F. AIR QUALITY

INTRODUCTION

This section addresses the environmental setting and impacts related to air quality. Air pollution is a local and regional concern because it can be a health hazard and may adversely affect the productivity of agricultural lands. The entire San Joaquin Valley is a shared air basin where concentrations of ozone and particulate matter violate state and federal standards for protecting public health. Because new emissions of pollutants that could cause or contribute to additional violations would be associated with construction and operation of the West Patterson projects, the impacts are discussed here.

SETTING

REGULATORY FRAMEWORK

REGULATED POLLUTANTS

National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) are planning standards that define the upper limits for ambient airborne concentrations of pollutants. The standards are designed to protect all aspects of the public health and welfare, with a reasonable margin of safety. At the national level, the federal Clean Air Act requires the U.S. Environmental Protection Agency (U.S. EPA) to establish NAAQS and designate areas that are either attaining or violating the standards. In California, the task of air quality management and regulation has been legislatively granted to the California Air Resources Board (CARB) and to local regional districts or counties. The CARB establishes CAAQS and designates the attainment status of each area in the state with the standards. The San Joaquin Valley Air Pollution Control District (APCD, or District) coordinates the local efforts to comply with these standards.

The NAAQS and CAAQS are established for "criteria pollutants." These are ozone, respirable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead. Ozone is an example of a secondary pollutant that is not emitted directly from a source (e.g., an automobile tailpipe). It is formed in the atmosphere by chemical and photochemical reactions. Nitrogen oxides (NOx) and reactive organic gases (ROG), including volatile organic compounds (VOC), are regulated as precursors to ozone formation.

Toxic air contaminants (TACs) are a category of air pollutants separate from criteria pollutants that pose a present or potential hazard to human health, but which tend to be emitted on a localized and source-specific basis and cause impacts that are typically more localized than those created by criteria air pollutants. There are more than 900 toxic air contaminants recognized by different regulatory agencies. Although ambient air quality standards do not exist for these pollutants, sources are regulated with emission standards and risk-based limitations at the federal, state, and local levels.

AIR QUALITY PLANNING AND ATTAINMENT

The California Air Resources Board is responsible for oversight of air quality management in the state. CARB's responsibilities include establishing emissions standards and regulations for certain mobile sources in the state (e.g., autos, light-duty trucks, etc.) and overseeing the efforts of local air pollution control districts. The San Joaquin Valley Air Pollution Control District is responsible for demonstrating that attainment of the ambient air quality standards is either achieved or will be achieved through proper regional planning. The APCD directly regulates stationary emission sources through its permit authority in APCD Regulation II and indirectly manages emissions from mobile sources through coordination with regional municipalities and transportation planning agencies.

Because of ongoing violations of the NAAQS and CAAQS for ozone and PM_{10}, the San Joaquin Valley Air Basin is designated as a nonattainment area for these criteria pollutants, and these pollutants are the most relevant to air quality planning and regulation in the Air Basin. The local APCD manages these pollutants through a long-range attainment planning process that forecasts emissions and future concentrations depending on changes in source activity, regulatory programs, and meteorological

conditions. The plans for demonstrating eventual ozone and PM_{10} attainment are evolving documents that are updated approximately triennially to reflect the changing population, economic, land use, and transportation conditions in the San Joaquin Valley. The most recent Ozone Attainment Demonstration Plan was published in 1994 and most-recently updated in 2001, and the PM_{10} Attainment Demonstration Plan was published in 1997. The attainment status for each of the criteria pollutants is summarized in Table III.F.1.

Table III.F.1: Ambient Air Quality Attainment Status for San Joaquin Valley

Pollutant	CAAQS[1] Attainment Status	NAAQS[2] Attainment Status
Ozone	Nonattainment (Severe)	Nonattainment (Severe)
Inhalable Particulates (PM_{10})	Nonattainment	Nonattainment (Serious)
Fine Particulates ($PM_{2.5}$)	No Applicable Standard	To Be Determined
Carbon Monoxide	Attainment	Attainment
Nitrogen Dioxide	Attainment	Attainment
Sulfur Dioxide	Attainment	Attainment

Notes:
[1] CAAQS = California Ambient Air Quality Standards.
[2] NAAQS = National Ambient Air Quality Standards.

Source: San Joaquin Valley APCD 2002, http://www.valleyair.org/aqinfo/attainment.htm; Turnstone Consulting, 2002.

The U.S. EPA can constrain federal funding for regions that fail to meet attainment planning horizons. The amount of time allowed to reach attainment is longer for those areas with more severe attainment problems. The ozone attainment planning target date for the SJVAB is 2005. In 2002, the APCD Governing Board considered voluntarily downgrading the Basin from a 'severe' federal nonattainment status for ozone to 'extreme.' Downgrading the nonattainment status would allow the APCD more time to attain the ozone standards before incurring federal penalties. The PM_{10} attainment planning date is 2006. Improvements in CO conditions led by lower emitting motor

vehicles and reformulated fuels allowed the region to be upgraded to a status of CO attainment since the early 1990s.

Fine particulate matter ($PM_{2.5}$) is also a pollutant of concern in the San Joaquin Valley. The NAAQS for $PM_{2.5}$ are being implemented via recent U.S. EPA rule-making, and ambient monitoring to determine the attainment status of the region is underway. Monitoring will likely reveal region-wide violations of the $PM_{2.5}$ NAAQS, which will trigger a separate long-range planning process for the APCD to identify and manage sources of this pollutant and its precursor pollutants. A state-level standard for $PM_{2.5}$ is also being implemented by CARB.

Management of toxic air contaminants is accomplished through a combination of source identification, risk characterization, control requirements, and avoidance of land use conflicts. Mobile sources of TACs (such as particulate matter from diesel exhaust) are managed through vehicle emission control programs implemented on a state and federal level with the cooperation of fuel suppliers and vehicle and engine manufacturers. Stationary sources of TACs are subject to the APCD permitting requirements, which include an evaluation of potential TAC emissions and risks to nearby receptors. For new sensitive land uses resulting from local planning actions (including new residential areas and schools), it is the responsibility of the local land use jurisdiction to identify whether the new land uses would be located near existing sources of TACs. Avoiding land use conflicts can also accomplish management of the public's exposure to odors.

CITY OF PATTERSON AIR QUALITY POLICIES

The City of Patterson General Plan provides policies for promoting, and to the extent possible, improving local and regional air quality. The following policies would be relevant to the proposed West Patterson projects:

VI.D.2 The City shall utilize the CEQA process to identify and avoid or mitigate potentially significant air quality impacts of new development. The CEQA process shall also be utilized to ensure early consultation with the APCD concerning air quality issues associated with specific development proposals.

VI.D.3 The City shall notify and coordinate with the APCD when industrial developments are proposed. Such coordination will assist applicants in complying with applicable air quality regulations and will assist the City in promptly identifying and resolving potential air quality problems.

VI.D.4 Major intersections shall be designed to minimize long vehicle delays which result in carbon monoxide (CO) "hot spots."

VI.D.5 The City shall, to the extent practicable, separate sensitive land uses from significant sources of air pollutants or odor emissions.

VI.D.6 The City shall promote expansion of employment opportunities within Patterson to reduce commuting to areas outside Patterson.

VI.D.7 The City should review development proposals using criteria established by the APCD in order to minimize future increases in vehicle travel and to assist in implementing appropriate indirect source regulations adopted by the APCD.

EXISTING LOCAL AIR QUALITY CONDITIONS

CARB and APCD continually monitor the ambient concentrations of criteria pollutants including ozone, inhalable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), and carbon monoxide (CO). The nearest stations operated near Patterson are in Modesto and Turlock.

Data gathered from the Modesto station indicates the following (CARB, 2002a):

- Ozone concentrations between 1998 and 2001 exceeded the 1-hour ozone CAAQS on as many as 24 and as few as 7 days per year, and the NAAQS was exceeded on four days over the four-year period. More frequent violations occur in the southern portions of the San Joaquin Valley.
- PM_{10} concentrations between 1998 and 2001 exceeded the 24-hour CAAQS in approximately 15 to 25 percent of the samples per year. The 24-hour NAAQS for PM_{10} was exceeded on approximately three days over the four-year period.
- $PM_{2.5}$ monitoring began in 1999. Between 1999 and 2001, the NAAQS was exceeded on approximately 20 days over the three-year period.

- Carbon monoxide (CO) concentrations between 1998 and 2001 ranged up to a maximum of 7.3 parts-per-million (8-hour). Since 1991, the ambient air quality standards for CO have not been exceeded anywhere in the San Joaquin Valley.

EXISTING LOCAL SOURCE INVENTORY

The West Patterson project area is primarily used for agriculture. The Patterson Airport is located within the project area along with lands occupied by the California Department of Forestry, Caltrans, and water conveyances. Agricultural sources within the project area can include off-road equipment and pumping stations that would generate exhaust emissions, along with farming activities or burning that can create substantial dust or soot emissions. Besides agricultural operations, few stationary emitting sources are within the project area. There is a crude pipeline operation approximately three miles south of Sperry Avenue along Interstate 5 (approximately 2.5 miles south of the Patterson Gardens site) that is a major source of organic compounds; otherwise, there are no major commercial or industrial sources in the vicinity (CARB, 2002b). Neighboring land uses in the vicinity of the project cause minor emissions through small-scale commercial and rural residential activities.

Mobile sources in the project vicinity contribute to emissions in the area. Traffic on Interstate 5 (I-5) and vehicles accessing existing highway commercial uses on the western boundary of the project area routinely cause exhaust emissions and emissions from entrained dust on the roadways.

Throughout the remainder of the San Joaquin Valley Air Basin, agricultural operations and mobile sources account for a substantial portions of ozone precursor and PM_{10} emissions. The majority of PM_{10} emissions in the valley are attributed to farming operations and airborne dust from paved and unpaved roads (SJVAPCD, 2002). Managing growth of emissions from agricultural operations and emissions from all types of motor vehicle activity are an important component of the regional air quality attainment strategy. Industry and other stationary sources make up the remainder of the man-made emissions in the basin.

IMPACTS AND MITIGATION

APPROACH

SIGNIFICANCE THRESHOLDS / SIGNIFICANCE CRITERIA

The San Joaquin Valley Air Pollution Control District (APCD, or District) establishes thresholds of significance in guidelines adopted by the District in 1998 (SJVAPCD, 2002). The guidelines define separate thresholds for construction emissions, project operation and occupation, and cumulative impacts. Project development would cause a significant air quality impact if it were to result in:

- Construction activities that would not comply with District Regulation VIII or implement effective and comprehensive control measures.
- Emissions of air pollutants that would cause or substantially contribute to either localized or regional violations of the ambient air quality standards. (Project emissions of more than 10 tons per year (tpy) of VOC or NOx would substantially contribute to ongoing regional ozone violations.)
- Exposure of sensitive receptors to substantial concentrations of TACs or objectionable odors. (Substantial concentrations are those that lead to an exposure of TACs increasing the probability of contracting cancer for the maximally exposed individual by more than 10 in one million.)

If project development would individually cause a significant air quality impact from project operations then the cumulative impacts of the project would be considered significant.

METHODOLOGY AND ASSUMPTIONS

The analysis addresses construction emissions and emissions from project operation separately. Emissions from construction can vary considerably depending on the specific activities taking place, level of activity, soil conditions, and weather. The APCD emphasizes implementation of control measures determined by the APCD to be effective and comprehensive rather than detailed quantification of construction emissions

(SJVAPCD, 2002). This analysis identifies all feasible control measures for emissions of construction dust and equipment exhaust emissions.

Analysis of emissions from project operations involves predicting the regional emission changes that would be induced by a long-range planning effort. Large-scale development usually causes new mobile source activity, which increases emissions from motor vehicles, and new stationary or area-wide sources. Mobile source emissions depend on the nature of the vehicle trips. Among the complex variables that affect emission estimates are the trip lengths, trip speeds, and the nature of trip ends (e.g., whether it is followed by another trip in rapid succession or followed by a lull where the vehicle has opportunity to cool off). This analysis provides estimates of future mobile source emissions based on trip generation projections from the traffic study (TJKM, May 2002) and the annual average Motor Vehicle Emission Inventory (MVEI) for Stanislaus County in 2025. The MVEI is a model published by the California Air Resources Board in conjunction with the EMFAC2001 database (CARB, 2002c). Area source emissions, which include emissions from new natural gas combustion for energy and heating, landscaping activities, and use of consumer products, are analyzed separately using the area source component of the URBEMIS7G model (CARB, 2002a).

Because carbon monoxide (CO) conditions have improved greatly since the early 1990s, this analysis uses a tiered methodology for analyzing localized CO impacts caused by congested traffic. If heavy traffic would cause the level of service (LOS) on streets or intersections to deteriorate to LOS E or F, or if traffic will substantially worsen an LOS F condition, then the future localized concentrations of CO are predicted and compared to the ambient air quality standards. If these conditions would not occur, then no potential violations of the CO standards are expected to occur.

Stationary source emissions from new manufacturing and processing equipment that could be associated with light industrial development would be regulated by the APCD permitting process. The APCD rules and regulations would ensure that new stationary source emissions are adequately mitigated. The present analysis evaluates potential impacts of TACs and odors from these sources by considering whether a new potential source of TACs or objectionable odors would be located near existing sensitive receptors and whether new sensitive receptors would be located near an existing source of TACs or objectionable odors.

PROJECT IMPACTS AND MITIGATION

Impact F.1. Construction activities would generate emissions of PM_{10} and ozone precursors that could cause or contribute to violations of the air quality standards. (Significant)

Development of any aspect of the West Patterson projects has the potential to cause construction activities that would generate emissions of fugitive dust (PM_{10}) and exhaust from construction equipment. Emissions and the impacts from construction are difficult to accurately quantify because they vary considerably depending on the specific activities taking place, level of activity, soil conditions, and weather.

Airborne dust is a substantial component of the elevated PM_{10} concentrations in the San Joaquin Valley. Excavation, grading, unvegetated surfaces exposed to wind, material handling, material storage piles, and vehicle travel on paved and unpaved surfaces all can be sources of substantial fugitive dust emissions if not properly managed or maintained.

Dust would be generated within the entire West Patterson project area and at off-site locations along any infrastructure improvements. Existing residences and other sensitive receptors located along the routes of new wastewater or stormwater collection lines, or water supply lines, would be affected along with existing or new sensitive receptors in the project vicinity.

To avoid increased adverse health effects from new construction-related PM_{10} and to address nuisance concerns such as visible clouds of dust and soiling of exposed surfaces, the APCD oversees an extensive set of rules in Regulation VIII. All aspects of the West Patterson projects are expected to comply with the APCD rules; however the APCD specifically identifies measures for use as CEQA mitigation. Without implementing the APCD-recommended mitigation, construction-related fugitive dust emissions could contribute substantially to ongoing violations of the PM_{10} standards, which would cause a significant impact.

Ozone precursors (VOC and NOx), carbon monoxide, sulfur dioxide, and toxic diesel particulate matter are among the pollutants routinely emitted with construction equipment exhaust. For example, these emissions would occur with use of large earth-movers

during grading, trenching equipment during installation of water, sewer, and storm drainage pipes, or haul trucks delivering building materials to the site. Without additional mitigation, emissions of ozone precursors and PM_{10} from construction equipment exhaust would be likely to contribute to existing violations of the ozone and PM_{10} standards.

Without implementation of effective and comprehensive control measures fugitive dust emissions and emissions from equipment exhaust would cause a significant air quality impact.

Mitigation Measure F.1(a).

The developers, and the City for infrastructure improvements, shall implement the following measures to control construction emissions of PM_{10}:

- All disturbed areas, including storage piles, which are not being actively used for construction purposes, shall be effectively stabilized to limit dust emissions using water, chemical stabilizer/suppressant, or vegetative ground cover.
- All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized to limit dust emissions using water or chemical stabilizer/suppressant.
- All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled to limit fugitive dust emissions utilizing application of water or by presoaking.
- When materials are transported off-site, all material shall be covered, effectively wetted to limit visible dust emissions, or at least six inches of freeboard space from the top of the container shall be maintained.
- All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.)
- Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized to limit fugitive dust emissions utilizing sufficient water or chemical stabilizer or suppressant.

- Any site with 150 or more vehicle trips per day shall prevent carryout and trackout.
- Traffic speeds on unpaved roads shall be limited to 15 mph.
- Sandbags or other erosion control measures shall be installed to prevent silt runoff to public roadways from sites with a slope greater than one percent.

When construction covers a site that is large in area or located near residences, schools, or other sensitive receptors, the developers, and/or the City shall implement the following additional measures to control construction emissions of PM_{10}:

- Wheel washers shall be installed for all exiting trucks or wash off all trucks and equipment leaving the site.
- Wind breaks shall be installed at windward side(s) of construction areas.
- Excavation and grading activity shall be suspended when winds exceed 20 mph.
- The area subject to excavation, grading, or other construction activity at any one time shall be limited.

Mitigation Measure F.1(b).

The developers shall implement the following measures to control construction emissions of ozone precursors:

- Alternative fueled or catalyst equipped diesel construction equipment, or NOx or PM_{10} controlled equipment shall be used, where possible.
- Idling time for all equipment shall be minimized (e.g., to less than 10 minutes).
- The hours of operation of heavy duty equipment and/or the amount of equipment in use shall be limited, where possible.
- Fossil-fueled equipment shall be replaced with electrically driven equivalents, where possible (provided they are not run by a portable generator set).
- Construction during periods of high ambient pollutant concentrations shall be curtailed (e.g., this may include ceasing construction activity during the peak hour of vehicular traffic on adjacent roadways).

Implementation of these mitigation measures would reduce impacts of construction PM_{10} to a less-than-significant level, but impacts of ozone precursors from construction equipment exhaust would remain significant and unavoidable.

Impact F.2. Emissions from motor vehicles due to heavy project traffic could cause localized violations of carbon monoxide standards. (Significant)

Project traffic could impact local intersections and roadway segments by increasing congestion and reducing the performance of the transportation system. Localized air quality impacts can occur from tailpipe emissions of carbon monoxide at congested intersections (where the performance deteriorates to LOS E or F). The traffic study prepared for the West Patterson projects (TJKM, May 2002), identifies the locations where congestion could occur and recommends traffic mitigation measures that would improve each component of the affected roadway network to LOS D or better. Implementation of traffic mitigation would be consistent with the City of Patterson air quality policy VI.D.4. Without implementation of the mitigation measures recommended for traffic impacts, potentially significant air quality impacts could occur.

Mitigation Measure F.2.

Implement Mitigation Measures associated with Transportation and Circulation.

Implementation of this measure would assure that the potential impacts from localized emissions of CO are reduced to a less-than-significant level.

Impact F.3. The new uses allowed under the West Patterson Business Park Master Development Plan could cause emissions of toxic air contaminants or odors. (Significant)

The proposed light industrial and warehouse uses would allow new stationary sources or intense diesel truck activity that could generate TACs or odors depending on what types of uses ultimately locate in the plan area. The APCD would evaluate all projects involving stationary sources subject to permitting under APCD Regulation II. Examples of equipment that is subject to permitting requirements are: internal combustion engines, boilers, mixing or use of solvents or adhesives, or storage of motor fuels. Gas stations,

dry cleaners, parts coating or plating operations, auto body shops, and canning operations are each examples of uses that could occur within the Business Park Plan, including the Keystone Pacific proposal, and would be subject to APCD review. For sources emitting TACs, the APCD would require installation of control technologies to reduce impacts of TACs to a level that would not cause adverse health risks at nearby sensitive receptors. With the APCD review process in place no significant impact would be caused by potential TAC emissions from stationary sources.

Uses that could attract a high level of diesel truck activity would lead to impacts from diesel particulate which is a TAC. Wholesale distribution centers could be allowed within the Business Park Plan. According to CARB, the agency responsible with the U.S. EPA for managing diesel truck emissions, a distribution center with a 200 heavy-duty diesel truck fleet and refueling on-site could cause nearby receptors (within about 65 feet or 20 meters) to be exposed to an increased probability of contracting cancer of roughly 50 in one million (CARB 2000b). Increased risks of more than 10 in one million would qualify as a potentially significant impact. Ensuring that high levels of diesel vehicle activity occur at a sufficient distance from sensitive receptors would reduce the potential impacts. The Keystone Pacific site provides sufficient distance to possible truck activity by placing loading facilities away from Baldwin Road, with landscaping and detention ponds between the industrial and warehouse uses and the residences. Without implementation of a protective measure to provide adequate buffer zones in the remainder of the West Patterson Business Park Master Development Plan, a significant TAC impact could occur from diesel truck activity.

The APCD recommends incorporating buffer zones for new sources of potential odors. Examples of allowable uses that could generate odors include food packaging, pharmaceutical manufacturing, or certain types of research and development. Without implementation of a protective measure to provide an adequate buffer zone, a significant odor impact could occur. The City of Patterson air quality policy VI.D.5 guides the response to this impact.

Mitigation Measure F.3.

The West Patterson Business Park Master Development Plan shall include adequate buffer zones for TACs and odors by prohibiting centers of intense diesel vehicle activity

or odor sources from locating near existing or planned residences, schools, or other sensitive uses.

Implementation of this measure would assure that the impact caused by potential TACs and odors is reduced to a less-than-significant level.

Impact F.4. Construction and routine operation of the City's wastewater treatment plant expansion could cause increased emissions. (Less than Significant)

Construction of the proposed ponds and wastewater treatment plant upgrades would occur in two phases over approximately 24 to 28 months. The nature of the construction emissions would generally be similar to those of the other developments that would occur with the West Patterson projects. Emissions of PM_{10} as fugitive dust would be generated by wind erosion of exposed graded surfaces and construction equipment exhaust emissions would include ozone precursors (VOC and NOx), carbon monoxide, sulfur dioxide, and toxic diesel particulate matter. These impacts and the appropriate mitigation measures are illustrated in Impact F.1 above. No further analysis is necessary.

Routine operation of the wastewater treatment plant expansion would generate emissions of ozone precursors (VOC and NOx). The sources of ozone precursors range from small stationary sources to new mobile sources caused by new workers commuting to the expanded facility. These emissions need to be assessed for their potential to contribute to ongoing regional violations of the ozone standards. The operational emissions attributable to the expansion are summarized as follows:

Increased Energy Demand

Operation of the expanded facilities would require the use of additional pumps and motors, all of which would be electrically powered. Emissions associated with electricity generation occur at region-serving power plants and are required by APCD Regulation II to be offset through the use of pollution credits. Because these emissions are offset, no new air quality impact would occur.

Diesel Powered Equipment

The only new piece of diesel-powered equipment to be installed at the plant would be a 400-kW backup emergency-use power generator for use in the case of a power outage. Operation of the backup diesel generator would occur only for testing and on an intermittent basis (as-needed). The APCD permitting requirements for emission offsets would apply if the engine was allowed to operate more frequently. Because the generator would be used on an intermittent and as-needed basis, emissions from this source would not exceed the significance threshold of 10 tpy.

Evaporative Wastewater Treatment

Evaporative emissions of volatile organic compounds can occur when high levels of VOCs are contained in wastewater influent. Industrial activities typically contribute a majority of the VOCs commonly found in wastewater influent, often associated with the use of paint solvents, cleaning solutions, degreasing solutions, gasoline, and pesticides. Wastewater generated by residential, institutional, and commercial activities typically contain only trace levels of VOCs. Source control measures are often considered the most effective method of reducing concentrations of VOCs in wastewater influent from industrial facilities.

The U.S. EPA has established pretreatment standards for the discharge of industrial pollutants to publicly owned wastewater treatment facilities as part of its National Pretreatment Program. In California, the Regional Water Quality Control Board (RWQCB) implements this program. Once the RWQCB determines that a publicly owned wastewater treatment facility meets the criteria for regulation under this pretreatment program, it modifies the operator's waste discharge requirement (WDRs) to require the operator to develop a local pretreatment program. The local program is subject to review and approval by the RWQBC. As discussed in Section III.J, Wastewater, the City would be required to obtain revisions to its current WDRs from the RWQCB prior to expansion of its wastewater treatment facility. If the City's treatment plant is determined to be eligible for the pretreatment program, the revised WDRs would require the City to develop a pretreatment program to control industrial pollutants, including VOCs. As a result, VOC concentrations within the wastewater influent at the wastewater treatment plant would be minimized, and evaporative emissions of VOCs

associated with the operation of the proposed wastewater treatment facilities would be anticipated to be minor. Evaporative VOC emissions would not be expected to exceed the 10 tpy significance threshold.

Worker Trips

Operation of the expanded facilities would result in increased use of motor vehicles, primarily associated with new employees traveling to and from the proposed water treatment facilities and routine maintenance and inspection activities. Because operation of the proposed facilities would likely require the addition of approximately two full-time employees, the new mobile source activity would not result in a substantial change in emissions.

Total Operational Emissions

Total NO_x emissions from routine operation of the proposed wastewater treatment plant expansion (including increased vehicle use associated with employees, the backup generator, and evaporative emissions from wastewater influent) would be minor in comparison to those generated by the remainder of the West Patterson projects. Contributions of NO_x emissions from the expansion would be less than the 10 tpy threshold. Therefore, NO_x emissions would not contribute to a significance increase in regional ozone conditions.

With adoption of industrial source control measures, evaporative emissions of VOCs from public wastewater treatment facilities are typically minor and do not result in a substantial contribution to regional ozone formation (US EPA, 1991).

Mitigation Measure. No mitigation necessary.

Impact F.5. The expanded wastewater treatment plant and new percolation ponds would result in increased odor generating potential that could affect nearby residents. (Significant, Unavoidable)

The proposed expansion would include percolation ponds at locations within one mile of existing residences. Odors from domestic wastewater are typically a result of anaerobic

biological activity (bacterial growth without oxygen) in the sewer collection and wastewater treatment systems. Odors are most prevalent during warm weather conditions (approximately 70 degrees Fahrenheit and warmer), which favor a more rapid multiplication of the anaerobic bacteria. In addition, sewage containing industrial wastes may have odor problems compounded by organic gases from waste chemicals added to the sewer system. The anaerobic decomposition of compounds containing nitrogen and sulfur results in a number of gases, including hydrogen sulfide, ammonia, carbon dioxide, methane, nitrogen, oxygen and hydrogen. Although many different combinations of gases can occur at any given time, the most objectionable odors associated with domestic wastewater are typically the result of emissions of hydrogen sulfide gas.

The elements of a wastewater treatment facility most likely to generate odors typically include storage areas in which wastewater influent (i.e., untreated wastewater) or solids are open to the air and/or stored for extended periods of time. Major sources of odors typically include the influent pump stations, mechanical screens, and grit removal chambers. Additional sources of minor odors would also include sludge handling activities, as well as stockpiled materials from the mechanical screen and grit removal chambers. Storage and percolation ponds for treated effluent tend to generate fewer odors than those generated by the remainder of the treatment facility, because the effluent in the storage ponds has already been treated.

During high winds, odors generated at treatment plants are usually diluted. However, during light or calm wind conditions, potential odor levels can be high because dilution is minimized. When these odors are strong, or when a slight breeze exists, odors can be transmitted over relatively long distances. Potential increases in odors would be offset by design and/or operational procedures, including the use of chemicals and incorporation of additional treatment technologies. For example, the advanced integrated pond systems to be included with the proposed expansion can result in less odor than traditional treatment processes.

The West Patterson projects would include installation of new percolation ponds near the existing facility; all alternative percolation pond locations are within one mile of residences. Additionally, the project would increase the amount of wastewater that would be treated by the facility. Therefore, odors from project-related facilities may be detectable at these residences and could result in a significant nuisance. The impacts

related to objectionable odors from the expanded wastewater treatment facilities would cause a significant impact.

Mitigation Measure F.5.

The City's wastewater treatment plant expansion project shall incorporate the following measures to reduce the occurrence of objectionable odors:

a. Prior to final design, the City of Patterson will ensure that appropriate engineering controls have been incorporated into the design and construction of the proposed wastewater treatment and conveyance facilities to minimize the production of objectionable odors. Engineering controls to diminish odors could include, but would not be limited to, covering the headworks and/or prechlorinating at the headworks use of chemical additives to mask odors, or installing systems to collect odiferous air and remove objectionable odors (e.g., air scrubber).

b. During operation of the expanded wastewater treatment and conveyance facilities, the City of Patterson shall ensure that engineering controls designed to suppress odors are functioning properly by periodically evaluating odor levels adjacent to the facilities. Should objectionable odors be present, the City shall take appropriate action to correct them to the extent practical.

Although implementation of these measures would reduce the impacts related to objectionable odors by reducing the frequency of occurrence and duration of exposure, the nearby residences could still be exposed to objectionable odors from the project-related expansion. Increases in objectionable odors would remain a significant and unavoidable impact.

REGIONAL IMPACTS AND MITIGATION

Air quality impacts to the regional air basin depend on the growth of the emission inventory. Because the San Joaquin Valley is designated a nonattainment area for violations of the ozone and PM_{10} standards, any new emissions of these pollutants and their precursors could cause or contribute to new violations. Motor vehicle sources are the subject of numerous state and federal emission control requirements currently in place. The regional benefits provided by those programs are being offset by growth in

the regional vehicle population and growth in the levels of vehicular activity. The growth contribution related to the West Patterson projects is analyzed here.

Impact F.6. Emissions from increased motor vehicle activity and new area sources associated with the project could cause or contribute to ongoing violations of the ozone and PM_{10} standards. (Significant, Unavoidable)

Buildout (with operation and occupation) of the West Patterson projects would increase motor vehicle activity in the region by generating and attracting vehicle trips. Increased motor vehicle activity would cause increased emissions of ozone precursor pollutants (NOx and VOC) and particulate matter (both PM_{10} and $PM_{2.5}$). Along with motor vehicle emissions, emissions from area sources would also increase with the development. Area sources include new natural gas combustion for energy and heating, landscaping activities, and consumer products. The emission increases caused by operation of the West Patterson projects in the build-out year of 2025 are quantified in Table III.F.2.

Table III.F.2 West Patterson Projects: Mobile Source and Area Source Emissions

Source Category	NOx	VOC	CO	PM_{10}
Motor Vehicle Emissions (lb/day) (1)	325	267	1,933	626
Area-Source Emissions (lb/day) (2)	57	55	43	< 1
Total Daily Emissions (lb/day)	382	323	1,976	626
Total Annual Average Emissions (tpy)	69.8	58.9	360.7	114.2
APCD Significance Thresholds (tpy)	10	10	—	—
Project Significant Impact?	Yes	Yes	—	—

Notes:

lb/day = pounds per day; tpy = tons per year

[1] Motor vehicle emissions include project-related vehicle trips (year 2025) based on West Patterson projects traffic study (TJKM, May 2002).

[2] Area-source emissions include: natural gas use, landscaping, and use of consumer products. Wood-burning fireplaces or stoves are not included.

Sources: (1) CARB EMFAC2001 and (2) URBEMIS7G; Turnstone Consulting, 2002.

increase energy efficiency. Such measures may include, but need not be limited to:

- The use of insulation in attics and walls that exceeds Title 24 requirements;
- Orientation of buildings to maximize heating and cooling;
- Planting of deciduous trees on south- and west-facing sides of buildings;
- The use of double-paned windows; and
- The use of solar water heaters.

- New wood-burning fireplaces or stoves shall be prohibited.
- Natural gas lines or electrical outlets shall be installed in patio areas when feasible to discourage use of charcoal or wood barbeques.

Implementation of these mitigation measures would reduce impacts of motor vehicle and areas source emissions, but impacts would remain significant and unavoidable.

EXISTING PLUS KEYSTONE PACIFIC PROJECT CONDITIONS

Impact F.7. Emissions from increased motor vehicle activity and new area sources associated with the Keystone Pacific proposal could cause or contribute to ongoing violations of the ozone and PM_{10} standards. (Significant, Unavoidable)

Operation of the Keystone Pacific project would generate emissions from motor vehicles and area sources similar to those discussed under Impact F.6 for the Existing Conditions plus West Patterson projects scenario. Table III.F.3 shows the regional emission increases caused by operation of the Keystone Pacific project in the buildout year of 2025. Table III.F.3 shows that implementation of the Keystone Pacific project would exceed the APCD 10 tpy threshold for NOx. Additional mitigation would be appropriate to reduce this impact.

Mitigation Measure F.7.

Implement Mitigation Measures F.6(a), F.6(c), and F.6(d).

Implementation of these mitigation measures would reduce impacts of motor vehicle and area source emissions, but impacts would remain significant and unavoidable.

Table III.F.3: Keystone Pacific Project: Mobile Source and Area Source Emissions

Source Category	NOx	VOC	CO	PM_{10}
Motor Vehicle Emissions (lb/day) (1)	64.6	53.1	384.1	124.3
Area-Source Emissions (lb/day) (2)	5.1	0.6	3.6	< 1
Total Daily Emissions (lb/day)	69.7	53.7	387.7	124.5
Total Annual Average Emissions (tpy)	12.7	9.8	70.8	22.7
APCD Significance Thresholds (tpy)	10	10	—	—
Project Significant Impact?	Yes	No	—	—

Notes:

lb/day = pounds per day; tpy = tons per year

[1] Motor vehicle emissions include project-related vehicle trips (year 2025) based on West Patterson projects traffic study (TJKM, July 2002).

[2] Area-source emissions include: natural gas use, landscaping, and use of consumer products. Wood-burning fireplaces or stoves are not included.

Sources: (1) CARB EMFAC2001 and (2) URBEMIS7G; Turnstone Consulting, 2002.

EXISTING PLUS PATTERSON GARDENS PROJECT CONDITIONS

Impact F.8. Emissions from increased motor vehicle activity and new area sources associated with the Patterson Gardens proposal could cause or contribute to ongoing violations of the ozone and PM_{10} standards. (Significant, Unavoidable)

Operation of the Patterson Gardens project would generate emissions from motor vehicles and area sources similar to those discussed under Impact F.6 for the Existing Conditions plus West Patterson projects scenario. Table III.F.4 shows the regional emission increases caused by operation of the Patterson Gardens project in the build-out year of 2025. Table III.F.4 shows that implementation of the Patterson Gardens project would exceed the APCD 10 tpy threshold for NOx and VOC. Additional mitigation would be appropriate to reduce this impact.

Table III.F.4: Patterson Gardens Project: Mobile Source and Area Source Emissions

Source Category	NOx	VOC	CO	PM_{10}
Motor Vehicle Emissions (lb/day) (1)	45.4	37.3	269.9	87.3
Area-Source Emissions (lb/day) (2)	22.9	52.2	26.7	< 1
Total Daily Emissions (lb/day)	68.2	89.5	296.6	87.5
Total Annual Average Emissions (tpy)	12.5	16.3	54.1	16.0
APCD Significance Thresholds (tpy)	10	10	—	—
Project Significant Impact?	Yes	Yes	—	—

Notes:
lb/day = pounds per day; tpy = tons per year
[1] Motor vehicle emissions include project-related vehicle trips (year 2025) based on West Patterson projects traffic study (TJKM, July 2002).
[2] Area-source emissions include: natural gas use, landscaping, and use of consumer products. Wood-burning fireplaces or stoves are not included.
Sources: (1) CARB EMFAC2001 and (2) URBEMIS7G; Turnstone Consulting, 2002.

Mitigation Measure F.8.

Implement Mitigation Measures F.6(b), F.6(c), and F.6(d).

Implementation of these mitigation measures would reduce impacts of motor vehicle and area source emissions, but impacts would remain significant and unavoidable.

CUMULATIVE IMPACTS AND MITIGATION

Reviewing the consistency of the West Patterson projects and the Keystone Pacific Business Park and Patterson Gardens development projects with the regionwide ozone and PM_{10} Attainment Demonstration Plans provides an analysis of project impacts in a cumulative context.

FUTURE 2025 PLUS WEST PATTERSON PROJECTS

Impact F.9. The cumulative air quality effects of development of the West Patterson projects could delay the region's progress in attaining the air quality standards. (Significant, Unavoidable)

Implementing the West Patterson projects would involve changing the land use designations for some parcels from agriculture use to residential, business park light industrial, and warehouse distribution uses and provide specific project approval for the Keystone Pacific Business Park and Patterson Gardens proposals. The West Patterson projects would include features to minimize the number or length of new vehicle trips, among them would be satisfying a local goal of providing jobs and residences to reduce commuting to distant job centers. In spite of these features, this analysis identifies a significant air quality impact related to the projects' increased motor vehicle activity (Impact F.6).

The San Joaquin Valley APCD plans for growth in the region by depending, in part, on the land use designations and assumptions about the rate of buildout. Although the ozone and PM_{10} Attainment Demonstration Plans evolve to reflect the changing growth in the San Joaquin Valley, the West Patterson projects would cause a higher level of industrial development and could help to stimulate the pace of development in the area beyond what is currently contemplated in the Attainment Demonstration Plans. These consequences, in combination with other development in the region, would delay the region's progress in attaining the ozone and PM_{10} standards. Because operation and occupation of the project, with mitigation identified above, would cause a significant air quality impact individually (Impact F.6), the cumulative impact would also be significant.

Impact Mitigation Measure F.9.

Implement Mitigation Measures associated with Impact F.6.

Implementation of this measures would reduce the cumulative impacts of the project, but they would remain significant and unavoidable.

FUTURE 2025 PLUS KEYSTONE PACIFIC PROJECT CONDITIONS

Impact F.10. The cumulative air quality effects of development of the Keystone Pacific project could delay the region's progress in attaining the air quality standards. (Significant, Unavoidable)

Similar to the cumulative impacts of implementing the West Patterson projects discussed under Impacts F.6, F.7, and F.9, implementing the Keystone Pacific project would delay the region's progress in attaining the ozone and PM_{10} standards. Mitigation would be appropriate to reduce this cumulative impact.

Mitigation Measure F.10.

Implement Mitigation Measures F.6(a), F.6(c), and F.6(d).

Implementation of these measures would reduce the cumulative impacts of the project, but they would remain significant and unavoidable.

FUTURE 2025 PLUS PATTERSON GARDENS PROJECT CONDITIONS

Impact F.11. The cumulative air quality effects of development of the Patterson Gardens project could delay the region's progress in attaining the air quality standards. (Significant, Unavoidable)

Similar to the cumulative impacts of implementing the West Patterson projects discussed under Impacts F.6, F.8, and F.9, implementing the Patterson Gardens project would delay the region's progress in attaining the ozone and PM_{10} standards. Mitigation would be appropriate to reduce this cumulative impact.

Impact Mitigation Measure F.11.

Implement Mitigation Measures F.6(b), F.6(c), and F.6(d).

Implementation of these measures would reduce the cumulative impacts of the project, but they would remain significant and unavoidable.

References

All referenced documents are available for review, by appointment, at City of Patterson offices (33 S. Del Puerto Avenue) except those marked with an asterisk (*), which are at the Stanislaus County Planning Department (1010 10th Street, Suite 3400, Modesto, CA), and except for those identified with an internet website address.

(CARB) California Air Resources Board, 2002a Air Quality Data Statistics, http://www.arb.ca.gov/adam/, accessed April 2002.

(CARB) California Air Resources Board, 2000b. Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles, Appendix VII, October 2000.

(CARB) California Air Resources Board, 2002a. URBEMIS7G, Version 5.1.0. Prepared for San Joaquin Valley Air Pollution Control District, October 2000.

(CARB) California Air Resources Board, Facility Search for sources in Patterson, 2002b. CARB Emission Inventory Branch website (www.arb.ca.gov/app/emsinv/facinfo). Accessed June 2002.

(CARB) California Air Resources Board, 2002c. EMFAC2001 Version 2.08, June 2002.

(SJVAPCD) San Joaquin Valley Air Pollution Control District, 2002. Guide for Assessing and Mitigating Air Quality Impacts (GAMAQI) Technical Document, Section 3, Revised January 10, 2002.

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G. NOISE

INTRODUCTION

This section addresses the environmental setting and impacts related to community noise. The West Patterson projects could cause development of noise sensitive land uses as well as development of new land uses that could be substantial sources of noise. The potential noise effects of the projects are analyzed and mitigation measures identified where appropriate.

SETTING

NOISE TERMINOLOGY

Sound is described in terms of loudness and pitch. The standard rating of sound loudness (amplitude) measurement is the decibel scale (dB). Since the human ear is not equally sensitive to sound at all pitches (frequencies), a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. Environmental noise loudness is typically measured in terms of the A-weighted decibel scale (dBA). This is a logarithmic scale that provides compensation approximating the sensitivity of the human ear to different pitches. The City of Patterson and Stanislaus County both use the following levels to quantify the effects of community noise on people, depending on the energy of the noise and what time of day the noise occurs:

- Leq, the equivalent energy noise level, is the average acoustic energy content of noise for a stated period of time, typically one hour, Leq(h);
- Ldn, the day-night average noise level, is a 24-hour average Leq with a 10 dBA "penalty" added to noise occurring during the hours of 10:00 P.M. to 7:00 A.M. to account for the greater nighttime sensitivity of people.

The logarithmic decibel scale allows an extremely wide range of acoustic energy to be characterized in a manageable notation. For example, a doubling of noise energy is

correlated to a 3.0 decibel (dB) increase in noise levels. This is also the minimum change in environmental noise that is recognizable by the human ear. An energy change of approximately a factor of ten is required for the human auditory system to perceive a doubling of noise loudness (a 10 dBA increase). On the A-weighted decibel scale, the sound level of normal talking is about 60 to 65 dBA.

Noise levels diminish (or attenuate) as distance from the source increases based on an inverse square rule, depending on how the noise source is physically configured. Sound from a point source, such as a single piece of construction equipment, attenuates at a rate of 6 dBA per doubling of distance. Heavily-traveled roads with few gaps in traffic behave as continuous line sources and attenuate roughly 3 dBA per doubling of distance.

EXISTING NOISE CONDITIONS

EXISTING NOISE SOURCES AND NOISE LEVELS

The existing and permanent noise environment in the West Patterson project area is generally affected by transportation, agriculture, and a few stationary sources.

The surrounding roadways that generate traffic noise are Sperry Avenue, Baldwin Road, and Ward Avenue. These are rural or transitional connector streets that may have occasionally fast-moving traffic, but are not heavily-traveled at night, causing only moderate daily levels of existing noise. According to the City of Patterson General Plan Noise Element, beyond about 65 feet of the centerline of Sperry Avenue, noise levels are less than 60 dBA Ldn. Much more substantial vehicular noise emanates from Interstate-5 (I-5) about one-half mile west of the Business Park Plan site. Approximately 25,000 vehicles per day travel the I-5 corridor through the project vicinity (TJKM, 2002), and about 25 percent of these vehicles are heavy-duty or lighter trucks (Caltrans, 2001). For those portions of the project vicinity that are within one-half mile of I-5 and that have an unobstructed line-of-sight to the freeway, the traffic noise from I-5 is likely above 60 Ldn.

The Patterson Airport, which occupies 30 acres of land near the center of the Business Park Plan site, is a general aviation facility used by small private aircraft. The majority of air traffic is for agricultural spraying, which results in short and low-flying flight operations. Flights occur on sporadic schedules, but can be at anytime during daylight

hours any day of the week. According to airport operators, as many as 70 landings and takeoffs could occur on a busy day (Fink, pers. com., 2002). Although the Patterson Airport is cited as a major noise source in the Noise Element of the Stanislaus County General Plan (October 1994), interviews conducted in 1986 to prepare for that planning effort indicate that few aircraft use the facility on a daily basis throughout the year, and rarely is the airport used at night. While individual aircraft flyovers are noticeable near the airport, beyond the airport site, noise from aircraft is expected to be less than 60 Ldn (Stanislaus County, 1987).

Ongoing agricultural operations on properties throughout the project area occur periodically and seasonally and they vary depending on how the land is used. For any of the agricultural properties, farming equipment, pumps, trucks, or cropdusters may occasionally cause elevated noise levels during certain operations.

Although there are no major industrial operations or fixed equipment within the project area, certain surrounding uses at times cause perceptible, intermittent noise. The Patterson Community Sports Complex is adjacent to the southeast corner of the Patterson Gardens site and is considered to be a potential source of nuisance noise through broadcasts of announcements and crowd noise for sports events (baseball and soccer games). The Pacific Tomato Growers facility on Sperry Avenue is approximately one-half mile east of the Patterson Gardens site, which is sufficiently distant to be a minor source.

NOISE SENSITIVE AREAS

Some activities and land uses are more sensitive to noise than others. The City's Noise Element identifies various land use types that are considered noise-sensitive. These include residences, schools, health care services, churches, public assembly facilities, libraries, museums, hotels and motels, outdoor recreation areas, and offices.

Rural residences are scarce in the West Patterson project vicinity. There is one residence on the south side of Sperry Avenue immediately adjacent to the Patterson Gardens site, and several residences on parcels in the Business Park Plan area. There are homes east of the Patterson Gardens project site across Ward Avenue, and there are residences under construction east of the Business Park Plan area, across Baldwin Road. There are also a few homes on the north side of Sperry Avenue, west of Ward Avenue, across from a

portion of the Patterson Gardens site. There are also rural residences within one mile of the existing wastewater treatment facility and proposed percolation pond sites; the nearest residences are located approximately 500 feet from one possible percolation pond site.

REGULATORY FRAMEWORK

The Noise Control Act of 1972 assigns the U.S. EPA the responsibility of developing regulations to adequately control environmental noise such that it does not endanger the population's health and welfare. The EPA established the Office of Noise Abatement and Control, but in 1981, funding for the office was removed. Similarly, the California Department of Health Services (DHS) once operated an Office of Noise Control that has since been disbanded. Environmental noise protection is mainly a local government responsibility, managed by the City of Patterson and Stanislaus County.

CITY OF PATTERSON NOISE CONTROLS

The *Patterson General Plan* Noise Element provides the policies that are intended to reduce the adverse effects of noise. The Noise Element sets standards for the maximum allowable noise exposure from both stationary and transportation-related sources as summarized on Tables III.G.1 and III.G.2, below (from Tables II-3 and II-5 of the Noise Element, respectively).

The Noise Element provides further guidance for new development through the following policies:

VII.E.1 New development of noise-sensitive uses shall not be allowed where the noise levels due to non-transportation noise sources will exceed the noise levels standards of Table II-3, as measured immediately within the property line of the new development, unless effective noise mitigation measures have been incorporated into the development design to achieve the standards specified in Table II-3.

VII.E.2 Noise created by new proposed non-transportation noise sources shall be mitigated so as not to exceed the noise level standards of Table II-3 as measured immediately within the property line of lands designated for noise-sensitive uses. This policy does not apply to noise sources associated with agricultural operations on lands zoned for agricultural uses.

Table III.G.1: Maximum Allowable Noise Exposure - Stationary Noise Sources

	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Hourly Leq, dB	50	45
Maximum Level, dB	70	65

Notes:
Each of the noise levels specified above shall be lowered by five dBA for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g. caretaker dwellings).

Source: *Patterson General Plan*, Noise Element, Table II-3.

Table III.G.2: Maximum Allowable Noise Exposure - Transportation Noise Sources

Land Use	Outdoor Activity Areas[1]	Interior Spaces	
	Ldn/CNEL, dB	Ldn/CNEL,	Leq, dB[2]
Residences, Transient Lodging,	60[3]	45	--
Theaters, Auditoriums, Music Halls	--	--	35
Offices	60[3]	--	45
Churches, Meeting Halls	60[3]	--	40
Schools, Libraries, Museums	--	--	45
Playgrounds, Neighborhood Parks	70	--	--

Notes:
[1] Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.
[2] As determined for a typical worst-case hour during periods of use.
[3] For other than residential uses, where an outdoor activity area is not proposed, the standard shall not apply. Where it is not possible to reduce noise in outdoor activity areas to 60 dB Ldn/CNEL or less using a practical application of the best available noise reduction measures, an exterior noise level of up to 65 dB Ldn/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

Source: Patterson General Plan, Noise Element, Table II-5.

VII.E.3 Where proposed non-residential land uses are likely to produce noise levels exceeding the performance standards of Table II-3 at existing or planned noise-sensitive uses, an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design. (Requirements for the content of an acoustical analysis are identified in the City of Patterson General Plan, Policy Document.)

VII.E.4 The feasibility of proposed projects with respect to existing and future transportation noise levels shall be evaluated by comparison to the Land Use Compatibility Guidelines for Development (reproduced as Figure III.G.1, below).

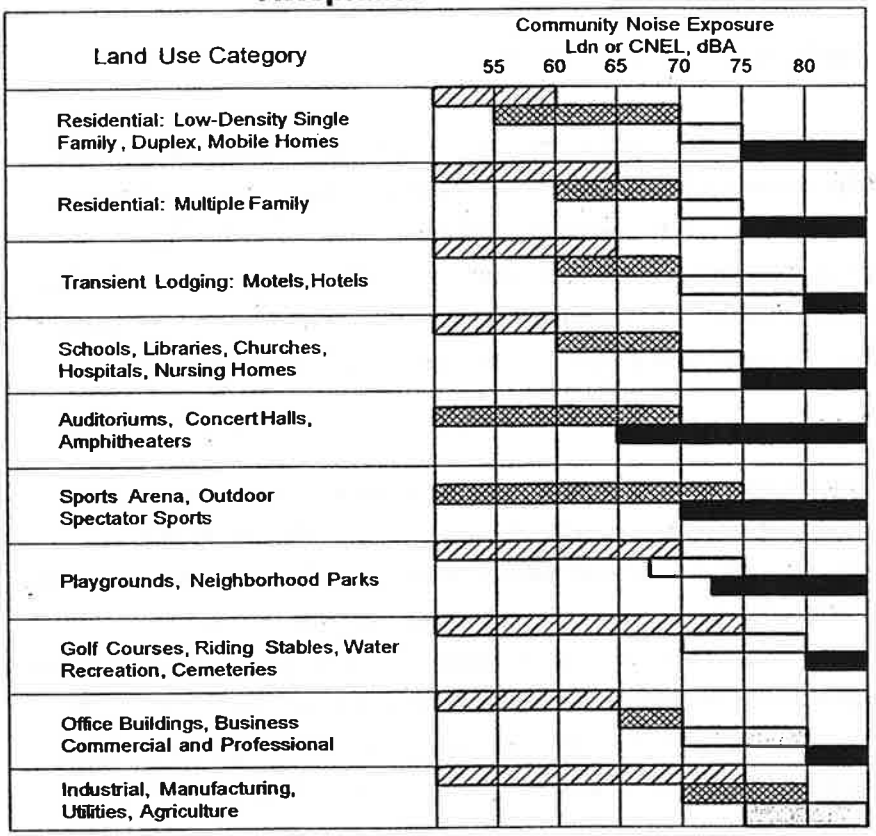
VII.E.5 New development of noise-sensitive land uses will not be permitted in areas exposed to existing or projected levels of noise from transportation noise sources which exceed the levels specified in Table II-5, unless the project design includes effective mitigation measures to reduce noise in outdoor activity areas and interior spaces to the levels specified in Table II-5.

VII.E.6 Noise created by new transportation noise sources, including roadway improvement projects, shall be mitigated so as not to exceed the levels specified in Table II-5 at outdoor activity areas or interior spaces of existing noise-sensitive land uses in either the incorporated or unincorporated areas.

VII.E.7 Where noise-sensitive land uses are proposed in areas exposed to existing or projected exterior noise levels exceeding the levels specified in Table II-5 or the performance standards of Table II-3, an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design.

VII.E.8 Where noise mitigation measures are required to achieve the standards of Table II-3 and II-5, the emphasis of such measures shall be placed upon site planning and project design. The use of noise barriers shall only be considered a supplemental means of achieving the noise standards after all practical design-related noise mitigation measures have been integrated into the project.

Acceptable Noise Levels



INTERPRETATION

NORMALLY ACCEPTABLE

Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

CONDITIONALLY ACCEPTABLE

New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

NORMALLY UNACCEPTABLE

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

CLEARLY UNACCEPTABLE

New construction or development should generally not be undertaken.

Adapted from: Office of Planning and Research, State of California General Plan Guidelines, Appendix A: Guidelines for the Preparation and Content of the Noise Element of the General Plan, 1990.

FIGURE III.G.1: STANDARDS FOR ACCEPTABLE NOISE LEVELS

STANISLAUS COUNTY NOISE CONTROLS

Similar to the City of Patterson, the basic goals of the Stanislaus County Noise Element are to: (1) protect the economic base of the County by preventing the encroachment of incompatible land uses near known noise-producing industries, railroads, airports and other sources; and (2) protect the citizens of Stanislaus County from the harmful effects of exposure to excessive noise. The guiding policies for Stanislaus County are similar to those set by the City of Patterson (e.g., the general goal for noise-sensitive areas is 60 Ldn).

The Stanislaus County Airport Land Use Commission adopted land use conditions in 1978 for the Patterson Airport area (Stanislaus County, 1978). The aim of the conditions is to guide the land uses around the airport in a way that would be compatible with ongoing use of the airport. To promote uses compatible with the noise environment, new uses would need to be airport-oriented or incorporate sound-proofing where needed to meet the County guidelines. New residential uses, and noise-sensitive uses like theaters and churches would need to be located outside of flight areas. (Area "3" as shown in Figure II.5: Existing Stanislaus County General Plan Land Use Designations and Airport Zones, p. II.16.)

IMPACTS AND MITIGATION

APPROACH

SIGNIFICANCE THRESHOLDS / SIGNIFICANCE CRITERIA

Development of the West Patterson projects would cause a significant impact to community noise if it would:

- Create a substantial permanent increase in ambient noise levels above levels existing without the project (i.e., create conditions inconsistent with the City of Patterson or Stanislaus County Noise Elements; for example, by exposing new or existing residences or neighborhood parks to unacceptable noise levels characterized by the land use compatibility chart (Figure III.G.1), or exposing outdoor areas of residences to noise levels greater than 60 or 65 dBA Ldn as characterized in Table II-5 of the City's Noise Element (Table III.G.2).

- Expose people in the vicinity of an airport to excessive noise levels (for example, by exposing new residences to unacceptable noise levels according to the land use compatibility chart).

- Create a substantial, long-term temporary increase in ambient noise levels above those existing without the project (for example, by creating uncontrolled or unmitigated noise from construction) over an extended period in a single location.

Construction-related activities are exempted from the County's noise ordinance standards provided they do not occur between the hours of 9 P.M. to 6 A.M. on weekdays and between 9 P.M. to 7 A.M. on weekends.

METHODOLOGY AND ASSUMPTIONS

The major categories of noise sources that must be analyzed are construction noise, transportation and traffic-related noise, and stationary noise from industrial uses or mechanical equipment. Noise from ongoing agricultural and airport operations is handled qualitatively. Due to their intermittent nature and the highly variable conditions of exposure, depending on distances to mobile farm equipment or varying aircraft flight paths, noise from agricultural and airport operations in the vicinity would be difficult to quantify.

Construction noise would be widespread at times and highly variable depending on the level of activity and the orientation of the activity with nearby sensitive receptors. In general, most construction equipment (e.g., heavy trucks, backhoes, graders) causes intermittent noise levels in the range of 82 to 85 dBA at a distance of 100 feet; more intense construction work (e.g., pavement breaking or rock drilling) causes intermittent noise levels up to about 94 dBA at a distance of 100 feet. Receptors likely to be disturbed by construction noise are identified and measures that could be used to minimize the impacts are proposed.

The compatibility of existing and future sensitive noise receptors with project-related and cumulative development is addressed by reviewing traffic noise and noise from stationary sources. New sensitive receptors in the Patterson Gardens proposal could be adversely affected by the existing noise sources that are identified above. The change in noise levels that would be caused by traffic in the vicinity of the West Patterson projects is quantified, based on traffic predictions for the projects and typical vehicle noise levels

from the California Department of Transportation (Caltrans, 2000). Future traffic noise levels are characterized with contours that show how noise levels change with distance from the roadway. Substantial noise increases are defined to be those that would cause a recognizable change or more than a 3 dBA increase above the existing noise. If substantial noise increases would occur at existing residences, then the analysis identifies measures to reduce the project-related noise. If future-with-project traffic noise levels would be incompatible with future land uses anticipated with the project, then the analysis identifies features that could be incorporated with proposed development to reduce the impact.

PROJECT IMPACTS AND MITIGATION

IMPACTS OF WEST PATTERSON PROJECTS

Impact G.1. Project-related construction could cause a substantial, though intermittent and short-term, increase in noise levels. (Significant)

Completion of construction activities would include use of heavy equipment, for grading and other activities, through completion of buildings and landscaping. Heavy trucks would travel to and from and within the development areas to move earthwork, equipment, and building materials. Smaller equipment, such as jack hammers, pneumatic tools, and saws could also be used throughout the construction phases. The noise associated with these activities would be generated within the entire West Patterson project area and at off-site locations near any infrastructure improvements.

Existing residences and other sensitive receptors located along the routes of new wastewater collection lines, water supply lines, or other project-related infrastructure improvements (including expansion of the wastewater treatment plant) would be affected along with existing or new residences as they are developed in the project vicinity. Construction of the new pipelines would create noise along Ward Avenue, Sperry Avenue, and at locations in Heartland Ranch. Pipeline construction activities would occur for about four weeks on any typical block during the approximately 12-month construction period. Improvement and widening of Sperry Avenue and Baldwin Road would affect residences adjacent to these construction activities. Residences along construction traffic routes would also be temporarily affected. Residences located in the interiors of Creekside Meadows, Walker Ranch and Heartland Ranch would be buffered

from construction activities and construction traffic in existing roadways by both distance and buildings closer to the roads, and thus would not be significantly impacted by these construction activities.

Improvements related to expansion of the wastewater treatment facilities would be constructed within the boundary of the existing wastewater treatment plant and on some 120 acres surrounding the plant. Construction of the proposed percolation ponds would require heavy earthmoving machinery for grading. Construction of the wastewater treatment plant expansion, force main and percolation ponds would take about 12-14 months for each 0.5 mgd expansion. Development of the improvements would occur in various phases. The initial development phase for each expansion would be earthmoving, lasting about four months and involving initial site preparation activities such as site clearing, grading, and excavation. Because the City is considering several alternative locations for the percolation ponds, the specific location of the percolation ponds has not yet been determined. The nearest rural residences are located approximately 500 feet from one of the proposed pond sites.

Although the West Patterson projects have a collective buildout and occupation target year of 2025, construction efforts could occur at any time during the life of the projects. The construction efforts would necessarily occur in phases in order to reach the eventual development goals. For example, the Project Description (Chapter II) anticipates completion of certain early improvements under the Keystone Pacific Business Park proposal before the end of 2003, and early development of residential uses under the Patterson Garden proposal would commence in 2004 with commercial development under that proposal commencing later in 2006. Construction in Patterson Gardens and in the Keystone Pacific Business Park would continue on a phase-by-phase basis, for five to ten years or more, similar to buildout of nearby residential subdivisions.

For any one receptor location or residence, construction noise would be an intermittent impact extending only for the short term, corresponding with the development schedule for nearby project components. Construction equipment would be sufficiently distant from most noise-sensitive locations for the majority of the work because of the size of the development parcels. For example, residences located on lots east of those adjacent to Baldwin Road would be buffered by distance from construction activities on the west side of Baldwin, and construction activities on the interior portions of the Keystone

Pacific Business Park site would be buffered by distance and by new buildings from residences along the east side of Baldwin.

Because most construction equipment causes intermittent noise levels in the range of 82 to 85 dBA at a distance of 100 feet, any noise-sensitive locations that would be in close proximity to project-related construction noise could experience a recognizable noise increase. Beyond 300 feet, the maximum intermittent noise levels would be less than 75 dBA. Construction activities occurring during the more noise-sensitive evening and nighttime hours could result in increased levels of annoyance and sleep disruption to occupants of nearby residences. Therefore, although temporary, noise-generating activities over the long-term construction period could cause a significant impact without implementation of reasonable measures to manage construction activities.

Mitigation Measure G.1.

Construction-related activities shall be conducted in accordance with the following:

- Construction activities shall be restricted to the hours between 7:00 A.M. and 7:00 P.M., Monday through Saturday (excluding federal and state holidays), with no construction on Sundays; minor construction equipment servicing and maintenance will be excepted from this restriction.
- During construction, mufflers shall be provided for all heavy construction equipment and all stationary noise sources. Stationary construction noise sources shall not be located near from occupied dwelling units, or contractors shall be required to provide appropriate noise-reducing engine housings or screens.
- Staging areas shall be placed as far from existing residences as possible.

Implementation of this mitigation measure would reduce the impacts from construction noise to a less-than-significant level.

Impact G.2. Increased traffic, including truck traffic, could cause substantial noise increases for existing sensitive receptors in the project vicinity. (Significant)

Future occupation and operation of the West Patterson projects would contribute substantial additional traffic to existing roadways in the project vicinity and create new

traffic on roadways internal to the project site. The new traffic throughout the area would be part of generally increased noise from increased activity eventually replacing the existing, rural noise environment with one that would seem more suburban. The existing residences in the project vicinity would experience gradually increased traffic noise as the development proceeds. The City of Patterson noise policies VII.E.6 and VII.E.8 guide the response to this impact.

This analysis summarizes the existing conditions and presents the future noise levels for 2025 along roadway segments analyzed by the traffic study. For land use planning purposes, the noise contours for future conditions are also tabulated. Compared with existing conditions, growth in traffic noise will occur regardless of the West Patterson projects. Compared to future conditions that would occur without the project, the West Patterson projects would cause substantial traffic noise increases (i.e., greater than a 3 dB change) on Sperry Avenue, Ward Avenue, and Baldwin Road in the vicinity of the Patterson Gardens site. Existing homes along Ward Avenue and those under construction along Baldwin Road would experience a recognizable increase in traffic noise. The future noise levels are presented in Table III.G.3.

Table III.G.3 provides a reasonable worst-case prediction of noise levels and the distances necessary to achieve the planning criteria of either 60 or 65 Ldn. Contour distances presented in Table III.G.3 do not account for obstructions that may interrupt the line-of-sight between a receptor and the passing traffic. Only attenuation by distance is considered in the predictions. Thus at locations where a building is between the receptor and the roadway, noise levels could be as much as 5 dBA less than shown in the table. The noise levels include assumptions about the vehicle mix based on information available in 2001, which accounts for the extraordinary amount of truck traffic (about 25 percent of all vehicles) on Interstate 5. Distances to future noise contours in Table III.G.3 are from the centerline of the roadway. For example, in the future-plus-project conditions the noise level near the edge of Ward Avenue (assuming a future 80-foot right-of-way) would be about 65 Ldn, but by backing up to 110 feet from the future centerline, the noise level would diminish to 60 Ldn.

Table III.G.3: Future Traffic Noise Levels with the West Patterson Projects

Roadway Segment	Existing Ldn (at 50')	Future Ldn (at 50')	Future+ Project Ldn (at 50')	Future+Project 65 Ldn Contour (in feet)	Future+Project 60 Ldn Contour (in feet)
I-5, n/o Sperry	80.0	82.6	83.4	1,670	4,370
I-5, s/o Sperry	80.2	82.7	82.9	1,540	4,020
Sperry, e/o Baldwin	61.4	66.3	70.7	160	460
SR-33, n/o Rogers	63.1	67.8	69.0	110	320
SR-33, s/o Sperry	61.9	65.1	66.8	70	200
Ward, n/o American	57.5	62.9	63.0	30	90
Ward, n/o Marshall	52.9	59.6	63.8	40	110
Baldwin, n/o Sperry	46.5	59.8	66.9	70	210

Notes:

Segments correspond with those analyzed in Traffic Study, TJKM, July 2002.

Ldn = Day-night noise levels.

Traffic mix includes approximately 25% trucks on I-5, 3% trucks on other collector roads.

Distances are from centerline of roadway, assuming an unbroken line-of-sight with no intervening structures.

Source: Turnstone Consulting, 2002.

Without implementation of additional measures, future traffic noise with the West Patterson projects would cause a significant impact to existing residences on Ward Avenue, and noise from truck traffic related to the Business Park Plan development, including the Keystone Pacific Business Park proposal, could significantly impact planned residences, expected to be under construction in the near future, along Baldwin Road across from the business park site north of Sperry Avenue. Because no outdoor recreational areas are proposed for the Keystone Pacific Business Park, traffic noise would not cause a significant impact to this proposed future use. Impacts to the proposed residential and open space uses in Patterson Gardens are discussed in the Cumulative Impacts section, below.

Operation of the expanded wastewater facilities would result in increased use of motor vehicles, primarily associated with employees traveling to and from the proposed wastewater treatment facilities and routine maintenance and inspection activities. Operation of the proposed facilities would likely require the addition of approximately two full-time employees. Assuming and average of two trips per day per employee, operation of the proposed facilities would result in a maximum of approximately four additional vehicle trips per day. The expanded wastewater treatment plant would not

generate more than an average of one additional truck trip per week. In comparison to existing operations, implementation of the proposed project is not anticipated to result in a substantial change in routine on site maintenance- and inspection-related mobile source activities. Therefore, operation of the proposed wastewater facilities would not result in substantial traffic increases on local roads and no significant noise impacts would occur.

Mitigation Measure G.2.

Development plans shall incorporate the following features:

- Improvements to Ward Avenue included in the Patterson Gardens proposal shall provide acceptable future noise levels for existing residences on Ward Avenue, by locating the centerline of the road at least 110 feet from the homes' outdoor activity areas. Consistent with policy VII.E.8, the use of noise barriers shall only be considered a supplemental means of achieving the noise standards after all practical design-related noise mitigation measures have been considered for integration into the Ward Avenue improvements. Because traffic from the Patterson Gardens project alone would not significantly impact existing Ward Avenue residences (see discussion below), but would contribute to significant impacts caused by the West Patterson projects, a funding mechanism should be established to ensure all project sponsors in the West Patterson project area contribute a "fair share" to the Ward Avenue improvements.

- Improvements to Baldwin Road included in the Keystone Pacific Business Park proposal shall provide acceptable future noise levels for residences on Baldwin Road between Sperry Avenue and the Keystone Pacific site, either by locating the centerline of the road at least 210 feet from the homes' outdoor activity areas or by improving the residential properties to satisfy the goals of City of Patterson Noise Element policy VII.E.6. Consistent with policy VII.E.8, the use of noise barriers shall only be considered a supplemental means of achieving the noise standards after all practical design-related noise mitigation measures have been integrated into the Keystone Pacific proposal.

- The circulation system for the West Patterson Business Park Master Development Plan shall include alternate truck access routes from Sperry Avenue and/or Rogers Road for businesses that face Baldwin Road, to reduce traffic noise impacts to residences on Baldwin Road.

Implementation of this mitigation measure would reduce the impacts of traffic noise experienced by existing and approved residences to a less-than-significant level.

Impact G.3. Light industrial activities and truck loading operations under the Business Park Plan could generate noise levels inconsistent with the City's or the County's noise compatibility goals. (Significant)

The occupation and operation of light industrial development within the West Patterson Business Park Master Development Plan area would cause increased stationary-source noise. Future stationary sources of noise could range from mechanical equipment for routine building ventilation, refrigeration, materials loading, or stocking, storage, and warehousing of goods to very specialized equipment for the various manufacturing, assembly, packaging, or processing uses that would be allowable (see Chapter II, Project Description, and West Patterson Business Park Master Development Plan in Appendix B). The range of examples includes basic warehousing that could involve mechanical or mobile equipment for lifting, conveyance and organization of goods, and recycling centers that could involve material dumping, spraying and compacting. Noise from these new stationary sources could be incompatible with surrounding uses. The City of Patterson noise policies VII.E.2 and VII.E.3 guide the response to this impact.

The West Patterson Business Park Plan, including the Keystone Pacific proposal, includes certain design elements and restrictions that would help reduce the potential effects of industrial noise. These elements include:

- Allowing only manufacturing and processing uses that would be conducted entirely within enclosed buildings.
- Including building setbacks that would provide greater separation between industrial and adjacent residential development.
- Limiting development adjacent to noise sensitive uses to industrial business park and office uses and concentrating more intensive industrial operations to the interior of the Business Park site.

New truck-loading operations would also be associated with development under the Business Park Plan. The Keystone Pacific Business Park proposal includes warehouse and light industrial uses that would attract new truck traffic along Baldwin Road, which provides direct access to the site. The orientation of buildings within the Keystone Pacific site has not been finalized but the proposal indicates that loading dock access would be provided in the rear of the individual buildings, not facing Baldwin Road. In addition, there would be approximately 400 feet of buffer space on the eastern edge of

the Keystone Pacific site for landscaping and stormwater detention ponds and including the Baldwin Road right-of-way. In the remaining portions of the Business Park Plan area, there are no specific proposals for development at this time. This means that the orientation of buildings outside of the Keystone Pacific area remains unknown. Residents along Baldwin Road could be impacted by increased truck traffic on Baldwin Road or by loading dock operations facing Baldwin Road and within a direct line-of-sight of the residences.

For any specific uses that may not be able to fully satisfy the design elements for stationary sources or truck loading above, a significant impact could occur. Potential noise sources that would exceed the City's or the County's stationary noise source criteria (Table G.1, or Table II-3 of the Noise Element) or be unacceptable according land use noise compatibility goals (Figure G.1) would warrant additional mitigation.

Mitigation Measure G.3.(a).

Prospective light industrial tenants shall be required to provide an acoustical analysis demonstrating that adequate setbacks or other noise mitigation features are incorporated for any uses that would not be conducted entirely within enclosed buildings or would involve intensive industrial operations that would not be concentrated to the interior of the Business Park site.

Mitigation Measure G.3.(b).

Light industrial uses associated with the West Patterson Business Park Master Development Plan and adjacent to Baldwin Road shall be designed so that truck-loading operations and delivery areas are shielded from residences on Baldwin Road.

Implementation of these mitigation measures would reduce the noise impacts from light industrial uses to a less-than-significant level.

Impact G.4. Routine operation of the City's wastewater treatment plant expansion could cause operation of noise sources exceeding the City's or County's noise exposure goals for existing residences near the plant. (Less than Significant)

Routine operation of the expanded wastewater treatment plant would involve operation of stationary sources of noise. These sources of noise are addressed to evaluate their potential to cause excessive noise levels at existing rural residences in the vicinity of the plant. Although the nearest residences are approximately 500 feet from the closest of the proposed percolation pond sites, no permanent noise-generating equipment would be located at the percolation ponds.

The two proposed advanced integrated pond systems (AIPS) at the plant would be equipped with flow pumps for the transfer of wastewater and aerators for the circulation of pond water. The new AIPS would be located next to existing similar equipment that is currently in operation. Both the flow pumps and aerators would be submersed (i.e., underwater), and only the sound of splashing water from the aerator would be detectable. Therefore, the AIPS pumps and aerators would not result in a detectable increase in onsite noise levels at the plant.

The proposed plant expansion also includes two new effluent pumps to pump the treated wastewater from the wastewater treatment plant to the percolation ponds, and a new emergency generator. Noise levels typically generated by wastewater pumps range from 65 to 80 dBA at 10 feet, depending on type and size. However, because the proposed pumps would be installed in an enclosed, below-grade cement structure, resultant overall noise levels would not be anticipated to differ substantially from those already generated by existing effluent pumps. Noise levels generated by the proposed emergency generator would also be similar to those of the existing generator. Because the generator would be used on an intermittent and as-needed basis, primarily during power outages, overall increases in ambient noise levels at the plant would not be anticipated to change, in comparison to existing conditions.

Minor and intermittent increases in ambient noise levels at the plant would not be anticipated to result in a detectable increase in ambient noise levels at nearby residences. Because noise related to the expansion would be attenuated by distance, this equipment would not cause a significant noise impact.

Mitigation Measure. No mitigation necessary.

Impact G.5. Noise from ongoing agricultural operations and aircraft overflights could periodically exceed the City's noise exposure goals for Patterson Gardens residences. (Less than Significant)

Ongoing agricultural operations adjacent to the Patterson Gardens project area could intermittently result in noise levels exceeding the City's goals for exposure from stationary sources (see Table G.1, or Table II-3 in the Noise Element). Noise from agricultural aircraft operations departing and arriving at the Patterson Airport could also impact Patterson Gardens residents. Seasonal aircraft overflights pass within one-half mile of the western edge of the Patterson Gardens site. The frequency of operations at the Patterson Airport varies but could range up to 70 landings and takeoffs per day, an equivalent of six per hour for a 12-hour day. Agricultural noise impacts to the new residences would be periodic and seasonal. The agricultural operations and aircraft overflights are not anticipated to cause more than 60 Ldn on the Patterson Gardens site. The City of Patterson noise policy VII.E.2 guides the response to agricultural noise; it states that the policy to mitigate noise to meet stationary noise standards shall not apply to agricultural operations on lands zoned for agricultural use. The agricultural properties adjacent to the Patterson Gardens site are zoned for agricultural use.

Prospective homeowners at Patterson Gardens must sign a "Right to Farm" agreement. The agreement acknowledges the presence of agricultural operations in the area and the presence of agriculturally-related aircraft accessing the Patterson Airport and precludes legal action and/or complaint on the part of the landowner regarding noise generated during normal agricultural and airport operations. See Section III.C, Agricultural Resources, for additional information about right-to-farm ordinances.

Mitigation Measure: No mitigation necessary.

KEYSTONE PACIFIC BUSINESS PARK PROJECT

Impact G.6. Increased traffic, including truck traffic, from the Keystone Pacific Business Park could cause substantial noise increases for existing sensitive receptors along Baldwin Road. (Significant)

Similar to the traffic noise effects discussed under Impact G.2 for the West Patterson projects as a whole, operation of the Keystone Pacific Business Park proposal would contribute to increased traffic noise on area roadways. Compared to future conditions that would occur without development of the Keystone Pacific Business Park, the

Keystone Pacific proposal would cause a substantial traffic noise increase (over 3 dB) on the segment of Baldwin Road north of Sperry Avenue leading to the new Keystone Pacific Business Park entrance. Future noise levels that would occur with development only of the Keystone Pacific project are shown in Table III.G.4. Homes within 140 feet of the Baldwin Road centerline, with an unbroken line-of-sight of the traffic, would experience future noise levels over 60 Ldn. Traffic-generated noise levels on Ward Avenue would increase by 2.8 dB at 50 feet; this would not be considered a significant impact because the increase would be less than 3.0 dB, and therefore would not be noticeable to most people. Because the project would substantially contribute to noise levels on Baldwin Road north of Sperry Avenue, mitigation measures are necessary to reduce significant traffic-related noise impacts.

Table III.G.4: Future Traffic Noise Levels with Keystone Pacific Business Park

Roadway Segment	Future Ldn (at 50')	Future + Keystone Pacific Ldn (at 50')	Future+ Keystone Pacific 65 Ldn Contour (in feet)	Future+ Keystone Pacific 60 Ldn Contour (in feet)
Sperry, e/o Baldwin	66.3	67.9	90	260
SR-33, n/o Rogers	67.8	68.2	100	270
SR-33, s/o Sperry	65.1	65.7	60	160
Ward, n/o American	62.9	63.2	30	100
Ward, n/o Marshall	59.6	62.4	30	80
Baldwin, n/o Sperry	59.8	65.1	50	140

Notes:
Segments correspond with those analyzed in Traffic Study, TJKM, July 2002.
Ldn = Day-night noise levels.
Distances are from centerline of roadway, assuming an unbroken line-of-sight with no intervening structures.
Source: Turnstone Consulting, 2002.

Mitigation Measure G.6.

Improvements to Baldwin Road included in the Keystone Pacific Business Park proposal shall provide acceptable future noise levels for residences on Baldwin Road between Sperry Avenue and the Keystone Pacific site, either by locating the centerline of the road at least 140 feet from the homes' outdoor activity areas or by improving the residential properties to satisfy the goals of City of Patterson Noise Element policy VII.E.6.

Consistent with policy VII.E.8, the use of noise barriers shall only be considered a supplemental means of achieving the noise standards after all practical design-related noise mitigation measures have been integrated into the Keystone Pacific proposal.

Implementation of this mitigation measure would reduce impacts of traffic noise from the Keystone Pacific proposal to a less-than-significant level.

Impact G.7. Light industrial activities and truck loading operations with the Keystone Pacific Business Park proposal could generate noise levels inconsistent with the City's or the County's noise compatibility goals. (Significant)

Similar to the Business Park Plan effects discussed under Impact G.3, operation of the Keystone Pacific Business Park would generate noise from industrial activities. As noted under Impact G.3, the orientation of buildings on the Keystone Pacific site would place loading docks at the backs of buildings fronting on Baldwin Road. In addition, approximately 400 feet of buffer space, including the width of Baldwin Road plus landscaping and detention ponds, would provide further noise reduction. Compliance with design guidelines for the West Patterson Business Park Master Development Plan, including limiting any manufacturing and processing activities to those that are conducted within enclosed buildings and concentrating more intensive industrial uses in the interior of the site, would also help to reduce stationary source noise. If all of these features are included in the Keystone Pacific Business Park, operational noise from light industrial and warehouse activities would not cause significant noise impacts to residences on the east side of Baldwin Road.

Because site plans, uses, and building designs for the Keystone Pacific Business Park have not been finalized, implementation of Mitigation Measures G.3.a and b would be necessary to reduce operational noise impacts to a less-than-significant level.

Mitigation Measure G.7.

Implement Mitigation Measures G.3.a and G.3.b if the Keystone Pacific Business Park site plan and building designs change from those described in Chapter II, Project Description.

PATTERSON GARDENS PROJECT

Impact G.8. Increased traffic from the Patterson Gardens proposal could cause noise increases for existing sensitive receptors in the project vicinity. (Less than Significant)

Similar to the West Patterson projects effects discussed under Impact G.2, construction and occupancy of the Patterson Gardens proposal would contribute to increased traffic noise on area roadways. Compared to future conditions that would occur without the project, the Patterson Gardens proposal would not cause a substantial traffic noise increase on any area roadway segments. Future noise levels with the Patterson Gardens project alone are shown in Table III.G.5. Because Patterson Gardens would not cause a substantial traffic noise increase, as all changes would be less than 3.0 dB, the impact would be less than significant.

Table III.G.5: Future Traffic Noise Levels with Patterson Gardens Project

Roadway Segment	Future Ldn (at 50')	Future + Patterson Gdns Ldn (at 50')	Future + Patterson Gdns 65 Ldn Contour (in feet)	Future+ Patterson Gdns 60 Ldn Contour (in feet)
Sperry, e/o Baldwin	66.3	65.8	60	170
SR-33, n/o Rogers	67.8	67.8	90	250
SR-33, s/o Sperry	65.1	65.6	60	160
Ward, n/o American Eagle	62.9	63.6	40	100
Ward, n/o Marshall	59.6	62.0	30	70
Baldwin, n/o Sperry	59.8	60.6	20	60

Notes:
Segments correspond with those analyzed in Traffic Study, TJKM, July 2002.
Ldn = Day-night noise levels.
Distances are from centerline of roadway, assuming an unbroken line-of-sight with no intervening structures.
Source: Turnstone Consulting, 2002.

Mitigation Measure. No mitigation necessary.

CUMULATIVE IMPACTS AND MITIGATION

Assessing the compatibility of the proposed land use changes with the noise environment expected in 2025 including the foreseeable future growth provides an analysis of the cumulative effects of the proposed development of the West Patterson projects.

Impact G.9. Cumulative development, including the West Patterson projects, could lead to noise conflicts between incompatible land uses. (Significant)

The West Patterson projects, along with other growth expected in the area, would dramatically alter the noise environment by 2025 with increased traffic and activity. Future traffic noise levels throughout the area could be incompatible with planned development. The cumulative noise environment could conflict with the Noise Element goals for future uses within the Patterson Gardens area (e.g., residences, school, and parks) and the Business Park area (e.g., day care centers, broadcast studios, and highway-commercial hotels). If a hotel/motel were proposed in the new Highway-Commercial area south of Sperry Avenue near I-5, substantial noise insulation would be required to meet the 45 dB Ldn noise criterion for interior spaces required in the Patterson Noise Element Table II-5, under both existing and future-with-project conditions, as noise levels are and would continue to exceed 80 dB Ldn near the freeway (see Table III.G.3).

Because the specific uses that would occupy the Business Park area have not been identified at this early stage, the cumulative analysis focuses on the compatibility of the residences under the Patterson Gardens proposal with the cumulative noise environment. The City of Patterson noise policies VII.E.5, VII.E.7, and VII.E.8 guide the response to this impact.

Future noise levels along Sperry Avenue and Ward Avenue would exceed the 60 dB Ldn threshold for outdoor activity areas (for example, backyards or balconies) of the first row of houses proposed along each of these streets (see Table III.G.3, above). The future-plus-project noise level near the edge of Sperry Avenue would be approximately 70 Ldn, and on Ward Avenue, the future-plus-project noise level at the edge of the road would be approximately 64 Ldn.

The Patterson Gardens proposal incorporates 6-foot-high concrete block walls along each of these roadways and Baldwin Road for consistency with the design of the existing walls

on Sperry Avenue and Ward Avenue. These walls would provide noise reduction for the first story of the first row of residences by approximately 5 dB, where the line-of-sight with traffic is broken. Six-foot-high walls would not be effective at reducing noise on the upper floors of proposed two-story structures, or portions of the residential structures that would be exposed to a direct line-of-sight to the passing traffic. With the proposed walls intercepting traffic noise, noise along Sperry Avenue would be reduced to approximately 65 Ldn, and noise along Ward Avenue would be approximately 59 Ldn. Additional noise reduction measures would be necessary for the presently proposed homes along Sperry Avenue to meet the City's outdoor goal of 60 Ldn. Measures that would provide a 5 dB reduction include:

- improving the noise insulation performance of the proposed 6-foot-high wall by increasing its height and mass (e.g., providing an eight-foot high concrete block wall would provide approximately 1 to 2 dB additional reduction); and

- configuring the outdoor activity area of the first row of residences so that it is approximately 160 feet from the centerline of Sperry Avenue, which would provide additional noise reduction by distance (i.e., with the proposed 6-foot wall, noise levels would be below 60 Ldn for all locations more than 160 feet from the centerline of Sperry Avenue).

If implementation of these measures is infeasible, the City's Noise Element allows exterior noise levels up to 65 dBA Ldn. For the proposed homes in Patterson Gardens located along Ward Avenue, noise levels would be acceptable without additional mitigation measures.

Traffic noise also has the potential to cause unacceptable noise in the interior spaces of some new residences in Patterson Gardens if they were not built with adequate noise insulation. Interior noise level goals of the City's Noise Element would be met with typical, modern, high-quality, energy-efficient construction of the dwelling units. This would be especially necessary for the upper stories of the first row of residences that could overlook the proposed 6-foot walls along Sperry Avenue and Ward Avenue. Additional measures are identified to reduce potentially significant noise impacts.

Mitigation Measure G.9 (a).

The Patterson Gardens development proposal shall reduce noise caused by cumulative traffic increases from 65 to 60 dBA Ldn in residential outdoor areas along Sperry

Avenue. This may be accomplished by providing a combination of the following measures:

- Improve the noise insulation performance of the proposed six-foot-high wall by increasing its height and mass; and/or
- Configure the outdoor activity area of the first row of residences so that it is approximately 160 feet from the centerline of Sperry Avenue.

Mitigation Measure G.9 (b).

The Patterson Gardens development proposal shall reduce noise levels in residential interior spaces caused by cumulative traffic by providing a combination of some or all of the following measures for the first row of proposed residences facing Sperry Avenue and Ward Avenue, sufficient to result in interior noise levels of 50 dB Leq during the day and 45 dB Leq at night:

- Air handling systems that enable windows facing the traffic to be permanently closed;
- Energy-efficient, multiple-pane, windows and sliding glass doors mounted in low air infiltration rate frames (glass in both windows and doors should not exceed 20 percent of the floor area in a room);
- Solid core exterior doors with perimeter weather stripping and threshold seals;
- Exterior walls consisting of stucco, brick veneer, or wood siding with a ½-inch minimum thickness fiberboard ("soundboard") underlayer;
- Roof or attic vents facing the traffic that are baffled;
- Floor plans oriented along roadways with bedrooms and living rooms towards the interior side of the home, with kitchens, bathrooms and closets facing the roadway.

Implementation of the appropriate combination of these mitigation measures would reduce the cumulative noise impacts to a less-than-significant level.

References

All referenced documents are available for review, by appointment, at City of Patterson offices (33 S. Del Puerto Avenue) except those marked with an asterisk (*), which are at the Stanislaus County Planning Department (1010 10th Street, Suite 3400, Modesto, CA), and except for those identified with an internet website address.

Caltrans, 2000. Vehicle Reference Noise Emission Levels from Caltrans Technical Noise Supplement (TeNS: Figure N-5511.1), accessed August, 2002, http://www.dot.ca.gov/hq/env/noise/index.htm.

Caltrans, 2001. Annual Average Daily Truck Traffic on the California Highway System 2000, http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/. Accessed December.

Fink, Warren, 2002, personal communication, President, Patterson Flying Services, with Turnstone Consulting, July 9.

* Stanislaus County, 1987. Support Documentation for the Stanislaus County General Plan, June.

* Stanislaus County, 1978. Airport Land Use Commission Plan, August.

TKJM, 2002. *Traffic Study for West Patterson Master Development Plan*, July.

H. HYDROLOGY AND WATER QUALITY

SETTING

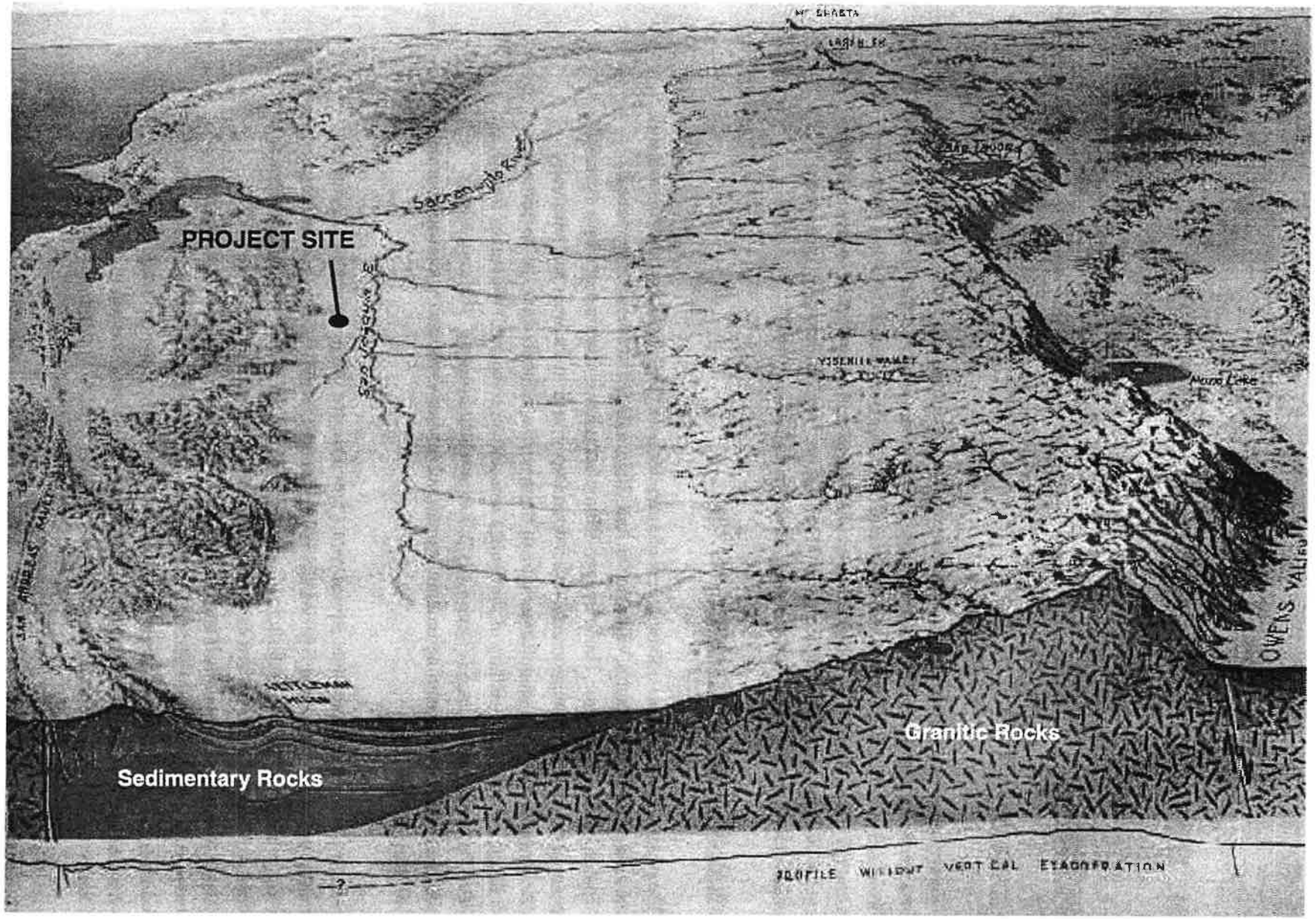
CLIMATE

The climate of the Patterson area is characterized as Mediterranean, with cool wet winters and warm dry summers. The mean annual rainfall in the vicinity of the West Patterson project area for the period between 1948 and 2000 is approximately 11 inches (Climate Center, 2000). Analysis of long-term precipitation records indicates that wetter and drier cycles lasting several years are common in the region. Severe, damaging rainstorms occur at a frequency of about once every three years (Brown, 1988).

DRAINAGE AND FLOODING

The project area occupies relatively level terrain between the Coast Range to the west and the open floor of the Central Valley to the east (Figure III.H.1: Oblique Diagram of Central Valley Drainage). The drainage within this region is characterized by a series of generally eastward flowing creeks, which drain the uplands to the west and eventually discharge to the San Joaquin River. One of these creeks, Salado Creek, is the primary drainage feature in the vicinity of the project area and receives all of the runoff from the West Patterson project area (Figure III.H.2: Regional Hydrology). The only other drainage features consist of agricultural canals and ditches associated with irrigation and tailwater collection.

Salado Creek is an intermittent stream with a drainage area of approximately 25 square miles upstream of Interstate-5 (FEMA, 1990). Salado Creek flows through the Coast Range uplands in a steep well-defined channel and through the foothills in a moderately-defined and sometimes incised channel. Within about one-half mile of the creek's emergence from the foothills it crosses the Delta Mendota Canal (DMC) through an overchute structure (Figure III.H.3: Photographs I - Salado Creek and Delta Mendota Canal). North of the DMC, Salado Creek flows through gently northward sloping irrigated agricultural land (currently in row crops). The creek essentially bisects the Patterson Gardens portion of the project area (Figure III.H.4: Photographs II - Delta



SOURCE: Shelton, J.S., 1966, Geology Illustrated, W.H. Freemen & Company.

Not to Scale

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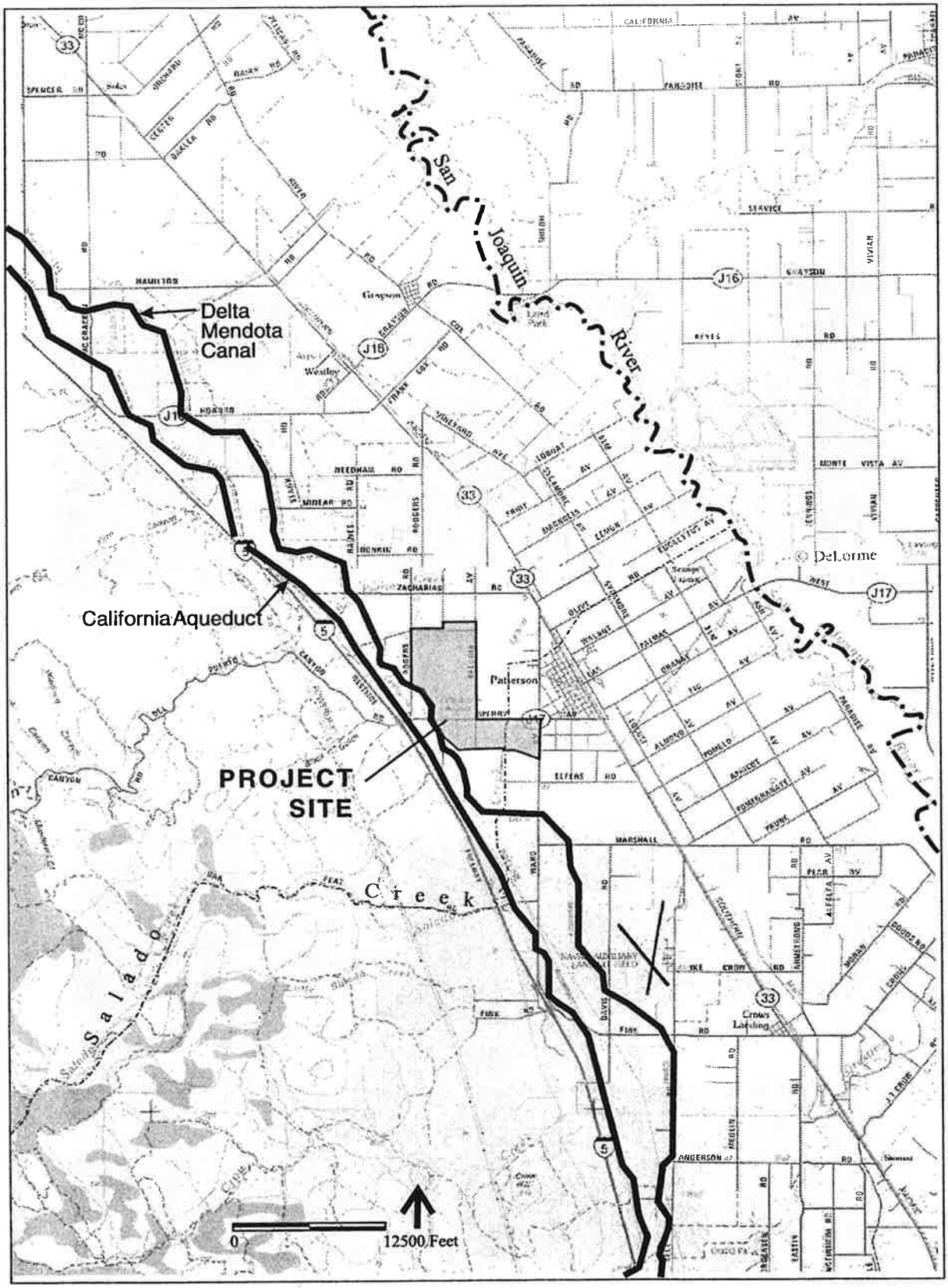
FIGURE III.H.1: OBLIQUE DIAGRAM OF CENTRAL VALLEY DRAINAGE



SOURCE: DeLorme Mapping Company, 1988, Northern California Atlas & Gazetteer

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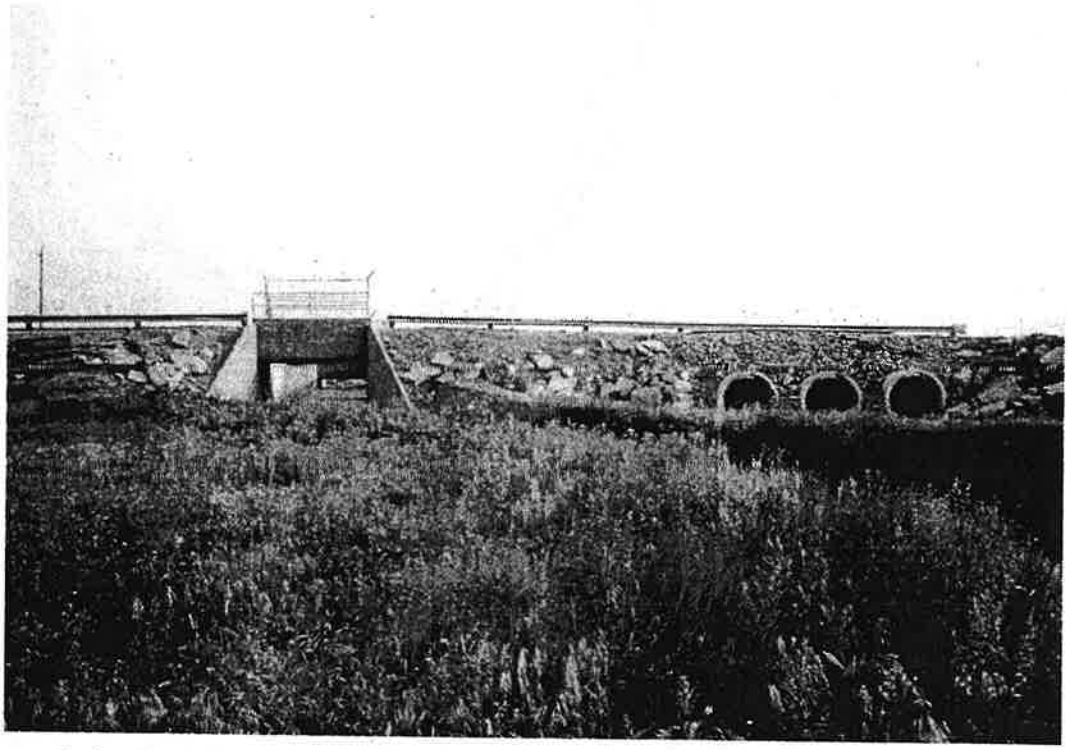
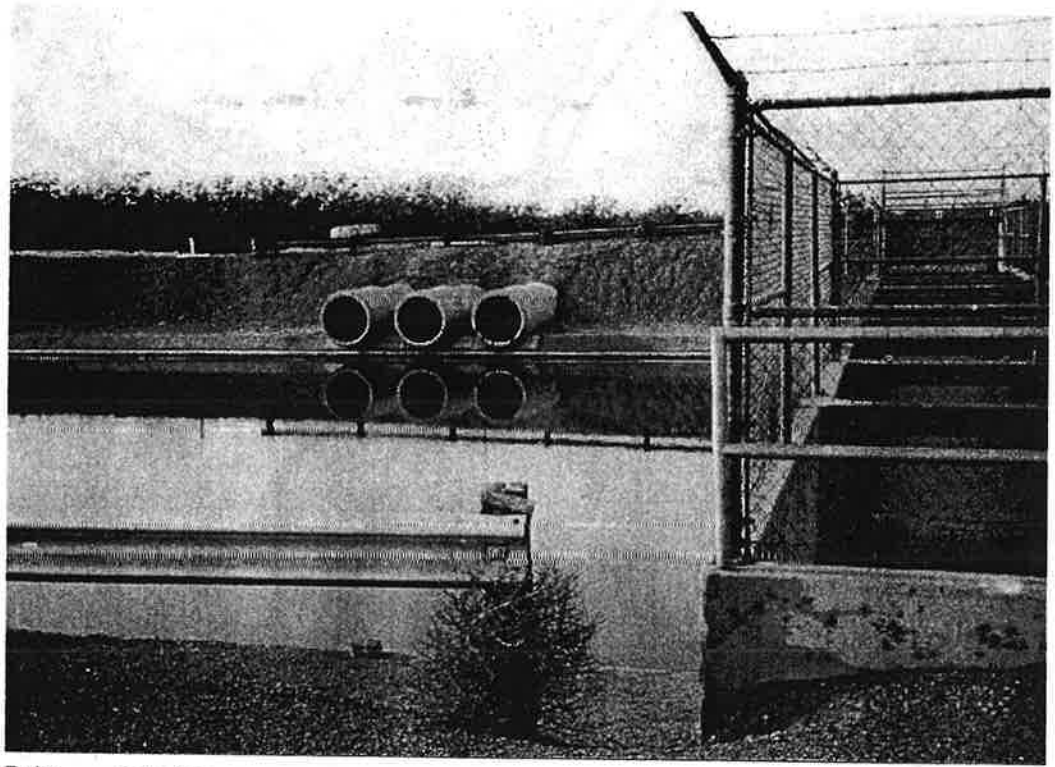
FIGURE III.H.2: REGIONAL HYDROLOGY



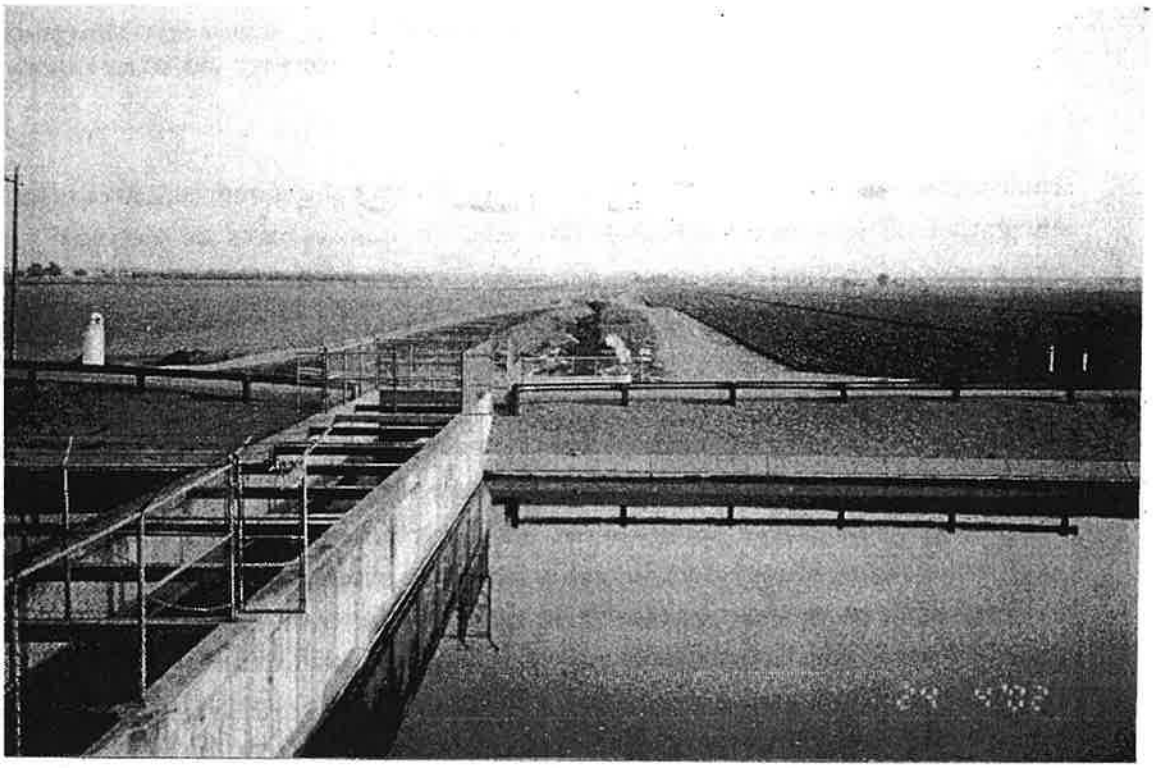
Salado Creek at the Delta Mendota Canal looking north. The overchute is visible to the left and the high-water diversion into the DMC is visible to the right.



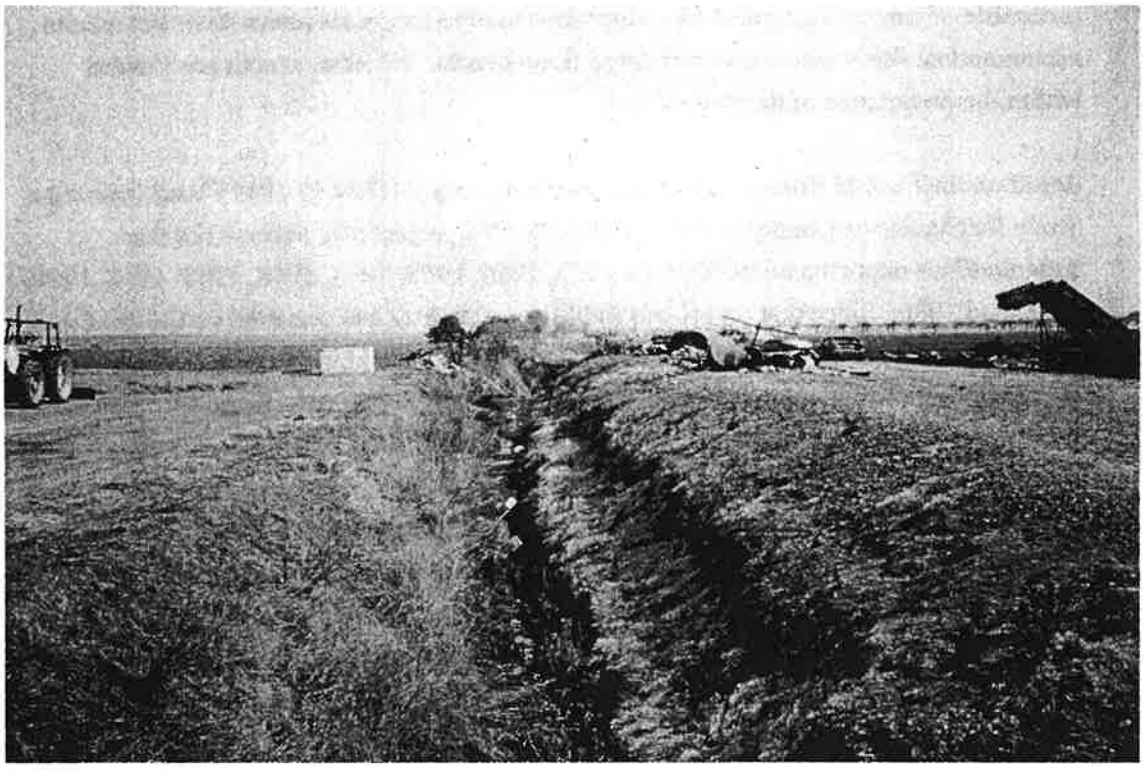
Delta Mendota Canal looking south. Overchute to the right; diversion structures (which discharge flood waters from Salado Creek into the DMC) are shown on the left.

SOURCE: Baseline Environmental Associates

FIGURE III.H.3: PHOTOGRAPHS I - SALADO CREEK AND DELTA MENDOTA CANAL



Delta Mendota Canal in the foreground looking north toward the Patterson Gardens portion of the project site.



Typical view of Salado Creek in the vicinity of the Patterson Gardens portions of the project site.

SOURCE: Baseline Environmental Associates

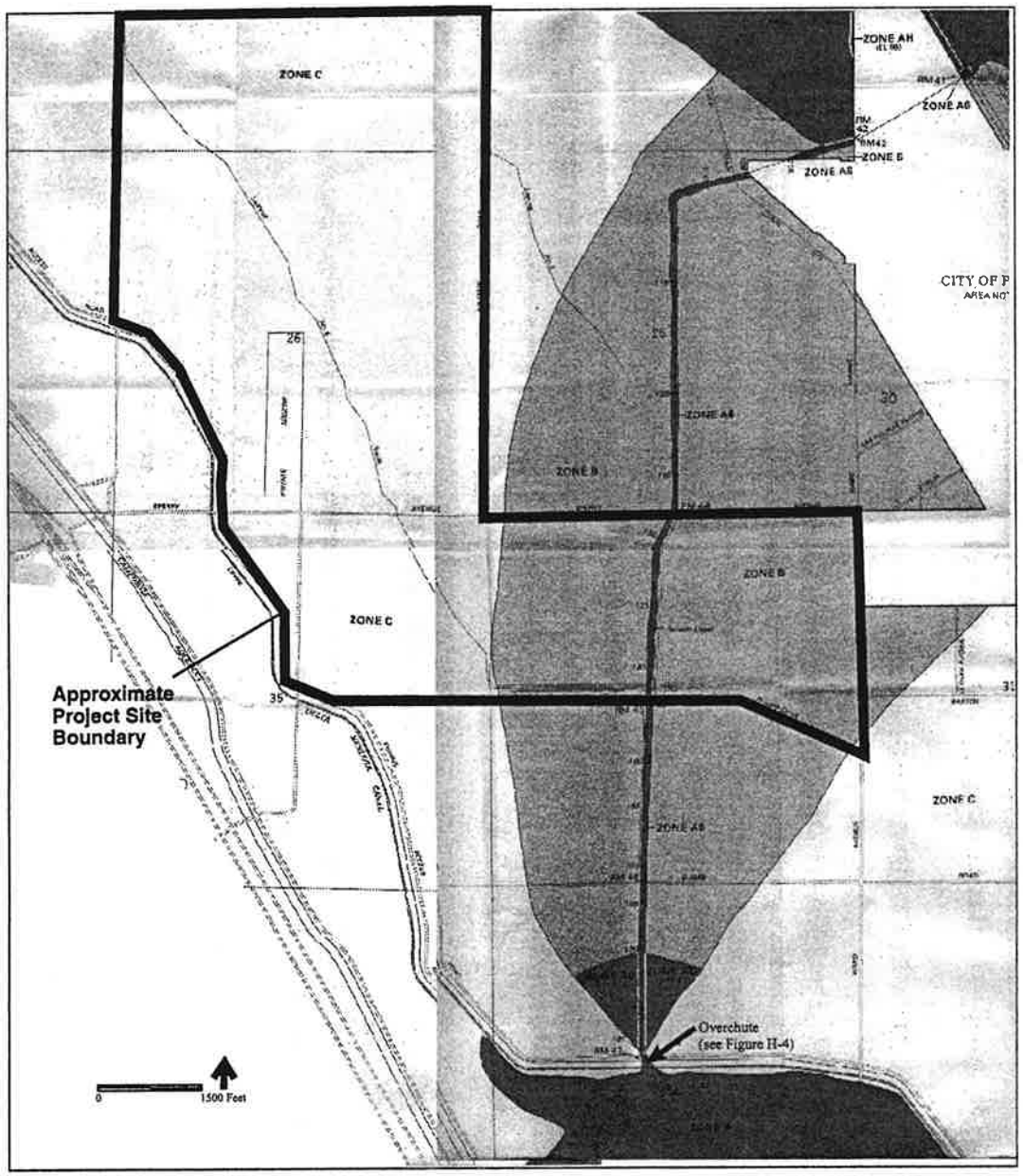
FIGURE III.H.4: PHOTOGRAPHS II - DELTA MENDOTA CANAL AND SALADO CREEK

Mendota Canal and Salado Creek). Within the site, the creek is a narrow incised channel with plowed soil up to the top of bank on each side. The channel banks are steep and support upland weeds and ruderal grasses. Salado Creek continues north past the Patterson Gardens site, turns east through the City of Patterson and eventually drains into the San Joaquin River.

In an undeveloped setting like the project area (and most of the watershed catchment area upstream), when rainfall intensities exceed the infiltration capacity of surface soils, runoff flows over the ground surfaces toward established drainage channels. Storm water runoff is then conveyed away from the area in creeks and streams. Prior to human development, the storm water generated in the uplands to the west would have flowed through the well-defined channel (now called Salado Creek) until it reached the valley floor, where the flowing water would spread out over a large area on the relatively flat surface, losing most of its kinetic energy (velocity). Encroachment into this wide natural "floodplain" of Salado Creek on the valley floor by roadways, canals, and agricultural fields has resulted in a narrowly constricted channel. In general, this constricted channel is capable of conveying typical base flow and small to moderate storm flow, but cannot accommodate flows associated with large flood events. No other creeks are located within the boundaries of the project area.

Based on the Federal Emergency Management Agency's (FEMA) 1989 Flood Insurance Study for Stanislaus County (FEMA, 1989), flooding reportedly occurred in the Patterson/Newman area in 1954, 1955, 1957, 1958, 1959, 1963, 1968, 1969, 1978, 1980, 1983, and 1986. Since that report was published, flooding has occurred on Salado Creek several times in the 1990s, including 1995 and 1998 (Lambert, pers. com., 2002). Based on the Flood Insurance Rate Map (FIRM), the 100-year flood zone (Zone A6)[1] within the project area is confined within the Salado Creek channel (Figure III.H.5: Flood Insurance Rate Map); no other drainage or irrigation feature with the project area is associated with the 100-year floodplain (FEMA, 1989a). The rate at which water is delivered to the Salado Creek channel in the vicinity of the project area is controlled by the amount of water that passes through the overchute at the DMC. The overchute on, and the levee system upstream of, the DMC limit the peak discharge downstream of the DMC to 710 cubic feet per second (cfs) (FEMA, 1989). Salado Creek between the DMC and Sperry

[1] Zone A6 is defined as "areas of 100-year-flood; base flood elevations and flood hazard factors [have been] determined."



A1-A30 Areas of 100-year flood; base flood elevations and flood hazard factors determined.

In the past, the numbers on numbered A zones had significance for flood insurance premium rates, but those distinctions are no longer valid. For flood insurance purposes, any numbered A zone is now rated the same as Zone AE.

B Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one(1) foot or where the contributing drainage area is less than one square mile; protected by levees from the base flood.

C Areas of minimal flooding.

KEY TO MAP

500-Year Flood Boundary	ZONE B
100-Year Flood Boundary	ZONE A1
Zone Designations	ZONE AE
100-Year Flood Boundary	ZONE B
500-Year Flood Boundary	
Base Flood Elevation Line With Elevation In Feet**	513
Base Flood Elevation in Feet Where Uniform Within Zone**	(EL 987)
Elevation Reference Mark	RM7×
Zone D Boundary	
River Mile	•M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

SOURCE: Federal Emergency Management Agency (FEMA), 1989, Flood Insurance Rate Map, Community Pane Number 0603840685B, September 29,1989.

FIGURE III.H.5: FLOOD INSURANCE RATE MAP

Avenue is capable of conveying 300 cfs (Stoddard, 2001). The disparity between the conveyance capacity of Salado Creek downstream of the DMC (300 cfs) and the conveyance capacity of the DMC overchute (710 cfs) is the reason that the FIRM shows a broad "Zone B" flood hazard area north of the DMC. Zone B is defined as "areas between limits of the 100-year and 500-year flood; or certain areas subject to 100-year flooding with an average depth less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood." The FIRM indicates that the creek overtops the channel banks just north of the DMC during the 100-year event, and therefore it is concluded that the Zone B designation is for "areas subject to 100-year flooding with an average depth less than one (1) foot."

It is important to note that two infrastructure projects have been completed since the FIRM was published that would be expected to reduce flood hazards at the Patterson Gardens site: 1) the Salado Creek diversion structures at the DMC, and 2) the improvement of Salado Creek conveyance capacity from Sperry Avenue to the San Joaquin River. These are described more fully below.

SALADO CREEK DIVERSION AT THE DELTA MENDOTA CANAL

In 1998, three 60-inch diameter concrete culverts were installed through the levee that separates Salado Creek from the DMC (Figure III.H.3). The culverts allow storm water to flow from Salado Creek into the DMC during moderate to large storm events. This diversion reduces the maximum peak flow through the DMC overchute and in Salado Creek north of the DMC. Prior to the installation of the diversion structures, the overchute had a calculated conveyance capacity of 710 cfs (during the 100-year event). The anticipated conveyance through the overchute during the 100-year event with the diversion structure in-place has not been calculated, but would be expected to be substantially less than 710 cfs.

SALADO CREEK FLOOD MITIGATION PROJECT

As described in the City of Patterson, Western Expansion Area Master Storm Drainage Plan (Stoddard, 2001):

> In 1998, a cooperative project between the County of Stanislaus, the City of Patterson, and Kaufmann & Broad was carried out to increase the carrying capacity of Salado Creek from Sperry Road all the way to the

San Joaquin River. The improvements consisted of both channel enlargement and embankment construction with the majority of the work being construction of a 96-inch cast-in-place pipeline from a point just east of the Union Pacific Railroad all the way to the San Joaquin River. The design capacity of the facility between Sperry Road and the San Joaquin River is 500 cfs.

This downstream conveyance improvement would be expected to substantially reduce backwater flooding at the site.

DAM FAILURE INUNDATION

The West Patterson project area is not located within identified dam failure inundation hazard areas.[2] The elevation of the area (ranging from 120 to 200 feet above mean sea level) and distance from the Sacramento-San Joaquin Delta preclude potential inundation by coastal hazards such as tsunamis, extreme high tides, or future sea level rise.

In summary, the West Patterson project area (in particular the Patterson Gardens site) is susceptible to storm-related flooding, but not dam failure inundation or coastal flooding. Based on the FIRM, the 100-year flood hazard zone (Zone A) for Salado Creek through the Patterson Gardens site is contained within the channel banks. A substantial portion of the site is subject to flooding (with inundation depths less than one foot) during the 100-year storm event (Zone B). It is likely that since storm drainage infrastructure improvements have been completed since the FIRM was published that the FIRM overstates the flood hazard in the project area.

WATER QUALITY

SURFACE WATER

No surface water quality data are available for Salado Creek. However, qualitative observations can be made about the expected water quality within the creek based on land uses within the watershed. With the exception of the Diablo Grande development in the

[2] Based on review of the dam inundation maps of the California Office of Emergency Services website: http://www.oes.ca.gov/dim.nsf

upper portion of the watershed,[3] Salado Creek drains sparsely developed lands in the uplands to the west. Cattle grazing (with open access to the creek) was observed in the upland portion of the watershed. Direct access to the creek by cattle would be expected to result in elevated levels of nutrients, pathogens, and sediment in the creek water. In addition, Salado Creek receives discharges of return water from agricultural operations, and therefore may contain residual pesticides, herbicides, and nutrients from this source. Downstream of the project area the creek may receive additional agricultural runoff and urban pollutants (petroleum hydrocarbons, metals, sediment) from roadway and industrial site runoff through the City of Patterson storm drainage collection and conveyance system.

Salado Creek drains into the San Joaquin River approximately four miles east of the project area. The San Joaquin River, which drains the northern portion of the San Joaquin Valley, carries substantial amounts of agricultural return water or drainage (RWQCB, 1994). The San Joaquin River in the vicinity of the City of Patterson is designated as "impaired" by the Central Valley Regional Water Quality Control Board (RWQCB) for numerous pollutants under Clean Water Act Section 303(d) (RWQCB, 1998). The existing 1998 303(d) list indicates that the San Joaquin River is impaired for the following pollutants: boron, chlorpyrifos, DDT, diazinon, electrical conductivity, group A pesticides, selenium, and unknown toxicity. Agriculture has been identified as the source for each of these pollutants (with the exception of unknown toxicity).

GROUNDWATER

There are three physiographic regions within the San Joaquin Valley: 1) the western alluvial fan, the eastern alluvial fan, and the basin (Dubrouvsky, 1998). The project area is located within the western alluvial fan region in a subbasin referred to as the Delta Mendota Groundwater Basin (as designated by the California Department of Water Resources). The sediments in the western alluvial fan region are generally poorly sorted and derived from marine sedimentary rocks (with some continental sedimentary and volcanic rocks) of the Coast Ranges (Burrow, 1995). Groundwater occurs in the geologic materials underlying the site in discrete water-bearing zones or "aquifers." The uppermost zone (from the ground surface to a depth of about 250 feet) is composed of a

[3] At the time this analysis was conducted (2002), only the golf course (and associated facilities) had been constructed. However, it is anticipated that a substantial residential development would be completed at Diablo Grande.

heterogeneous mixture of gravel, sand, silt, and clay (Page, 1986). At a depth of approximately 250 to 300 feet below the surface, a lacustrine clay deposit known as the "modified E clay" or "Corcoran Clay" occurs in the vicinity of the site and acts as a confining layer (or aquitard) for the aquifer below. The City of Patterson, which relies exclusively on groundwater as its domestic water source, operates five wells that draw groundwater from the confined aquifer (below the Corcoran Clay). This water contains elevated levels of salt,[4] averaging 900 mg/L (Stoddard, 1996). A more detailed description of groundwater resources in the vicinity of the project area is included in Section III.I, Water Supply.

Salt loading is a water quality issue of concern in the San Joaquin Valley. As stated in the Basin Plan (RWQCB, 1994, p. IV-2.00):

> Salt management is becoming increasingly important in the San Joaquin Valley for urban and agricultural interests. If current practices for discharging water containing elevated levels of salt continue unabated, the San Joaquin Valley can have a large portion of its groundwater severely degraded within a few decades.

Salts are introduced into the basin with imported water supplies. Although the water may leave the basin by evaporation, evapotranspiration, or through the San Joaquin River, much of the salts stay behind, potentially leading to a build-up of salt in the soil and groundwater. Excessive salt loading can result in a degraded water supply, particularly if concentrations exceed the Secondary Drinking Water standard of 1,000 mg/L (upper limit). Salt loading of managed groundwater basins is an important issue throughout the San Joaquin Valley. In addition, many of the naturally-occurring deposits (which comprise the aquifers) in the vicinity of the project area, particularly in the mountains to the west, are of marine origin and, therefore, have high salt content.

The contribution of human activities (e.g., agriculture, groundwater pumping, water transfers) to the salt balance has been investigated. A United States Geological Survey (USGS) study was conducted in the Sacramento Valley of California to determine whether human activities had affected groundwater quality through time (Bertoldi, 1991). Substantial increases in TDS and nitrates were observed since the 1950s, indicating that

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[4] The term "salt" refers to unspecified dissolved ions in water. The salt content is typically quantified as total dissolved solids (TDS) in mg/L or electrical conductivity in µmhos/cm.

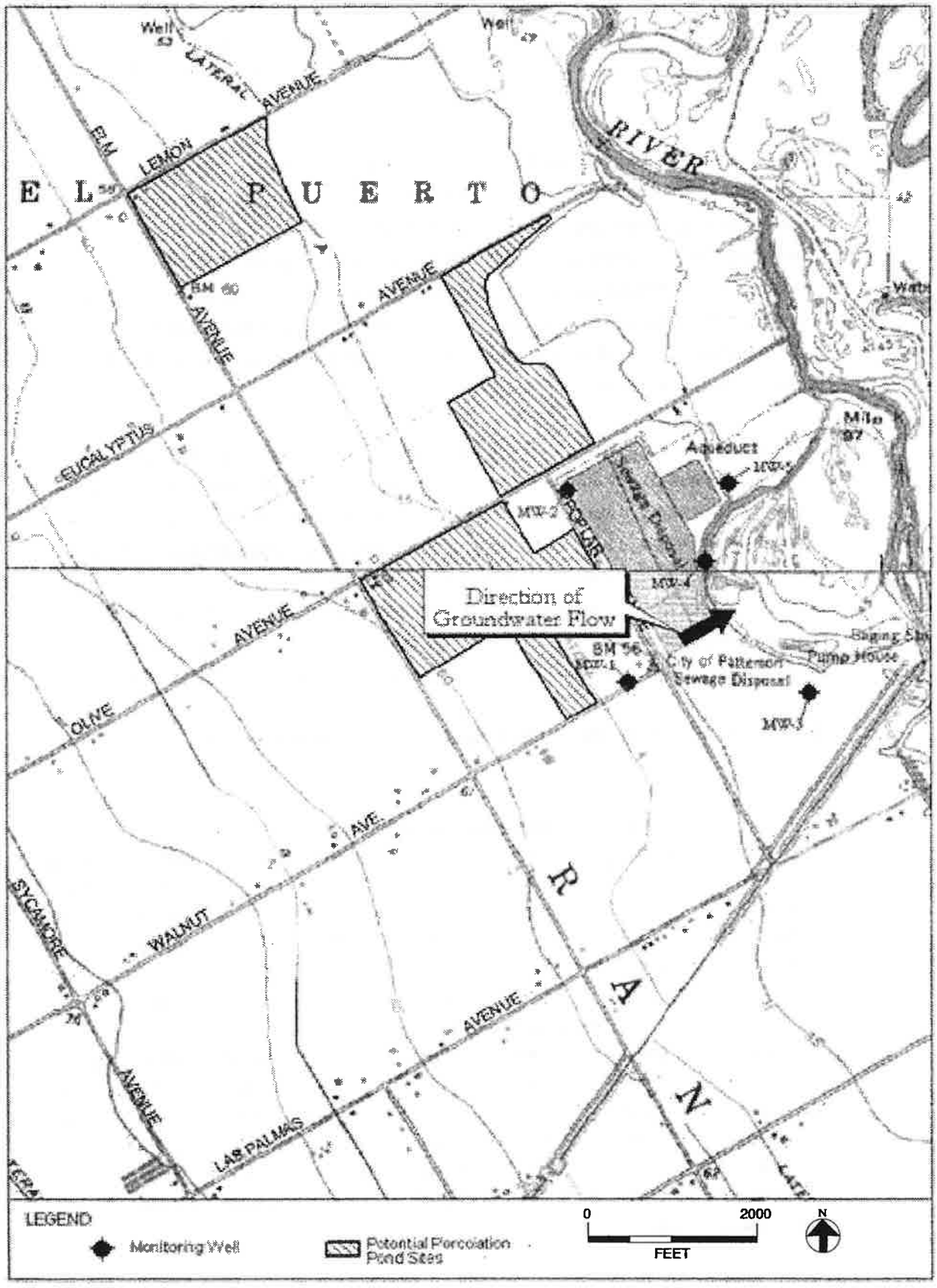
groundwater quality was degraded as a result of increasing application of agricultural chemicals and growth of urban populations. No similar studies for the San Joaquin Valley were reported, but "because agricultural practices in the San Joaquin Valley are similar to those of the Sacramento Valley, it is likely that groundwater quality in the San Joaquin Valley is also degrading as a result of human activity."

A subsequent study conducted by the USGS on nitrate and pesticide trends in groundwater in the eastern San Joaquin Valley (Dubrovsky, 1998), indicates that groundwater drinking water supplies have been degraded by fertilizers and pesticides. Of approximately 100 various types of wells monitored, nitrate concentrations exceeded U.S. EPA drinking water standards about one-fourth of the time and pesticides were identified about two-thirds of the time (although mostly at low concentrations).

Groundwater Quality Effects of Patterson Wastewater Treatment Plant

As discussed in Section III.J, Wastewater, of this EIR, the permits issued by the RWQCBs to projects involving discharges of waste to land and/or water, are called Waste Discharge Requirements (WDRs) and include standards for pollutant discharges. On June 16, 2000, the RWQCB issued WDRs for the City's existing wastewater treatment plant (Order No. 5-00-146). The WDRs include groundwater limitations such that, "the discharge, in combination with other sources, shall not cause the underlying groundwater to contain waste constituents in concentrations greater than the background water quality at or beyond the point of compliance. Any incremental increase in waste constituent concentrations within the point of compliance, when compared to background, shall not exceed the increase typically caused by the percolation discharge of domestic wastewater and shall not violate water quality objectives, unreasonably impact beneficial uses, or cause pollution or nuisance." To aid in verification that the existing treatment plant is in compliance with these groundwater limitations and with the State Water Resources Control Board's (SWRCB) groundwater antidegradation policy (State Board Resolution No. 68-16), the WDRs require the City to develop and implement a groundwater monitoring program and to provide quarterly monitoring reports to the RWQCB.

Pursuant to this requirement, the City of Patterson installed five monitoring wells at and around the existing wastewater treatment plant (see Figure III.H.6: Groundwater Monitoring Well Locations at Wastewater Treatment Plant). The groundwater gradient



SOURCE: EDAW

TURNSTONE CONSULTING

PATTERSON

FIGURE III.H.6: GROUNDWATER MONITORING WELL LOCATIONS AT WASTEWATER TREATMENT PLANT

slopes towards the San Joaquin River to the east side of the plant. Monitoring wells MW-1 and MW-2 are located west of the treatment plant, and are sampled for background upgradient data. Monitoring wells MW-3, MW-4, and MW-5 are located downgradient of the plant, and are intended to monitor the quality of the groundwater after the treated effluent has percolated into the groundwater. Well MW-3 is located downgradient of the newer southern percolation ponds, which have received very limited service to date. MW-3, therefore, is believed to represent background conditions, rather than downgradient conditions (Lee & Ro, 2002).

Quarterly monitoring reports have been prepared for 2001 and for the first quarter of 2002. The primary contaminants of concern associated with effluent from wastewater treatment plants are coliform and nitrogen compounds. The City also tests the treated effluent from the wastewater plant for total dissolved solids concentrations (TDS), electrical conductivity (a means of measuring TDS), and other constituents in the plant effluent. Tables III.H.1 and III.H.2 summarize the data related to TDS, electrical conductivity, coliform, and nitrates in groundwater. Results for salinity parameters for the treated effluent are in Table III.H.3 and results for nitrate are in Table III.H.4.

Table III.H.1: Monitoring Well Sampling for Salinity Parameters

	Electrical Conductivity (µmhos/cm)						
Well	**4/4/01**	**7/13/01**	**9/5/01**	**11/7/01**	**2/8/02**	**5/3/02**	**Average**
MW-1	3,600	1,890	2,710	3,105	2,704	2,980	2,802
MW-2	2,900	1,901	3,720	3,010	2,737	3,160	2,854
MW-3	4,100	1,537	4,410	3,593	3,020	3,490	3,332
MW-4	930	1,853	2,710	2,592	1,990	2,540	2,015
MW-5	2,500	1,898	3,130	2,554	2,265	2,450	2,469
	Total Dissolved Solids (mg/L)						
Well	**4/4/01**	**7/13/01**	**9/5/01**	**11/7/01**	**2/8/02**	**5/3/02**	**Average**
MW-1	2,400	1,600	1,830	2,190	2,170	2,030	2,038
MW-2	1,800	2,010	2,020	2,140	2,070	2,140	2,008
MW-3	2,800	3,110	2,260	2,500	2,430	2,480	2,620
MW-4	550	1,680	1,670	1,710	1,450	1,640	1,412
MW-5	1,500	1,700	1,670	1,710	1,610	1,530	1,638

Source: Lee & Ro, 2002.

Table III.H.2: Monitoring Well Sampling for Coliform and Nitrate

Well	4/4/01	7/13/01	9/5/01	11/7/01	2/8/02	5/3/02
			Total Coliform (ml MPN)			
MW-1	4	<2	500	80	<2	<2
MW-2	17	<2	11	<2	<2	8
MW-3	22	<2	<2	<2	<2	<2
MW-4	7	<2	<2	<2	<2	<2
MW-5	500	<2	<2	<2	<2	<2
			Fecal Coliform (ml MPN)			
MW-1	<2	<2	170	8	<2	<2
MW-2	2	<2	<2	<2	<2	<2
MW-3	<2	<2	<2	<2	<2	<2
MW-4	<2	<2	<2	<2	<2	<2
MW-5	<2	<2	<2	<2	<2	<2
			Nitrate [as N] (mg/L)			
MW-1	25	9	15	13	25	16
MW-2	5	6	5	5.4	5.6	1.7
MW-3	17	19	15	17	19	17
MW-4	<0.4	<0.4	3	<0.4	0.4	2.2
MW-5	10	1	4	3.4	6.2	29

Notes:
5 mg/L Nitrate (as NO_3) = 1 mg/L Nitrate (as N)
Source: Lee & Ro, 2002.

Table III.H.3: Treatment Plant Effluent Sampling - Salinity

	Jan 01	Feb 01	Jan 02	Feb 02	Mar 02	Apr 02	AVERAGE
Electrical Conductivity (µmhos/cm)							
	1,716	2,000	1,539	1,503	1,511	1,620	**1,648**
Total Dissolved Solids (mg/L)							
	1,260	1,270	605	n/a	1,250	1,277	**1,132**

Notes:
n/a= no data available
Source: Lee & Ro, 2002.

Table III.H.4: Treatment Plant Effluent Sampling - Nitrate (as NO_3 in mg/L)

Sampling Date	**Jan 01**	**Feb 01**	**Mar 01**	**Apr 01**	**May 01**	**Jun 01**
Nitrate Concentration	69	78	32	7	9.5	11.5
(Date)	**Jul 01**	**Aug 01**	**Sep 01**	**Oct 01**	**Nov 01**	**Dec 01**
(Concentration)	32	20	14	16	45	45
(Date)	**Jan 02**	**Feb 02**	**Mar 02**	**Apr 02**	**AVERAGE (2001)**	
(Concentration)	37.5	35	6.6	6.4	31.6	

Source: Lee & Ro, 2002.

A more detailed discussion of the results of the City's groundwater monitoring can be found in the *Report of Future Impacts on Groundwater Salinity and Beneficial Uses Due to Anticipated Development Within the City of Patterson Wastewater Service Area* (Lee & Ro, 2002).

The City's water supply is derived from groundwater wells. The water produced by these wells is moderately saline. TDS concentrations for the City's water wells range from 770 to 1,000 mg/L, with a nonweighted average concentration of 892 mg/L (see Section III.I, Water Supply, Table III.I.1). Sampling of the background monitoring wells near the existing plant indicates that the groundwater salinity (TDS) in the shallow aquifer surrounding the treatment plant is high. Average TDS concentrations in background monitoring wells (MW-1 and MW-2) are 2,038 to 2,008 mg/L, respectively (see Table III.H.1). The average TDS concentration of the plant effluent is 1,132 mg/L. (see Table III.H.3) Because the plant effluent is of lower salinity than the shallow groundwater upgradient of the plant, the effluent appears to reduce the salinity concentration of the local groundwater by dilution. This is evidenced by the reduced salinity concentrations sampled in MW-4 and MW-5 (1,412 and 1,638 mg/L respectively), located downgradient of the more frequently used effluent ponds (Table III.H.1). Higher TDS concentrations (2,620 mg/L) are found in monitoring well MW-3.

As previously discussed, however, MW-3 is located downgradient of the southern effluent ponds, which have received very limited service to date. Samples from MW-3 are therefore believed to represent background conditions rather than downgradient conditions (Lee & Ro, 2002).

A common method for determining whether water contains infectious organisms that could threaten human health is to use an indicator species such as coliform bacteria (a common group of bacteria used as an indicator of fecal pollution and an indirect indicator of the presence of organisms that could cause human disease). Typically, the most probable number assay (MPN) is used to assess the concentration of coliform in a water sample. This assay involves making a dilution series from the sample to be analyzed. At a certain dilution level (or factor) the chance of finding coliform bacteria in the solution is statistically rare. The objective listed in the Basin Plan for coliform organisms (total coliform) in drinking water sources is 2.2/100 ml MPN. Coliform has been detected in groundwater samples from monitoring wells at the plant. Total coliform exceeded 2.2/100 ml MPN in the background monitoring wells (MW-1 and MW-2) during four of the six quarterly sampling events (Table III.H.2). In the downgradient wells (MW-3, MW-4, and MW-5), however, total coliform exceeded 2.2/100 ml MPN in only one sampling event (i.e., April 4, 2001). The City does not sample coliform in the plant effluent. Data from the monitoring wells however, suggest that coliform in the groundwater appears to be related primarily to agricultural land uses upgradient of the plant (Lee & Ro, 2002).

The objectives listed in the Basin Plan for nitrogen in drinking water sources are the maximum contaminant levels (MCL) specified in Title 22 of the California Code of Regulations. The MCL for nitrate and nitrite as nitrogen is 10 mg/l, and the MCL for nitrate as NO_3 is 45 mg/l. Nitrate as nitrogen has been detected in groundwater samples in the background monitoring wells at concentrations of up to 25 mg/l (see Table III.H.2). The average nitrogen concentration of the plant effluent for the sample period (January 2001 through April 2002) was 5.8 mg/L (see Table III.H.4). Plant effluent exceeded 10 mg/L during two sampling events. On January 2001 and February 2001, the nitrogen concentration of the plant effluent was 13.8 and 15.6 mg/L, respectively. The plant has not exceeded the 10 mg/L MCL during any sampling events since that time.

Because the plant effluent is consistently lower in nitrogen concentration than the shallow groundwater upgradient of the plant, the effluent appears to reduce the nitrogen

concentration of the local groundwater by dilution. This is evidenced by the reduced nitrogen concentrations sampled in MW-4 and MW-5, located downgradient of the more frequently used effluent ponds (see Table III.H.2). Nitrogen concentrations in these two wells are generally well below the 10 mg/L MCL, and have only exceeded the MCL

during one sampling event: 29 mg/L on May 3, 2002. Sampling data show that nitrogen concentrations in MW-3 have exceeded 10 mg/L during all sampling events. As previously discussed, however, MW-3 is located downgradient of the southern effluent ponds, which have received very limited service to date. Samples from MW-3 are therefore believed to represent background conditions rather than downgradient conditions (Lee & Ro, 2002).

The City's wastewater treatment plant, therefore, complies with the WDR's groundwater limitations regarding groundwater degradation. With regard to salinity, the RWQCB issued a letter to the City stating that "the salinity study is considered complete, and no further action is required at this time" (RWQCB, 2002).

REGULATORY FRAMEWORK

FEDERAL EMERGENCY MANAGEMENT AGENCY

In 1968, Congress created the National Flood Insurance Program (NFIP) in response to the rising cost of taxpayer funded disaster relief for flood victims and the increasing amount of damage caused by floods. The NFIP makes federally-backed flood insurance available for communities that agree to adopt and enforce floodplain management ordinances to reduce future flood damage. The NFIP is managed by the Federal Emergency Management Agency (FEMA). FEMA is the agency responsible for conducting floodplain studies and publishing Flood Insurance Rate Maps (FIRM) that delineate flood hazard areas. The City of Patterson and County of Stanislaus are participating communities in the NFIP, and therefore all new development must comply with the minimum requirements of the NFIP.

REGIONAL WATER QUALITY CONTROL BOARD

Water quality in surface and ground water bodies is regulated by the State and Regional Water Quality Control Boards. The County is under the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB), which is responsible for implementation of State and Federal water quality protection guidelines in the vicinity of the project area. The RWQCB implements the Water Quality Control Plan (Basin Plan) (RWQCB, 1994), a master policy document for managing water quality issues in the region. The Basin Plan establishes beneficial water uses for waterways and water bodies

within the region. Beneficial uses of surface waters in the Central Valley include water contact recreation, noncontact water recreation, industrial service supply, irrigation supply, navigation, shellfish harvesting, fishing, and preservation of rare and endangered species. Beneficial uses of the groundwater aquifer include municipal and domestic supply, industrial process supply, industrial service supply, and agricultural supply.

Runoff water quality is regulated by the Federal National Pollutant Discharge Elimination System (NPDES) Nonpoint Source Program (established through the Federal Clean Water Act). The NPDES Nonpoint Source Program objective is to control and reduce nonpoint discharges of pollutants to water bodies. The Program is administered by the California Regional Water Quality Control Boards. The following NPDES stormwater permits are relevant to the City of Patterson and development proposed by the West Patterson projects:

General Construction Permit

Projects disturbing more than five acres of land during construction are required to file a Notice of Intent (NOI) with the RWQCB to be covered under the State NPDES General Construction Permit for discharges of storm water associated with construction activity. A developer must propose control measures that are consistent with the State General Permit. A Storm Water Pollution Prevention Plan (SWPPP) must be developed and implemented for each site covered by the general permit. A SWPPP should include Best Management Practices (BMPs) designed to reduce potential impacts to surface water quality through the construction and life of the project. The specific projects that have been proposed, Patterson Gardens and Keystone Pacific Business Park, both exceed five acres and would be required to comply with the General Permit.

General Industrial Permit

The control of nonpoint source runoff from industrial sources and associated pollutants is regulated in California by the State Water Resources Control Board under the statewide General Permit for Stormwater Discharges Associated with Industrial Activities. The General Permit presents the requirements for compliance of certain industries with the NPDES. A wide range of industries is covered under the General Permit, including mining operations, lumber and wood products facilities, petroleum refining, metal industries, and some agricultural product facilities such as dairies. Based on the

information available, it does not appear that the General Permit for Industrial Activities would apply to either of the two specific projects that have been proposed. The Patterson Gardens proposal is a residential project (General Permit for Industrial Activities would not apply) and the list of "anticipated tenant types" for the Keystone Pacific Business Park, listed in Appendix B, does not include the types of facilities covered by the General Permit for Industrial Activities. However, industrial activity in the West Patterson Business Park Master Plan area would be required to comply with the General Permit for Industrial Activities.

Municipal Separate Storm Sewer System Program

The Storm Water Phase II Final Rule applies to operators of *regulated* small municipal separate storm sewer systems (MS4s). Under the NPDES storm water program, operators of large, medium, and regulated small MS4s require authorization to discharge pollutants under an NPDES permit. Medium and large operators are required to submit comprehensive permit applications and are issued individual permits. Regulated small MS4 operators have the option of choosing to be covered by an individual permit, a general permit, or a modification of an existing Phase I MS4's individual permit. Based on preliminary discussions with RWQCB staff, it does not appear the City of Patterson (which would be considered a small MS4) will be required to participate in this program in the near future (Day, 2002). Only a select subset of small MS4's, referred to as "regulated small MS4's," is covered by the Phase II Final Rule, either through automatic nationwide designation or designation on a case-by-case basis by the NPDES permitting authority (the RWQCB). Patterson has not been designated.

STANISLAUS COUNTY

Stanislaus County General Plan Policies/Implementation Measures

Goal 1, Policy One

Implementation Measure 4

Development, except that which is consistent with the County General Plan at the time the Patterson Agreement is executed, in the area known as the Sperry Avenue Corridor, shall be required to participate in the solution of the Salado Creek flooding problem.

Goal 1, Policy Four

Implementation Measure 2

Applications for development in areas with growth-limiting factors such as high water table, poor soil percolation, geological fault areas, flood plains, and airport hazard areas shall include measures to mitigate the problems.

Implementation Measure 3

Development within the 100-year flood boundary shall meet the requirements of Chapter 16.40 (Flood Damage Protection) of the County Code and within the designated floodway shall obtain Reclamation Board approval.

Goal 2, Policy Five

Implementation Measure 1

Proposals for urbanization in groundwater recharge areas shall be reviewed to ensure that (1) as much water as possible is returned to the recharge area, (2) the development will not cause discharge of materials detrimental to the quality of the water, and (3) the development will not result in significant groundwater overdrafting or deterioration in quality. The Department of Environmental Resources shall require:

A. In those areas where groundwaters are susceptible to overdrafting, the project proponent shall perform a hydrogeological analysis and include appropriate mitigation measures in the proposal.

B. In those areas where groundwater quality is susceptible to deterioration or is already of reduced quality, the level of wastewater treatment shall be such that it will not cause further quality deterioration.

Stanislaus County Ordinances

Title 9 Health and Safety - Chapter 9.36 Water Wells

9.36.060 Protection Against Surface Water Entrance

All wells shall be so constructed as to prevent the entrance of surface water from any source into the well or into any aquifer. The construction of a well pit is prohibited; provided, however, a variance permit may be granted by the health officer. All pumping equipment shall be installed with protective devices to effectively prevent the entrance of foreign matter into the well casing. (Prior code § 3-304).

9.356.120 Destruction Authority

Every abandoned well shall be destroyed in accordance with the methods prescribed n the standards. The health officer shall have the authority to order the destruction or repair of any well that is polluted or unsafe or is so located as likely to become polluted. (Prior code § 3-310).

9.36.130 Maintenance of Well Out of Service

The owner shall continuously maintain, in accordance with the provisions of this chapter, any well which is out of service, so as to be safe and to prevent pollution of any aquifer. A properly maintained out-of-service well shall not be considered to be an abandoned well. (Prior code § 3-311).

Title 16 Buildings and Construction

Chapter 16.05 Building Code

16.05.080 1994 Uniform Building Code Appendix Chapter 33 – Storm Water Drainage

Appendix Chapter 33 of the Uniform Building Code is amended by adding Section 7016 3319 thereto, to read:

> Section 3319 Storm Water Drainage Requirement. In all cases where proposed construction is for commercial, industrial, or public or quasi-public buildings or structures, for two family, three-family, four-family, or multi-family dwellings, or for other uses which similarly involve structural ground coverage likely to affect storm drainage in the areas in

which they are located, including but not limited to trailer parks and parking lots, drainage facilities for the property shall be constructed in a manner approved by the Department of Public Works, which may include discharge into a publicly maintained storm drain system or ponding basin. Submission of the drainage plans for approval shall be the responsibility of the owner or the developer of the property on which the construction is proposed, and the application for a building permit shall be accompanied by a drainage plan suitable for review by the Department of Public Works. (Ord. CS 625 § 3 (part), 1996).

Chapter 16.50 Flood Damage Prevention

16.50.040 Methods of Reducing Flood Losses

In order to accomplish its purposes, this chapter includes methods and provisions to:

A. Restrict or prohibit uses which are dangerous to health, safety and property due to water or erosion hazards, or which result in damaging increases in erosion or flood heights or velocities;

B. Require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;

C. Control the alteration of natural floodplains, stream channels and natural protective barriers, which help accommodate or channel flood waters;

D. Control filling, grading, dredging and other development which may increase flood damage; and

E. Prevent or regulate the construction of flood barriers which will unnaturally divert flood waters or which may increase flood hazards in other areas. (Ord. CS 638 § 1 (part), 1996).

16.50.180 Standards for Utilities

A. All new and replacement water supply and sanitary sewage systems shall be designed to minimize or eliminate:

1. Infiltration of flood waters into the systems; and

2. Discharge from systems into flood waters.

B. On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding. (Ord. CS 638 § 2 (part), 1996; Ord. CS 625 § 12 (part), 1996).

16.50.190 Standards for Subdivisions

A. All preliminary subdivision proposals shall identify the flood hazard area and the elevation of the base flood.

B. All subdivision plans will provide the elevation of proposed structure(s) and pad(s). If the site is filled above the base flood elevation, the lowest floor and pad elevations shall be certified by a registered professional engineer or surveyor and provided to the floodplain administrator.

C. All subdivision proposals shall be consistent with the need to minimize flood damage.

D. All subdivision proposals shall have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize flood damage.

E. All subdivisions shall provide adequate drainage to reduce exposure to flood hazards. (Ord. CS 638 § 2 (part), 1996; Ord. CS 625 § 12 (part), 1996).

CITY OF PATTERSON GENERAL PLAN AND ORDINANCES

The City of Patterson General Plan includes the following policies that relate to water quality and flooding:

Water Quality

VI.A.1. The City shall prohibit the establishment of any new septic systems within areas where City sewer and water service will be available in the foreseeable future.

VI.A.2. The City shall seek the elimination of existing septic tanks in urbanized areas.

VI.A.3. In reviewing major new development proposals, the City shall consider the project's potential for adversely affecting water quality in the San Joaquin River and the area's groundwater resources.

VI.A.4. The City shall regularly monitor water quality in City wells for evidence of toxics, saltwater intrusion, and other contaminants.

VI.A.5. The City shall utilize the CEQA process to identify and avoid or mitigate potential groundwater pollution problems resulting from new commercial and industrial development.

VI.A.6. The City shall support efforts at the county, regional, and statewide levels to reduce runoff of toxic agricultural chemicals into Salado Creek and the San Joaquin River.

VI.A.7. The City shall implement measures to minimize the discharge of sediment into Salado Creek and the San Joaquin River.

Flooding

VII.B.1. The City shall continue to participate in the National Flood Insurance Program. To this end, the City shall ensure that its regulations are in full compliance with standards adopted by the Federal Emergency Management Agency.

VII.B.2. New residential development, including mobile homes, shall be constructed so that the lowest floor is at least 12 inches above the 100-year flood level.

VII.B.3. Non-residential development shall be anchored and flood-proofed to prevent damage from the 100-year flood or, alternatively, elevated to at least 12 inches above the 100-year flood level.

VII.B.4. Existing development shall comply with policies B.2. and B.3. when improvements are made costing at least 50 percent of the estimated current market value of the structure before the improvements.

VII.B.5. Construction of storm drainage improvements shall be required, as appropriate, to prevent flooding during periods of heavy rainfall.

VII.B.6. The City shall impose appropriate conditions on grading projects performed during the rainy season to ensure that silt is not conveyed to storm drainage systems.

The City of Patterson ordinances include requirements for flood damage prevention (Chapter 16.50). These ordinances are essentially equivalent to the county ordinances described above.

IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

Development within the project area would have a significant impact if it were to result in:

- An increase in the frequency and/or magnitude of flooding events at the site or in the region;
- Alteration of drainage patterns that could exacerbate flooding problems;
- Exposure of life and property to increased harm from flood hazards (relative to existing conditions) as defined by the Federal Emergency Management Agency (FEMA);
- Any measurable degradation of water quality, including violation of applicable water quality standards;
- Substantial interference with groundwater recharge or depletion of groundwater supplies.

PROJECT IMPACTS AND MITIGATION

Impact H.1. Placement of housing in areas subject to flooding could result in severe hardship and property damage for project occupants. (Significant)

The portion of the proposed Patterson Gardens site adjacent to Salado Creek is located within an area susceptible to flooding. Based on the FIRM, the 100-year flood hazard zone (Zone A) for Salado Creek through the Patterson Gardens site is contained within the channel banks. A substantial portion of the Patterson Gardens site is subject to flooding (with inundation depths less than one foot) during the 100-year storm events (Zone B), according to the FIRM. It is likely that because storm drainage infrastructure improvements (described above) have been completed since the FIRM was published, that the FIRM overstates the flood hazard at the Patterson Gardens site. However, based on the available information, a potential flood hazard still exists along Salado Creek.

The Patterson Gardens Final Development Plan includes improvements to the Salado Creek channel through that site. The Plan, if implemented, would reshape the channel form to increase the conveyance capacity from an estimated 300 cubic feet per second (cfs) to 500 cfs. It would not be beneficial to increase the channel capacity beyond 500 cfs since the downstream components are not designed to convey more than 500 cfs (Stoddard, 2001). In addition, the plan includes bank reshaping measures and the establishment of a 20-foot setback from the top of the bank on each side. On the west side of the channel, the setback would be an oak savanna buffer. The east side setback would include about 10 feet of oak savanna, a 5-foot pedestrian path, and a 5-foot landscaped buffer. However, even with the proposed channel conveyance improvements, it has not been demonstrated that all 100-year flows would be contained within the channel banks, and therefore flooding of residential development proposed in the vicinity of Salado Creek could occur during moderate to severe flood events.

Mitigation Measure H.1.

New construction and substantial improvement of any structure in Zone B in the project area (no construction is proposed in Zone A) shall have the lowest floor elevation, including basement, elevated above the highest adjacent grade at least two feet (as measured from the flow line of the gutter). This is consistent with General Plan policy VII.B.2 which states that all new residential development shall be constructed so that the lowest floor elevation is at least 12 inches above the 100-year flood, since the maximum inundation depth within Zone B at the site is one foot.

Upon completion of the structure, the elevation of the lowest floor, including basement, shall be certified by a registered professional engineer or surveyor, or verified by a community building inspector to be properly elevated. Such certification shall be provided to the floodplain administrator.

Implementation of this mitigation measure would reduce this impact to a less-than-significant level.

Impact H.2. Impervious surfaces and placement of structures in a floodplain would increase the amount of runoff, potentially exacerbating existing local flooding problems. (Significant)

Development of the project area would result in more surface area covered by impervious surfaces (buildings, paved roadways, sidewalks, and parking lots) relative to existing conditions. Undeveloped, gently sloping, vegetated lands (the existing condition) generally have low runoff coefficients, meaning that they yield a relatively small portion of the total rainfall as runoff. Much of the precipitation infiltrates into the subsurface. Impervious surfaces yield nearly all rainfall as runoff because infiltration is greatly reduced. Increased runoff volume and the increased rate of delivery of runoff to storm water conveyances could exceed the capacity of downstream drainage ways, causing localized flooding. In addition, placement of structures in the Zone B flood hazard area could displace existing floodwater storage capacity, increasing flooding problems downstream.

The 2001 Master Storm Drainage Plan, City of Patterson, Western Expansion Area (Master Drainage Plan) was prepared to guide storm drain infrastructure improvements required to adequately serve the anticipated growth in the vicinity of the project area. The Master Drainage Plan specified *Detention and Discharge to Salado Creek* as the preferred alternative to address the drainage challenges of the West Patterson area. Specifically, the Master Drainage Plan states that (page 15):

> Storm water would be collected through a series of pipelines and discharged into one of many detention basins so that the flow could be attenuated and discharged to the creek. The discharge would be interrupted when insufficient capacity was available in the creek for conveyance some time later to avoid contributing to creek flooding downstream. Detention basins would be evacuated by gravity discharge with the basins connected in series to a pipeline which discharges to Salado Creek, with the exception of the basins near the creek which would be evacuated by use of pumping stations. Flow into the pipeline would both be 'metered' through an orifice, and regulated by a control gate. The rate of metering would be such that the entire contents of the basin could be evacuated within 48 hours. The basins would be designed to contain runoff from the 100-year 24-hour storm event. Detention basins would be configured to serve also as parks in a dual purpose function.

The Patterson Gardens Preliminary and Final Development Plan (October 2000) and the Keystone Pacific Business Park Application Document Package (August 2001) include conceptual drainage plans that are consistent with the Master Drainage Plan. Specifically, the Master Drainage Plan specifies a minimum of five detention basins in

each of the Patterson Gardens and Keystone Pacific Business Park subareas. The Patterson Gardens conceptual drainage plan alternatives include multiple detention basins, and the Keystone Pacific Business Park conceptual drainage plan includes seven detention basins, each with conveyance piping of similar size. These meet the Master Drainage Plan standards.

Mitigation Measure H.2.

Each phase of development must design and install drainage systems in compliance with the intent of the recommended drainage plan detailed in the *2001 Master Storm Drainage Plan, City of Patterson, Western Expansion Area* (Stoddard & Assoc., 2001). The detention basins shall be designed so that flow to the creek could be interrupted when insufficient capacity was available in the creek for conveyance of the flows. The drainage improvements shall be designed and constructed so that no increase in the peak flow in Salado Creek would occur during the 100-year flood event as a result of project implementation.

Design-level drainage plans for each phase of development of the West Patterson projects would be submitted to the City of Patterson for review. Drainage plans and detention basin design details would be reviewed for compliance with the "no increase in peak flow" requirement prior to approval of the project and to ensure that the final drainage plans are consistent with 2001 Master Storm Drainage Plan, City of Patterson, Western Expansion Area.

Implementation of this mitigation measure would reduce this impact to a less-than-significant level.

Impact H.3. The increase in impervious surfaces could adversely affect groundwater recharge. (Less than Significant)

A substantial increase in impervious cover (e.g., structures, roads, and parking lots) could reduce the quantity of rainfall and/or irrigation water that infiltrates into the subsurface and recharges the shallow aquifer. However, implementation of the proposed West Patterson projects would not be expected to result in a significant impact to groundwater recharge for two reasons: 1) the project area is small relative to the size of the groundwater basin, which is largely undeveloped; and 2) features included in the project design, including substantial on-site detention of storm water, would to some degree

offset the reduced infiltration that would occur in those areas covered by impervious surfaces.

The project area covers approximately 1,122 acres. The Delta Mendota groundwater basin, which underlies the project area, covers an area of 736,000 acres. The entire project area represents approximately one-tenth of one percent of the surface area of the groundwater basin.

In addition, all West Patterson projects including the Patterson Gardens and Keystone Pacific Business Park proposals) would include water features and storm water drainage basins that would collect and detain runoff prior to discharge. Since the detention basins would be constructed in native soils, some infiltration would occur. As the water depths increased in the basins during storm events, the infiltration rates would likely increase with the greater depth (hydraulic head) further increasing groundwater recharge.

This impact is considered less than significant without mitigation.

Mitigation Measure. No mitigation necessary.

Impact H.4. Construction activities and post-construction land uses could result in degradation of water quality in nearby surface water bodies by reducing the quality of storm water runoff. (Significant)

CONSTRUCTION-PERIOD IMPACTS

Under existing conditions, much of the project area and proposed percolation pond sites for the wastewater treatment plant are regularly plowed for row crop agriculture, which results in regular disturbance of surface soils. However, standard agricultural practices limit erosion by timing of plowing operations and orientation of plowed rows. Construction and grading within the project area and the percolation pond sites could result in exposure of soil to runoff, potentially causing erosion and entrainment of sediment in the runoff. Soil stockpiles and excavated areas would be exposed to runoff and, if not managed properly, the runoff could cause erosion and increased sedimentation in storm sewers or Salado Creek.

Specifically, at the proposed Patterson Gardens and Keystone Pacific Business Park, it is assumed that the entire subareas (305 and 224 acres, respectively) would be subject to

grading and/or some sort of surface soil disturbance. Both subareas slope gently, Patterson Gardens toward the north and Keystone Business Park to the northeast. If a storm of adequate intensity to cause a substantial runoff event were to occur, sediment entrained in runoff at these subareas may eventually reach Salado Creek, impairing water quality.

The potential for chemical releases is present at most construction sites. Once released, substances such as fuels, oils, paints, and solvents could be transported to surface waters and/or groundwater in storm water runoff, wash water, and dust control water, potentially reducing the quality of the receiving waters.

OPERATION-PERIOD IMPACTS

New construction and intensified land uses at the project area and new construction at the proposed percolation pond sites would result in increased vehicle use and potential discharge of associated pollutants. Leaks of fuel or lubricants, tire wear, and fallout from exhaust contribute petroleum hydrocarbons, heavy metals, and sediment to the pollutant load in runoff being transported to receiving waters. Runoff from the proposed common landscaped areas (at Patterson Gardens, Keystone Business Park, and other unspecified areas) and individual home sites (at Patterson Gardens) may contain residual pesticides and nutrients. Long-term degradation of the quality of runoff from the site could impact the quality of receiving waters.[5]

Mitigation Measure H.4.

Each developer who proposes to construct a project within the project area shall prepare a SWPPP designed to reduce potential impacts to surface water quality through the construction and life of the project whether or not the development site is over five acres. The specific projects that have been proposed, Patterson Gardens and the Keystone Pacific Business Park, would be required to prepare and implement SWPPPs. The City shall also prepare a SWPPP for its wastewater facility expansion project. The SWPPP would act as the overall program document designed to provide measures to mitigate potential water quality impacts associated with implementation of the proposed project.

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[5] The receiving water for the entire project area is Salado Creek, which drains into the San Joaquin River.

It is not required that the SWPPP be submitted to the RWQCB, but must be maintained on-site and made available to RWQCB staff upon request. The SWPPP shall include:

- **Specific and detailed BMPs designed to mitigate construction-related pollutants.** At minimum, BMPs shall include practices to minimize the contact of construction materials, equipment, and maintenance supplies (e.g., fuels, lubricants, paints, solvents, adhesives) with storm water. The SWPPP shall specify properly designed centralized storage areas that keep these materials out of the rain.

  An important component of the storm water quality protection effort is knowledge of the site supervisors and workers. To educate on-site personnel and maintain awareness of the importance of storm water quality protection, site supervisors shall conduct regular tailgate meetings to discuss pollution prevention. The frequency of the meetings and required personnel attendance list shall be specified in the SWPPP.

  The SWPPP shall specify a monitoring program to be implemented by the construction site supervisor, and must include both dry and wet weather inspections. In addition, in accordance with State Water Resources Control Board Resolution No. 2001-046 (SWRCB, 2001), monitoring would be required during the construction period for pollutants that may be present in the runoff that are "not visually detectable in runoff."[6] Each developer shall retain an independent monitor to conduct regular inspections and provide written reports to the City of Patterson Planning Director to ensure Compliance with the SWPPP. RWQCB personnel, who may make unannounced site inspections, are empowered to levy considerable fines if it is determined that the SWPPP has not been properly prepared and implemented.

  BMPs designed to reduce erosion of exposed soil may include, but are not limited to: soil stabilization controls, watering for dust control, perimeter silt fences, placement of hay bales, and sediment basins. The potential for erosion is generally increased if grading is performed during the rainy season as disturbed soil can be exposed to rainfall and storm runoff. If grading must be conducted during the rainy season, the primary BMPs selected shall focus on erosion control, that is, keeping sediment on the site. End-of-pipe sediment control measures (e.g., basins and traps) shall be used only as secondary measures. If hydroseeding is selected as the primary soil stabilization method, then these areas shall be seeded by September 1 and irrigated to ensure that adequate root development has occurred prior to October 1. Entry and egress from the

[6] Construction materials and compounds that are not stored in water-tight containers under a water-tight roof or inside a building are examples of materials for which the discharger may have to implement sampling and analysis procedures.

construction site shall be carefully controlled to minimize off-site tracking of sediment. Vehicle and equipment wash-down facilities shall be designed to be accessible and functional during both dry and wet conditions.

- **Measures designed to mitigate post construction-related pollutants.** The SWPPP shall include measures designed to mitigate potential water quality degradation of runoff from all portions of the completed development, including residential, light industrial, and commercial areas. In general, passive, low-maintenance BMPs (e.g., grassy swales, porous pavements) are preferred. If the SWPPP includes higher maintenance BMPs (e.g., sedimentation basins, fossil filters), then funding for long-term maintenance needs must be specified (the City will not assume maintenance responsibilities for these features).

  Yet to be developed residential, commercial, and light industrial parcels generally provide many opportunities for innovative storm water management, including permeable pavers, concave lawn/infiltration basins, grassy swales, and dry-wells connected to roof downspouts. The final design team for each development project shall review and incorporate the concepts included in *Start at the Source, Design Guidance Manual for Stormwater Quality Protection* (BASMAA, 1999), in the project design.

The City of Patterson Department of Public Works shall ensure that the SWPPP is prepared prior to approval of the grading plan for each development project or each phase of a large-phased development project. Implementation of this mitigation would reduce the level of significance of this impact to a less-than-significant level.

Impact H.5. Existing water supply wells in the project area, if not properly managed or decommissioned, could be damaged during construction, potentially allowing impacts to groundwater quality. (Significant)

There are numerous water supply wells located in the project area. If any of the wells were not fitted with effective sanitary seals upon construction, or if any seals have been damaged since installation, or were to be damaged during grading and construction for the West Patterson projects, surface water (potentially containing pollutants) could seep into the wells and the underlying aquifer, causing water quality degradation.

Specifically, there are two wells located at the Patterson Gardens site (one domestic well in the south-central portion and one irrigation well in the west-central portion of the parcel) and one well at the Keystone Pacific Business Park (one domestic well southeast corner of the parcel).

Mitigation Measure H.5.

Prior to approval of a grading plan for development of a particular parcel or subarea of the project area, a well survey shall be conducted to determine the location and characteristics of each well for that particular parcel or subarea. The survey shall be conducted and documented by a State-registered geologist or engineer, and the results submitted to the City for review.

The water supply wells shall either be:

1. Properly abandoned in compliance with the California Department of Water Resources, California Well Standards and Stanislaus County Code, Chapter 9.36 prior to final approval of the grading plan; or

2. Inspected by a qualified professional to determine whether each well is properly sealed at the surface to prevent infiltration of water-borne contaminants into the well casing or surrounding gravel pack. The California Well Standards require an annular surface seal of at least 20 feet. If any of the wells are found not to comply with this requirement, the applicant shall retain a qualified well driller to install the required seal. Documentation of the inspections and seal installations, if any, shall be provided to the City prior to final approval of the grading plan.

Implementation of this mitigation would reduce the level of significance of this impact to a less-than-significant level.

Impact H.6. The City's proposed wastewater treatment plant expansion could impair groundwater beneficial uses or quality. (Less than Significant)

Beneficial uses of the groundwater aquifer in the San Joaquin River Basin are municipal and domestic supply, industrial process supply, industrial service supply, and agricultural supply. The most stringent water quality criteria for these beneficial uses are for drinking water sources. The primary contaminants of concern associated with effluent from wastewater treatment plants are coliform and nitrogen compounds. Groundwater salinity is also an important issue in the San Joaquin River Basin.

The groundwater monitoring conducted near the City's wastewater treatment facility shows that except for the April 4, 2001 monitoring event, the groundwater downgradient

of the plant consistently complies with the Basin Plan objectives for coliform. The groundwater monitoring and effluent sampling also show that treated effluent from the plant reduces the concentrations of salinity and nitrogen in the groundwater by dilution. The character of the treated effluent discharged from the expanded wastewater treatment facility is expected to be similar to the existing effluent, and is therefore expected to meet coliform and nitrogen objectives, and to continue to dilute salinity concentrations in the groundwater.

Prior to implementation of the City's proposed wastewater treatment plant expansion, the City would be required to obtain revisions to its current WDRs from the RWQCB. The City would be required to prepare and submit a Report of Waste Discharge as part of the application process to revise the WDRs. At a minimum, all Reports of Waste Discharge must describe the type and quantity of the proposed discharge, and include a complete characterization of the constituents and the discharge concentration of each constituent. In May 2002, the RWQCB provided the City with a list of additional information requirements that would be required in the Report of Waste Discharge for the proposed plant expansion. Based on this information, the RWQCB would evaluate the project's effects on the beneficial uses of groundwater, and its compliance with the SWRCB's antidegradation policy. The revised WDRs are expected to require continuation of the City's groundwater monitoring and reporting program to ensure compliance.

Because the City's expanded plant would be required to comply with the revised WDRs, and because the City's existing facility complies with the current WDRs, the project is not expected to unreasonably impact the beneficial uses or quality of the groundwater. This would be a less-than-significant impact.

Mitigation Measure. No mitigation necessary.

Impact H.7. The proposed change in land use at the project area could affect regional groundwater quality. (Less than Significant)

It is possible that the West Patterson projects, while adequately mitigating project site-related water quality impacts, could contribute to regional groundwater quality degradation. In particular, the West Patterson projects would contribute salt loading to the basin by allowing the application of irrigation water to residential and commercial landscaping (and other incidental uses). However, relative to existing salt loading associated with agricultural production, it is estimated that based on existing and

proposed irrigation patterns, the West Patterson projects would reduce total on-site salt load. Table III.H.5 presents a summary of the information used to calculate the estimated salt load associated with the existing conditions and the West Patterson projects. The calculation indicates a reduction in salt loading at the site of approximately 17 percent. Thus, the West Patterson projects would reduce the level of an ongoing contribution to regional groundwater quality impacts.

It should be noted that the additional loading associated with the application of agricultural fertilizers (which contain a substantial amount of salt) was not included in the

Table III.H.5: Estimated Salt Load with West Patterson Projects

Acreage	Acreage Irrigated	Average Water Use (per acre)	Total Annual Water Use (acre-feet)	Source of Water	Water Quality as TDS (mg/L)	Total Salt Load (at the site per year) (lbs)	(tons)
Existing Water Use at the Project Area							
1,085	868[1]	3.0[2]	**2,604**	Well/Lateral 6[3]	500[2]	3,532,556	1,766
Proposed Land Use and Associated Water Use							
Residential:							
305	153[4]	4.0[5]	**610**	City	1,000[6]	1,655,038	828
Industrial:							
780	117[7]	4.0[5]	**468**	City	1,000	1,269,767	635
Total for West Patterson projects						2,924,805	1,463

Notes:
[1] Assumes that 80 percent of the agricultural land could be irrigated under existing conditions (excludes roadways and border areas).
[2] Roos, pers. com., 2002
[3] Water is supplied by a combination of groundwater and surface water. Lateral 6 is a conveyance structure operated by the West Stanislaus Irrigation District.
[4] Assumes that 50 percent of the residential area would be irrigated landscaping (excludes roadways, driveways, hardscape, and building footprints).
[5] Estimated water need to maintain irrigated turf grass. Turf grass is the highest water-need common landscape planting and therefore this is considered a conservative assumption for this analysis.
[6] Estimate is based on current water quality of approximately 900 mg/L (Stoddard and Associates, 1996), but assumes that continued degradation to City supply may occur with time. However, it is not anticipated that the City supply would be allowed to exceed the secondary maximum contaminant level (upper) of 1,000 mg/L.
[7] Assumes that 15 percent of the industrial areas would be irrigated landscaping (excludes roadways, parking lots, and building footprints).

Source: Baseline Environmental Consulting, 2002.

calculation for existing conditions presented on Table III.H.5. It is expected that the rate of fertilizer use for residential and industrial landscape maintenance would be substantially less than for agriculture. Thus, the analysis is conservative. The additional reduction in salt load associated with reduced fertilizer use was not quantified, but would be expected to further reduce salt loading of the West Patterson projects relative to existing conditions.

In addition, it is likely that some pesticides and herbicides would be applied to the landscaped areas of the completed West Patterson projects. However, relative to the existing conditions, in which substantial quantities of pesticides and herbicides are applied to the agricultural fields on a regular basis, the chemical use associated with the West Patterson projects is expected to be reduced. Thus, the West Patterson projects would likely result in reduced impact to regional groundwater quality associated with pesticide and herbicide use.

Mitigation Measure. No mitigation necessary.

References

All referenced documents are available for review, by appointment, at City of Patterson offices (33 S. Del Puerto Avenue) except those marked with an asterisk (*), which are at the Stanislaus County Planning Department (1010 10th Street, Suite 3400, Modesto, CA), and except for those identified with an internet website address.

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I. WATER SUPPLY

INTRODUCTION

This section analyzes water demand associated with the West Patterson projects, in addition to existing water demand and that associated with projected growth through 2020 under the City's 1992 General Plan; identifies existing and proposed future sources of water supply to serve that demand; and analyzes the reasonably foreseeable environmental impacts associated with serving that demand. This analysis is based primarily on the City's Urban Water Management Plan (UWMP) (Stoddard & Assocs. 2002a) and a Water Supply Assessment (Assessment) prepared for the West Patterson projects (Stoddard & Assocs. 2002b). Both documents were adopted by the City of Patterson City Council (City Council) on August 6, 2002. The Assessment is included in Appendix E and is summarized and incorporated by reference here. The analysis is also based on information in the City's 1992 General Plan and the City of Patterson Year 2001 Water Master Plan (Water Master Plan) (Stoddard & Assocs. 2001b).

SETTING

REGULATORY FRAMEWORK

The following state and local laws, programs, and policies affect the supply and use of water in the Patterson area.

URBAN WATER MANAGEMENT PLAN

On August 6, 2002, the City Council adopted an Urban Water Management Plan (UWMP) pursuant to the Urban Water Management Planning Act.[1] The UWMP evaluated past, present, and projected water demand and supply in five-year increments

[1] California Water Code sections 10610-10657, as amended by 2001 Cal. Stat. 320 (SB 672), 2001 Cal. Stat. 643 (SB 610), and 2001 Cal. Stat. 644 (AB 901).

through 2020; the costs and reliability of the supply; and the City's conservation efforts, water shortage responses, and use of recycled water. The UWMP's evaluation incorporated the water demand projected for the West Patterson projects. Based on an evaluation of the City's groundwater resources, the UWMP concluded that the City's groundwater is sufficient to serve projected demand through 2020 associated with the land uses (identified in the City's 1992 General Plan) within the City's sphere of influence as it is proposed to be amended for the West Patterson Business Park Master Development Plan. The UWMP also concluded that surface water source of supply would be economically preferable and noted that the City has begun negotiations with water providers in the region in pursuit of potential surface water transfers.

WATER SUPPLY ASSESSMENT

Also on August 6, 2002, the City Council adopted a Water Supply Assessment for the West Patterson Business Park Master Development Plan and Patterson Gardens Residential Development (Assessment), pursuant to sections 10910 to 10915 of the California Water Code, often referred to as "SB 901."[2] Those sections require preparation of an assessment for certain large development projects such as the West Patterson projects. Based mainly on the City's UWMP, the Assessment concluded that a sufficient water supply – groundwater – is available to serve the West Patterson projects in addition to the City's existing water demand and water demand associated with other planned development through 2020 projected in the City's 1992 General Plan, as proposed to be amended.[3] Following the UWMP, the Assessment concluded that, although groundwater would serve as a sufficient water supply for the West Patterson projects, a surface water supply would be preferable. As required by Water Code section 10911(b), the Assessment is included in this EIR in Appendix E.

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[2] The statute was amended significantly in late 2001 by 2001 Cal. Stat. 643 (SB 610).

[3] The Assessment relied on the UWMP's projections of water supply and demand for (1) development projected by the City's 1992 General Plan to occur through 2020, and (2) the development associated with expansion of the City's sphere of influence as part of the West Patterson projects.

WATER SUPPLY VERIFICATION

California Government Code section 66473.7 requires that a condition be included in any tentative subdivision map for a residential subdivision of 500 or more units mandating that a "sufficient water supply" be available to serve the subdivision in addition to existing and planned future water uses.[4] The appropriate public water system must submit to the city or county a water supply verification (Verification) evaluating whether such a sufficient water supply exists, based on substantial evidence. Absent demonstration in the Verification that a sufficient water supply exists, a final subdivision map cannot be issued for the subdivision, and the subdivision cannot be built. If the West Patterson projects were approved, the City would prepare, as required by Government Code section 66473.7, a Verification prior to issuance of a final subdivision map for Patterson Gardens.

CALIFORNIA WATER LAW

California's constitution, statutes, and common law erect a complex scheme of rights in surface waters and groundwater. Rights in surface waters are governed by a hybrid system of riparian and appropriative rights, some of which are administered by the State Water Resources Control Board (SWRCB) and others, appropriative rights established prior to 1914, that are not subject to SWRCB's jurisdiction. Riparian users are entitled to make reasonable use of the natural flow of water in the watercourse that their properties adjoin. Appropriative rights are established by diverting surplus water – water not used by riparian users – for nonriparian uses. The rights of riparians are essentially co-equal ("correlative"), but are superior to appropriative rights. Water is allocated among appropriative users based on seniority, under the principle of "first in time, first in right."

Groundwater rights are not administered by any state agency, but rather are adjudicated by courts on a case-by-case basis. Groundwater rights are divided into overlying rights, appropriative rights, and prescriptive rights. Overlying and appropriative rights generally correspond to riparian and appropriative rights in surface waters, respectively. Any use of groundwater away from the property from which it was pumped is an appropriative use, while "on-tract" uses are typically overlying. Where the aquifer is overdrafted, a court can allocate water among competing overlying users on a correlative basis and to

[4] Added by 2001 Cal. Stat. 642 (SB 221).

overlying users before appropriative users. Water would be allocated among appropriative users based on seniority. In other words, appropriative users may take any surplus water left over after satisfaction of overlying uses, and absent such surplus (i.e., where the aquifer is overdrafted) appropriations may be enjoined in reverse order of seniority to accommodate overlying and more senior appropriative uses. Where an appropriative user has been withdrawing non-surplus water for more than five years, the appropriative right may ripen into a prescriptive right, which is effectively treated as an overlying right for purposes of groundwater allocation.

Both surface-water rights and groundwater rights are subject to a state-constitutional requirement that the use to which the water is put be reasonable and beneficial.

STATE DRINKING WATER QUALITY REGULATIONS

The State Department of Health Services (DHS) establishes "primary" and "secondary" Domestic Water Quality Standards for drinking water supplied by public water systems such as the City. The standards are required by state law to meet or exceed standards adopted by the U.S. Environmental Protection Agency. The concentrations of specified constituents are limited to maximum contaminant levels (MCLs) and are established on a constituent basis for bacteriological contaminants (such as total coliform), organic chemicals (such as benzene), inorganic chemicals (such as total dissolved solids), and radioactivity (such as gross alpha particle activity). Primary standards are set at levels necessary to protect public health and may not be exceeded. Secondary standards are based on acsthetic criteria such as taste and odor and are composed of (1) recommended limits that may be exceeded but are not recommended to be exceeded; (2) upper limits that may be exceeded for a limited duration with prior DHS approval; and (3) short term limits that may not be exceeded.

Public water systems also must obtain a domestic water supply permit from DHS. The City has obtained such a permit.

STANISLAUS COUNTY GENERAL PLAN

The Stanislaus County General Plan includes two policies and several implementation measures applicable to water supply, quoted below:

Policy 5	Protect groundwater aquifers and recharge areas, particularly those critical for the replenishment of reservoirs and aquifers.
Implementation Measure 4	During the project and environmental review process, encourage new development to incorporate water conservation measures to minimize adverse impacts on water supplies. Possible measures include, but are not limited to, low-flow plumbing fixtures, use of reclaimed wastewater for landscaping when feasible, and use of drought-tolerant landscaping.
Implementation Measure 5	Continue to implement the landscape provisions of the Zoning Ordinance, which encourage drought-tolerant landscaping and water-conserving irrigation methods.
Policy 7	New development that does not derive domestic water from pre-existing domestic and public water supply systems shall be required to have a documented water supply that does not adversely impact Stanislaus County water resources.

STANISLAUS COUNTY ORDINANCES

Stanislaus County ordinances are generally applicable within the City's sphere of influence outside City limits. The County has enacted several ordinances relevant to water supply, summarized here (all references are to the Stanislaus County Code):

Chapter 9.36	Requires permits to construct, install, or destroy groundwater wells or well seals. Requires design of wells to prevent entrance of surface water or other foreign matter into the well and requires installation of sanitary seals. After construction, installation, or repair, a well must be disinfected. Provides for inspections by public health officers and allows such officers to grant variances. Out-of-service wells must be maintained to prevent pollution of the aquifer. Requires destruction of abandoned wells in compliance with state Department of Water Resources (DWR) standards. Requires a well driller's report to be filed with the County upon completion of a well. Prescribes penalties for violation.
Chapter 14.12	Prohibits residential outdoor water use between 1:00 PM and 7:00 PM. Provides for watering of residential landscaping on

	alternate days based on street address. Prohibits watering down of paved driveways, sidewalks, and paved parking lots. Prohibits water waste and requires that water not be allowed to escape from landscaping to roads or streets. Prescribes penalties for violation.
Section 16.50.180	Requires that new or replacement water supply systems be designed to minimize or eliminate infiltration of, and discharge to, flood waters.
Section 20.52.210	Requires subdivisions to be connected to a public water system if located within 2640 feet from a water line and within the water system's service area. Provides for county approval of new public water systems formed to serve a subdivision.
Section 20.56.190	Requires that a subdivider "show that an adequate supply of potable water exists and is available to all lots." Provides that water may be supplied by private wells if connection to an existing public water system is infeasible.

CITY OF PATTERSON 1992 GENERAL PLAN

The City of Patterson General Plan is discussed in detail in Section III.B, above. The General Plan includes several policies relevant to water supply, quoted below:

IV.A.1	The City shall continue to use groundwater as a source of domestic water for the city. The City shall also pursue, as expeditiously as possible, acquisition of surface water rights to supplement its water supply in order to accommodate projected water demand and provide for water security.
IV.A.3	The City shall not approve any new development without the demonstrated assurance of an adequate water supply to support such development.
IV.A.5	To minimize the need for the development of new water sources and facilities and to minimize sewer treatment needs, the City shall promote water conservation both in City operations and in private development.
IV.A.8	The City shall, through a combination of water development fees and other funding mechanisms, ensure that new development pays its share of the costs of water system improvements.

CITY OF PATTERSON ORDINANCES

The City has adopted several ordinances relevant to water supply, summarized here (references are to the City of Patterson Administrative Code):

Chapter 15.48	Prescribes planting and irrigation system design standards for new development. Requires preparation of landscape and irrigation plans. Specifies that 90 percent of plants must be drought tolerant and requires underground irrigation to reduce water waste.
Section 13.24.380	Duplicates requirements of Chapter 14.12 of the Stanislaus County Code, discussed above.

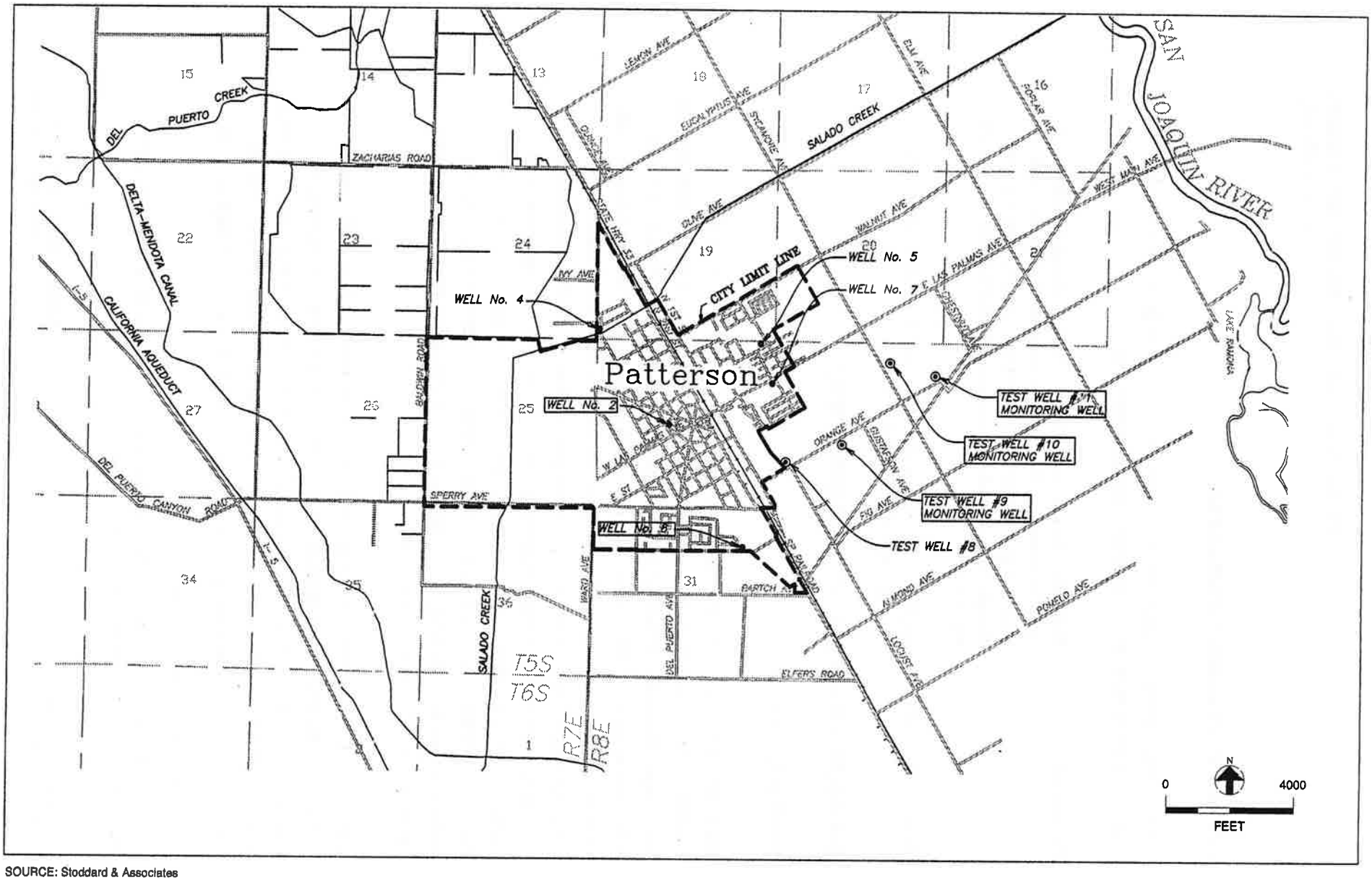
WATER RESOURCES IN THE PATTERSON AREA

SURFACE WATER

As shown in Figure III.I.1: Watercourses, Water Conveyance Features, and Well Locations, the primary surface water resource in the West Patterson project vicinity is the San Joaquin River (the River), which runs roughly south to north approximately four miles east of the City. The River is fed principally by snowmelt from the Sierra Nevada and return flows from users along its course, and empties into the Sacramento-San Joaquin Delta (Delta). In the West Patterson project vicinity, the Patterson Irrigation District (PID) makes diversions from the River under pre-1914 appropriative water rights. In 2000, the PID diverted approximately 41,000 acre-feet of water from the River.[5] The West Stanislaus Irrigation District (WSID) diverts water from the River under a license from the State Water Resources Control Board (SWRCB) and diverted approximately 47,000 acre-feet in 2000.

Salado Creek flows south to north across the City as indicated in Figure III.I.1 and empties into the River to the northeast of the City. Salado Creek is an intermittent stream, flowing for short periods during and after rainfall events, and drains a watershed of approximately 25 square miles. Between the northern portion of the City and the River, Salado Creek runs underground through a 96-inch pipeline. Although seepage

[5] An "acre-foot" of water – the amount of water necessary to flood an acre of land to a depth of one foot – is equivalent to 325,851 gallons.



SOURCE: Stoddard & Associates

TURNSTONE CONSULTING

PATTERSON

FIGURE III.I.1: WATERCOURSES, WATER CONVEYANCE FEATURES, AND WELL LOCATIONS

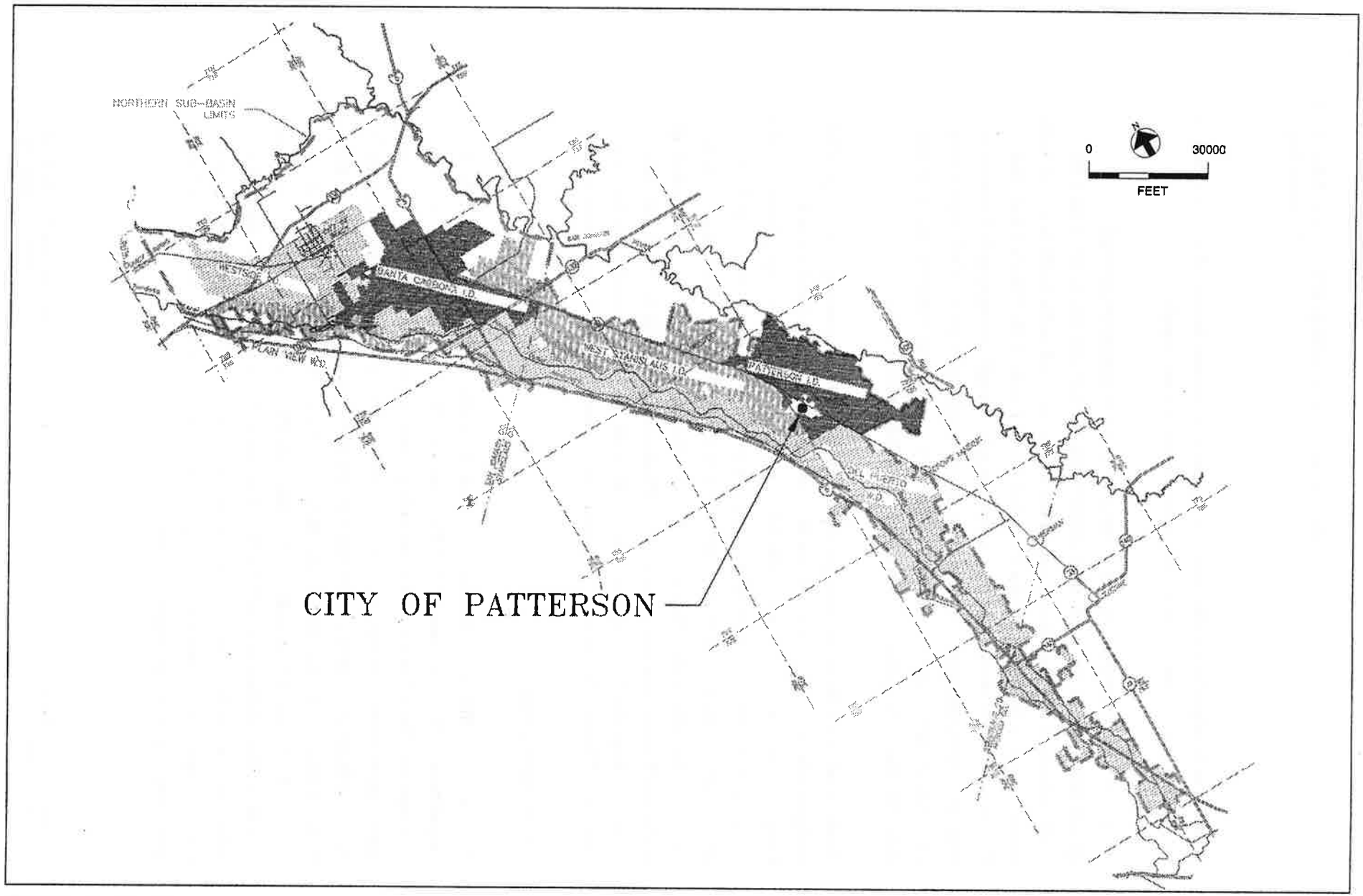
from the unlined portions of the creek enters the groundwater regime, the infrequency of its flows makes the creek a minor contributor to local water supply.

Also shown in Figure III.I.1 is Del Puerto Creek, which drains a watershed of approximately 73 square miles and traverses from west to east just north of the City. USGS reports the average annual runoff in Del Puerto Creek to be 6,164 acre-feet, with periodization of flow being similar to that of Salado Creek. Like Salado Creek, Del Puerto Creek contributes to the area's water supply through an unquantified volume of seepage entering the groundwater regime. Neither Salado Creek nor Del Puerto Creek serves as a water source for users in the Patterson area, except indirectly via the creeks' contributions to the groundwater regime and the San Joaquin River.

To the west of the West Patterson project area adjacent to I-5, running roughly parallel and generally from north to south, are the Delta Mendota Canal (DMC) and the California Aqueduct (Aqueduct). The DMC is part of the Central Valley Project (CVP) operated by the federal Bureau of Reclamation and supplies water from the Delta to contractors (primarily agricultural) between Tracy and Mendota. The Aqueduct is part of the California State Water Project (SWP) and delivers water from the Delta to municipal and agricultural contractors as far south as Riverside County. In the West Patterson project vicinity, the DMC delivers water to the PID, the WSID, and the Del Puerto Water District (DPWD). The Aqueduct supplies water to the Oak Flat Water District (OFWD).

GROUNDWATER

The City lies within the Delta-Mendota Groundwater Basin (Basin), as defined by the Department of Water Resources (DWR) in Bulletin 118-80 (DWR 1980). The Basin encompasses 736,000 acres of land extending along the western side of the San Joaquin Valley between the San Joaquin River and the western edge of the Valley alluvium, from the Stanislaus/San Joaquin County line through Stanislaus and Merced Counties into Fresno County to the boundary of the Westlands Water District south of the City of Firebaugh. A regional Groundwater Management Plan prepared by the San Luis & Delta Mendota Water Authority (SLDMWA) (Stoddard & Assocs. 1996) identified three subbasins – a Northern Subbasin, a Central Subbasin, and a Southern Subbasin, in the City's vicinity. As shown in Figure III.I.2: Location of Northern Subbasin, the City lies at the southern end of the Northern Subbasin.



SOURCE: Stoddard & Associates

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FIGURE III.I.2: LOCATION OF THE NORTHERN SUBBASIN

In the City's vicinity, groundwater is found in a shallow unconfined aquifer and a deeper confined aquifer, separated by a layer of Corcoran Clay. The depth from the surface to the bottom of the Corcoran Clay layer varies from approximately 100 feet west of the City near I-5 to 350 feet east of the City (Schmidt & Assocs. 2002, at Fig. 1).[6] The confined aquifer lying below that depth is the source of the City's water supply, as discussed further below. The shallow aquifer supplies groundwater to some agricultural water users in the West Patterson project vicinity as well as for numerous domestic wells. A substantial component of the recharge to the shallow aquifer is believed to be percolation from applied irrigation water. The confined aquifer is recharged primarily by lateral inflow and secondarily by leakage from the shallow aquifer through the Corcoran Clay.

In a 1995 study, DWR concluded that the Delta Mendota Basin was overdrafted by 24,000 acre-feet annually, 5 percent of the total annual withdrawals from the Basin (DWR, 1995). That overdraft, however, appears to be located well to the south of the City, west of Dos Palos and Firebaugh. Surface water deliveries to that area have been curtailed due to environmental restrictions implemented to protect water quality and fish and wildlife in the Delta.

More specific and recent studies have confirmed that the groundwater in the City's vicinity is not overdrafted.[7] In 2002, in preparing the UWMP, the City undertook additional study of the groundwater in the West Patterson project vicinity (Schmidt & Assocs. 2002). That study revealed a total quantity of at least 80,000 acre-feet of water in the aquifer beneath the City, 30,000 to 50,000 acre-feet of which were estimated to be of adequate water quality for municipal and industrial uses served by the City. The 80,000 acre-foot total is sustained by an estimated 9,300 acre-feet of annual recharge, not including seepage from irrigation and Salado and Del Puerto Creeks.

BASELINE WATER SUPPLY AND DEMAND

The City of Patterson currently supplies water for municipal and industrial (M&I) uses to customers within the City's sphere of influence (shown in Figure II.4, in Chapter II,

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[6] The Schmidt study is appended to the Assessment, which in turn has been included in this EIR in Appendix E.

[7] The studies are discussed in the UWMP (Stoddard & Assocs. 2002a).

Project Description) including Villa del Lago, a small commercial development. The City serves residential, commercial, industrial, institutional (such as schools and government buildings), landscape, and recreational uses. The City does not supply water for agricultural use.

BASELINE WATER SUPPLY

The City of Patterson currently relies, and historically has relied, solely on groundwater to serve its water demand. The City currently operates five groundwater wells, with nominal capacities ranging from 600 gallons per minute (gpm) in Well 6 to 1,600 gpm in Well 5 and aggregate nominal capacity of 5,200 gpm. The approximate locations of those wells are shown in Figure III.I.1.

As mentioned above, the City's wells tap a deep confined aquifer. The City has carefully selected the aquifer zones tapped by each well to optimize the quality of water delivered. The water quality of each well, defined in terms of concentrations of primary constituents of concern, is shown in Table III.I.1. The table also presents the Maximum Contaminant Levels (MCLs) promulgated by DHS for those constituents of concern. None of the City's wells are known to violate any primary standard, though all of the wells exceed recommended secondary standards for some inorganic chemicals. The principal water quality concerns with the City's groundwater are its high levels of salinity, measured by its concentration of total dissolved solids (TDS) and electroconductivity, and elevated concentrations of nitrates. Sulfates also exceed the recommended secondary standards.

Table III.I.2 presents historical groundwater withdrawals and deliveries to customers. The difference between withdrawals and deliveries, unaccounted-for water, is attributable to waste associated with well start-up, currently unmetered deliveries to City facilities such as parks, system leakage, flushing of water mains, and metering inaccuracies. Water is delivered to customers directly from the City's wells, with disinfection treatment. A 1,000,000-gallon surface-mounted storage tank and a hydropneumatic tank are used to control the wells and maintain system pressure in a suitable range. The distribution system consists primarily of asbestos-cement and steel pipe, and also PVC pipe, ranging from two to twelve inches in diameter (Bookman-Edmonston Engineering 1992).

Most of the West Patterson project area is currently in agricultural use, principally in irrigated row crops. The primary sources of agricultural water are the imported surface

Table III.I.1: Water Quality in Existing Wells, Primary Constituents of Concern

	WELLS					MAXIMUM CONTAMINANT LEVEL (MCL)[1]			
						PRIMARY	SECONDARY		
CONSTITUENTS	2	4	5	6	7		REC.	UPPER	SHORT TERM
Hardness (mg/L)	490	400	430	440	340	N/A			
Calcium (mg/L)	85	65	77	79	60	N/A			
Magnesium (mg/L)	68	59	57	58	47	N/A			
Sodium (mg/L)	150	140	100	140	100	N/A			
HCO3 mg/L	240	250	150	230	91	N/A			
Sulfates (mg/L)	340	290	210	380	260		250	500	600
Chlorides (mg/L)	160	120	210	98	160		250	500	600
Nitrates (mg/L)	30	28	5.5	21.8	6.1	45			
Specific Conductance (µmhos/cm)	1500	1300	1260	1360	1100		900	1600	2200
Total Dissolved Solids (mg/L)	1000	860	770	940	890		500	1000	1500
Arsenic (ug/L)	ND	ND	ND	3	3	50			
Chromium (ug/L)	20	19	15	19	16	50			
Iron (ug/L)	ND	ND	80	ND	40		N/A	300	N/A
Manganese (ug/L)	ND	ND	ND	ND	10		N/A	50	N/A
Gross Alpha Particle Activity (pCi/L)	2.44	2	2.13	2.72	2.84	5[2]			

Notes:
[1] Cal Code Regs Title 22, §§ 64431, 64441, 64449.
[2] Requires additional testing for Uranium and/or Radium. Cal. Code Regs. tit. 22, § 64441(b).
Shaded values exceed secondary recommended limits.
ND = None Detected N/A = No applicable MCL

Source: Stoddard & Assocs. 2002a.

Table III.I.2: City of Patterson Historical Water Use

YEAR	METERED WATER DELIVERIES		WATER PRODUCTION		UNACCOUNTED-FOR WATER
	(mg/yr)	(afa)	(mg/yr)	(afa)	(%)
1980	233	715	284[1]	872[1]	18
1985	240	737	293[1]	899[1]	18
1990	441	1,353	541	1,660	18
1995	536	1,645	643	1,973	17
2000	628	1,927	768	2,357	18

Notes:

[1] Estimated from metered data.

Source: Stoddard & Assocs. 2002a.

supplies from the San Joaquin River and the DMC. Agricultural users in the project area also pump groundwater for use on-site although this is estimated to be a very small quantity.[8] Domestic uses on agricultural properties are similarly supplied. The West Patterson project area is divided between the service areas of the Del Puerto Water District (DPWD) and the West Stanislaus Irrigation District (WSID). The project area presently is estimated to receive between 2,720 and 3,120 acre-feet annually of CVP and San Joaquin River water per year from those water districts. These total estimates are based on unit water demand estimates prepared by the two water districts. WSID estimates water use, defined as water consumed by crops plus water required for adequate soil leaching, to be 2.42 acre-feet annually per acre, while DPWD estimates water use to be 2.78 acre-feet annually per acre (Stoddard & Assocs. 1999). Neither district supplies its customers with groundwater.

BASELINE WATER DEMAND

To provide a full analysis of water supply impacts, this EIR uses two measures of existing, or "baseline," water demand. The first baseline measure, "Year 2000 Existing Demand," is actual recorded water production in 2000: the amount of water demanded plus the amount of unaccounted-for water produced as a byproduct of serving that demand. As indicated in Table III.I.2, this measure is 2,357 acre-feet annually.

[8] Because data on private groundwater wells is not available to the public, precise estimates of groundwater use on properties in the project area are impossible.

The second baseline measure includes Year 2000 Existing Demand, but adds to it demand associated with approved residential development that was not yet drawing water in 2000. Such development – a total of 2,132 units – is not subject to any further discretionary land-use approvals by the City and is currently in varying stages of buildout. It is probable that this residential development will proceed as approved. This second measure of baseline demand, "Year 2000 Plus Approved Development Demand," is estimated to be approximately 3,600 acre-feet annually.

Both measures of baseline demand reflect conservation measures that the City is implementing. Table III.I.3 identifies 10 categories of such "demand management measures" (DMMs) described in the UWMP. The City has not quantified precisely the water savings attributable to implementation of the DMMs, but the UWMP estimated that collectively they may account for as much as a 10 percent savings.

Meeting Baseline Demand

The City's 2002 groundwater study estimated that between 30,000 acre-feet and 50,000 acre-feet of drinking-water-quality groundwater is available to the City in the confined aquifer. If Year 2000 Plus Approved Development Demand were to continue unchanged indefinitely, groundwater meeting Domestic Water Quality Standards would likely be exhausted at some point between 2009 and 2014. The 2009 date corresponds to the estimate of 30,000 acre-feet of adequate quality groundwater, while the 2014 date corresponds to the 50,000 acre-foot estimate. If Year 2000 Existing Demand were to continue unchanged indefinitely, the supply of groundwater meeting Domestic Water Quality Standards would likely be exhausted at some point between 2012 and 2020, again reflecting the 30,000 acre-foot and 50,000 acre-foot estimates respectively. In sum, due to anticipated water quality limitations, the City's untreated groundwater is not believed to be sufficient to supply baseline demand much beyond the early part of the next decade. The City's plan to provide a supply of sufficient quality and quantity is discussed below.

IMPACTS AND MITIGATION

This section quantifies future demand and identifies the City's proposal for supplying water for the West Patterson Projects and other uses planned for through 2020 in the

Table III.I.3: UWMP Demand Management Measures

DMM DESCRIPTION		CITY CONSERVATION PROGRAM
Residential Plumbing Retrofit	1.	Low-flow fixtures required for all new construction and major remodels
	2.	Low-interest loan program for home improvements for qualified homeowners
System Water Audits, Leak Detection, and Repair	3.	New billing software program
	4.	Monthly tracking of production vs. billing
	5.	Reduction of unaccounted-for water
	6.	Leak Detection and Repair Protocol
	7.	Water Pipeline Replacement Programs (CIP and HUD grant)
Metering with Commodity Rates for all New Connections and Retrofit of Existing Connections	8.	All residential, commercial/industrial, and City facilities connections metered
	9.	All new parks are metered; all existing parks to be metered by end of FY 2002/03
	10.	Meter Replacement Program (as part of Leak Detection Protocol and as part of Meter-Read Automation Project)
Large Landscape Conservation Programs and Incentives	11.	Water-efficient landscape ordinance
	12.	Use of automated irrigation systems
Public Information Programs	13.	Quarterly City newsletter
	14.	"Welcome" package for new residents
	15.	Water-efficient landscape education at model homes
School Education Programs	16.	Will begin to address with part-time Water Conservation Coordinator in FY 2002/03
Conservation Programs for Commercial, Industrial and Institutional Accounts	17.	Require low-flow fixtures and water efficient landscaping for all new development
	18.	General Plan policies promoting development of industries that minimize the need for development of new water sources and facilities and minimize sewer treatment needs
Conservation Pricing	19.	Two-tiered water rate structure based on actual metered water use
	20.	Sewage use charges based on water consumption
Water Conservation Coordinator	21.	Half-time Water Conservation Coordinator budgeted for FY 2002/03

(Table cont. on next page)

(Table III.I.3 Continued)

DMM DESCRIPTION	CITY CONSERVATION PROGRAM	
Water Waste Prohibitions	22.	Outdoor water use restrictions
	23.	Refrigeration/air-conditioning water use restrictions
	24.	Emergency conservation measures for drought conditions

Source: Stoddard & Assocs. 2002a.

City's UWMP, identifies and analyzes the environmental impacts of the proposed water supply, and identifies potential mitigation measures for those impacts.

FUTURE WATER DEMAND AND PROPOSED SUPPLY

This section discusses the water demand projected to be associated with the West Patterson projects, in combination with other water demand anticipated through 2020 in the City's UWMP. It also discusses the water supply proposed by the City to serve those demands – treated and untreated groundwater. A variant of the proposed water supply, using surface water rather than treated groundwater, is evaluated separately below.

FUTURE WATER DEMAND

Estimated Demand for the West Patterson Projects

At full buildout, the West Patterson projects would account for an annual water demand of approximately 3,018 acre-feet annually: 696 acre-feet annually for 987 residential units and 21.4 acres of commercial development in the proposed Patterson Gardens development and 2,322 acre-feet annually for business park and light industrial uses on 819 acres in the Business Park Plan area (Stoddard & Assocs. 2002b). Of that 2,322 acre-feet annually, the proposed 224-acre Keystone Pacific Business Park is anticipated to use approximately 627 acre-feet annually (Stoddard & Assocs. 2001b, at Table III-2). At buildout, water demand for the West Patterson projects and Year 2000 Existing Demand would total 5,375 acre-feet annually. Water demand for the West Patterson projects and Year 2000 Plus Approved Development Demand would total 6,675 acre-feet annually.

The unit water demand estimated for the West Patterson projects, 2.77 acre-feet annually, per acre is comparable to 2.42 and 2.78 acre-feet annually per acre unit water use estimates described above for agricultural uses in the project area. The water currently used in the project area is almost entirely from surface water sources, while, as discussed below, the West Patterson projects would be supplied either entirely by groundwater or by a combination of groundwater and surface water. As described above, existing use in the area is almost wholly agricultural, while uses associated with the West Patterson projects would be predominately industrial and residential. Accordingly, while a portion of the water currently supplied to the area returns to the shallow aquifer through the percolation of irrigation water, very little water is anticipated to reach groundwater once the West Patterson projects are built out and most unconsumed and waste water is diverted to the City's storm drainage and sanitary sewer systems.[9]

Estimated Cumulative Demand

In 2020,[10] total water demand in the City's sphere of influence including the West Patterson projects (cumulative demand) is anticipated to be approximately 7,589 acre-feet annually (Stoddard & Assocs. 2002a), 3,989 acre-feet annually beyond the Year 2000 Plus Approved Development Demand baseline and 5,232 acre-feet annually beyond the Year 2000 Existing Demand baseline. Table III.I.4 shows the estimated pace of population growth and the accompanying increase in water demand to 2020.

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[9] The reduction in recharge to the shallow aquifer from curtailed irrigation return flows will have a negligible effect on the volume of groundwater available to the City. The City withdraws from the deep confined aquifer, which is largely isolated from the shallow aquifer by a layer of semipermeable Corcoran Clay (Schmidt & Assocs. 2002).

[10] It is anticipated that, while buildout of the proposed Patterson Gardens development and perhaps other residential areas in the City's sphere of influence would occur by 2020, the West Patterson Business Park Plan area is anticipated to take significantly longer to build out. The conservative 2020 buildout date was used to ensure that sufficient water supplies are available before, rather than after, they are needed (Stoddard & Assocs. 2002a).

Table III.I.4: Total Water Demand Projections

YEAR	POPULATION	WATER DEMAND	
		(mg/yr)	(afa)
2000	12,100	768	2,357
2005	15,600	1,102	3,381
2010	20,800	1,596	4,898
2015	25,000	1,996	6,126
2020	30,000	2,472	7,589

Source: Stoddard & Assocs. 2002a.

Table III.I.5 presents the anticipated breakdown of residential, commercial, and industrial water uses. As noted above, the City does not supply any water for agricultural uses.

Table III.I.5: Water Demand Projections by Land Use Category

YEAR	WATER DEMAND (afa)			
	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	TOTAL
2005	1,895	187	1,299	3,381
2010	2,745	271	1,881	4,898
2015	3,434	339	2,353	6,126
2020	4,254	420	2,915	7,589

Source: Stoddard & Assocs. 2002a.

Table III.I.6 compares the estimates of project demand and cumulative demand, both at buildout, with the two baseline demand measures.

Table III.I.6: Comparison of 2020 Water Demand Projections

	WATER DEMAND (afa)		
Baseline Measure	**Baseline Demand**	**With West Patterson projects**	**Cumulative Demand**
Year 2000 Demand baseline	2,357	5,375 (3,018)[1]	7,589 (5,232)[1]
Year 2000 Plus Approved Development Demand baseline	3,600	6,675 (3,018)[1]	7,589 (3,989)[1]

Notes:
[1] Increase above relevant baseline.

Source: Shute Mihaly & Weinberger; Stoddard & Assocs. 2002a

PROPOSED WATER SUPPLY

Initial phases of the West Patterson projects, along with the City's existing demand, would be served from untreated groundwater pumped from the City's existing wells. Three additional wells would also be needed to serve the West Patterson projects, in addition to existing and other projected demand, by 2012. Figure III.I.1, above, shows the locations of proposed and existing wells.[11]

The water demand estimates for the West Patterson projects provided above assume that potable groundwater supplied by the City would be used to irrigate landscaping in the proposed Keystone Pacific Business Park. However, the developer, Keystone Corporation, has committed to using on-site nonpotable groundwater for that purpose.

Because the relative proportions of the project area occupied by landscaping and other uses have not yet been quantified, the associated water savings cannot now be quantified. It is expected to reduce demand for the City's supplies below the levels shown above, although not substantially. Those savings would be expanded, however, if other landowners in the West Patterson Business Park Master Plan area adopted similar measures for their properties. Use of non-potable groundwater for landscaping is identified as a demand management measure in the City's UWMP (Stoddard & Assocs. 2002a).

Assuming the West Patterson projects were not approved and no further growth were approved within the City's present sphere of influence, the City would be expected to deplete the available supply of groundwater meeting Domestic Water Quality Standards beneath the City at some point between 2009 and 2014. If no growth were to occur at all beyond 2000, those dates would be 2011 and 2020, respectively. Approval of the West Patterson projects, in combination with other planned development in the City's sphere of influence, would accelerate the depletion of good quality groundwater, from these earlier and later time horizons to 2008 and 2012, respectively. Although the City would need to look beyond untreated groundwater to meet its projected water demand even without the West Patterson projects, the projects would cause the problem to arise earlier.

To serve cumulative demand, the City would continue to rely on its groundwater, with installation of treatment systems before groundwater quality deteriorates to a level that

[11] As of this writing, Well 8 was being installed to serve already approved development.

will no longer support the City's uses, likely between 2008 and 2012. Existing wells (estimated to be seven to nine in number by the time treatment would become necessary) would be maintained and two new wells installed thereafter by 2020, which would also tap the deep, confined aquifer. Wells would be located to optimize the quality of groundwater pumped and to minimize potential adverse effects of pumping (discussed below).

Before water quality became unacceptable, existing wells would be retrofitted with wellhead desalination systems.[12] New wells coming on line would similarly be equipped with the treatment systems. Using reverse osmosis, the systems would remove sufficient dissolved solids and other constituents of concern to allow the resulting water to satisfy DHS primary and mandatory secondary drinking water standards. Wellhead treatment would avoid the need to construct and operate a centralized treatment plant, and treated water could be conveyed directly to the end customer via the City's conveyance infrastructure planned for in the Water Master Plan.

Operation of the desalination system would create substantial volumes of concentrated brine as a byproduct, estimated to be as great as 16 percent of the total volume of water pumped. Accordingly, approximately 9,034 acre-feet of groundwater would need to be pumped annually to meet the City's projected 2020 water demand of 7,589 acre-feet annually, approximately 1,445 acre-feet of that 9,034 acre-feet being lost as unusable brine. Disposal of the brine would involve design and construction of a conveyance system to collect the brine from each wellhead treatment system and deliver it to a central source for disposal, either by deep well injection or evaporation. Disposal options are discussed more fully below.

The City's UWMP and the Water Supply Assessment prepared for the West Patterson projects (attached as Appendix E) identified rough estimates of the costs associated with groundwater treatment. Although the costs of treatment would be high, the UWMP and Assessment concluded that groundwater treatment remains a feasible source of supply. More precise cost estimates must await more detailed engineering evaluation and identification of the particular treatment technology and brine disposal method to be used.

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[12] A variant of the proposed project that would supply the West Patterson projects with surface water used conjunctively with untreated groundwater is discussed below.

Reliability

The basin from which the City pumps groundwater has not been adjudicated, and therefore no decree is available to quantify and document the City's groundwater rights. As described below, based on the type of use made by the City and the results of the City's groundwater investigation, however, there appears to be sufficient surplus water in the confined aquifer to support the City's proposed appropriative use to serve the West Patterson projects in addition to existing and planned water uses. Groundwater is accordingly believed to be a reliable source of supply.

The City's rights to water pumped to serve the West Patterson projects would be appropriative rather than overlying, because although the City literally overlies the aquifer, it delivers water for use off of the tract from which it is pumped. An appropriative user may legally put to beneficial use any available surplus groundwater. In other words, such a user may appropriate water if doing so would not cause the aquifer to become overdrafted. If overdraft occurs, overlying users and senior appropriative users may seek a judicial decree ordering more junior appropriators to curtail or cease withdrawals.

Overdraft is unlikely here. In the past, the City's groundwater supply has proved reliable even in severe drought years when surface-water users turn to groundwater to supplement declining surface-water deliveries. Previous studies of groundwater in the area, described in the City's UWMP, have also indicated that increased withdrawals from the aquifer can increase the aquifer's sustainable yield by reducing the volume of subsurface outflow (Stoddard & Assocs. 2002a). The City's recent groundwater investigation indicates that the pumping required to serve the West Patterson projects in addition to existing and planned uses would not cause the aquifer to become overdrafted. There is an estimated 80,000 acre-feet of water in the deep and shallow aquifers, sustained by 9,300 acre-feet annually of recharge, not including deep percolation of water and seepage from unlined canals and Salado and Del Puerto Creeks. The City's projected maximum annual withdrawals of 9,034 acre-feet annually are within that annual increment. Because overdraft is unlikely, groundwater is considered to be a legally reliable source of supply.

Because desalinated groundwater is not a widely used source of supply, data on performance and reliability of the treatment technology are not yet available. Having treatment occur at each wellhead rather than centrally, however, would allow the system

to better tolerate failure. The groundwater treatment and supply system would be designed to supply the City's entire maximum-day water demand with its highest capacity groundwater pump out of service. Accordingly, repairs could be made on any wellhead treatment system without disrupting water service.

APPROACH

METHODOLOGY AND ASSUMPTIONS

For purposes of assessing water supply needs, the City's UWMP assumes that the pace of commercial and industrial development within the City, including buildout of the West Patterson Business Park Master Development Plan, will mirror the rate of the City's growth in population (Stoddard & Assocs. 2002a). The EIR analysis follows the UWMP's approach.

The principal impact of the West Patterson projects when considered alone is that the City would need to begin treating its groundwater sooner (at some point between 2008 and 2012) than if the projects did not go forward. At some point, the City will need to begin treating its groundwater or switch to a new source altogether, whether or not the West Patterson projects are approved. Accordingly, many of the impacts discussed below could occur even if the West Patterson projects were not approved.

This EIR evaluates the environmental impacts of the City' proposed future water supply at a programmatic level. Further project-level review for groundwater treatment will be conducted as required by CEQA.

SIGNIFICANCE CRITERIA

Supplying the West Patterson projects with groundwater, both untreated and treated, would have a significant environmental impact if:

- Supplying water would require disposal of significant amounts of waste as a byproduct of treating water to attain water quality standards.
- Supplying water would use more energy than could be supplied by electric utilities serving the project area.

- Pumping groundwater would cause the local groundwater to become generally overdrafted or cause the water table to drop in the area of the City's pumping (creating a "cone of depression") so as to (1) interfere with other established or planned groundwater uses by reducing groundwater quality or causing wells to dry up; or (2) cause subsidence of overlying land and thereby cause damage to public or private property.

- Supplying water would require extension of water supply conveyance infrastructure into previously unserved areas, require the construction of new treatment infrastructure, or require significant alterations to existing infrastructure, which would result in potentially significant environmental impacts.

- Installing new wells or pumping groundwater would introduce new contaminants into the aquifer.

PROJECT IMPACTS AND MITIGATION

This section identifies and evaluates the potential significance of all foreseeable environmental impacts associated with supplying the West Patterson projects with groundwater, both treated and untreated. (A variant of the proposed project, that of supplying the West Patterson projects with surface water used conjunctively with untreated groundwater, is also discussed and analyzed, under a separate heading, below.)

Impact I.1. Treatment of groundwater would require the disposal of large quantities of concentrated brine created as a byproduct of groundwater treatment. (Significant and Unavoidable)

Treatment of groundwater would require installation of reverse osmosis desalination systems at each wellhead. As a byproduct of the desalination process, each wellhead treatment system would produce a significant amount of concentrated brine, estimated to be as much as 16 percent of the total volume of water pumped, or 1,445 acre-feet annually of brine given projected demand of 7,589 acre-feet annually in 2020. Assuming 16 percent of the untreated groundwater is lost as brine and based on the unweighted average concentration of total dissolved solids (TDS) in groundwater pumped by the City

in 2000, the maximum TDS concentration of the resulting brine would be 5,600 mg/L.[13] That concentration would increase with the TDS concentrations in the City's well water.

That brine would also require disposal. The City has analyzed three disposal methods: conveyance to the City's wastewater treatment plant as part of the City's normal wastewater stream, evaporation in lined ponds, or deep well injection. Disposal via the wastewater treatment plant is considered to be infeasible because of the significant contribution of salts that the brine would make to the plant's effluent and the accompanying risk that the introduction of brine would cause the plant to adversely affect shallow groundwater quality and violate the plant's waste discharge requirements (see Section III.J, Wastewater).

Both evaporation and injection are potentially feasible, though further engineering studies and environmental review would be necessary to determine which is preferable. Under either injection or evaporation, the brine would need to be piped from each wellhead source to a central location for disposal. Laying of that pipeline would entail physical impacts that will be evaluated in project-specific environmental review after the disposal system has been designed, though it is anticipated that the pipieline would be installed in existing rights-of-way.

Evaporation would require the City to purchase new property and construct evaporation ponds with impervious linings to prevent percolation of the brine into the shallow aquifer. After evaporation, salts would need to be collected and transported to an appropriate solid-waste-disposal facility. If evaporated, the 1,445 acre-feet annually of brine would produce approximately 11,000 tons of salts per year that would require proper disposal. Evaporation would require conversion of large areas of land, most likely agricultural land, for evaporation ponds and disposal of large quantities of salt at a solid waste landfill.[14] That disposal would also entail additional traffic and air quality impacts associated with delivering salt to a landfill. Approximately two truck trips per day would

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[13] This estimate is based on a perfect membrane, i.e., one that removes all constituents. In fact, the actual concentration would be lower and would depend on the treatment technology used.

[14] Recycling of evaporated salt for use for culinary purposes is not feasible, given that the brine produced by the treatment systems would include a variety of salts in addition to sodium chloride. Recycling evaporated salt for industrial applications may be feasible but requires further study.

be needed to transport the volume of salts produced. The trucks would carry the salts either to the nearby Fink Road Landfill, if disposal of this type of waste would be accepted there. Under these circumstances, traffic and air quality impacts would not be significantly different from those discussed for the West Patterson projects in Sections III.F and III.G. If the waste salts were considered hazardous and could not be disposed of at the Fink Road Landfill, they would need to be trucked to Kettleman City, the location of the nearest landfill that accepts hazardous waste. While the additional vehicle miles traveled (approximately 260 miles per day) would incrementally increase air emissions in the San Joaquin Air Pollution Control District, the increase would be marginal and would not substantially change the already-significant impacts caused by the West Patterson projects.

The injection method would entail injecting the brine into deep groundwater, well below the aquifer zones containing usable groundwater. A permit from the Regional Water Quality Control Board (RWQCB), and concomitant CEQA review, would be required to authorize the injection. To issue a permit, RWQCB would need to conclude that the injection would not adversely affect surface water or groundwater of usable quality. Because injection disposes of the brine in a single step, it appears preferable to evaporation.

The surface-water-supply variant (discussed below), on the other hand, would require disposal of little waste. Suspended solids would be removed through coagulation and flocculation, sedimentation, and filtration, and such solids would require disposal, but would be produced at a fraction of the volume of brine produced by reverse osmosis. The small volume of resulting byproducts likely could be disposed of on land surrounding the treatment plant.

Until a final disposal method has been decided upon and its foreseeable environmental impacts fully analyzed, this impact is presumed to be significant and unavoidable.

Mitigation Measure I.1

If the City elects to use evaporation and disposal of solid salts as a method of brine disposal, the City shall require new development to pay its pro-rata share of the cost of an agricultural conservation easement, in the manner discussed in Mitigation Measure C.1, for the acreage converted for use as evaporation ponds.

This impact is considered to be significant and unavoidable after mitigation.

Impact I.2. Groundwater treatment would consume substantial energy. (Less than Significant)

The City is located in the proposed Westside Purchase Zone in which the Turlock Irrigation District (TID) has proposed to purchase Pacific Gas & Electric's power distribution facilities. TID has estimated that current annual electricity usage in the Westside Purchase Zone is 110,000 megawatts and has projected load growth of approximately 3 percent per year for the area (Robert Hondeville, letter, 2002).

Reverse osmosis is energy intensive because it requires pumping water against intense osmotic pressure through a semi-permeable membrane. Although energy use would depend on the specific treatment technology used, the treatment process is projected to use approximately 1.1 megawatt hours per acre-foot of water treated, for a total of 9,937 megawatt-hours annually in 2020. Compared to *present* annual usage of 110,000 megawatts, this represents more than three times the 3 percent annual load growth projected for the area. Nevertheless, this power consumption would increase gradually over time as the West Patterson projects build out, and by the time the 9,937 megawatt-hour level is reached, total usage in the area can be expected to be considerably greater given 3 percent annual growth in the interim. Accordingly, the energy demand associated with treating groundwater is not anticipated to interfere with or exceed the capacity of local power generation and transmission facilities.

The energy demand associated with groundwater treatment would be much greater than that associated with treatment of surface water. Surface water treatment involves less energy intensive processes such as coagulation and flocculation, sedimentation, filtration, and introduction of disinfectant chemicals such as sodium hypochlorite to eliminate pathogens.

This impact is considered to be less than significant.

Mitigation Measure. No mitigation necessary.

Impact I.3. Pumping groundwater to serve the West Patterson projects and other existing and planned demand could create a severe "cone of depression" beneath the City's well field. (Significant and Unavoidable)

Heavy groundwater pumping in a concentrated area from a confined aquifer could cause a significant "cone of depression" to form beneath and surrounding the well field. Close to the active wells, the groundwater level is drawn down. In a confined aquifer, the

degree of drawdown declines rapidly with increasing distance from the wells. The cone of depression also draws water into the well field from surrounding areas. Depending on its extent, the cone of depression formed by heavy, concentrated pumping could adversely affect local groundwater users.

Water quality effects. A deep cone of depression could draw poor-quality water from surrounding areas into the aquifer zones tapped by nearby groundwater users. The City's recent groundwater investigation has revealed that the good quality water beneath the City is bordered on the west and east by large areas of lower quality water, and on the north and south by water of uncertain quality (Schmidt & Assocs. 2002). Heavy pumping could create a pressure gradient drawing water from these areas (and to a lesser extent from the more saline shallow, unconfined aquifer) toward the City's well field and immediately surrounding areas, potentially interfering with other groundwater uses in the City's vicinity.

The likelihood of interfering with other groundwater uses is reduced substantially by several factors. Although public records of well locations and water uses are unavailable, informal research has revealed few, if any, surrounding groundwater users near the City's well field who are drawing water from the deep, confined aquifer used by the City. Rather, local agricultural and domestic groundwater users rely on the unconfined aquifer, which reduces their well installation and operation costs. The City's pumping is not anticipated to have a measurable impact on the unconfined aquifer. Moreover, the quality of water in the unconfined aquifer is already impaired: the shallow aquifer is recharged principally by percolation of irrigation water and has high levels of salinity. Accordingly, any increase in salinity in the confined aquifer caused by the City's pumping is likely to be small relative to existing levels already tolerated by agricultural users, and the risk of affecting the few nearby users is low.

On the other hand, if an overlying landowner were to initiate a new, salt-sensitive use of water from the confined aquifer near the City's well field, the City's pumping could potentially interfere with it by drawing more saline water into the user's well-field.

Localized depletion of groundwater. Second, the cone of depression draws down the local water table, reducing water levels in nearby wells pumping from the confined aquifer, and thus reducing their capacities and possibly drying up wells with relatively shallow well settings. The City's groundwater investigation estimated the drawdown that

would occur at two levels of pumping, 4,500 acre-feet annually (that estimated to be necessary in approximately 2010) and 8,000 acre-feet annually (slightly less than that estimated to be necessary in 2020[15]). Table III.I.7 shows the estimates of drawdown.

Table III.I.7: Estimates of Aquifer Drawdown

Distance from Well Field	4,800 afa of Withdrawals (ca. 2010)	8,000 afa of Withdrawals (ca. 2020)
Centroid	150 ft	250 ft
1 mile	35 ft	60 ft
2 miles	25 ft	45 ft

Source: Schmidt & Assocs. 2002, at 15-16.

Accordingly, the likelihood that the cone of depression would interfere with other users decreases with (1) increasing distance from the City's wells and (2) increasing depth settings of pumps in those other users' wells.

Land Subsidence. Third, a severe cone of depression could cause land subsidence on the surface above the cone. As groundwater is drawn down, the clays in the soil matrix can become compacted, causing the land surface above to subside. The City's groundwater study noted that subsidence in the area of the City's wells is possible (Schmidt & Assocs. 2002). Maximum subsidence in the well field is estimated to be between one-half foot and one foot and less than one-half foot beyond one-half mile from the well field.

Most obviously, subsidence, if sufficiently severe, could cause property damage to structures and rigid surfaces on the overlying land. Because most of the wells are located on agricultural land, however, the risk of damage to structures is relatively low. Subsidence could also damage the wells themselves, by causing well casings to collapse.

Summary and Conclusion. The longer and more intensively the City relies on groundwater, the greater the risk that these impacts could manifest and the greater their

[15] Levels of drawdown in 2020 would be somewhat more severe than the table indicates, assuming 16% of water pumped is lost as brine and thus total withdrawals of 9,034 acre-feet annually are required. That higher estimate was not available at the time the City's groundwater study was completed.

potential severity. If groundwater pumping to support buildout of the West Patterson projects were to create a severe cone of depression, this would be a significant impact.

Mitigation Measure I.3.a.

As recommended in its groundwater study, the City shall sample groundwater quality semiannually to assess water quality and shall conduct additional studies to better understand the direction and rate of groundwater flow in the confined aquifer. These investigations will allow the City to optimize the arrangement of new water supply wells to maximize water quality and minimize the severity of the resulting cone of depression and associated impacts. To the extent feasible, new wells shall be located at greater spacings to reduce the cone of depression and maximize their distance from nearby users. This would reduce the risk and/or severity of the potential impacts discussed above.

Mitigation Measure I.3.b.

If, in the unlikely event that an existing user of the confined aquifer finds its well affected by the City's pumping, the City shall compensate that user for the cost of deepening the pump setting and the increased cost of operating the well to draw water from greater depths. New development in the City's sphere of influence shall be required to pay its fair share of such costs.

Mitigation Measure I.3.c.

The City shall implement a subsidence monitoring program as recommended in the City's groundwater study. Subsidence shall be monitored annually at each well and new wells shall be designed to prevent damage to the wells from subsidence as described in the groundwater study.

Because of the variety of risks associated with formation of a cone of depression beneath the City's pumping, this impact is considered to be significant and unavoidable after mitigation.

Impact I.4. Supplying water to the West Patterson projects would require extension of water supply conveyance infrastructure into previously unserved areas. (Less than Significant)

The City does not currently supply water to the project area; land in the project area is currently in agricultural use and is supplied with water by local water agencies or from on-site groundwater wells. Because the City has determined that groundwater quality in the project area fails to meet applicable water quality standards (Stoddard & Assocs. 2001b), the City would supply the West Patterson projects with groundwater pumped from wells east of the City limits.

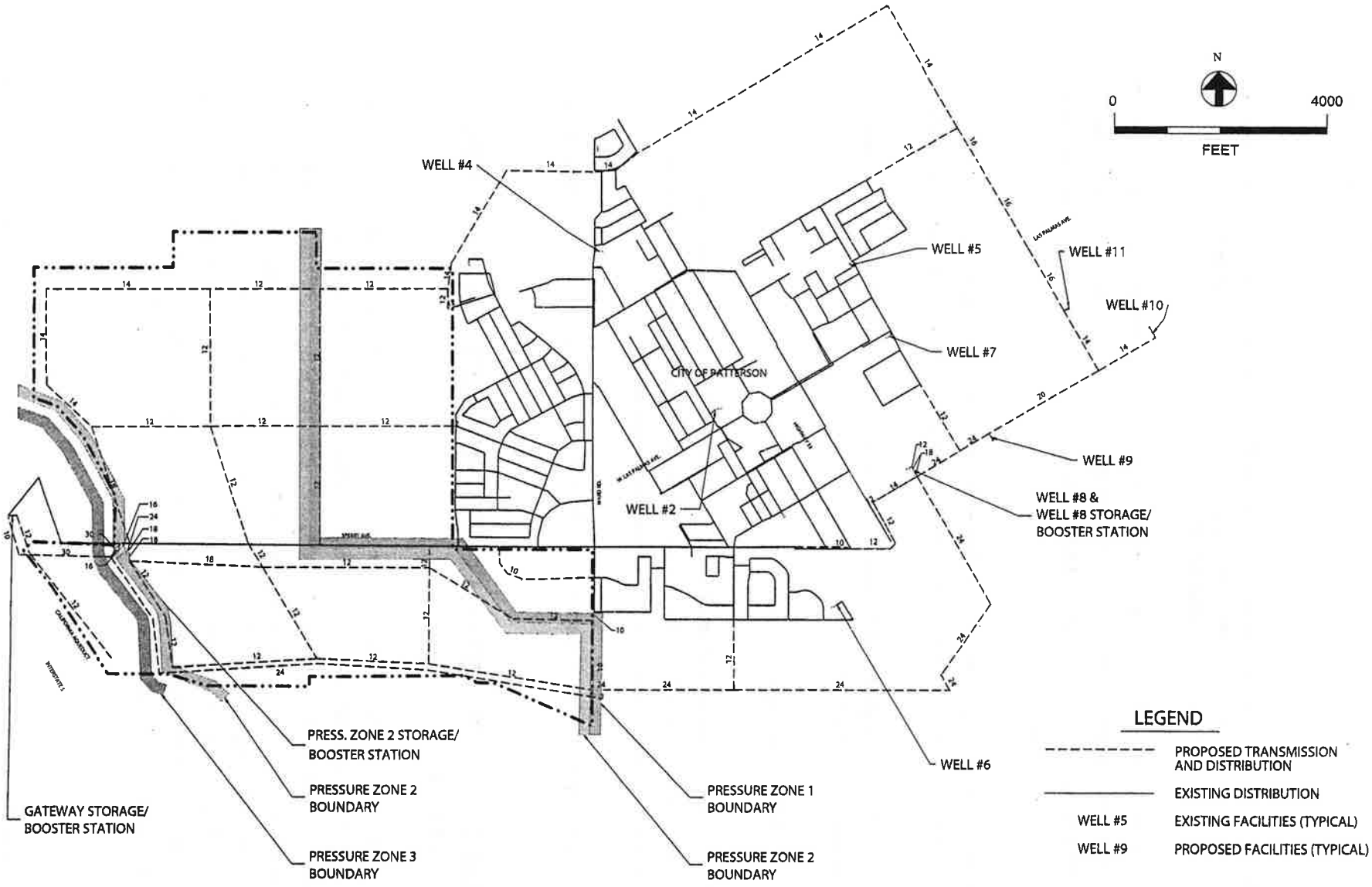
The City's Water Master Plan identifies locations and design criteria for conveyance infrastructure to transport water from the City's groundwater wells to customers in the project area (Stoddard & Assocs. 2001b). Figure III.I.3: Water Supply Distribution Infrastructure, depicts existing and proposed conveyance facilities necessary to serve the West Patterson projects.

The primary impacts associated with the extension of water supply infrastructure to the project area would be the physical impacts of laying pipeline. As shown in Figure III.I.3, water supply pipelines proposed in the Water Master Plan would be laid in existing rights of way or areas that would be disturbed for construction of other aspects of the West Patterson projects. The potential environmental effects related to that construction are addressed in other applicable sections of this EIR (e.g., Section III.D, Biological Resources; III.G, Noise; and III.F, Air Quality). It is anticipated that the incremental physical impacts – those impacts above and beyond the impacts of the other earth-disturbing activities in the area – associated with the laying of pipeline as contemplated by the Water Master Plan would be less than significant.

The conveyance infrastructure described in the Water Master Plan was designed to be consistent with the City's existing water distribution infrastructure. Accordingly, implementation of the Water Master Plan would complement, rather than adversely impact, the City's existing water supply system.

The extension of water supply infrastructure is considered to have a less-than-significant impact.

Mitigation Measure. No mitigation necessary.



SOURCE: Stoddard & Associates

TURNSTONE CONSULTING

PATTERSON

FIGURE III.I.3: WATER SUPPLY DISTRIBUTION INFRASTRUCTURE

Impact I.5. Operation of existing wells and construction of new wells could lead to the introduction of new contaminants into the aquifer. (Potentially Significant)

To implement the proposed groundwater treatment system, the City would need to install six new groundwater wells to serve the West Patterson projects and existing and other water demand planned for in the UWMP. Those wells would be equipped with wellhead desalination treatment systems.

Operation of existing wells and installation of new wells could cause incidental contamination of the aquifer by introducing pollutants from the surface into the aquifer.

Those pollutants might be on the pump equipment itself or allowed to migrate through an improperly installed well.

Mitigation Measure I.5.

To avoid contaminating the aquifer, the City shall comply with all aspects of the County's water well ordinance in Chapter 9.36 of the Stanislaus County Code in installing, repairing, removing, and abandoning water wells.

This mitigation measure is expected to reduce the impact to a less-than-significant level.

IMPACTS AND MITIGATION: SURFACE-WATER SUPPLY VARIANT

This section discusses a variant on the proposed water supply: conjunctive use of treated surface water with untreated groundwater. Although the City is proposing to supply the West Patterson projects with untreated groundwater in the near term, followed by treated groundwater if groundwater quality declines to an unacceptable level, the City has also been investigating the possibility of developing a surface-water supply, consistent with Policy IV.A.1 of the City's 1992 General Plan. This variant analyzes the environmental impacts of an alternative surface-water supply, in the event that the City elects to obtain such a supply in lieu of treating groundwater.

SURFACE-WATER SUPPLY VARIANT: POTENTIAL SOURCES, CONSTRAINTS AND OTHER CONSIDERATIONS

POTENTIAL SOURCES

The City would obtain surface water entitlements sufficient to meet the City's projected cumulative water demand. As discussed further below, and as discussed in the UWMP, the City would need to obtain entitlements to a surplus of water, approximately 13,000 acre-feet annually in total, to ensure that average *deliveries* would meet the City's projected cumulative demand of 7,589 acre-feet annually.

Several water agencies in the Patterson area already import water from outside the region, via the Aqueduct and Delta Mendota Canal (DMC), and make withdrawals from the San Joaquin River. If transfers could be negotiated with the appropriate water agencies, these resources, used in conjunction with groundwater, would be sufficient to meet the City's planned demand and avoid the need to import new water from outside the region. Specifically, the Patterson Irrigation District (PID) and Del Puerto Water District's (DPWD) Central Valley Project (CVP) contracts and the Oak Flat Water District's (OFWD) State Water Project (SWP) contract are suitable for the City's uses and would provide a sufficient quantity of water. Other water purveyors in the Central Valley also have water supplies available for sale, which could be "wheeled" from their current locations through water conveyance infrastructure such as the DMC and Aqueduct to reach the City. The region's existing surface water supply is discussed at greater length in the City's Water Supply Options document (Stoddard & Assocs. 2000b).

The City might obtain such surface water entitlements in any of several ways. It could seek an assignment of the water purveyor's contract with the CVP or SWP. Under that circumstance, the City would become a direct water contractor with either the federal Bureau of Reclamation (for CVP water) or state Department of Water Resources (for SWP water). Alternatively, the City could enter a long term water-supply contract with the purveyor, under which the purveyor would remain the party to the CVP or SWP contract and would agree to supply water to meet the City's needs. A third possibility would involve the City's purchasing an option on a future assignment, either alone or in conjunction with an interim water-supply contract. The City is currently evaluating the relative costs and benefits of these competing approaches.

The City has been in contact with several water purveyors who have surplus water available for sale and who have expressed interest in working with the City. Each of the following potential sources of supply is contractually available to serve municipal and industrial (M&I) uses and, where applicable, contracts may be assigned with permission of the Bureau of Reclamation:

1) ***Patterson Irrigation District.*** The City is engaged in ongoing negotiations with the nearby PID to purchase the City's water requirements from PID's CVP entitlement to 16,500 acre-feet annually. In recent years, PID has been transferring much of its CVP entitlement to agricultural water contractors south of the Delta on a year-to-year basis. PID has expressed interest in contracting with the City for either the full or partial assignment of PID's CVP contract or a long term water-supply contract for some or all of that quantity.

2) ***Quinto Farms.*** Quinto Farms, located on the border of Merced and Stanislaus Counties west of I-5, is attempting to sell their CVP water supply. They hold entitlements to 4,136 acre-feet annually under a DPWD water service contract and 2,500 acre-feet under a Centinella Water District (CWD) water service contract. The DPWD water would probably require a transfer pursuant to the Central Vally Project Improvement Act rather than a contract assignment, given DPWD's policy regarding water transfers.

3) ***Broadview Water District.*** The Broadview Water District (BWD), located in western Fresno County, holds a CVP contract for 27,000 acre-feet annually for use on 9,500 acres of land. BWD is interested in selling the water together with the land, and the majority of the land has been listed with a single broker for the purpose of the sale. Negotiations are currently underway between BWD and another agricultural water purveyor, but that water user does not require the full 27,000 acre-feet annually, and some partnership between the City of Patterson and the agricultural water purveyor could be mutually beneficial. If the City were to purchase the water and land, the water could then be separated from the land and transferred to the City, with the land sold or leased for dry farming or for land retirement sponsored by the Bureau of Reclamation (see below).

4) ***Layne Water Development & Storage.*** Layne Water Development & Storage, a water broker, has a 25-year contract for use of the Semitropic Groundwater Bank located in Kern County. The new storage unit has a capacity of 650,000 acre-feet, recharge capability of 50,000 acre-feet annually and a recovery potential of 200,000 acre-feet annually. The company offers a broad range of services to meet water supply needs, including identification, permitting and procurement of supply; providing backup supplies for drought reliability; and financing, designing, installing and operating water supply and treatment systems. The company can either retain ownership and sell the water on a merchant basis,

construct facilities for ownership and operation by the City, or provide operation and maintenance of City-owned facilities.

5) ***Regional Surface Water Option.*** Local government agencies and water purveyors in Stanislaus County are beginning to discuss the possibility of developing region-wide municipal surface-water supplies. Such an approach could involve construction of one or more centralized water treatment plants connected to a surface-water source, with distribution pipelines connecting the plants to local jurisdictions throughout the region. Use of one or more regional plants would likely provide a substantial economy of scale over many dispersed plants and might also reduce the physical environmental impacts associated with construction of a separate plant for each jurisdiction. Thus far, discussions have addressed the regional supply issue only at a conceptual level, and no plans or specifications have been prepared. Such an approach would involve considerable planning and require additional comprehensive environmental review. At this time, any detailed discussion of the possible characteristics of such an approach, such as the location of a treatment plant or pipelines or sources of supply, would be speculative.

Surface water rights, including those held by the Bureau of Reclamation for the CVP, may only be used within a given "place of use" defined by the SWRCB. As a result, some surface water transfers require application to the SWRCB for a change in the water's place of use. A transfer of water to the City from the sources described above would not require such an application because the City lies within the place of use for the CVP (SWRCB 1999).

Because surface water entitlements are not currently "in hand," it remains possible that none of the potential supplies described above would be available to serve the project. In that event, the City would use treated groundwater as previously described. Nevertheless, all of the water suppliers mentioned here are believed to be willing sellers and the quantity available for sale is more than sufficient to meet the City's needs. They therefore are considered to be feasible water supplies for the City's needs, and their environmental impacts are discussed below.

WATER QUALITY CONSTRAINTS

The San Joaquin River is not considered to be a feasible source of water for M&I purposes, because of its high levels of salinity (Stoddard & Assocs. 2002a). Aqueduct and DMC water, on the other hand, are potentially viable. Salinity in both sources is considerably below the levels occurring in the City's existing groundwater wells and

within the DHS Domestic Water Quality Standards shown above in Table III.I.1 (Stoddard & Assocs. 2001a).

Implementation of the surface-water supply variant would require construction of a water treatment plant. Although water in the DMC and Aqueduct easily meets Domestic Water Quality Standards for salinity, the water would need to be filtered to remove suspended solids and treated to eliminate pathogens. Because the water would likely be delivered to the City through the DMC or Aqueduct, the necessary treatment plant would be built near those facilities, both of which lie to the west of the City. The plant's capacity would be designed to be scalable to eventually meet estimated maximum-day water demand associated with the projected demand of 7,589 acre-feet annually in 2020.

Water quality in the Aqueduct is generally superior to that in the DMC: because the Aqueduct's headworks in the Delta are closer to the Sacramento River than to the San Joaquin River, the Aqueduct's water quality is more closely associated with that of the cleaner Sacramento (Stoddard & Assocs. 2001a). Accordingly, SWP water is preferable to CVP water from a water quality perspective. If the City and a CVP contractor, such as PID, can reach an agreement for a transfer of CVP water to the City, the City might seek to negotiate an exchange of CVP and SWP water.

RELIABILITY CONSTRAINTS

Sources of surface water are subject to greater seasonal and annual variability than is groundwater. Surface water is most plentiful in the winter and spring months when rainfall and snowmelt are plentiful and demand for water is lowest. The volume of water delivered by both the CVP and SWP to their contractors also varies significantly from year to year depending on whether the year has been wet, dry, or normal and the need to make water available for fish and wildlife. Accordingly, the Bureau of Reclamation and DWR have calculated approximate probabilities that a particular volume of water (expressed as a percentage of contractors' entitlements) will actually be delivered to contractors south of the Delta.[16] Those probabilities are shown in Table III.I.8.

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[16] Reliability statistics given for CVP water are for irrigation water, rather than M&I water. Assuming the City were to obtain a transfer from an agricultural contractor, the reliability of the supply would be the same as that of irrigation water (Stoddard & Assocs. 2001a, at attachment 1 (*Draft Central Valley Project M&I Water Shortage Policy* (Mar. 9, 2001) 3)).

Table III.I.8: Estimated Frequency Distribution of Annual CVP and SWP Water Deliveries

Portion of Entitlements	Percentage of Years in which CVP Deliveries Exceed That Portion	Percentage of Years in which SWP Deliveries Exceed That Portion
0 %	95 %	100 %
25 %	80 %	99 %
50 %	62 %	87 %
75 %	35 %	78 %
90 %	18 %	56 %

Source: Stoddard & Assocs. 2002a.

To avoid water shortages in years in which CVP or SWP deliveries fail to meet entitlements, the City would purchase a surplus of entitlements. Accordingly, to supply the estimated cumulative demand of 7,589 acre-feet annually by 2020, the City would obtain entitlements to approximately 13,000 acre-feet annually of water from a CVP source, assuming a long-term average yield of 60 percent of entitlements. Delivery of the full entitlement would very rarely, if ever, occur. In most years, actual deliveries would exceed 6,500 acre-feet, although deliveries would fall below that volume in approximately 38 percent of years. These estimates are based on the more restrictive CVP estimates; somewhat less water would need to be obtained if the SWP were relied on to serve some or all of the City's needs.

In some years, deliveries would fall below the City's cumulative demand. To ensure that shortages do not occur in such years, the City would develop an Aquifer Storage and Recovery system ("ASR system") to make conjunctive use of surface water and groundwater. The City would "bank" excess water when supply exceeded demand, by injecting treated surface water into the aquifer beneath the City using its existing groundwater production wells and new wells added after the switch to surface water was made.[17] (This would occur in normal and wet years before buildout when the City's water demand would be low and in wet years after buildout.) Water then would be withdrawn when surface water deliveries fail to meet demand. The injected surface water

[17] The City would need to obtain a permit from the Regional Water Quality Control Board prior to beginning injections into groundwater.

would create a zone of good quality water in the aquifer, and it is anticipated that the injected water would mix with the existing groundwater of lesser quality, thus increasing the total volume of good-quality water available. Prior to implementation, the City would conduct further study of a potential ASR system to evaluate its reliability and efficiency. To prevent water shortages in critical dry years when the ASR system could not produce sufficient water to meet demand, the City would also enter short term water contracts on a spot market to purchase additional surface water and implement a water waste ordinance to reduce demand (Stoddard & Assocs. 2002a). Similar systems are currently in place for existing water banking programs in other parts of the State, and have been proven to be reliable, efficient and functionable. Based on existing well logs and known soil strata information from existing wells in the Patterson area, there is sufficient reason to assume that some form of ASR system would work in the Patterson area. The additional studies mentioned above would clarify engineering and hydrological requirements for designs of specific and alternative ASR systems. These studies are beyond the scope of this EIR.

The City would continue to install new water supply wells as required to meet demand and would continue to rely on untreated groundwater until its quality becomes unacceptable. Based on its projected rate of growth, the City anticipates that seven to nine deep wells would be in operation by that time. Those wells would continue to be maintained and additional deep wells would follow to provide insurance against a severe drought when surface water deliveries may drop to zero. Those new wells are anticipated to be located to the east of the City, where groundwater quality is highest.

CONVEYANCE INFRASTRUCTURE

The City's Water Master Plan lays out a system of water conveyance infrastructure designed to deliver water from the City's existing and planned groundwater wells to existing users and to the West Patterson project area. That infrastructure will be funded through a Mello-Roos assessment district established by the City for the West Patterson project area in 2001.

Implementation of the surface-water variant would require several modifications to the planned system. First, new conveyance would likely be required to transport water either from the the DMC or Aqueduct to the water treatment plant. This would involve construction of a new turnout on the DMC or Aqueduct. Construction of a turnout on the

DMC would be subject to approval by the Bureau of Reclamation and therefore would be subject to review under the National Environmental Policy Act (NEPA) and other federal laws. Construction of a turnout on the Aqueduct would be subject to DWR approval and would require further review under CEQA and other state laws. From the turnout, water would be delivered to the treatment plant through a new pipeline. As noted above, the treatment plant would be sited to the west of the City near the DMC or Aqueduct, and its location would be tailored to minimize the need for new conveyance between the source and the plant.

Additional water distribution works (storage tanks, pumping plants, and pipelines) would need to be designed and installed to deliver water from the treatment plant to users, as planned for in the City's Water Master Plan (Stoddard & Assocs. 2001b). The City's existing and planned conveyance infrastructure is anticipated to be sufficient to convey water withdrawn from the wells in the ASR system in lean water years to the City's existing users and those in the West Patterson project area.

To the extent that other, currently undeveloped portions of the City's amended sphere of influence, such as those on the south and east sides of the City, are to build out, additional planning would be required to design conveyance from the plant and wells to those areas.

APPROACH TO ANALYSIS OF VARIANT

SIGNIFICANCE CRITERIA

Supplying surface water for the West Patterson projects would have a significant environmental impact if:

- Implementation of the surface water variant would interfere with the operation of SWP or CVP facilities, primarily in the Delta, or adversely affect water quality in the Delta.
- Implementation of the surface water variant would cause existing users of the supply obtained by the City to switch to other water sources, with attendant effects on those users.
- Pumping groundwater prior to switching to a surface-water supply or in the operation of the ASR system would create a cone of depression that would (1)

interfere with other established or planned groundwater uses by reducing groundwater quality or causing wells to dry up; or (2) cause subsidence of overlying land and thereby cause damage to public or private property.

- Supplying surface water would require extension of water supply conveyance infrastructure into previously unserved areas, require the construction of new treatment infrastructure, or require significant alterations to existing infrastructure, which would result in potentially significant environmental impacts.

- Supplying surface water would require the construction of a water treatment plant, which would result in potentially significant environmental impacts.

- Installing new wells, pumping groundwater, or injecting treated surface water through the ASR system would introduce new contaminants into the aquifer.

VARIANT IMPACTS AND MITIGATION

Variant Impact I.1. Implementation of the surface water variant could interfere with the operation of SWP or CVP facilities, primarily in the Delta, or adversely affect water quality in the Delta. (Less than Significant)

The Bureau of Reclamation operates a series of facilities in the Delta that divert Delta water south through the DMC. Water enters the CVP headworks in the southern portion of the Delta approximately 10 miles northeast of the City of Tracy from where it is pumped through the Tracy Pumping Station into the DMC. The SWP diverts Delta water through headworks in the northern portion of the Delta. Water is initially stored in the Clifton Court Forebay, conveyed through the California Aqueduct Intake Channel, and pumped from the Harvey O. Banks Pumping Plant to Bethany Reservoir, which in turn releases water into the Aqueduct. Changes in the type or place of use of CVP or SWP water could adversely affect these facilities by altering the timing of necessary deliveries, or sufficient capacity in the system (e.g., at the pumping plants) might not be available to accommodate the water when needed. Such changes in timing could also have adverse impacts on Delta water quality.

No such impacts are likely to occur here. Whatever the source of the City's surface water, it almost certainly would be a water purveyor supplying primarily agricultural users. The transfer of water from such users, such as the PID's present water purchasers, to the City for M&I uses would have minimal effects, if any, on the operation of the CVP

or SWP and its diversion facilities in the Delta. All of the water the City is considering acquiring is currently used south of the Delta and delivered via the DMC or the Aqueduct. Accordingly, the same amount of water would pass through CVP and/or SWP facilities after a transfer as before.

Likewise, the timing of deliveries throughout the year would be essentially unchanged, as an assignment of a water contract would be subject to the terms of delivery in the contract being assigned. Delivery of water on an agricultural demand schedule is not anticipated to be inconsistent with the timing of the City's M&I demand: like agricultural uses, the City's M&I demand is expected to be greater in the drier summer and fall months than in the winter and spring. Any changes associated with a shift from agricultural use to the City's municipal and industrial use would be minuscule and insignificant when compared to system capacity.

Finally, before any transfer to the City could be effected, either the Bureau of Reclamation or DWR would need to approve the transfer and assess its impact on the relevant project's facilities and operation. Further environmental review under NEPA and/or CEQA also would be required to accompany such a decision.

For similar reasons, a transfer to the City would be unlikely to have any perceptible impact on Delta water quality. Because the City is considering water transfers only from current users south of the Delta, and because the timing of deliveries to the City would be largely unchanged, water flow through the Delta would also remain essentially unchanged. Accordingly, no adverse impacts to Delta water quality are expected.

This potential impact is anticipated to be less than significant.

Variant Mitigation Measure. No mitigation necessary.

Variant Impact I.2. Implementation of the surface water variant could cause existing users of a supply obtained by the City to switch to other water sources, with attendant effects on those users. (Significant and Unavoidable)

Transferring water from an existing use to the City would require existing users to find new sources of water or modify or discontinue existing uses. A user's response to curtailment of its water supply involves a complex economic decision-making process

and thus is difficult to predict. Prediction is further complicated because the City has not finalized a source of surface water, and thus even current users cannot be identified precisely. The types of impact generally anticipated to be possible can be identified, however, based on the basic expectation that any source of surface water used will be currently in agricultural use south of the Delta.

When deprived of its surface water source, a current user could switch to an alternative source, either surface water or groundwater. A switch to groundwater could cause or exacerbate local groundwater overdraft. The loss of imported surface water could also adversely affect the water resource balance in the area by reducing aquifer recharge or surface runoff from imported irrigation water. The effects of switching to an alternative surface water supply would obviously depend on the relevant source of surface water supply and the water resource balance in the affected area.

In other circumstances, however, existing agricultural uses may not be economically sustainable without the availability of water of equivalent quality at existing rates, and therefore transferring water to the City could require the current users to change or discontinue agricultural use. That might mean switching to cultivation of a less water-intensive crop, fallowing some or all of the land under irrigation in the dry years, or permanently discontinuing agricultural use of the property. The latter might involve conversion of the property to another use, such as commercial, industrial, or residential use. Any attempt to quantify the loss of agricultural land or the increase in development would be speculative and therefore beyond the scope of this EIR.

Nevertheless, because it is anticipated that most current purchasers of the water sought by the City would be water purveyors rather than end users, the impact of the loss of the entitlements to 13,000 acre-feet annually would likely be spread across a large number of end users.[18] If the water purveyor were unable to locate another cost-effective water source, it might reduce deliveries to all customers pro rata, meaning that the impact on any one user would be less likely to make the use infeasible. Such end users might still be compelled to switch to groundwater to supplement surface water deliveries, however.

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[18] For reasons discussed above, the impacts of loss of 13,000 acre-feet annually in contractual entitlements would be considerably less severe than the loss of that volume of actual water deliveries.

The following paragraphs discuss the potential impacts to current users from each of the potential surface water supply sources:

1) ***Patterson Irrigation District.*** Current purchasers are believed to be large agricultural water purveyors, such as the Westlands Water District, who could spread the loss of water across end users or take advantage of economies of scale in obtaining alternative surface water sources that would be unavailable to individual end users. Indeed, current purchasers are using the water under contracts of one year in duration, which at least suggests that they can tolerate some risk that the supply will be interrupted.

2) ***Quinto Farms.*** Quinto Farms is attempting to sell their entire CVP water supply through the Del Puerto Water District and Centinella Water District. It is unknown where Quinto Farms will obtain its water supply after the sale or whether they plan to put their land to nonagricultural uses.

3) ***Broadview Water District.*** The Broadview Water District (BWD) is seeking to sell its water together with its land. Accordingly, if the City were to purchase a portion of BWD's water and land, the City could retire the land from irrigated agricultural production. Such land retirement would eliminate the need to find an alternative source of water. Retirement would also reduce the selenium-contaminated drainage problem that has been associated with irrigation in the area. The City may be able to resell or lease the property to the Bureau of Reclamation as part of its Land Retirement Program under the Central Valley Project Improvement Act of 1992 (CVPIA). Such transactions would be contingent on the land's compliance with Reclamation's selection criteria (U.S. Bureau of Reclamation 1997).

4) ***Layne Water Development & Storage.*** The water made available by Layne Water Development & Storage comes from the Semitropic Groundwater Bank located in Kern County. Because this water is in underground storage and not in use, the City' purchase of that water would not affect any current users.

5) ***Regional Surface Water Option.*** As discussed previously, regional surface water supplies are in the early phases of discussion among stakeholders in Stanislaus County. At this time, it would be speculative to estimate the impacts of such an approach on existing water users.

Finally, as noted above, DWR or Bureau of Reclamation review and approval would be a prerequisite to obtaining a transfer of SWP or CVP water. That review would consider

the impacts on existing users of the relevant water project.[19] Approval by the Bureau of Reclamation or DWR would also require further environmental review.

The impacts to current users from the City's purchase of surface-water entitlements are potentially significant, though their actual significance cannot be precisely ascertained now.

Variant Mitigation Measure I.2.

Impacts on groundwater supplies could be mitigated if existing users were to obtain replacement surface-water supplies. As discussed briefly above, such alternative supplies are potentially available from a number of sources. To the extent possible, the City shall provide any information about alternative surface-water supplies at its disposal to current users of the supply purchased by the City to assist them in securing such supplies.

The uncertainty associated with this potential impact makes speculative any prediction about the extent of the impact and the availability and effectiveness of mitigation. Accordingly, the impact, even with the potential mitigation measure, is currently presumed to be significant and unavoidable.

Variant Impact I.3. Pumping groundwater prior to switching to a surface-water source would cause a cone of depression. (Less than Significant)

Before switching to a surface water supply under this variant, the City would supply the West Patterson projects with untreated groundwater, expanding production of that groundwater beyond its existing levels. As discussed above in the context of treated groundwater supply impacts, long term pumping of groundwater could entail creation of a severe cone of depression with significant effects on other groundwater users.

A cone of depression would also be created by the City's pumping prior to switching to surface water, but it would be less severe than that created by continued reliance on

[19] For transfers made pursuant to the Central Valley Project Improvement Act (CVPIA), the Bureau of Reclamation would be required to ensure that the transfer will "have no significant long-term adverse impact on groundwater conditions in the transferor's service area." CVPIA § 3405(a)(1)(J).

groundwater as the City's sole source of supply. The projected dimensions of the cone in 2010 and 2020 are compared above in Table III.I.7. If the City were to implement the surface-water-supply variant, the City would consider beginning the transition to surface water earlier than otherwise necessary if the effects of the cone of depression from continued reliance on groundwater appeared to be severe. Accordingly, the impact on other groundwater users of the projected cone created by groundwater pumping prior to switching to a surface-water supply is considered to be less than significant.

Likewise, the impact of a cone of depression caused by operation of the ASR system would be minimal. The injected treated surface water would improve local groundwater quality and prevent subsidence – both beneficial effects. The City then would be pumping water that it had previously injected into the aquifer, to which it would hold exclusive rights. Accordingly, the impact on other groundwater users of a cone of depression created by operation of the ASR system is considered to be less than significant.

Variant Mitigation Measure. No mitigation necessary.

Variant Impact I.4. Supplying water to the West Patterson projects would require extension of water supply conveyance infrastructure into previously unserved areas. (Less than Significant)

The City does not currently supply water to the project area; land in the project area is currently in agricultural use and is supplied with water by the local water agencies or from on-site groundwater wells. Because the City has determined that groundwater quality in the project area fails to meet applicable water quality standards (Stoddard & Assocs. 2001b), the City would supply the West Patterson projects with groundwater pumped from wells east of the City limits, for as long as groundwater quality in that area continues to meet Domestic Water Quality Standards. After that point, under this variant, the City would switch to a surface-water supply.

The City's Water Master Plan identifies locations and design criteria for conveyance infrastructure to transport water from the City's groundwater wells to customers in the project area (Stoddard & Assocs. 2001b). Figure III.I.3, above, depicts existing and proposed conveyance facilities necessary to serve the West Patterson projects.

The primary impacts associated with the extension of water supply infrastructure to the project area would be the physical impacts of laying pipelines. As shown in Figure III.I.3, water supply pipelines proposed in the Water Master Plan would be laid in existing rights of way or areas that would be disturbed for construction of other aspects of the West Patterson projects. The potential environmental effects related to that construction are addressed in other applicable sections of this EIR (e.g., Agricultural Resources, Biological Resources, Noise and Air Quality). It is anticipated that the incremental physical impacts – those impacts above and beyond the impacts of the other earth disturbing activities in the area – associated with the laying of pipeline as contemplated by the Water Master Plan would be less than significant.

Surface water would be delivered to end users through the City's existing conveyance infrastructure, plus the new infrastructure planned for in the Water Master Plan. The Master Plan contemplates delivery of water from the City's wells east of the City, but it also makes allowance for the reverse direction of flow expected to accompany a surface-water supply delivered from a water treatment plant to the west of the City. Nevertheless, additional pipelines would be required to convey raw water from the DMC or Aqueduct to the treatment plant and then to connect the treatment plant to the existing conveyance system. The City anticipates that the pipelines required would be limited to existing rights of way. Construction of new turnout(s) on the DMC and/or Aqueduct would also be required by implementation of the surface-water-supply option, though the construction impacts of those turnouts would be limited almost entirely to the structure of the relevant canal itself. Such construction would comply fully with applicable CVP and/or SWP requirements to minimize impacts to water quality in the relevant canal, prevent disruption of service to other users, and avoid impacts to biological resources. Additional environmental review also would be performed prior to any such construction.

The conveyance infrastructure described in the Water Master Plan was designed to be consistent with the City's existing water distribution infrastructure. Accordingly, implementation of the Water Master Plan would complement, rather than adversely impact the City's existing water supply system. The extension of water supply conveyance infrastructure is considered to have less-than-significant impacts.

Variant Mitigation Measure. No mitigation necessary.

Variant Impact I.5. Supplying water to the West Patterson projects with surface water would require construction of a water treatment plant. (Significant and Unavoidable)

Supplying the West Patterson projects with surface water would require construction of a water treatment plant. The plant would likely be sited to the west of the City, in proximity to the principal surface water sources in the area, the DMC and Aqueduct. The precise location and footprint of the treatment plant cannot be ascertained at this time and thus the impacts of the plant are too speculative to determine in this programmatic-level evaluation. Accordingly, identification of the precise physical impacts of the plant must await project-level review in a subsequent CEQA document. Because the impacts associated with construction of a water treatment plant are currently unknown, until project-level review can be completed the environmental impacts of such construction are presumed to be significant and unavoidable.

Variant Mitigation Measure. None determined to be available until a treatment plant is designed and its location ascertained.

Variant Impact I.6. Installing new wells, pumping groundwater, or injecting treated surface water through the ASR system would introduce new contaminants into the aquifer. (Potentially Significant)

The City would need to install six new groundwater wells to serve the West Patterson projects and existing and other water demand planned for in the UWMP. Several of the wells would be configured to allow injection of treated surface water into the aquifer.

Operation of existing wells, installation of new wells, and operation of an ASR system that injects treated groundwater into the aquifer could cause incidental contamination of the aquifer by introducing pollutants from the surface into the aquifer. Those pollutants might be on the pump equipment itself, allowed to migrate through an improperly installed well, or be in the water injected into the aquifer. Because all water injected into the aquifer through the ASR system would first be treated by a surface water treatment plant, this is not anticipated to be a source of contamination. Pump equipment and installation, however, could be an independent source of contamination.

Variant Mitigation Measure I.6.

To avoid contaminating the aquifer, the City shall comply with all aspects of the County's water well ordinance in Chapter 9.36 of the Stanislaus County Code in installing, repairing, removing, and abandoning water wells.

This mitigation measure is expected to reduce the risk to a less-than-significant level.

THE CITY'S FUTURE WATER SUPPLY

The proposed project entails beginning to desalinate groundwater to meet the City's water demand when groundwater quality deteriorates to a point at which it no longer meets Domestic Water Quality Standards. Nevertheless, a surface water supply, if it could be obtained, would be environmentally preferable to treatment of groundwater. Groundwater treatment would likely result in greater environmental impacts, as it would require disposal of large quantities of concentrated brine and might cause groundwater quality deterioration for other users and potential surface subsidence in the area of the pumping. On the other hand, the waste byproducts of surface water treatment are expected to be minimal. Use of surface water would also likely produce net benefits for local groundwater by increasing recharge to the deep aquifer (via the ASR system). That recharge would eliminate the risks of drawdown and subsidence and affirmatively improve the quality of groundwater in the aquifer by introducing water with considerably lower concentrations of dissolved solids.

Surface water appears to be economically preferable as well. The capital costs of treated groundwater are higher than those of surface water (Stoddard & Assocs. 2002b). The operation and maintenance (O&M) costs of the wellhead treatment systems also appear to outstrip the O&M costs of treating and delivering surface water. The treatment systems consume a great deal of energy in operation and may require frequent maintenance. Disposal of the voluminous brine produced by the desalination systems would further add to the cost.

While groundwater is immediately available to serve the West Patterson projects, the City does not presently have in hand rights to a surface water supply. The City therefore has proposed to serve the West Patterson projects with treated groundwater, but the impacts of a surface-water supply variant have been analyzed to allow the City to use

such a supply should one become available before a water supply alternative to untreated groundwater becomes necessary. The City should continue to pursue a surface-water supply, but if such a supply were not available when needed, the City could begin to treat groundwater as proposed here.

References

All referenced documents are available for review, by appointment, at City of Patterson offices (33 S. Del Puerto Avenue) except those marked with an asterisk (*), which are at the Stanislaus County Planning Department (1010 10th Street, Suite 3400, Modesto, CA), and except for those identified with an internet website address.

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J. WASTEWATER

INTRODUCTION

Proposed and future development in the West Patterson project area would increase the amount of wastewater generated in the service area of the City's wastewater treatment plant. New development would require expansion of the City's wastewater collection, treatment, and disposal infrastructure. The West Patterson projects includes construction of wastewater collection facilities in Sperry Avenue and Ward Avenue to serve the two proposed development projects, Keystone Pacific Business Park and Patterson Gardens. Additional expansion of the collection system would be required to serve the remainder of the Business Park Plan area. The City is proposing a 2-phase, 1-million-gallon-per-day (mgd) expansion of its existing wastewater treatment and disposal facilities to accommodate previously-approved development (including Creekside Meadows, Walker Ranch I and II, and Shire Place, hereafter called Creekside Development), the two development proposals analyzed in this EIR (Keystone Pacific Business Park and Patterson Gardens), and buildout of the West Patterson Business Park Master Development Plan area.

This EIR Wastewater section describes the projected quantity of wastewater to be generated by the two development proposals and buildout of the West Patterson Business Park Master Development Plan, and describes the capability of the City's existing wastewater system to serve projected wastewater flows from the West Patterson projects. This section then analyzes the impacts of the City's proposed facility expansion accommodating the increased wastewater flows. The section analyzes cumulative impacts of wastewater flows from the West Patterson projects plus additional growth in Patterson contemplated in the *Patterson General Plan* by 2020.

The City is in the process of preparing a Wastewater Master Plan update, which will be the subject of separate environmental review. No Initial Study or Notice of Preparation has been published for that environmental review as of publication of this Revised Draft EIR. The separate environmental review document on the Wastewater Master Plan will address impacts of wastewater facilities expansion to serve buildout of Patterson as described and accommodated in the *Patterson General Plan*.

The City is also separately contemplating a plan to accommodate the wastewater generated by the Diablo Grande development in western Stanislaus County, and has entered into an agreement with the Western Hills Water District to provide for engineering and environmental analysis of the facilities that would be necessary. At this time, the City has not decided to treat Diablo Grande wastewater; impacts of expansion of the wastewater treatment system to accommodate Diablo Grande would be included in the Wastewater Master Plan environmental review.

In anticipation of possibly accepting Diablo Grande wastewater flows, the City is considering constructing the main sewer collection lines proposed for Sperry and Ward Avenues for the West Patterson projects at a slightly larger size in order to accommodate flows from Diablo Grande, should the Diablo Grande plan go forward. To avoid the need to retrench at a later time should an agreement be reached with Diablo Grande, the Western Hills Water District would fund the incremental cost of these larger collection lines. If the City chose not to provide Diablo Grande with wastewater treatment, these larger collection facilities could theoretically accommodate additional development in the area west of Patterson; however, no such development is approved, contemplated, or under discussion by the City or Stanislaus County, and the new sewer lines could not serve additional development without new connecting pipelines. Therefore, the additional capacity would likely go unused. The EIR assumes these larger-sized wastewater collection lines in the Project Description and the impacts analyses. The Wastewater Section also includes a discussion of the cumulative impacts on the City's wastewater system resulting from potential accommodation of Diablo Grande wastewater.

SETTING

EXISTING CITY WASTEWATER SYSTEM

The City of Patterson provides wastewater collection, treatment and disposal service for all residents, schools, and commercial and industrial establishments in the City except for Patterson Frozen Foods, which has its own onsite treatment system, and a few residences, which are served by their own onsite septic tank systems. The City's wastewater system also serves the Villa Del Lago commercial development located near the I-5/Sperry Avenue interchange. The City's wastewater system can be categorized into three basic systems: collection, treatment, and disposal.

WASTEWATER COLLECTION SYSTEM

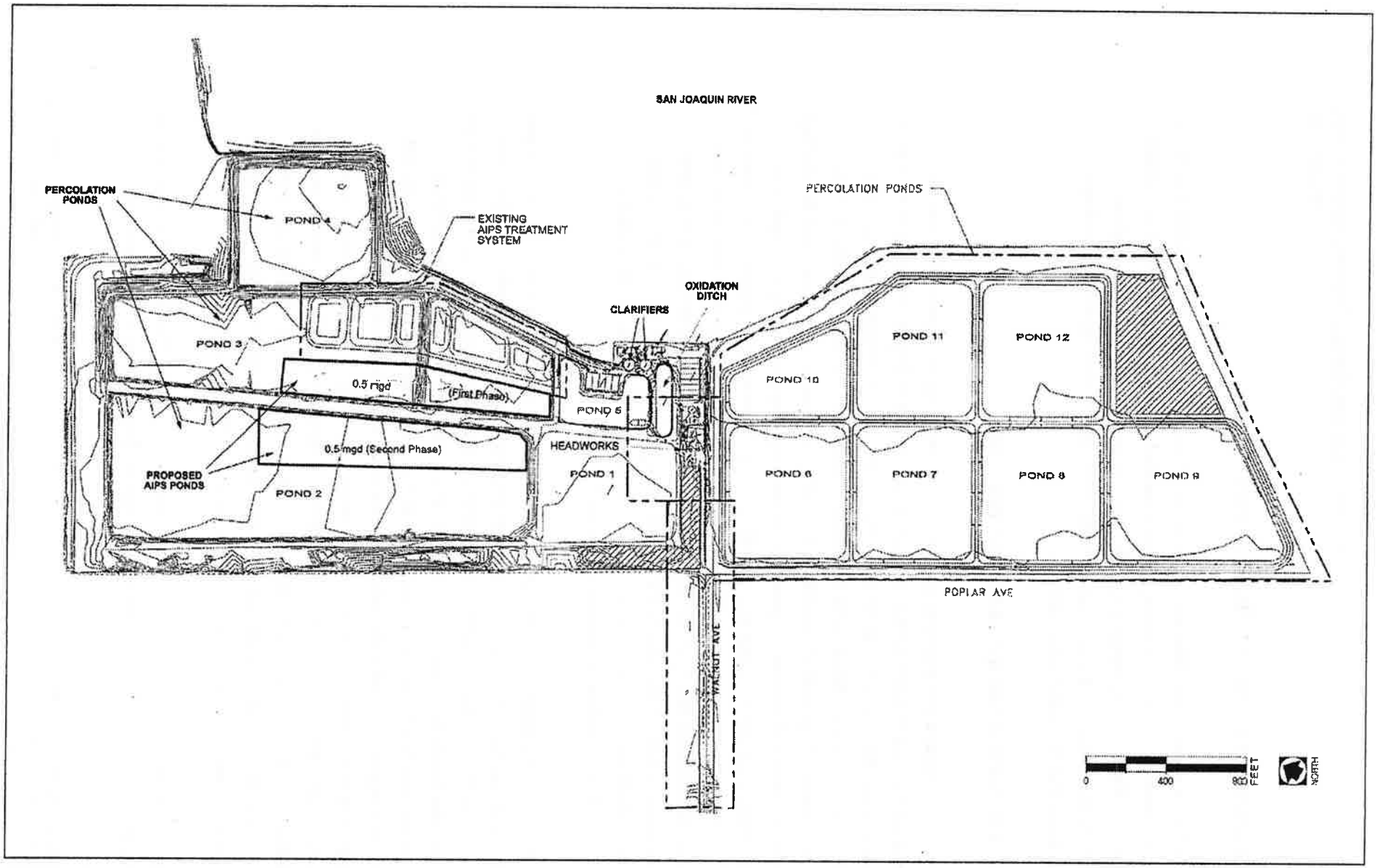
The City's wastewater collection system consists of gravity flow pipelines ranging in size from 6-inch to 33-inch diameters, typically located in City street rights-of-way. Older portions of the system, which generally serve the downtown core residential and commercial areas, were constructed before 1960. Newer developments have been connected to the system over time.

WASTEWATER TREATMENT AND DISPOSAL

The City's wastewater treatment plant is located on an approximately 160-acre site situated between Walnut and Las Palmas Avenues, east of Poplar Avenue and west of the San Joaquin River (see Figure III.J.1: City Wastewater Treatment Plant, and Figure III.J.2: Existing City Wastewater Collection System Serving West Patterson). The plant's currently permitted capacity is 1.3 million gallons per day (mgd), and the average current volume of wastewater produced by the City is approximately 0.8 mgd. The remaining capacity is available to provide service for previously-approved expansion and to accommodate unanticipated high flow conditions. Wastewater is treated using two types of treatment processes, each principally an aerated biological treatment system. The older system, with a permitted capacity of 0.8 mgd, consists of an activated sludge process followed by clarification. The newer system is an advanced integrated pond system (AIPS), with a permitted capacity of 0.5 mgd.

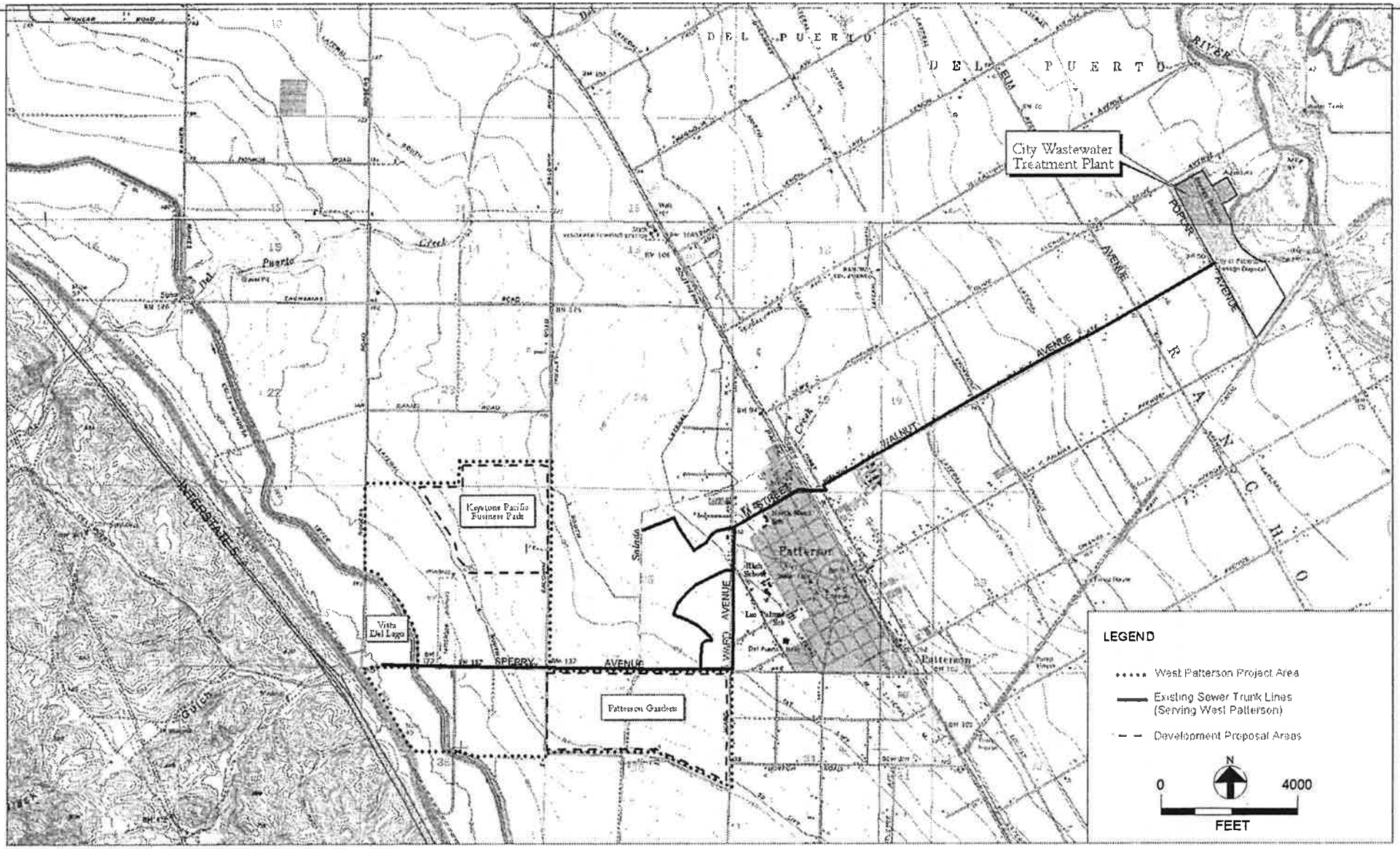
The treatment facilities include a lift station, metering structure, headworks, comminuter, oxidation ditch, settling clarifiers, AIPS ponds, and sludge drying beds. The lift station is located at the terminus of Walnut Avenue where the influent (i.e., untreated wastewater) is received from the Walnut Avenue trunk sewer line into the plant. The metering structure and headworks are located downstream of the lift station. In general, the lift station consists of a wet well with five submersible lift pumps with a total capacity of approximately 6 mgd, and a 16-inch discharge force main (a pipe that transmits pumped, rather then gravity flows). The flow is measured by two magnetic flow meters prior to entering the headworks (one operating and one standby). The headworks contains a comminuter to grind rags, plastics, and other solids, and a bypass barscreen, diversion structures, and gates to direct flow to secondary treatment systems.

Secondary treatment is provided by two types of processes. The activated sludge system is a process where, under aerobic (i.e., oxygenated) conditions, a community of



SOURCE: Lee & Ro, Inc. 2002

FIGURE III.J.1: CITY WASTEWATER TREATMENT PLANT



SOURCE: EDAW

III.J.5

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FIGURE III.J.2: EXISTING CITY WASTEWATER COLLECTION SYSTEM SERVING WEST PATTERSON

microorganisms (i.e., activated sludge) including non-pathogenic bacteria consume biodegradable materials such as proteins, carbohydrates, fats, and other compounds are nourished by organic material in the wastewater and reproduce. The activated sludge metabolizes and transforms the organic and inorganic substances into environmentally acceptable forms. This process occurs in an 8-foot deep oxidation ditch with two surface brushes used to enhance aeration and mixing capacity. Following secondary treatment in the oxidation ditch, the mixed liquor (i.e., treated wastewater and activated sludge) is settled in two secondary clarifiers. Some of the settled sludge (bacterial organisms) is returned to the oxidation ditch to continue the process, and the rest is wasted (i.e., removed) to sludge drying beds. Three sludge pumps facilitate the process. The secondarily-treated wastewater is pumped to the open air disposal ponds where the treated effluent percolates into the ground or evaporates. The City currently does not chlorinate its treated effluent. No river discharge is currently permitted.

Under the AIPS system, wastewater from the headworks is pumped directly into the AIPS ponds. The AIPS system consists of a series of three ponds that use facultative bacteria, which can adapt themselves to grow and metabolize in both aerobic and anaerobic (i.e., without oxygen) conditions. By using facultative bacteria, both aerobic and anaerobic biological processes occur simultaneously. The upper portion of the water column (i.e., supernatant) is aerobic and the lower portion is anaerobic. This process provides secondary treatment with greater energy efficiency because energy-consumptive mixing devices are not required. The AIPS system also results in less odor than traditional treatment processes. Most odors are generated in the anaerobic zone. The aerobic zone of the facultative ponds can create a cap that inhibits odors from the anaerobic zone from escaping to the atmosphere. The treated effluent is then pumped to the open air disposal ponds where it percolates into the ground and evaporates. No river discharge is currently permitted.

Twelve disposal percolation ponds are located on about 80 acres of land in the existing wastewater treatment plant (see Figure III.J.2). Ponds located on the north side of the plant see more frequent use and have a higher percolation rate than the newer ponds located on the south side of the plant. The current design of the plant limits the use of the southern ponds (ponds 6 through 12) because there is no method of transporting effluent from the existing clarifiers to the south ponds. Only effluent from the AIPS ponds are disposed of in the southern ponds.

REGULATORY FRAMEWORK

WASTEWATER TREATMENT REQUIREMENTS

If not properly treated, wastewater can reduce the quality of surface water and groundwater aquifers. In California, the nine Regional Water Quality Control Boards (RWQCBs), under the supervision of the State Water Resources Control Board (SWRCB), are responsible for protecting surface, ground, and coastal waters throughout the state. The West Patterson project site falls in the jurisdiction of the Central Valley RWQCB Sacramento Main Office. RWQCBs develop standards restricting the amount of pollutants that can be discharged into the ground or into a water body, and enforce these standards by requiring proper authorization prior to discharges of potential water-borne pollutants. Under the federal Clean Water Act, discharges to surface waters (e.g., San Joaquin River) require issuance of a National Pollutant Discharge Elimination System (NPDES) permit, whereas discharges to land (e.g., percolation ponds, farmland irrigation) do not. Discharges to both land and water require Waste Discharge Requirements (WDRs). These permits are issued by the RWQCBs and include standards for pollutant discharges.

On June 16, 2000, the RWQCB issued WDRs for the City's existing wastewater treatment plant (Order No. 5-00-146). The WDRs prohibit certain discharges including hazardous materials, discharges to surface waters, untreated or partially treated waste, and discharges that would cause degradation of any water supply. The WDRs also include discharge specifications that limit the quantity of daily discharges (1.3 mgd) and the allowable extent of objectionable odors, require protection from 100-year flood events, limit biological oxygen demand (BOD)[1] and settleable solids reaching the percolation disposal ponds, limit the pH range (i.e., level of acidity and alkalinity), and prevent mosquito breeding.

The WDRs also include groundwater limitations such that "the discharge, in combination with other sources, shall not cause the underlying groundwater to contain waste constituents in concentrations greater than the background water quality at or beyond the point of compliance. Any incremental increase in waste constituent

[1] Biological oxygen demand (BOD) is a measure for the quantity of organic material that can be oxidized by aerobic microorganisms and is typically expressed in milligrams per liter. Reduced oxygen levels in surface water (i.e., caused by high BOD) can adversely affect fish and other aquatic organisms that rely on the dissolved oxygen for respiration. Presence of BOD in groundwater might also indicate degradation by human activities.

concentrations...when compared to background, shall not...violate water quality objectives, unreasonably impact beneficial uses, or cause pollution or nuisance." To ensure compliance with these groundwater limitations and with the SWRCB's groundwater antidegradation policy (State Board Resolution No. 68-16), the WDRs require the City to develop and implement a groundwater monitoring program and to provide quarterly monitoring reports to the RWQCB. The City has been preparing and providing these monitoring reports to the RWQCB. These reports demonstrate that the City's plant is in compliance with the WDRs and the SWRCB groundwater antidegradation policy.

CITY OF PATTERSON GENERAL PLAN

The City of Patterson General Plan includes the following policies that relate to wastewater treatment:

IV.A.5. To minimize the need for the development of new water sources and facilities and to minimize sewer treatment needs, the City shall promote water conservation both in City operations and in private development.

IV.B.1. The City shall selectively repair or replace old sanitary sewer lines to eliminate or minimize infiltration/inflow.

IV.B.2. The City shall ensure the provision of adequate sewer service to all new development in the City and support the extension of sewer service to existing developed areas where this service is lacking.

IV.B.3. The City shall expand and develop new wastewater treatment and disposal capacity, which would include aerated pond treatment with evaporation/percolation disposal, to accommodate the needs of existing and planned development.

IV.B.4. The City shall, through a combination of sewer development fees and other funding mechanisms, ensure that new development pays its share of the costs of sewer system improvements.

COUNTY OF STANISLAUS GENERAL PLAN

The County of Stanislaus General Plan includes the following policy that relates to wastewater treatment:

Policy 22: Future growth shall not exceed the capabilities/capacity of the provider of services such as sewer, water, public safety, solid waste management, road systems, schools, health care facilities, etc.

IMPACTS AND MITIGATION

WASTEWATER SYSTEM PLANNING ACTIVITIES

In 1992, the City of Patterson prepared the *Wastewater System Master Plan* (City of Patterson, 1992b) to provide guidance for future expansion of its existing wastewater collection, treatment, and disposal system to accommodate expected development in the City General Plan Area. The Master Plan found:

> The existing collection system is considered adequate to serve the existing service area including infill. For planning purposes, capacity is not available other than on an interim case by case basis for new development in the General Plan growth area (City of Patterson, 1992b; page 2-2).

The Master Plan also included a staged implementation program to meet the City's future treatment capacity needs, but recommended periodic review of the Master Plan to incorporate revisions that may be appropriate due to changing future conditions.

Over the last several years, a substantial amount of development has occurred in West Patterson. The sewer collection pipe sizes constructed for the new developments generally followed the recommendations set forth in the Master Plan, and some of the pipes were oversized to assist in providing sewage collection service for future development on the west side of the City. In 1994, the City approved annexation of the Creekside Development, which required the applicant to fund construction of a new trunk line in M Street and Walnut Avenue, varying from 27 inches to 33 inches in diameter, to convey wastewater from the western portion of the City to the wastewater treatment facility. This trunk line was addressed in the *Creekside Annexation to the City of Patterson EIR* (City of Patterson, 1994), but has not yet been constructed. In 2001, the City prepared the *Western Expansion Area Sanitary Sewer Collection System* report (City of Patterson, 2001) to determine the most cost effective way of providing sewage collection to the west side of the City's General Plan area and the proposed expansion of the City's Sphere of Influence. This report recommended expansion of the sewer collection system, to include two new collection pipes to serve the west side of the City:

one in Sperry Avenue between American Eagle and Ward Avenue and the other in Ward Avenue between Sperry Avenue and M Street.

PROPOSED WASTEWATER INFRASTRUCTURE IMPROVEMENTS

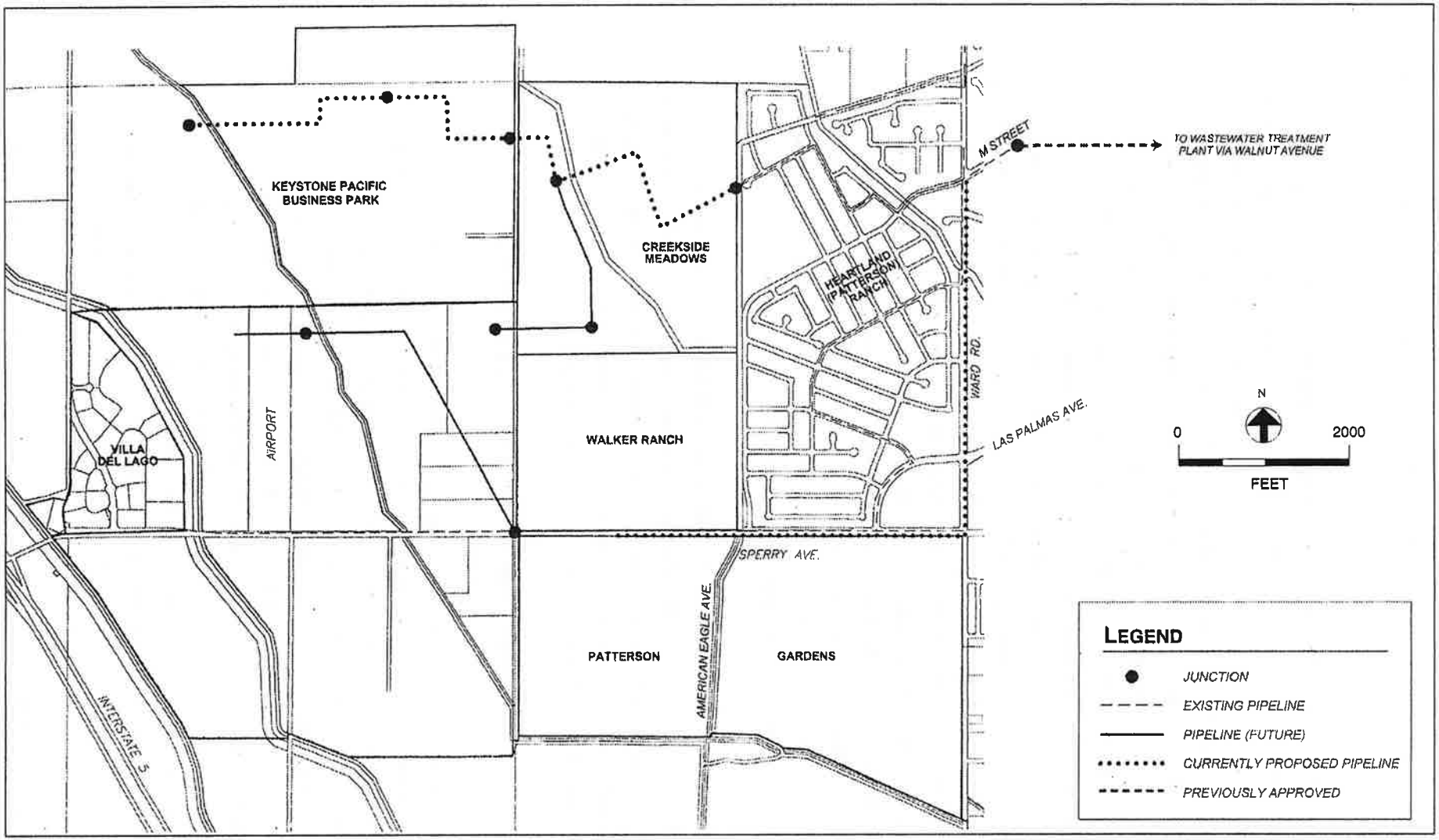
The City is proposing to expand its wastewater collection, treatment, and disposal system to accommodate wastewater generated by the West Patterson projects. The City is proposing a 2-phase, 1-million-gallon-per-day (mgd) expansion of its existing wastewater treatment and disposal facilities to accommodate previously-approved residences (Creekside Development), the Keystone Pacific Business Park, and Patterson Gardens, and buildout of the Business Park Plan area. The City also proposes expansion of its main collection system to serve the West Patterson projects. Additional expansion of the collection system would be carried out by developers on individual development parcels, such as the Patterson Gardens site and the Keystone Pacific Business Park site, to serve individual buildings.

PROPOSED WASTEWATER COLLECTION SYSTEM

To accommodate wastewater generated by the Keystone Pacific Business Park, the City of Patterson is proposing to construct 12-inch and 21-inch sewer lines[2] across the northern portion of the Creekside Development in Creekside Meadows, to connect with the existing 27-inch line in the northwestern portion of Heartland Ranch (see Figure III.J.3: Proposed Sanitary Sewer Trunk Improvements). To accommodate wastewater generated by Patterson Gardens and other portions of the West Patterson projects, the City would construct a new, approximately 21-inch sewer trunk line in Sperry Avenue from the intersection of American Eagle Avenue. This sewer line would run east to Ward Avenue, north along Ward Avenue, and connect to the existing 27-inch line in M Street (see Figure III.J.3).

The City is also separately contemplating a plan to accommodate the wastewater generated by the Diablo Grande development in western Stanislaus County, and has entered into an agreement with the Western Hills Water District to provide for engineering and environmental analysis of the necessary facilities. The City has not

[2] All pipeline sizes are approximate; sizes identified in the *Wastewater System Master Plan* may change during design due to more detailed information on actual design flows, invert grades, and similar factors.



SOURCE: Stoddard & Associates 2001; EDAW, Inc. From: *Western Area Sanitary Sewer Trunk Improvements*

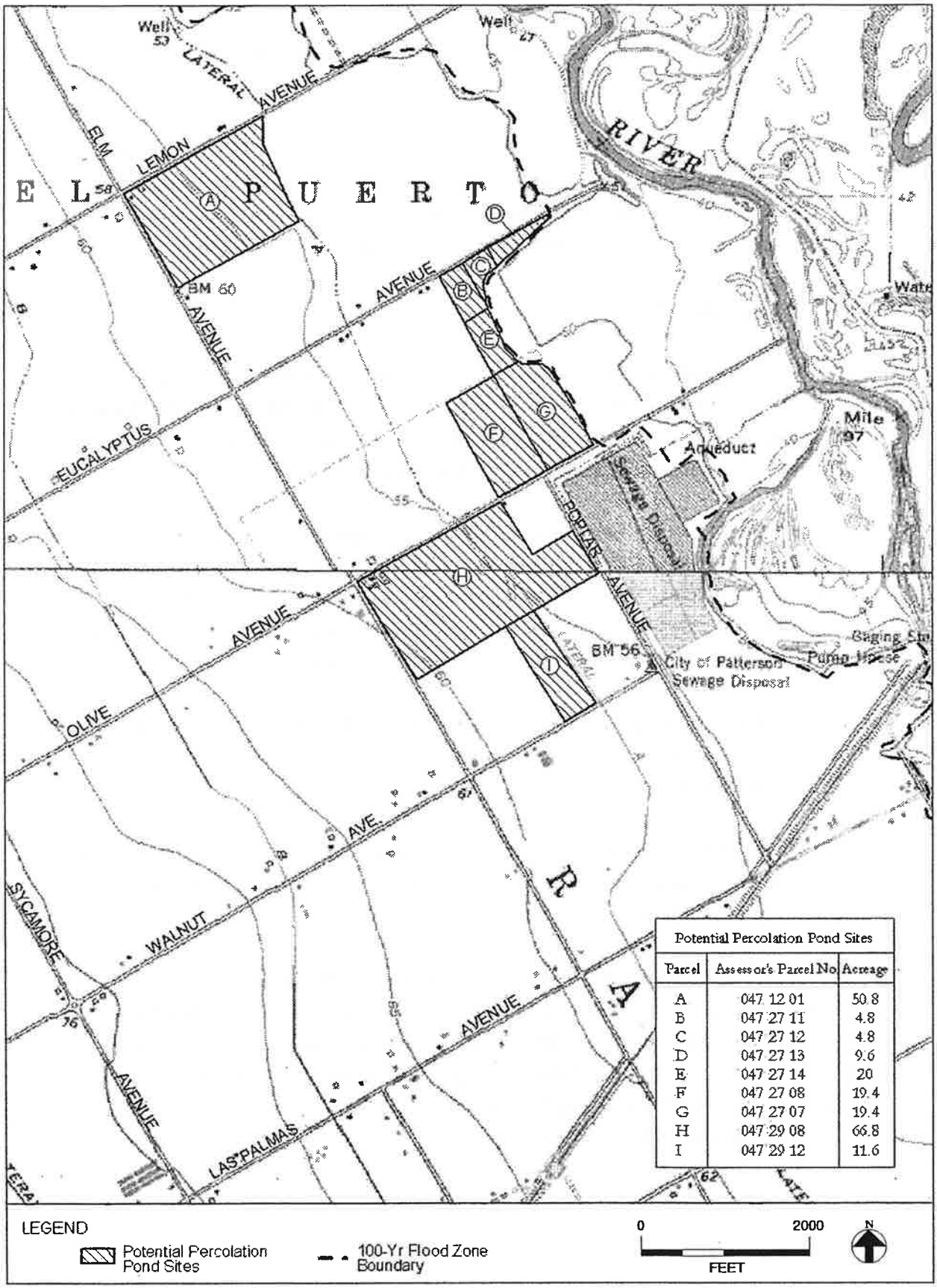
FIGURE III.J.3: PROPOSED SANITARY SEWER TRUNK IMPROVEMENTS

decided to collect or treat Diablo Grande wastewater; the impact of expanding the City's wastewater treatment system to include Diablo Grande wastewater flows is proposed to be included in an environmental review document planned to be prepared on the City's Wastewater Master Plan. Environmental review has already been carried out for the Diablo Grande development project. In anticipation of potentially accepting Diablo Grande wastewater, the City is considering construction of the wastewater collection lines (i.e., sewer trunk lines) in Sperry Avenue and Ward Avenue at a slightly larger size to accommodate Diablo Grande flows as well as flows from the West Patterson projects. Slightly oversizing the sewer trunk line for the West Patterson projects would avoid re-trenching and laying a second pipeline in the future if the City decided to collect and treat Diablo Grande wastewater. The Western Hills Water District would fund the incremental cost of the larger trunk line. If the City chose not to provide Diablo Grande with wastewater treatment, these larger sewer trunk lines could theoretically accommodate additional development in the area west of Patterson; however, no such development is approved, contemplated, or under discussion by the City or Stanislaus County, and the new collection lines could not serve additional development without new connecting pipelines. Therefore, the additional capacity would likely go unused.

Once constructed, the M Street and Walnut Street trunk line that was previously approved as part of the Creekside Development would convey West Patterson wastewater from the existing 27-inch line in M Street to the wastewater treatment plant. This sewer trunk line will run along M Street, cross Highway 33 and the railroad tracks, and then continue down Walnut Avenue to the wastewater treatment plant.

PROPOSED WASTEWATER TREATMENT PLANT EXPANSION

Expansion of the City's existing wastewater treatment plant would include a two-phase expansion of the AIPS treatment system in the existing wastewater treatment plant facility (approximately 0.5 mgd per phase), and construction of approximately 120 acres of percolation ponds and associated levees and access roads (see Figure III.J.4: Alternative Percolation Pond Locations). In addition to serving Patterson Gardens and a portion of the Keystone Pacific Business Park, the first phase expansion would be constructed to serve the previously-approved 1,348 residences in the Creekside Development. The Creekside Development includes the Creekside Meadows, Walker Ranch, and Shire Place projects located north of Patterson Gardens and approximately east of the Keystone Pacific Business Park (see Figure III.J.3). The City's existing plant capacity will serve approximately 750 residences, to be built in the Creekside



SOURCE: EDAW

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FIGURE III.J.4: ALTERNATIVE PERCOLATION POND LOCATIONS

Development. The first-phase expansion would serve the balance of the Creekside Development, the Patterson Gardens proposal, and about 150 acres of the Keystone Pacific Business Park. The second-phase expansion would serve the balance of the Keystone Pacific Business Park and future development in the Business Park Plan Area.

Wastewater Generation

The Keystone Pacific Business Park would result in development of 224 acres of business-related uses including light industrial, warehouse, and flex space. The Business Park would generate an average wastewater flow rate of approximately 136,650 gallons per day (gpd) at project buildout as indicated in Table III.J.1.

Patterson Gardens would result in development of 305 acres of residential and commercial/office uses. Patterson Gardens residential uses would generate an average wastewater flow rate of about 296,000 gpd at project buildout as indicated in Table III.J.2. The commercial/office component of Patterson Gardens would generate about 22,500 gpd, for a total of about 318,500 gpd from the Patterson Gardens development.

Buildout of the remaining portions of the West Patterson Business Park Development Plan area would generate an average wastewater flow rate of about 350,700 gpd, as indicated in Table III.J.3.

The Creekside Development will result in the development of 1,348 new residences, and will generate an average wastewater flow rate of about 404,500 gpd at project buildout as indicated in Table III.J.4.

The total wastewater generated by the West Patterson projects and the Creekside Development would be approximately 1,210,500 gpd. To summarize, Table III.J.5 shows the wastewater treatment plant's existing capacity, existing, flows, and the projected flows from the West Patterson projects and the Creekside Development. As shown in Table III.J.5, permitted plant capacity exceeds existing flows by about 0.5 mgd (1.3 mgd permitted - 0.8 mgd existing flows).

Table III.J.1: Keystone Pacific Business Park Wastewater Generation

Land Use	Building Size (Square Feet)	Population Units per Square Foot	Population Units (employees or customers)	Generation Rate (gal/unit/day)	Average Flow Rate (gpd)
Warehouse	1,911,195	1 per 750	2,550 employees	30	76,500 gpd
Manufacturing/ Assembly/ Light Industrial	582,830	1 per 500	1,165 employees	30	34,950 gpd
Offices	235,750	1 per 300	840 employees/ customers	30	25,200 gpd
Retail/Commercial	27,570	1 per 500			
Total					136,650 gpd

Notes: Totals may not add due to rounding.

Source: Lee & Ro, Inc., 2002; Turnstone Consulting, 2002.

Table III.J.2: Patterson Gardens Wastewater Generation

Land Use	Building Size (Square Feet)	Population Units per Square Foot	Population Units (residents, employees, or customers)	Generation Rate (gal/unit/day)	Average Flow Rate (gal/day)
Residential	n/a	n/a	2,960 residents[1]	100	296,000 gpd
Commercial / Retail	227,000	1 per 500	450 employees/ customers	30	22,500 gpd
Office	87,500	1 per 300	290 employees	30	
Total					318,500 gpd

Notes:
Totals may not add due to rounding
[1] Assumes 3 residents per home at 987 homes.

Source: Lee & Ro, Inc., 2002.

Table III.J.3: West Patterson Business Park Plan Area Buildout Wastewater Generation

Land Use	Building Size (Square Feet)	Population Units per Square Foot	Population Units (employees or customers)	Generation Rate (gal/unit/day)	Average Flow Rate (gpd)
Warehouse	3,223,230	1 per 750	4,300 employees	30	129,000 gpd
Manufacturing/ Assembly/ Light Industrial	1,366,920	1 per 500	2,735 employees	30	82,050 gpd
Offices	1,099,700	1 per 300	3,670 employees	30	110,100 gpd
Retail/Commercial	57,480	1 per 500	110 employees	30	3,300 gpd
Highway Commercial	393,935	1 per 500	790 emplopyees	30	23,700 gpd
Hotel/Motel	80,000	~1 per room	85 employees	30	2,550 gpd
Total					350,700 gpd

Notes:
Totals may not add due to rounding.

Source: Lee & Ro, Inc., 2002;Turnstone Consulting 2002.

Table III.J.4: Creekside Development Wastewater Generation

Land Use	Building Size (Square Feet)	Population Units/ Sq. Ft.	Population Units	Generation Rate (gal/unit/day)	Average Flow Rate (gal/day)
Residential	n/a	n/a	4045 residents[1]	100	404,500 gpd

Notes:
[1] Assumes about 3 residents per home at 1,348 homes.
Source: Lee & Ro, Inc., 2002; Turnstone Consulting, 2002.

Table III.J.5: Summary of Existing and Projected Wastewater Flows

Currently Permitted Plant Capacity	1.3 mgd
Proposed Capacity with 1.0 mgd expansion	**2.3 mgd**
Existing Flows	0.8 mgd
Creekside Development Flows	0.4 mgd
West Patterson Project Flows	0.8 mgd
Total Projected Flows	**2.0 mgd**

Source: Lee & Ro, Inc., 2002.

The proposed capacity increase would result in an excess capacity of about 0.3 mgd (future capacity of 2.3 mgd - projected flows of 2.0 mgd). Thus, the proposed expansion would reduce the excess capacity by about 0.2 mgd. The 0.3 mgd would not be sufficient to accommodate the 0.74 mgd demand from the Diablo Grande development.

Treatment Plant Components

The City's wastewater expansion project would include a number of improvements to the existing plant. Some of these improvements would be required for the West Patterson expansion, and other improvements are considered upgrades to the existing facility. Modification of existing equipment would be implemented when possible. In some instances, however, it would not be possible to incorporate existing equipment or facilities into an upgraded plant. Obsolete facilities and equipment would be bypassed or removed.

Improvements required for the West Patterson expansion include two new AIPS ponds systems (0.5 mgd each) with 1 mgd of total treatment capacity on about 15 acres of land in the existing treatment plant site. The new AIPS systems would be constructed where percolation ponds now exist. Other improvements would include an additional grinder and diversion gates for the existing headworks, two additional effluent pumps, an effluent flow meter, additional effluent piping (including a force main from the effluent pump station to the new percolation ponds), and landscaping at the plant.

Other proposed improvements to upgrade the plant include a new maintenance and storage building, lining of the existing AIPS finishing ponds, and additional aerators in the existing AIPS ponds.

PROPOSED PERCOLATION PONDS

The City is considering several alternative sites for the percolation ponds (see Figure III.J.4, p. III.J.13). All of the sites are located in unincorporated Stanislaus County, approximately 2 miles east of downtown Patterson. The topography of the pond sites is flat, and current land uses are irrigated agricultural production. The northeastern-most pond site is located in and adjacent to the 100-year flood plain of the San Joaquin River (see Figure III.J.4). No pond construction is proposed in the San Joaquin River floodway; levees would be constructed for portions of the site that may be in the flood plain, in compliance with state and local requirements. Use of the sites would be subject

to agreement by the existing land owners. Structures are located on some of the pond sites, and would be demolished. The potential environmental effects related to construction and operation of the percolation ponds are addressed in other applicable sections of this EIR.

APPROACH

This subsection analyzes the potential effects of the West Patterson projects on the capacity of the City of Patterson's wastewater collection and treatment facilities, and analyzes whether the project would exceed the wastewater treatment requirements of the Central Valley Regional Water Quality Control Board. The potential environmental effects related to physical expansion of the City's wastewater facilities are addressed in other applicable sections of this EIR (III.C, Agricultural Resources; III.D, Biological Resources; III.F, Air Quality; III.G, Noise; III.I, Hydrology and Water Quality; and III.P, Cultural Resources).

SIGNIFICANCE CRITERIA

The following significance criteria are based on the CEQA Guidelines Appendix G Environmental Checklist.

The project would result in a significant impact if it were to:

a) Exceed wastewater treatment requirements of the Central Valley Regional Water Quality Control Board.

b) Require or result in the construction of new wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

METHODOLOGY AND ASSUMPTIONS

This analysis contains information based on consultation with the City of Patterson, the RWQCB, and several technical documents and reports. Descriptions of existing wastewater collection, wastewater treatment, and wastewater flow systems were developed through information provided from the *City of Patterson General Plan* (City of Patterson, 1992a), the *Wastewater System Master Plan* (City of Patterson, 1992b), the *Creekside Annexation to the City of Patterson EIR* (City of Patterson, 1994), the *City of*

Patterson Western Expansion Area Sanitary Sewer Collection System report (City of Patterson, 2001), and the *Report of Future Impacts On Groundwater Salinity and Beneficial Uses Due to Anticipated Development Within The City of Patterson Wastewater Service Area* (Lee and Ro, Inc., 2002).

PROJECT IMPACTS AND MITIGATION

Impact J.1. The City's wastewater collection systems would not have adequate capacity to serve the West Patterson projects and adjacent approved residential development. (Significant)

The West Patterson Projects would generate a substantial amount of wastewater. No onsite wastewater collection system currently serves the West Patterson project area, and the existing City collection facilities would not be adequate to serve the sites without additional improvements.

PATTERSON GARDENS

Patterson Gardens would result in development of 305 acres of residential and commercial/office uses. Patterson Gardens would generate an average wastewater flow rate of about 318,500 gpd at project buildout as indicated in Table III.J.2.

The project sponsor is proposing to provide an onsite wastewater collection system to serve the needs of the project. The collection system is proposed to be included in the final project design. Eight-inch, 10-inch, and 12-inch sewer lines would be constructed in the project site to collect project-generated wastewater. These collectors would connect to the City's proposed trunk lines in Sperry and Ward Avenues.

The City would review Patterson Garden's proposed wastewater improvements to ensure consistency with applicable portions of the Wastewater Master Plan and the *Western Expansion Area Sanitary Sewer Collection System* report. Any inconsistencies between the proposed improvements would be resolved during the City's review.

KEYSTONE PACIFIC BUSINESS PARK

The Keystone Pacific Business Park would result in development of 224 acres of business-related uses including light industrial, warehouse, and flex space. The Business

Park would generate an average wastewater flow rate of approximately 136,650 gpd at project buildout as indicated in Table III.J.1.

The project sponsor is proposing to provide an onsite wastewater collection system to serve the needs of the project. The collection system is proposed to be included in the final project design. The 12-inch sewer line recommended in the City's *Western Expansion Area Sanitary Sewer Collection System* report would be constructed across the middle portion of the project site in Keystone Pacific Parkway. Eight-inch sewer lines would be constructed on the project site and connect to the 12-inch line at various points. The 12-inch sewer line would connect to the City's proposed 12-inch sewer line located east of the project site in the Creekside Meadows development (see Figure III.J.3).

The City would review the Business Park's proposed wastewater improvements to ensure consistency with applicable portions of the Wastewater Master Plan and the *Western Expansion Area Sanitary Sewer Collection System* report. Any inconsistencies between the proposed improvements would be resolved during the City's review.

WEST PATTERSON BUSINESS PARK MASTER DEVELOPMENT PLAN AREA

Buildout of the remaining portions of the West Patterson Business Park Master Development Plan area would generate approximately 350,700 gpd of wastewater (see Table III.J.3). No onsite wastewater collection system currently serves these areas.

CONCLUSION

The Keystone Pacific Business Park, Patterson Gardens, and buildout of the remaining portions of the West Patterson Business Park Master Development Plan area would generate a substantial amount of wastewater. No on-site wastewater collection system currently serves these areas, and the existing City collection facilities would not be adequate to serve these areas without additional improvements.

Expansion of the City's wastewater collection system to serve the West Patterson projects would require fair-share funding contributions from the project sponsors for the Business Park and Patterson Gardens, and for the project sponsors of future development in the Business Park Plan area. Without this funding, the City's wastewater collection system

would not have adequate capacity to serve the West Patterson projects. This would be a significant impact.

The City's approval of Patterson Gardens would include annexation of Patterson Gardens into the City. Following annexation, the City would require Patterson Gardens to participate in an existing Mello-Roos community facilities district (CFD). Property owners within the Mello-Roos district are assessed a special tax to finance public services and capital facilities like expansion of the City's wastewater collection and treatment facility. Because Patterson Gardens would automatically contribute its fair-share of funding, Patterson Gardens would not contribute to this significant impact. Because a CFD funding mechanism would not be automatic for the Keystone Pacific Business Park or future development in the Business Park Plan area, these projects would result in potentially significant impacts related to wastewater collection.

Mitigation Measure J.1.

The project sponsors for Patterson Gardens and the Keystone Pacific Business Park, and project applicants for future development in the Business Park Plan area shall construct all necessary wastewater system improvements on their property, or contribute to a new community facilities district to construct these improvements.

The City shall, through a combination of sewer development fees and other funding mechanisms, ensure that new development pays its share of the costs of sewer system improvements. (General Plan Policy IV.B.4)

Implementation of this mitigation measure would reduce this impact to a less-than-significant level.

Impact J.2. The West Patterson projects would generate wastewater in excess of the existing capacity of the City's wastewater treatment facility. (Significant)

The Keystone Pacific Business Park would generate approximately 136,650 gpd of wastewater, and Patterson Gardens would generate approximately 318,500 gpd. Buildout of the remaining portions of the West Patterson Business Park Master Development Plan area would generate approximately 350,700 gpd of wastewater. Demand from the Creekside Development would be about 404,500 gpd. The remaining capacity of the City's wastewater treatment plant is approximately 0.5 mgd. Total demand from the West

Patterson projects and the Creekside Development would be approximately 1.21 million gallons per day, more than 0.6 mgd over the existing treatment capacity.

The City's proposed first-phase wastewater treatment plant expansion (0.5 mgd) would be constructed to serve the remainder of the previously approved Creekside Development residences. The City's existing plant capacity will serve the first residences to be developed in the Creekside Development area. The first-phase expansion would serve the balance of the Creekside Development, which would generate about 180,000 gpd of wastewater. The remaining capacity of the first-phase expansion (about 320,000 gpd) would serve the Patterson Gardens development proposal and the first phases (about 150 acres) of the Keystone Pacific Business Park. The City's proposed second-phase treatment plant expansion (0.5 mgd) would provide adequate capacity to serve the remaining phases of the Keystone Pacific Business Park and the remaining portions of the West Patterson Business Park Master Development Plan area. As shown on Table III.J.5, the proposed wastewater plant and percolation pond expansion would adequately serve these developments.

Expansion of percolation ponds to serve the first-phase expansion of the wastewater treatment plant would remove up to 120 acres of agricultural land from production, and would reduce the availability of foraging habitat for Swainson's hawks. The impacts and relevant mitigation measures, if available, are discussed in Section III.C, Agricultural Resources and Section III.D, Biological Resources.

Expansion of the City's wastewater treatment facilities would require fair-share funding contributions from the project sponsors for the Business Park and Patterson Gardens, and for the project sponsors of future development in the Business Park Plan area. Without this funding, the City's wastewater treatment facilities could not be expanded and would not have adequate capacity to serve the West Patterson projects. This would be a significant impact.

The City's approval of Patterson Gardens would include annexation of Patterson Gardens into the City. Following annexation, the City would require Patterson Gardens to participate in an existing Mello-Roos community facilities district (CFD) or a similar financing mechanism. Property owners within the Mello-Roos district are assessed a special tax to finance public services and capital facilities like expansion of the City's wastewater collection and treatment facility. Because Patterson Gardens would

automatically contribute its fair-share of funding, Patterson Gardens would not contribute to this significant impact.

In addition, Patterson Gardens' participation in the existing Mello-Roos CFD would contribute to funding the expansion of the City's wastewater treatment plant. This 0.5 mgd expansion would serve Patterson Gardens and approximately 150 acres of the Keystone Pacific Business Park. However, a second 0.5 mgd expansion of the plant would be necessary to serve the balance of the West Patterson Business Park area. A new CFD or similar financing district would be established in the West Patterson Business Park area to fund various infrastructure improvements, including this second treatment plant expansion. As each building is built in the Keystone Pacific Business Park, that building parcel would be annexed to the new CFD (or similar district). Keystone Pacific Business Park would, thus, contribute its share to financing the second expansion. However, because a CFD or similar funding mechanism would not be automatic for the rest of the West Patterson Business Park area, these projects would result in potentially significant impacts related to wastewater plant capacity.

Mitigation Measure J.2.

Project applicants for future development in the West Patterson Business Park Master Development Plan area shall participate in a new CFD or similar financing district established to finance the necessary second wastewater treatment plant expansion of 0.5 mgd.

With implementation of this measure, the significant impacts of additional wastewater flows would be reduced to less-than-significant levels.

Impact J.3. The City's proposed wastewater treatment plant expansion project could exceed the wastewater treatment requirements of the Regional Water Quality Control Board. (Less than Significant)

Prior to implementation of the City's proposed wastewater treatment plant expansion, the City would be required to obtain revisions to its current Waste Discharge Requirements (WDRs) from the RWQCB. The City would be required to prepare and submit a Report of Waste Discharge as part of the application process to revise the WDRs. At a minimum, all Reports of Waste Discharge must describe the type and quantity of the proposed discharge and include a complete characterization of the constituents and the

discharge concentration of each constituent. In May 2002, the RWQCB provided the City with a list of additional information requirements that would be required in the Report of Waste Discharge for the proposed plant expansion. Based on this information, the RWQCB would evaluate the project's effects on the beneficial uses of groundwater, and its compliance with the SWRCB's antidegradation policy. The revised WDRs are expected to require continuation of the City's groundwater monitoring and reporting program to ensure compliance. Because the City's expanded plant would be required to comply with the revised WDRs, and because the City's existing facility complies with the current WDRs, the project is not expected to exceed the wastewater treatment requirements of the RWQCB. This would be a less-than-significant impact.

Mitigation Measures. No mitigation necessary.

CUMULATIVE IMPACTS AND MITIGATION

Impact J.4. Wastewater generated by past, present, and future cumulative projects would exceed the capacity of the City's existing wastewater treatment facilities. (Less than Significant)

Past and present development contributes approximately 800,000 gpd of wastewater to the City's treatment plant. This represents the current flows generated in the City's wastewater service area. The West Patterson projects would generate approximately 806,000 gpd of wastewater. Future buildout of the portions of the City outside the West Patterson Business Park Master Development Plan area that are assumed under the *Patterson General Plan* to develop in the future would generate approximately 2,514,000 gpd of wastewater, and the Diablo Grande project would generate approximately 733,000 gpd, should the City choose to serve Diablo Grande (see Table III.J.6). If the City decides in the future to accept and treat Diablo Grande wastewater, the total cumulative wastewater flows projected in the City by the year 2020, including existing flows, would be approximately 4.1 mgd. Future projected flows would exceed the plant's currently permitted capacity of 1.3 mgd. This would be a significant cumulative impact.

According to Section 15130(a)(3) of the State CEQA Guidelines:

> [a]n EIR may determine that a project's contribution to a significant cumulative impact will be rendered less than cumulatively considerable and thus is not significant. A project's contribution is less than cumulatively considerable if

Table III.J.6: Projected Future Cumulative City of Patterson Wastewater Flows (By Year 2020)

LAND USES	Homes	Buildings (square feet)	Population (living & working)	Unit Value	Flow gal/unit d	Flowrates gal/d
Villa del Lago						70,000
Heartland Ranch						
Residential	350		1,050	Person	100	105,000
Creekside Development						
Walker Ranch I	500		1,500	Person	100	150,000
Walker Ranch II/						
Creekside Meadows	823		2,470	Person	100	247,000
Shire Place	25		75	Person	100	7,500
West Patterson Projects						
Patterson Gardens						
Residential	987		2,960		100	296,000
Commercial/Retail		302,500	740	Employee/ Customer	30	22,500
Keystone Pacific Business Park						
Warehouse		1,911,195	2,550	Employee	30	76,500
Mfg/Asmbly/Lt. Ind.		582,830	1,165	Employee	30	34,950
Offices/Retail/Comm'l		263,320	840	Employee/ Customer	30	25,200
West Patterson Business Pk						
Warehouse		3,223,230	4,300	Employee	30	129,000
Mfg/Asmbly/Lt. Ind.		1,366,920	2,735	Employee	30	82,050
Offices/Retail		1,157,170	3,780	Employee	30	113,400
Hotel/Motel		80,000	85	Employee/ Customer	30	2,550
Highway Comml		393,935	790	Employee/ Customer	30	23,700

(Table continued on next page)

(Table III.J.6, Continued)

LAND USES	Homes	Buildings (square feet)	Population (living & working)	Unit Value	Flow gal/unit d	Flowrates gal/d
Diablo Grande Development						
Residential	2,100		6,300	Person	100	630,000
Commercial			1,656	Employee/ Customer	30	49,680
Industrial			1,005	Employee	30	30,150
East Area Development[1]						
Bright Development	130		390	Person	100	39,000
Future Development	1,375		4,125	Person	100	412,500
Institutional Development (Schools, Hospitals, Retirement Homes)				Student/Bed		750,000
TOTAL						**3,296,700**

Notes: Totals may not add due to rounding.
[1] Based on buildout of *Patterson General Plan.*
Source: Lee & Ro, Inc., 2002.

the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact.

Mitigation Measures J.1 and J.2 require the West Patterson project applicants to construct wastewater system improvements and/or to contribute their fair share of funding to assist in constructing future wastewater systems, mitigating service and treatment deficiencies. Therefore, the West Patterson projects' contribution to this significant cumulative impact would be less than cumulatively considerable. The West Patterson projects would not result in a significant cumulative impact related to wastewater.

Mitigation Measures. No mitigation necessary.

Impact J.5. Wastewater treatment facilities expansion would result in excess capacity of about 0.3 million gallons per day. (Less than Significant)

The 1.0 mgd expansion in wastewater treatment facilities would result in about 0.3 mgd capacity in excess of the projected 2.0 mgd demand for the West Patterson projects and

the approved Creekside Development. The additional capacity could accommodate future growth in the Patterson area. The 0.3 mgd remaining capacity would be a reduction in excess capacity compared to existing conditions, and therefore would not be a significant impact. Any growth accommodated would be within that assumed in the *Patterson General Plan*. As shown in Table III.J.6, total flows from buildout of the *Patterson General Plan* would be substantially greater than the proposed expansion of the wastewater treatment facilities to a capacity of about 2.3 million gallons per day.

Mitigation Measures. No mitigation necessary.

References

All referenced documents are available for review, by appointment, at City of Patterson offices (33 S. Del Porto Avenue, Patterson, CA) except those marked with an asterisk (*), which are available for review, by appointment, at the Stanislaus County Planning Department (1010 10th Street, Modesto, CA).

City of Patterson. 1992a. *City of Patterson General Plan*, prepared by Lawrence Mintier and Associates, adopted June 11.

City of Patterson. 1992b. *Wastewater System Master Plan,* prepared by Dewante and Stowell.

City of Patterson. 2001. *Western Expansion Area Sanitary Sewer Collection System,* prepared by Stoddard and Associates.

Lee & Ro. 2002. *Report of Future Impacts On Groundwater Salinity and Beneficial Uses Due to Anticipated Development Within The City of Patterson Wastewater Service Area.*

* Stanislaus County. 1994. *Stanislaus County General Plan.*

K. GEOLOGY AND SEISMICITY

INTRODUCTION

This section provides a brief summary of the geology of the Patterson area, earthquake faults and seismic hazards in the West Patterson project area, and potential impacts from development in the project area. The information is summarized from the City of Patterson *General Plan Background Report*, 1992, and from the geotechnical report prepared for the Patterson Gardens site by Brown & Caldwell, 2002. The *General Plan Background Report* Seismic and Geologic Hazards section is incorporated by reference as summarized below.

SETTING

SOIL TYPES

Patterson is located in the San Joaquin River basin. The geologic units in this basin include the Tulare Formation, terrace deposits, alluvium, and flood-basin deposits. The Tulare Formation consists of beds, lenses, and tongues of clay, sand, and gravel. The Corcoran Clay member of this formation is a regional aquitard (a confining layer) that underlies the San Joaquin Basin in the project vicinity at depths ranging from 50 to 550 feet below the ground surface. Terrace deposits are composed of yellow, tan, and light-to-dark brown silt, sand, and gravel with a matrix that varies from sand to clay. Alluvium is composed of interbedded, poorly-to-well-sorted clay, silt, sand, and gravel. Flood-plain deposits are generally composed of light-to-dark brown and gray clay, silt, sand, and organic materials.

Soils on the West Patterson project site consist primarily of sands and gravels, silty sands, and less permeable silts and clays. Groundwater levels are found at about 50 to 60 feet below the ground surface in a shallow aquifer, and at 100 to 350 feet below the ground surface in the deeper aquifer from which the City obtains its drinking water (see Section III.I, Water Supply).

SEISMICITY

Several active faults have been identified that could affect structures in the Patterson vicinity. The San Andreas fault is located in the San Francisco Bay Area, about 30 miles west of Patterson west of the Diablo Range. This fault extends for nearly the entire length of California. It is an active fault, with numerous small earthquakes recorded each year, and a high probability of causing at least one major earthquake in the reasonably forseeable future that would affect Stanislaus County and the City of Patterson.

Other active faults located closer to the City include the Hayward Fault, extending from about Richmond to near Hollister, the Calaveras Fault located along the eastern side of the Berkeley-Hayward hills, and the Clayton-Greenville Fault located south of Concord approximately parallel with the Hayward fault. The Tesla-Ortigalita Fault system is located closest to Patterson, in the Diablo Range to the west of the project site.

An Alquist-Priolo Special Studies Zone (an area where construction is limited in order to reduce hazards posed by surface rupture of a fault) is located along the Ortigalita Fault in the Diablo Range west of Patterson. The West Patterson project site is not located in an Alquist-Priolo Zone.

GEOLOGIC AND SEISMIC HAZARDS

Geologic hazards include landslides and erosion hazards. While there have been landslides in the adjacent Diablo range, the project site is flat and is not subject to landslide or erosion hazards. There is some erosion potential in the area of Salado Creek on the Patterson Gardens site, as no erosion control measures are in place along the banks.

Seismic hazards include groundshaking and ground failure. Ground failure can include liquefaction, settlement, and landslides or slumping. Groundshaking is the direct effect of seismic activity, ranging from very low, undetectable motion to high intensities that cause building collapse. The intensity of the ground vibration is determined by the nature of the underlying soil, the location of the epicenter of the earthquake, and the duration of the ground motion. The effects of groundshaking depend on the age, size, and structural characteristics of a building as well as the geological characteristics of the building site.

Liquefaction is the loss of soil strength due to seismic shaking of loose, saturated sandy soil. The loss of strength leads to a "quicksand" condition where the soil becomes liquid and loses its ability to support structures.

Tsunamis and seiches, earthquake-induced large sea waves and waves in enclosed water bodies, respectively, would not occur in the West Patterson project area.

While Patterson is susceptible to earthquake-induced hazards, the area has not experienced major seismic activity since the area was settled in the late 1800s.

REGULATORY FRAMEWORK

The California Building Code, Title 24 of the California Code of Regulations, contains the most current structural standards for constructing earthquake-safe buildings. Cities and counties in California are required to adopt the California Building Code; amendments to the Building Code are permitted if they would impose more stringent requirements.

The Patterson *General Plan* includes goals and policies related to geologic and seismic hazards:

VII.A.1. The City shall require preparation of geotechnical reports and impose appropriate mitigation measures to ensure, within the limits of technical and economic feasibility, that new structures are able to withstand the effects of seismic activity, including liquefaction.

VII.A.2. Underground utilities, particularly water and natural gas mains, shall be designed to withstand seismic forces in accordance with state requirements.

The Stanislaus County *General Plan* includes goals and policies related to seismic hazards in the Safety Element:

> Goal One, Policy Three. Development should not be allowed in areas that are particularly susceptible to seismic hazard.

Implementation Measures

1. The County shall enforce the Alquist-Priolo Earthquake Fault Zoning Act.
Responsible Departments: Building Inspections, Planning Department, Planning Commission, Board of Supervisors

2. Development in areas of geologic hazard shall be considered for approval only where the development includes an acceptable evacuation route.
Responsible Departments: Sheriff, Fire Safety, Emergency Services, Public Works, Planning Department, Planning Commission, Board of Supervisors

4. The routes of new public roads in areas subject to significant seismic hazard shall be designed to minimize seismic risk.
Responsible Departments: Public Works, Planning Commission, Board of Supervisors

IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

The project would be considered to have a significant impact if it would cause substantial soil erosion or if it would expose substantial numbers of people to major geologic or seismic hazards.

PROJECT IMPACTS AND MITIGATION

Impact K.1. Development of the West Patterson projects could expose new residents and employees to geologic hazards and seismic risks. (Less than Significant)

Development of 987 residences in Patterson Gardens would result in a new population of nearly 3,000 people who would be exposed to the seismic risks of groundshaking and liquefaction. The commercial uses proposed for the Patterson Gardens site would attract new employees, as would the commercial and light industrial uses proposed in the Business Plan area.

Pursuant to the requirements of the Patterson *General Plan*, geotechnical reports would be required for all new construction in the West Patterson project area. As described in Section III.H, Hydrology and Water Quality, Stormwater Pollution Prevention Plans (SWPPPs) would be required for construction in the project area. SWPPPs include erosion control measures to reduce sediment in runoff from construction sites. This requirement would reduce any construction-related erosion effects to less-than-significant levels.

The Patterson Gardens project includes improvements to Salado Creek, including restoration and widening the channel, and planting the banks. These improvements would provide additional flood control and would reduce erosion potential.

All new buildings and infrastructure constructed as part of the West Patterson projects would be required to comply with structural provisions of the California Building Code related to seismic safety. Potential damage to structures from geologic hazards on the project site would be reduced to less-than-significant levels through the requirement for a geotechnical report and review of the building permit application pursuant to implementation of the Building Code.

Mitigation Measure. No mitigation necessary.

References

All referenced documents are available for review, by appointment, at City of Patterson offices (33 S. Del Puerto Avenue, Patterson, CA), except those marked with an asterisk (*), which are available for review, by appointment, at the Stanislaus County Planning Department (1010 10th Street, Suite 3400, Modesto, CA), and except for those identified with an internet website address.

Brown and Caldwell, 2002. Geotechnical Report.

City of Patterson, 1992. *Patterson General Plan, Background Report.*

L. HAZARDS

INTRODUCTION

This section discusses the presence of hazardous materials in the West Patterson project area and potential impacts of these materials. Information contained in the following section regarding the presence of hazardous materials in soil on the Patterson Gardens site, part of the West Patterson project area, is drawn from a report on surface-soil testing completed by Brown and Caldwell, *Letter Report for Surface Soil Testing at Patterson Gardens, Patterson, California*, dated June 13, 2002. A copy of this report can be found in the project file at City of Patterson offices and Stanislaus County offices.

SETTING

Historically the land comprising the West Patterson project area has been used for agricultural purposes with most of the land currently under cultivation as orchards, row crops, or oat hay. Located near the center of the Business Park Plan site is the Patterson Airport. The airport is privately owned and occupies approximately 30 acres of land; it is used primarily for agricultural spraying. The wastewater treatment plant site is located east of the City, near the San Joaquin River; the site has been in industrial use for over ten years. Proposed new percolation pond sites are located on historically agricultural land just north and east of the treatment plant.

POTENTIAL SOURCES OF CONTAMINATION

The major source of potential contamination stems from the long-term farming activities on and around the West Patterson project area and the wastewater percolation pond sites. Due to the fact that the proposed development at the Patterson Gardens site includes 987 residential units and historically and currently uses pesticides, the California Department of Toxic Substances Control (DTSC) recommended that the site be tested for both organochlorides and metals.

Structures located at the proposed wastewater percolation ponds site and the West Patterson project area provide a potential source of contamination. At least one of the structures on the proposed percolation ponds site was found to have asbestos siding, and there may be more structures with hazardous building material. Buildings in the West Patterson project area may have asbestos insulation in heating ducts or lead-based paint.

The Patterson Airport is used primarily to house planes and chemicals for crop dusting on agricultural fields within 20 miles of the airport site. Both the spraying and the short-term storage of hazardous chemicals can be considered a source of potential contamination. Crop-dusting requests are handled on an on-call, field-by-field basis. Chemicals are delivered to the airport the day before a scheduled spraying operation to minimize on-site storage time (Fink, pers. com., 2002).

SOIL SAMPLING AND TESTING

The goal of the Brown and Caldwell study was to investigate the possible sources of soil contamination on the Patterson Gardens site due to the historic use of chemical fertilizers and pesticides on the site. The investigation into possible contamination consisted of a visual inspection of the site and soils, as well as a random sampling of area soil (at a 1-foot depth). A total of 23 surface soil samples were collected on May 20, 2002. Twenty-one samples were taken from random locations chosen using the Minitab, Inc., Release 13 software and methodology. In addition, two non-random sample sites were chosen. At these sites, two samples were collected to be tested for both organochlorides and metals. The two non-random locations were a former burn area and the land earmarked for creation of a new public school. The burn area was chosen because it was considered a potential "hot spot" for hazardous chemicals, while the school site was selected because "testing of school property located on former agricultural lands is common practice in California" (Brown and Caldwell, 2002, p. 3).

Of the 23 samples taken, a total of 12 samples were analyzed. Extraction procedures used in the study followed the general DTSC outline for testing agricultural soils (DTSC, *Interim Guidance for Sampling Agricultural Soils*, June 28, 2000, as cited in Brown and Caldwell, 2002). Five metal samples (three random and two non-random) underwent metals analysis in accordance with the California Code of Regulations Title 22, while 11 of the organochloride samples (nine random and two non-random) underwent organochloride pesticide/herbicide analysis according to US EPA methods 8081A and

8151A. All unanalyzed samples were frozen for possible future reference. Data and analysis results can be found in the project file.

IMPACTS AND MITIGATION

The proposed development of the Patterson Gardens site would include the construction of new residences. Historic use of agricultural chemicals on the site could impact construction workers and/or new residents if high levels remain in the soil. In addition, the West Patterson projects would attract new employees and residents to sites near the Patterson Airport, which is used by agricultural spraying airplanes. Finally, the project would require the demolition of structures that could possibly contain hazardous materials such as asbestos and lead-based paints.

SIGNIFICANCE CRITERIA

The results of the surface soil testing conducted at the Patterson Gardens site give information about the levels of potentially hazardous chemicals present in the soils on and around the site. The results were compared with residential Preliminary Remediation Goals (PRGs) to determine the hazardous nature of chemicals present in the site soil. PRGs are numerical values established by the US EPA for Region IX. These values represent risk-based concentrations of hazardous chemicals. They are used as standards for evaluating levels of contamination at proposed project sites. PRGs combine exposure information and EPA toxicity for a given substance. The residential PRGs are generic values related to sites proposed for residential use, and they are calculated without taking into account site-specific information. Therefore, PRGs should be used as guidelines for decisions regarding the presence of hazardous chemicals, not as legally enforceable standards of contamination.

Hazardous building materials such as asbestos, and lead-based paint in buildings scheduled for demolition would cause a significant impact if they were released in quantities and/or locations where they would pose a substantial public health hazard and/or would generate a new, substantial hazard to special status species.

PROJECT IMPACTS AND MITIGATION

Impact L.1. New residents in Patterson Gardens and students at the school site in the Patterson Gardens site could be exposed to hazardous levels of chemicals in the soil. (Less than Significant)

With the exception of the metal arsenic, all reported metals were found to have concentrations at or below the PRG's established for residential sites; this would not cause a significant environmental impact. Despite the detection of arsenic at levels above its PRG, completion of the residential component of the project would not result in a significant hazardous materials impact. Although the level of arsenic in the soil was found to be above the PRG for residential sites, the levels were well within expected naturally-occurring "background" levels for soils in the area (Brown and Caldwell, 2002). The PRG is a generic variable and is not meant to be site specific. Many California soils contain natural concentrations of arsenic which are well above those listed in the PRG (Brown and Caldwell, 2002, p. 6). In this instance, the arsenic reading does not represent the addition of a hazardous chemical through historic agricultural practices, and therefore represents a less-than-significant impact to the residential development of the West Patterson site.

The compound DDD (dichlorodiphenyldichloroethane) was found at 3 of 11 sites with a maximum concentration of 39 mg/kg (PRG is 2,400 mg/kg). Both DDE (dichlorodiphenyldichloroethylene) and DDT (dichlorodiphenyltrichloroethane) were found in all 11 samples with maximum concentrations of 420 mg/kg and 190 mg/kg respectively (PRG for both organochlorides is 1,700 mg/kg). DDD and DDE are the natural decomposition products of the organochloride DDT, which was commonly used as a pesticide until it was banned in the United States in 1972. All three compounds found on the West Patterson site are currently below PRG levels. Since these chemicals cannot be used on the soil in the future, their levels should continue to drop over time. The presence of low levels of the pesticide DDT and its components pose no hazardous materials threat to the West Patterson project now or in the future. Therefore, the impact of organochlorides in the soil would be less than significant.

Portions of the West Patterson Business Park Master Development Plan area not included in the Patterson Gardens site, including the Keystone Pacific Business Park, are currently being used for agricultural purposes. Therefore, it is likely that the soil in these areas also contains levels of organochlorides and metals. None of these sites are scheduled for

residential development. Since soil PRG's for residential areas are lower than those for lands slated for industrial or business uses, it is unlikely that significant levels of contamination would be found in these soils in the future. Therefore, at this time it is expected that impacts would be less than significant.

Mitigation Measure. No mitigation necessary.

Impact L.2. Demolition of existing structures in the West Patterson project area or on the proposed wastewater percolation pond sites could release hazardous chemicals such as asbestos or lead. (Potentially Significant)

Asbestos siding is expected to be found on at least one of the structures located on one of the proposed percolation ponds alternative sites. It is possible that other structures scheduled for demolition located on the proposed percolation ponds sites or in the West Patterson project area may also contain asbestos or other hazardous materials such as lead-based paint. The carcinogenic properties of asbestos have resulted in strict regulations for the demolition of buildings found to contain asbestos compounds. These regulations are for the benefit of both the demolition workers and future residents/occupants of the buildings constructed on a site. The discovery of asbestos siding on one structure should lead to the thorough investigation of possible asbestos materials in other structures scheduled for demolition. The local office of the State Occupational Safety and Health Administration (OSHA) must be notified before asbestos abatement can be carried out. The company contracted to remove asbestos must be a certified abatement company, and must follow state regulations if the work involves the removal of over 100 square feet of asbestos materials (8 CCR 1529 and 8 CCR 341.6). Adherence to the regulations regarding removal of asbestos materials would reduce the risk of asbestos exposure during removal of the structures.

Many of the structures slated for demolition on the West Patterson project site were built before December 31, 1978. It is likely that some of these buildings contain lead-based paint. A thorough study should be undertaken prior to demolition to locate sources of lead contamination. Under Interim Final Rule, 29 CFR 1926.62, OSHA is responsible for enforcing state and federal regulations regarding worker exposure during demolition of structures known to contain lead paint. OSHA requires that methods to minimize exposure include respiratory protection, protective clothing, medical surveillance, and training. Were lead paint to be found in any of the structures on the West Patterson

project site slated for demolition, an appropriate abatement plan would be prepared and implemented.

If state and federal regulations are followed regarding the removal of asbestos and other hazardous materials such as lead-based paint on the Patterson project site, the impact from such materials can be reduced to a less-than-significant level.

Mitigation Measure L.2.

A thorough investigation shall be made of each structure on the West Patterson site scheduled for demolition during implementation of the project. Each study shall focus on locating sources of asbestos and lead-based paint. Upon discovery of either of these substances in a building scheduled for demolition, removal is required to be conducted according to OSHA regulations.

With this mitigation, the impact of asbestos and lead-based materials can be reduced to a less-than-significant level.

Impact L.3. Agricultural spraying operations in the West Patterson project area and storage of chemicals at the Patterson Airport could expose residents and businesses to hazardous materials. (Less than Significant)

Crop dusting occurs only over agricultural fields in the surrounding area. Therefore, no spraying would occur directly over residential or industrial/business sites. Depending on prevailing winds, some areas may receive residual spray from nearby fields. However, the spray would be diluted by distance. Overall, conditions in the Patterson Gardens and the West Patterson Business Plan area resulting from spraying operations would be no different than those in similar areas throughout the County and the Central Valley where homes and businesses are located near agricultural fields. In addition, as the project progresses towards buildout, agricultural fields in the area would decrease so effects from spraying would diminish. In light of this, it is expected that any impacts from crop dusting originating at the Patterson Airport would be less than significant.

Mitigation Measure. No mitigation necessary.

References

All referenced documents are available for review, by appointment, at City of Patterson offices (33 S. Del Puerto Avenue) except those marked with an asterisk (*), which are at the Stanislaus County Planning Department (1010 10th Street, Suite 3400, Modesto, CA), and except for those identified with an internet website address.

Brown and Caldwell, June 13, 2002. *Letter Report for Surface Soil Testing at Patterson Gardens, Patterson, California.*

California Code of Regulations, Title 8 Sections 1529, and 341.6, on Asbestos.

Code of Federal Regulations, Title 29 Section 1926.62, on Lead.

Fink, Warren, personal communication, 2002, President, Patterson Flying Service, with Turnstone Consulting, July 9.

M. COMMUNITY SERVICES

INTRODUCTION

The Community Service section discusses existing schools, fire protection services, police services, solid waste management, and parks and recreational facilities of the West Patterson project area, and the changes that would affect these services with construction of the proposed West Patterson projects. It evaluates the impacts of the proposed projects on the City's community facilities and describes mitigation measures, where called for, that would lessen potentially significant impacts resulting from the West Patterson projects. The Community Services section is based on available site information; a review of the 1992 *City of Patterson General Plan,* the 2002 *City of Patterson Sphere of Influence Plan and Master Services Element;* the 2002 *City of Patterson Development Fees Studies;* the 2001 *Fink Road Landfill Expansion Project Draft EIR*; the *School Facilities Funding and Mitigation Agreement By and Between the Patterson Unified School District and Patterson Gardens* and information gathered from the Stanislaus Council of Governments (StanCOG); and telephone conversations with City Staff. This section is organized by sub-topic, with Setting and Impacts identified under each.

1. SCHOOLS

SETTING

The project site lies within the Patterson Unified School District (PUSD). The School District is bounded by the San Joaquin County border to the north, the San Joaquin River to the east, Marshall Road to the south, and Santa Clara and Alameda Counties to the west. The state has a class-size limit of 20 students in K-3 classrooms, and a policy of 33 students in 4-6 classrooms, 30 students in 7-8 classrooms, 28 students in 9-12 classrooms, and 24 in K-12 laboratory classrooms. PUSD currently has a loading policy of 20 students per K-3 classroom, 25 students per 4-6 classroom, and 30 students per 7-12 classroom. To accommodate enrollment increases, the School District has added portable classrooms at most of its school sites. Two of the School District's five elementary

schools, the middle school and the high school are located in the City of Patterson. None of the four schools in Patterson exceed state loading capacity standards.

The elementary schools are Northmead School (Grades K-3) and Las Palmas School (Grades 4-6). The PUSD offers three pre-school classes in the Patterson area; two are offered at Northmead School, and one at the Stanislaus County Housing Authority on Walnut Drive. A new elementary school is planned for Patterson's Creekside area. Development of this school was precipitated by the Walker Ranch development. The school is scheduled to be in operation within two years. Patterson also has a private Catholic school, Sacred Heart School.

The middle school, Patterson Junior High School (Grades 7-8), and high school, Patterson High School (Grades 9-12), are located next to each other. A new middle school building is under construction and is scheduled to be completed by 2003. Once this building is operational, Patterson Junior High School will relocate to the new premises and Patterson High School will expand into the old middle school facilities.

The Yosemite Community College District serves the Patterson area. The nearest community college is Modesto Junior College in Modesto, which has two campuses. The main campus is located on College Avenue, and Modesto Junior College West is located on Blue Gum Avenue. The colleges in the District offer a full program of courses suitable for transfer to a four-year college or university, and offer an Associate of Arts degree.

California State University, Stanislaus (CSUS), is located in Turlock, approximately 18 miles east of Patterson. CSUS offers a variety of four-year bachelor of arts and science degrees, and a limited number of masters of arts degrees. Chapman College in Modesto, a private college, offers bachelors and masters degrees. A number of business and vocational schools are located in Modesto. The John F. Kennedy Special Education Center in Modesto provides a complete range of classes for the trainable mentally handicapped, developmentally handicapped, and multi-handicapped students, from birth to 22 years of age. The center also provides vocational training and parent counseling.

REGULATORY FRAMEWORK

Patterson General Plan Policies

The *City of Patterson General Plan* Public Facilities and Services Element provides goals related to provision of adequate school facilities. Policies furthering these goals that are relevant to the West Patterson projects include:

IV.G.2. Standards established by the Patterson Unified School District shall be considered in determining the number and location of new school sites. These standards are based on the assumed average number of students per household for each grade level (which varies for different types of housing) and the average size of an elementary school, junior high school, or high school.

IV.G.5. The City shall support enactment of state legislation to finance the construction of new schools.

IV.G.6. The City shall approve only those development proposals that have recognized and mitigated their full impact on school facilities, as determined by the City Council. The City shall work with the Patterson Unified School District to identify, establish, and implement additional measures that may be necessary to adequately finance school facilities in the City.

IV.G.7. The City shall require, to the extent possible, that new school facilities are constructed concurrently with new residential development.

IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

Development within the project site would have a significant impact on school facilities if:

- It required new or physically altered facilities, the construction and/or operation of which could cause significant environmental impacts.

Effects of Proposed West Patterson Projects

Based on generation factors of about 0.47 children per dwelling unit for elementary schools, about 0.14 children per dwelling unit for middle schools, and about 0.20 children per dwelling unit for high schools, the Patterson Gardens proposal would generate a total of about 800 additional school-aged children. About 465 of these new students would be at the elementary school level, about 135 students would be at the middle school level, and about 200 students would be at the high school level.

School Facilities Funding and Mitigation Agreement Between PUSD and Patterson Gardens

The developer for Patterson Gardens, along with other residential developers of properties in the area west of downtown Patterson including Walker Ranch I, Walker Ranch II, and Creekside Meadows developers, have entered into a School Facilities Funding and Mitigation Agreement. The City, PUSD, and these developers have devised a four-step plan to finance PUSD school facilities that would be needed to accommodate additional students generated by the development of new residences, including Patterson Gardens (PUSD, 2001). The four steps of this financing plan include:

1. A mitigation payment to PUSD at or prior to issuance of each residential building permit.

2. The participation of these developers in one or more Community Facilities Districts ("CFDs") formed pursuant to the Mello-Roos Community Facilities Act of 1982.

3. An approximately 19.5 million local general obligation bond. This bond received voter approval in June 2001 and is applicable to district-wide needs.

4. Use of State of California funds allocated under the Senate Bill No. 50 (SB 50). This Bill is also referred to as the Leroy R. Greene School Facilities Act of 1998.

Senate Bill No. 50. In November 1998, the State Legislature enacted amendments to the statutory scheme for school fees with the adoption of the Leroy F. Greene School Facilities Act of 1998 (SB 50). Senate Bill 50 included a $9.2 billion bond measure that was approved by the voters as Proposition 1A. According to the Leroy R. Greene School Facilities Act of 1998, school districts are governed in their ability to charge fees to mitigate the impact of new development by Government Code Section 65970. In order to

collect fees allowed by the statute, school districts must prepare a study documenting the need for such fees and the facilities for which the fees will be used. The approval of Proposition 1A made operative other provisions of SB 50 that amended the laws governing school impact fees and other mitigation of school facilities impacts. More specifically, SB 50 amended Government Code Section 65995(a) to prohibit state or local agencies from imposing school impact mitigation fees, dedications, or other requirements in excess of those provided in the statute. In certain circumstances, school districts may impose alternate fees for new residential construction. The legislation also prohibits local agencies from denying or conditionally approving a project based on the inadequacy of local school facilities.

According to the School Facilities Funding and Mitigation Agreement, the mitigation payments made by the developers to the PUSD constitute the entire extent of the developers' obligation to provide fund to the PUSD for accommodating the new student generated by the West Patterson properties. The developers would be required to make no further payments.

Impact M.1. The project would generate about 800 additional school-aged children which would increase the demand for school facilities. (Less than Significant)

The residential component of the project, the Patterson Gardens proposal, would increase the demand for school facilities by adding 800 additional school-aged children. Prior to building permit issuance for new residential development, the project sponsor would be required to demonstrate full compliance with the relevant provisions of the School Facilities Funding and Mitigation Agreement. The developers' obligation to mitigate impacts on PUSD's ability to provide adequate school facilities for additional students generated by the new developments would be considered fully satisfied by the developers' agreement to participate in CFDs and payment of mitigation fees specified in the Mitigation Agreement. Thus this would be a less-than-significant impact.

Mitigation Measure. No mitigation necessary.

Impact M.2. The expansion of employment opportunities in Patterson may attract households with school-aged children resulting in a secondary impact on area schools. (Less than Significant)

Development of the Business Park Plan area, the light industrial and business park component of the project, would not directly generate additional school-aged children. However, it is possible that jobs generated by these commercial/industrial uses could induce workers to relocate to Patterson, thereby resulting in secondary impacts to schools because of an influx of new residents. State law mandates that school impact fees be charged for development of commercial/industrial uses. The West Patterson projects would comply with this mandate and pay the requisite development impact fees.

Additionally, as discussed in Section III.N, Population, Housing and Employment, residential development has outpaced the expansion of employment opportunities in Patterson. Thus in the future, the number of new jobs is not expected to exceed the planned housing supply and the corresponding school-aged children associated with these residences. Therefore, this would be a less-than-significant impact.

Mitigation Measure. No mitigation necessary.

2. FIRE PROTECTION SERVICES

SETTING

The Patterson Fire Department and West Stanislaus Fire District (WSFD) are primarily volunteer fire departments that share a full-time fire chief and a fire station in Patterson, though for administrative purposes they operate as separate entities. The fire chief serves as chief of both the Patterson Fire Department and the WSFD, with half of his salary paid by each entity. The Patterson Fire Department provides fire protection within the City limits, and WSFD is responsible for serving approximately 625 square miles of area west of the current city limits within the City's sphere of influence as well as unincorporated County land adjacent to it. Both departments have a "shared first response" protocol, and would therefore jointly serve the West Patterson project area.

The Patterson Fire Station, located at 433 West Las Palmas Avenue, does not have adequate space for administration, equipment, equipment maintenance, storage, or adequate parking. Besides Patterson Fire Station, WSFD also runs operations out of four additional fire stations, which are in Westley, Newman, and El Solyo. The Patterson Fire Department and WSFD have mutual aid agreements with all adjoining fire districts,

including the Woodland Avenue Fire District, the Salida Fire District, the Westport Fire District, the Mountain View Fire District, and the Stanislaus Consolidated Fire Protection District. The agreement with the Stanislaus Consolidated District is not for initial response but for secondary response, because of the distance between that district's headquarters and Patterson. The California Department of Forestry operates a fire station on Sperry Road east of Interstate 5 to combat fires during the summer fire season.

The Patterson Fire Department's equipment includes three engines and one rescue vehicle (owned jointly by the City and WSFD). Equipment owned by the WSFD includes nine engines (two reserves), five water tankers, three rescue vehicles (one reserve, and one each owned jointly with the Cities of Patterson and Newman), one mobile air compressor, a large mobile generator, and a pickup truck. In addition to fire suppression, fire department services include fire prevention, public education, fire hydrant maintenance, hazardous material response, and nuisance abatement.

The desired standard for fire protection services in Patterson is to maintain a ratio of about 4.7 firefighters (volunteers and full-time) per 1,000 population and a ratio of about 1 to 1.25 full-time fire protection personnel per 1,000 population. The Patterson Fire Department is served by 40 volunteers and WSFD is served by 125 volunteers including the 40 Patterson volunteers. Volunteers are called from the area where the emergency call originates. Additionally, the Patterson Fire Department and WSFD share about four full-time staff, including a fire chief, two captains, and one clerk.

The current Fire Department staff level is below the desired standard for fire protection services. At 2000 population levels (11,600), Patterson Fire Department would need a total of about 55 firefighters including a minimum of 12 to 15 full-time staff to maintain their desired fire protection personnel-to-population ratios.

According to Acting Fire Chief Bill Kinnear, current response time is estimated to be under four to five minutes to any part of the City, which is within the desired response time of five minutes (Kinnear, July 23, 2002).

REGULATORY FRAMEWORK

Patterson General Plan

The *City of Patterson General Plan* Public Facilities and Services Element provides goals related to provision of adequate fire protection services. Policies furthering these goals that are relevant to the West Patterson projects include:

IV.F.1. The City shall endeavor to achieve and maintain an overall fire insurance (ISO) rating of 5 or better. The goal for average response time for Priority 1 (emergency) calls shall be five minutes for 95 percent of the calls.

ISO Rating

Fire protection classifications are designated by the State Insurance Services Office (ISO). The ISO considers three primary factors in their rating system: fire department location, personnel, and equipment (50 percent); water supply and fire flow capacity (40 percent); and communications capabilities (10 percent). Ratings are based on a scale of 1 to 10, with 1 being the best possible protection. The Patterson Fire Department maintains an ISO rating of 6 within the City. Outside the City, the ISO rating is about 9.

Patterson Development Fee Studies

The *City of Patterson Development Fee Studies* report was first prepared in 1995 to provide the factual basis for the adoption of development impact fees in accordance with Government Code Section 66000. Based on this information, the City subsequently adopted impact fees for municipal facilities such as public safety services, including fire protection and police services. In 2000, the City prepared an updated capital improvement program and an associated development impact fee study for public safety, and the fees for municipal facilities were revised accordingly. As of 2000, the fee for fire protection facilities is calculated at the rate of $364.26 per dwelling unit for residential uses and at the rate of $0.26 per sq. ft. for non-residential uses.

IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

Development within the project site would have a significant impact on fire protection services if:

- It would result in the need for construction of additional fire protection facilities.

Effects of Proposed West Patterson Projects

Based on the desired standard of about 4.7 firefighters (volunteers and full-time) per

1,000 population and a ratio of about 1 to 1.25 full-time fire protection personnel per 1,000 population, residential development with the Patterson Gardens proposal would add approximately 2,961 residents and require an additional 14 firefighters including 3 to 4 full-time fire protection personnel. The demand for additional personnel and/or firefighting equipment is not considered to be a significant physical environmental impact, although it could be a fiscal impact in the City.

Acting Fire Chief Bill Kinnear estimates that development of the Business Park Plan area would require a new fire station with a minimum of nine full-time fire protection personnel. Given the location of the existing Patterson Fire Station in relation to the location of new development, the new fire station would need to be located in or near the Business Park Plan area.

Impact M.3. Development of the proposed West Patterson projects would increase the demand for construction of additional fire protection facilities. (Less than Significant)

Development of the West Patterson projects would require the provision of additional fire protection facilities, including a new fire station. Accordingly, the City's updated municipal facilities fee schedule requires the West Patterson projects to pay a development impact fee for fire protection services. Based on the rate of $364.26 per dwelling unit for residential uses, the fire protection impact fee for the 987-unit Patterson Gardens proposal would be about $359,525.00. Based on the rate of $0.26 per sq.ft. for non-residential uses, the fire protection impact fee for the development of the Business Park Plan area would be about $2,340,000. The West Patterson projects could have a significant impact on fire protection services if a new fire station were not provided prior to project buildout. The development impact fees would contribute towards construction of a new fire protection facility in the project area. Construction of a new fire station would have impacts similar to construction of other buildings discussed in various sections in Chapter III.

Mitigation Measure. No mitigation necessary.

3. POLICE SERVICES

SETTING

The City of Patterson contracts with the Stanislaus County Sheriff's Department for the provision of police services. The Sheriff (Patterson Police Services) provides law enforcement services in the city limits. It has a shared first response protocol with the County Sheriff's Department for life-threatening emergencies to areas outside the city limits, but in close proximity to the city. The Sheriff's Department patrol area for this portion of the county covers approximately 625 square miles. This area includes the West Patterson project area.

The Patterson Police Department will respond to requests from other agencies outside the City limits when necessary. Other agencies who may request assistance include the Stanislaus County Sheriff's Department, California Highway Patrol, and City of Newman Police Department.

The Police Department is located at 344 West Las Palmas Avenue and includes services such as the administrative offices, investigative bureau, records bureau, volunteer training facilities, community services, computer information services, and a dispatch office.

The desired ratio of police personnel to population in Patterson is about 1.5 full-time police personnel per 1,000 population. Currently, Patterson Police Department has about 17 officers and 3 volunteers, which means the City has maintained the desired ratio of about 1.5 police personnel per 1,000 population. There are at least two officers on duty at any given time.

Current response time to any part of the City is estimated to be under three minutes, which is within the desired response time. City police units are currently dispatched to City emergencies through the Stanislaus County Communications Center in Modesto. The Stanislaus Communications Center provides dispatch services which are part of the service contract with the Stanislaus County Sheriff's Department.

REGULATORY FRAMEWORK

Patterson General Plan Policies

The *City of Patterson General Plan* Public Facilities and Services Element provides goals related to provision of adequate police services. Policies furthering these goals that are relevant to the West Patterson projects include:

IV.E.1. The City shall through adequate staffing and patrol arrangements, endeavor to maintain the minimum feasible response time for police calls. The goal for average response times for Priority 1 calls (emergencies) shall be three minutes.

Patterson Development Fee Studies

The *City of Patterson Development Fee Studies* report was first prepared in 1995 to provide the factual basis for the adoption of development impact fees in accordance with Government Code Section 66000. Based on this information, the City subsequently adopted impact fees for municipal facilities such as public safety services, including fire protection and police services. In 2000, the City prepared an updated capital improvement program, and an associated development impact fee study for public safety, and the fees for municipal facilities were revised accordingly. As of 2000, the fee for police facilities is calculated at the rate of $124.28 per dwelling unit for residential uses and at the rate of $0.09 per sq. ft. for non-residential uses.

IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

Development within the project site would have a significant impact on police services if:

- It would result in the need for construction of additional police facilities.

Effects of Proposed West Patterson Projects

Based on the desired standard of about 1.5 full-time police officers per 1,000 population, residential development of the Patterson Gardens proposal would require an additional

4.5 police officers. The Stanislaus County Sheriff's Office Assistant Sheriff Richard Breshears estimates that the light industrial and commercial uses proposed by the West Patterson projects, including the Business Park Plan development and commercial uses in the Patterson Gardens proposal, would require additional police personnel at the minimum rate of 1.2 full-time officers per 1,000 employees per a 24-hour period. This means that if all businesses operated over a 24-hour time span, a minimum of 20 additional police officers may be needed. The demand for additional personnel and/or police equipment is not considered to be a significant physical environmental impact, although it could be a fiscal impact in the City. Given the location of the Patterson Police Station in relation to the location of the West Patterson project area, and given the number of additional officers needed, a new police facility would be needed in the area.

Impact M.4. Development of the proposed West Patterson projects would increase the demand for police facilities. (Less than Significant)

Development of the West Patterson projects would require the provision of additional police facilities. Accordingly, the City's updated municipal facilities fee schedule requires the West Patterson projects to pay a development impact fee for police services. Based on the rate of $124.28 per dwelling unit for residential uses, the police services impact fee for the 987-unit Patterson Gardens proposal would be about $122,665.00. Based on the rate of $0.09 per sq. ft. for non-residential uses, the police services impact fee for the development of the Business Park Plan area would be about $810,000. The West Patterson projects could have a significant impact on law enforcement if a new police facility were not provided prior to project buildout. The development impact fees would contribute towards construction of a new police facility in the project area. Construction of a police station would have impacts similar to construction of other buildings discussed in various sections in Chapter III.

Mitigation Measure. No mitigation necessary.

4. SOLID WASTE DISPOSAL

SETTING

The City of Patterson provides mandatory solid waste collection to all residents and businesses in the City, its sphere of influence, and unincorporated County land adjacent

to it. This area includes the West Patterson project area. Currently, the City recycles about 28 percent of its solid waste. Recycling is done by implementation of a green waste/garbage separation program, and the provision of a recycling dropoff center as well as services that hand-sort commercial wastes.

The City has a franchise agreement with Bonzi Patterson Disposal, which serves a majority of City residences with trash and curbside recycling collection services. These services include weekly collection for single family homes, mobile homes, and multi-family residences. The residential rates are currently $15.50 for 90-gallon waste containers and $11.60 for a 60-gallon container. Bonzi Patterson Disposal also provides commercial and industrial waste pickup. Commercial rates depend on the size of the container and frequency of pickup. Recycling containers are provided at no cost to anyone who is interested in participating in the recycling program. Bonzi Patterson Disposal does not have an exclusive franchise to collect recyclable materials. Other collectors also operate within the City.

The City's non-recyclable waste is disposed at the Fink Road Landfill and Waste-to Energy Plant, located west of Crows Landing. The waste-to-energy facility burns refuse and provides electricity to Pacific Gas & Electric's system. The landfill receives non-recyclables for disposal from all of Stanislaus County. The tipping fee is $26.50 per ton, and disposal companies pay this tipping fee. At permitted disposal rates of 1,500 tons per day (tpd), the anticipated life span of the landfill is approximately 8 to 15 years. At current average disposal rates (about 290 tpd), the anticipated life span of the landfill is approximately 26 to 41 years. A proposal to expand the Fink Road Landfill is currently under review. If expanded, the capacity of the landfill would increase from the currently permitted disposal rate of 1,500 tpd to 5,000 tpd, and the landfill would have an additional life span of 55 years from the start of the expansion. (Fink Road Landfill Expansion Project Draft EIR, 2001, pp. 3-10 and 3-14.)

REGULATORY FRAMEWORK

Patterson General Plan Policies

The *City of Patterson General Plan* Public Facilities and Services Element provides goals related to provision of solid waste management. Policies furthering these goals that are relevant to the West Patterson projects include:

IV.D.1. The City shall study and actively pursue methods of solid waste recycling and reuse, including source separation, with the goal of reducing its solid waste generation by 25 percent by 1995 and 50 percent by the year 2000.

State of California Recycling Policy

The State mandate, AB 939, to divert 50 percent or more of solid waste from landfills has been in force since 2000. Currently, the City does not meet this mandate as it recycles about 28 percent of its solid waste.

Stanislaus County Solid Waste Management Plan

The Stanislaus County Solid Waste Management Plan was formulated jointly by the County and nine cities in the County every five years. As per state statute, this Plan lists countywide waste management practices in order of priority; these are (a) source reduction; (b) recycling and composting; (c) environmentally safe transformation (burning waste to generate electricity); and (d) landfill (for waste that cannot be disposed of in any other manner).

The California Integrated Waste Management Board mandates review of all countywide solid waste management plans every five years. Accordingly, a review of the Stanislaus County Solid Waste Management Plan is currently in process. The County and all major cities within the County, with the exception of the City of Modesto, are planning to petition the Waste Management Board to form a waste collection region. If granted, the Stanislaus region, including Patterson, would prepare to calculate their waste reduction jointly, which would allow all of the jurisdictions to meet the 50 percent waste reduction requirement.

Waste Generation Factors

According to the General Plan EIR, daily waste generation factors for Patterson were approximately 3.3 pounds per capita for residential uses and 2.4 pounds per employee for non-residential uses (General Plan EIR, p. V-25). Based on these waste generation factors, in 2000 the City generated approximately 38,280 pounds of residential waste per day or about 6,985 tons for the year, and 3,960 pounds of non-residential waste per day or about 720 tons for the year. Overall, the City generated about 7,705 tons of solid

waste in the year 2000. With recycling about 28 percent, or 2,157 tons, of Patterson's annual waste stream was diverted from landfill in the year 2000.

IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

Development within the project site would have a significant impact on solid waste disposal if:

- It would increase generation of solid waste in excess of remaining or planned landfill capacity.

Effects of Proposed West Patterson Projects

Based on a waste generation factor of about 3.3 pounds per resident for residential uses, the Patterson Gardens proposal would generate approximately 9,771 pounds of residential waste per day or about 1,783 tons per year. Based on a waste generation factor of about 2.4 pounds per employee for non-residential uses, development of the Business Park Plan area and commercial uses within Patterson Gardens proposal would generate approximately 40,764 pounds of non-residential waste per day or about 7,440 tons per year. Overall, the West Patterson projects would generate a total of 9,223 tons of solid waste per year. At 28 percent recycling, about 2,582 tons per year of this waste stream would be diverted from landfill. At the state-mandated levels of recycling, 50 percent or 4,611 tons per year of this waste stream would be diverted from landfill.

Impact M.5. Development of the proposed West Patterson projects would generate additional solid waste in the City of Patterson. (Less than Significant)

At the current recycling rate of about 28 percent of total solid waste, about 6,641 tons per year of solid waste would reach the landfill. At a recycling rate of 50 percent, about 4,611 tons per year of this waste stream would reach the landfill. In either of the two scenarios, total solid waste generated due to the proposed projects would be within the current parameters of permitted disposal rate at Fink Road Landfill (1,500 ton per day). Therefore, provided the projects comply with all applicable provisions of the Stanislaus County Solid Waste Management Plan, additional generation of solid waste due to the proposed project would not be a significant impact.

Mitigation Measure. No mitigation necessary.

5. PARKS

SETTING

As of 2002, there are about 45 to 50 acres of total developed parkland within the current City limits, the surrounding areas planned for annexation, the adopted sphere of influence and the unincorporated County land adjacent to it. From 1990 to the present, total developed parkland acreage has grown from about 8 to 45-50 acres.

The City currently has 17 existing park and recreational facilities. Notable examples of these are described below:

- Patterson Sports Complex is located southwest of the City across Ward Avenue and south of the Patterson Gardens site. It consists of 25 acres developed with ball fields, a children's play area, and parking.
- North and South Parks at Las Palmas and Highway 33 make up a total of three acres. South Park is also known as Memorial Park. These are the oldest parks in Patterson, established when the town was originally laid out. The parks have playground equipment and are heavily used on holidays and weekends.
- Felipe Garza Park is a five-acre park at Walnut and Las Palmas Avenues; facilities at the park include playground equipment, a baseball diamond, and an open grassy area.
- Sunflower Park is a 1.5-acre park in the southern part of the city. The City is considering the conversion of a detention basin adjacent to the proposed Sunflower Park to a recreational facility.

In addition to these public parks, the city relies on school facilities to supplement City parks and recreational areas. School grounds that are open to the public after school and during the summer are:

- Northmead School, seven acres located at M and Fifth Streets. Facilities include a playground and an open grassy area.

- Las Palmas School, 11 acres located at Ninth Street and Las Palmas Avenue. The school grounds contain large open grassy areas suitable for field activities.

- Patterson High School and Junior High School share a 37-acre site. Facilities include athletic fields, tennis courts, and a gymnasium. Little League baseball games are held at the high school.

REGULATORY FRAMEWORK

The Quimby Act

Section 66700 of the Subdivision Map Act (the Quimby Act) prescribes the circumstances and procedures under which a local government may require the payment of a fee or the dedication of land for park purposes. Under the Quimby Act, a local government may adopt an ordinance requiring the dedication of land, or the payment of a fee in lieu of land, as a condition for the approval of a subdivision. The ordinance must include standards for determining the amount of land to be dedicated and the amount of any fee that would be paid in lieu of dedication. These standards must be adopted as part of the City's *General Plan*. More specifically, the Quimby Act allows a local government to require the dedication of land or the payment of an equivalent in-lieu fee that would be necessary to provide three acres of parkland per 1,000 residents in a new subdivision. If the existing standard of park-to-population is higher, the law allows a higher standard for the dedication or in-lieu fee, but not to exceed five acres per 1,000 residents.

The Quimby Act provides a mechanism for the acquisition of parkland by local governments as a condition of subdivision approval. The cost of developing the land into a park often is covered by local governments by the adoption of park facility impact fees. These fees may be used to develop new park facilities or replace facilities at existing parks.

City of Patterson Development Fee Studies

The *City of Patterson Development Fee Studies* report was first prepared in 1995 to provide the factual basis for the adoption of development impact fees in accordance with Government Code Section 66000. Based on this information, the City subsequently adopted a Parkland In-Lieu Fee schedule. In 2000, the City prepared an updated capital improvement program and associated development impact fee study. Subsequently, the

City undertook a revised program to fund the construction of certain park facilities, including an expanded sports complex, a community/senior center, an aquatics center, and other improvements to undeveloped parkland that may be acquired through new development.

There is no equivalent fee imposed on development of non-residential uses.

Patterson General Plan Policies

The *City of Patterson General Plan* Recreational and Cultural Resources Element provides goals related to provision of adequate recreational facilities and parks. Policies furthering these goals that are relevant to the West Patterson projects include:

V.A.2. The City shall establish a standard of five acres of developed parkland (combined neighborhood and community) per 1,000 residents.

V.A.3. New development is required to assist in meeting the City's standard of five acres per 1,000 residents. To this end, the City shall require new development to dedicate land, dedicate improvements, and pay in-lieu fees, or a combination of these determined acceptable by the City, to the maximum extent authorized by law.

V.A.3. The City shall pursue joint-use of school facilities as a high priority for the development of new park and recreational facilities, especially for after-school activities.

V.A.10. The City shall identify appropriate open spaces, including areas within the downtown and its western extension and along Salado Creek, for development of safe community activity areas.

Currently, the City has a ratio of 3.51 acres of developed parkland per 1,000 residents, which means the City is in compliance with the state standard of a minimum of three acres per 1,000 residents (according to the Quimby Act). However, it does not meet the City's *General Plan* standard of five acres per 1,000 residents. An additional 84 acres of developed parkland would be required to achieve the desired ratio of 5 acres of developed parkland per 1,000 residents through full buildout of the City's planning area.

IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

Development within the project site would have a significant impact on parks and recreation if:

- It generated a demand for new parkland and recreation facilities that would hinder efforts to achieve the desired ratio of parkland to population.

Effects of Proposed West Patterson Projects

Development of the proposed Patterson Gardens proposal would generate demand for additional parkland. In terms of provision of open space and recreational facilities, the Patterson Gardens proposal includes the reservation of approximately four acres of the southeast corner of the site, immediately adjacent to the City's existing regional sports complex, to be dedicated to the City for expansion of the sports complex. Additionally, the Patterson Gardens proposal also includes development of about 9.8 acres of neighborhood park, and about 2.0 acres of parkland and trails within the new Salado Creek right-of-way. Overall, the Patterson Gardens proposal would include 15.8 acres of developed parkland. Development of the proposed Business Park Plan area would not generate demand for new parkland or recreational facilities.

The City would require new residential development to dedicate land, dedicate improvements, and pay in-lieu fees for parks and recreational facilities. In particular, the City would require that the developer of Patterson Gardens set aside the required parkland as reflected in the Final Development Plan, and develop this parkland consistent with the City's Park Design guidelines. In return, the developer would be credited for the parkland in-lieu fee which is about $478.83 per residential unit, and the park development fee which is about $1,400 per residential unit.

Impact M.6. Development of the Patterson Gardens proposal would generate the need for additional parkland and recreational facilities to serve new residents. (Less than Significant)

Based on the desired standard of five acres of developed parkland per 1,000 residents, development of the Patterson Gardens proposal would generate the need for an additional 14.8 acres of new parkland. Based on the City's parkland requirements, the developer of

Patterson Gardens would dedicate a total of 15.8 acres for the development of new parkland, including neighborhood parks and trails, and expansion of the City's sports complex, as reflected in the Final Development Plan. The developer would also be required to develop this parkland consistent with the City's Park Design guidelines. In return, the developer would be credited for the parkland in-lieu fee, which is about $478.83 per residential unit, and the park development fee, which is about $1,400 per residential unit. Therefore, the Patterson Gardens proposal would be in compliance with *General Plan* open space requirements as well as State requirements, and the additional generation of demand for new parkland and recreational facilities due to the proposed project would not be a significant impact.

Mitigation Measure. No mitigation necessary.

References

All referenced documents are available for review, by appointment, at City of Patterson offices (33 S. Del Puerto Avenue) except those marked with an asterisk (*), which are at the Stanislaus County Planning Department (1010 10th Street, Suite 3400, Modesto, CA), and except for those identified with an internet website address.

Breshears, Richard, Assistant Sheriff, Patterson Police Department, July 23, 2002, telephone conversation with Turnstone Consulting.

*County of Stanislaus, Department of Public Works, 2001. *Fink Road Landfill Expansion Project Draft EIR, November 7, 2001.*

Crawford, Multari and Clark, 2002. *West Patterson Master Development Plan Draft EIR.*

*Ford, Kirk, Deputy Director, Stanislaus County Planning and Community Development, July 22, 2002, telephone conversation with Turnstone Consulting.

Kinnear, Bill, Acting Fire Chief, Patterson Fire Department and West Stanislaus Fire District (WSFD), July 23, 2002, telephone conversation with Turnstone Consulting.

*Meyers Group, February 2001. *Market Analysis and Absorption Projection for Mello Roos Financing District, City of Patterson, Stanislaus County, California.*

Patterson, 1992. *City of Patterson General Plan.*

Patterson, 2002. *City of Patterson Sphere of Influence Plan and Master Services Element, July 2002.*

Patterson, 2002. *City of Patterson Development Fees Studies, July 2002.*

(PUSD) Patterson Unified School District, 2001. *School Facilities Funding and Mitigation Agreement By and Between the Patterson Unified School District and Patterson Gardens.*

N. POPULATION, HOUSING, AND EMPLOYMENT

INTRODUCTION

The Population, Housing, and Employment section discusses existing population, housing, and employment-related trends of the West Patterson project area and the change in these trends with construction of the proposed West Patterson projects. It evaluates the potential impacts of the proposed projects on the City of Patterson's population, employment, and housing scenario, and describes mitigation measures, where called for, that would lessen potentially significant impacts of the West Patterson Projects. The Population and Housing subsection is based on available site information; a review of the 1992 *City of Patterson General Plan;* information gathered from the Stanislaus Council of Governments (StanCOG), including the *Draft Regional Housing Needs Assessment for Stanislaus County and its Cities, January 1, 2001 - July 1, 2008*;[1] and the 1990 and 2000 U.S. Census data.

SETTING

The Setting describes existing population, housing, and employment-related conditions in and around the West Patterson project area to establish a baseline against which population, housing, and employment-related impacts of the West Patterson projects may be compared.

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[1] After publication of the West Patterson Projects Revised Draft EIR, on October 3, 2002, StanCOG adopted a *Regional Housing Needs Assessment for Stanislaus County* in October 2002. The Revised Draft EIR cited certain background data from the *Draft Regional Housing Needs Assessment for Stanislaus County and its Cities* that were not included in the adopted *Regional Housing Needs Assessment for Stanislaus County*. However, this background data from the *Draft Regional Housing Needs Assessment for Stanislaus County and its Cities* continues to be valid, relevant and useful and remains in this Final EIR in the interest of continuity.

REGIONAL AND LOCAL SETTING

According to the 2000 U.S. Census, the population of Stanislaus County was about 447,000, and the population of the City of Patterson was about 11,600.[2] California Department of Finance estimated Stanislaus County's population to be about 469,500 and of the City of Patterson to be about 13,030, as of January 1, 2002 (DOF, 2002).

[2] Population, employment and housing data have been rounded off.

According to StanCOG projections, the population in the City of Patterson is expected to grow to about 19,750 by 2025. However, according to the City's projection (prepared February 2002), the population growth rate in Patterson is estimated to be an average of 6 percent up to 2010, and to be 3.7 percent after 2010. Using these percentages and January 2002 estimated population, City officials estimated that Patterson would have a population of 30,000 by 2020, which is approximately the projected holding capacity of the *General Plan* area for that year (General Plan EIR, 1992, p. II.7).[3] Additionally, using an annual growth rate of 3.7 percent beyond 2020, it is estimated that Patterson would have a population of approximately 36,000 by 2025. On a percentage basis, Patterson's population has grown at a slightly faster pace than the overall Stanislaus County population over the past 18 years (Meyers Group, 2001, p. 4).

Total employment in Stanislaus County was estimated to be about 164,600 in 2001,[4] and State of California, Employment Development Department (EDD), projected an average annual increase of about 3,115 jobs in the County (StanCOG RHND, 2002, p. 2). Using the 2001 employment growth rate, it can be estimated that countywide employment was about 161,500 in 2000 and would grow to about 239,350 jobs by 2025. Total employment in the City of Patterson was estimated to be about 1,650 in 2000 (Ford, 2002). According to the City of Patterson's official website, firms with 12 or more employees provide about 1,500 jobs in Patterson (Patterson, 2002). The remaining 150 jobs are in firms with fewer than 12 employees. According to projections contained in the 1992 General Plan EIR, the City could add as many as 14,000 employees at full buildout of land designated for non-residential use if all non-residential development were absorbed (General Plan EIR, 1992, p. II.9); it is assumed that this non-residential buildout and absorption would occur by 2025. (This would be considered a rapid absorption rate and, thus, creates a conservative estimate of employment growth.)

According to the 2000 U.S. Census figures, the total number of households, or occupied

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[3] Population projections in the *1992 General Plan* do not go beyond 2012, that is, a period of 20 years. Therefore, population estimates for 2020 were made by assuming an average annual population growth rate extended to 2020.

[4] In 1999, the total jobs in the County, non-agricultural jobs were estimated by the State of California, Employment Development Department to be about 141,700 (see EDD-1, 2002). According to EDD, the total employment in Stanislaus County was estimated to be about 195,900 as of June, 2002 (see EDD-2, 2002).

housing units, in Stanislaus County was about 145,150; the total number of households or occupied housing units in the City of Patterson was about 3,150.[5] The total number of dwelling units within the City has also grown from an estimated 2,700 in 1990 to about 3,260 in 2000, an average of about 67 units per year (Draft Patterson Housing Element, 2001). According to the recent *Draft Regional Housing Needs Assessment for Stanislaus County and its Cities,* with the exception of the City of Hughson, every jurisdiction in Stanislaus County, including the City of Patterson, has an excess of housing units (StanCOG RHND, 2002, p. 9). Patterson has a housing vacancy rate of 3.56 percent (DOF, 2002). StanCOG estimated the average annual household growth rate for Stanislaus County and the City of Patterson for the 1990-2000 period to be 1.48 percent and 2.06 percent, respectively, and for the 2001-2008 planning period to be 1.82 percent and 2.83 percent respectively (StanCOG RHND, 2002, p. 20).

COMMUTING PATTERNS

In Stanislaus County, the majority of home-to-work commutes for residents were within the county region. In terms of commuting patterns, the most important out-of-region routes were State Route 99 and Interstate 5. StanCOG staff reviewed employment statistics from EDD for their Regional Housing Needs analysis and according to these statistics in 1990 there were 20.97 percent more employed residents than jobs in the county; by 2001 this percentage had decreased to 14.7 percent (StanCOG RHND, 2002, p. 22). In spite of the improved jobs/housing ratio, almost all county jurisdictions are experiencing some residential development in anticipation of commuters to jobs in Bay Area counties. As the cost for housing near job centers, such as those in the Bay Area counties, has risen, workers have sought more affordable housing in communities farther and farther away from their jobs. This trend is especially true for cities in the regions surrounding Bay Area counties. Based upon two recent studies of drivers on Interstate 580 over the Altamont Pass, StanCOG recently estimated that about 26,000 Stanislaus County residents work in the Bay Area (StanCOG RHND, 2002, p. 23).

Patterson is the sixth largest city in Stanislaus County; it is located along State Route 33

[5] According to the 2000 U.S. Census figures, the total number of housing units in Stanislaus County was estimated to be about 150,800 in 2000 and the total number of housing units in Patterson was estimated to be about 3,260. DOF estimated the total number of housing units in Patterson to be about 3,405 as of January 1, 2001, and to have grown to about 3,625 as of January 1, 2002 (DOF, 2002).

and in proximity to West Main and Highway 5. It is relatively distant from the Modesto and Turlock areas, the major job-centers of the County; however, it is well-connected via freeways to the Bay Area, in particular to the San Jose region and the East Bay. Given the shortage of housing in the Bay Area and the high housing costs there, a number of people working in the Bay Area seek affordable housing in cities like Patterson that are outside the Bay Area but within commuting distance, about 45 to 90 minutes away, from many Bay Area job centers. In fact, a large percentage of recent residential development in the City has catered to commuters to the Bay Area, especially over the Altamont Pass (StanCOG RHND, 2002, p. 23). These factors continue to support a strong demand for housing in Patterson and drive the City's rapid residential growth. However, the mismatch between location of jobs and housing is straining local and regional roadways by compounding traffic congestion, as well as adversely affecting air quality.

According to a recent absorption study, a downturn in the high-tech sector may tempt Bay Area companies to relocate to San Joaquin and portions of Stanislaus Counties, where much of the workforce already lives, so as to lower business costs (Meyers Group, 2001, p. 3).

REGULATORY FRAMEWORK

REGIONAL HOUSING NEEDS DETERMINATION

In order to respond to the growing population and household growth of the state, and to ensure the availability of decent affordable housing for all income groups, the State of California enacted Government Code Section 65584 in 1981, which requires each Council of Governments (COG) to periodically distribute state-identified housing needs for its region. The State Department of Housing and Community Development (HCD) is responsible for determining this regional need, and initiating the process by which each COG must then distribute their share of statewide need to all jurisdictions within its region. This statute requires development of a new Regional Housing Needs Assessment or Determination (RHND) every five years. In this cycle, the planning period for Stanislaus County is from January 1, 2001 through July 1, 2008 (StanCOG RHND, 2002).

Government Code Section 65584 requires that a City's share of regional housing needs include the share of the housing needs of persons at all income levels. The different

income levels to be studied within the parameters of a state-mandated Housing Element (that every county and city in California is required to prepare) are "Very Low Income," "Low Income," "Moderate Income," and "Above Moderate Income." Based on a Federal Housing and Urban Development (HUD) formula, Stanislaus County is estimated to have the following distribution (by percentage) of income levels: Very Low Income - 22 percent, Low Income - 17 percent, Moderate Income - 21 percent, and Above Moderate Income - 40 percent. For the 2001-2008 planning period, the StanCOG Policy Board has distributed households for each of the jurisdictions within its boundaries by use of the above-stated regional income level percentages. This is consistent with the state statute.

StanCOG projects the county's share of statewide households[6] would grow from an estimated 147,215 households on January 1, 2001 to about 168,540 households, by July 1, 2008, and that the County would need to plan for the construction of at least 20,850 housing units by that date (StanCOG RHND, 2002, p. 4).[7]

StanCOG has also developed a methodology for distributing the housing need for the 2001-2008 period among its jurisdictions, using a "fair share" approach based on household and job growth of the region. Each jurisdiction is required by law to incorporate its housing need numbers into an updated version of its *General Plan* Housing Element. StanCOG determined Patterson's allocation of anticipated statewide

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[6] RHND defines household as "an occupied housing unit." Since the term "housing unit" includes all housing structures, occupied and vacant, the projected increase in households is greater than the projected increase in number of housing units needed.

[7] DOF estimated approximately 147,215 households in Stanislaus County as of January 1, 2001. In November 2001, HCD projected Stanislaus County's share of statewide households would grow to about 178,150 households by July 1, 2008, and that the county would need to plan for at least 30,200 new housing units by that date. On reviewing the HCD-determined minimum households projection for the county, StanCOG identified jobs/housing balance-related inconsistencies between the HCD projection and the goals of the statutorily-directed Interregional Partnership, a recently established program designed to improve the job/housing balance in Stanislaus County that requires HCD involvement. From 1990 to 2001 the jobs-to-household ratio increased from 1.054 to 1.118, and the trend-line for the 1990 through 2001 data would project a jobs to household ratio of 1.174 by 2008. The HCD projection of 178,150 households would significantly lower the county's current jobs-to-household ratio, from 1.118 to 1.058 by the year 2008, whereas HCD is directed to help Stanislaus County approach a jobs-to-household ratio closer to 1.5. Accordingly, in March 2002, StanCOG staff prepared the alternative minimum households projection, which has come to be known as the "Quality of Life Balanced" alternative, based upon an improved job-to-household balance. (StanCOG RHND, 2002, pp. 1-4).

households would grow from an estimated 3,300 households to about 4,050 households between 2001-2008,[8] and that the City would need to plan for the construction of a minimum of about 770 housing units during this time period (StanCOG RHND, 2002, pp. 5-6, and 15). This means Patterson would need to construct an average of about 102 new housing units per year. Using the growth in total number of housing units in the City between January 1, 2001 (3,400) and January 1, 2002 (3,625), Patterson is estimated to have constructed approximately 225 new housing units in that year. Thus, Patterson has exceeded its share of the countywide housing allocation for the first year of the seven-year planning period. In terms of affordability, the following is the distribution of housing units by income levels for Patterson:

Very Low Income (22%):	170 units
Low Income (17%):	131 units
Moderate Income (21%)	161 units
Above Moderate Income (40%)	308 units
Total	770 units[9]

CITY OF PATTERSON GENERAL PLAN POLICIES

The *City of Patterson General Plan* Land Use and Housing Elements provide goals related to balanced population, housing and employment growth. Policies furthering these goals that are relevant to the West Patterson projects include:

Land Use

I.A.2. Growth in Patterson shall be planned and guided consistent with the following population limits and land use principles:

- Population limit of 21,000 residents by the end of the twentieth year.

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[8] According to HCD-determined minimum households projection, the City of Patterson's allocation of anticipated statewide households would grow from an estimated 3,283 households on January 1, 2001 to about 4,210 households by July 1, 2008.

[9] In the adopted StanCOG *Regional Housing Needs Assessment for Stanislaus County*, October 2002, Patterson's total share of the countywide housing allocation is 634 units, broken down by income level as follows: Very Low Income (22%), 139 units; Low Income (17%), 108 units; Moderate Income (21%), 133 units; and Above Moderate Income (40%), 253 units.

- Concentrate community commercial, high-density residential and public facilities uses in the downtown area and its western extension.
- Emphasize a mixture of residential types and densities.
- Ensure that ample buffers are established between incompatible land uses.
- Provide for an orderly sequence of development based on the logical extension of public facilities and services. Projects which extend public facilities and services shall be given priority in the allocation of growth, consistent with the target population levels set forth above, and shall be afforded such assurances (e.g. development agreements) as may be necessary to ensure that future facilities and service are adequate and properly extended.

I.A.4. This policy calls for the rate of growth in Patterson to be linked to the provision of adequate services and infrastructure, including schools.

I.A.5. The City shall monitor residential and non-residential development and encourage adjustments as necessary in land use designations and the rate of project approvals to promote a reasonable city-wide balance between new employment-generating development and housing development and to minimize traffic impacts.

I.B.2. The City shall promote the development of affordable housing to meet the needs of low- and moderate-income households.

Housing

II.A. To designate adequate land for a balanced range of housing types and densities for all economic segments of the community.

II.D. To ensure the provision of adequate services to support existing and future residential development.

JOBS/HOUSING BALANCE

REGIONAL OUTLOOK

The majority of jobs within Stanislaus County are in its urban areas, with the maximum

jobs in the Modesto/Ceres urbanized area and the large industrial parks within their spheres of influence, and the Turlock urbanized area; following these are the Oakdale, Patterson, and Riverbank urban areas (StanCOG RHND, 2002, pp. 22-21). These urban areas, in particular the Modesto/Ceres urban area, are also the location of most of the households in the County. Accordingly, the RHND projects the greatest increase in housing units for Modesto, Turlock, and Ceres, and following those, the Oakdale, Patterson, and Riverbank areas.

CITY OF PATTERSON PROJECTIONS

The total number of jobs in Patterson was estimated to be about 1,650 and the total number of households or occupied housing units was estimated to be about 3,150 in 2000; therefore the jobs-to-housing ratio was about 0.52 in 2000. The City intends to improve its current jobs-to-housing ratio and to approach a target ratio of 1.5, which this is also the jobs-to-housing target ratio for Stanislaus County as a whole.

Between 2000 and 2025, the City of Patterson's population is projected to grow from approximately 11,600 to 36,000. The City could add as many as 14,000 new jobs if all the land designated for non-residential development in the 1992 General Plan EIR is built out and absorbed. No particular timeframe is attributed to this absorption, and policies in the *General Plan* allow the pace of this development to be dictated by market forces. However, should all the non-residential land uses be built out and absorbed by the year 2025, the number of jobs in Patterson is projected to grow from about 1650 to 14,000 jobs between 2000-2025. According to 2000 U.S. Census information, there are approximately 3.68 persons per occupied housing unit (11,600 persons divided by 3,150 occupied housing units) in Patterson. Using this persons-per-housing unit rate (3.68) beyond 2000, it can be estimated that Patterson would have about 9,750 occupied housing units by 2025 (36,000 persons divided by 3.68). The jobs-to-housing ratio would improve and reach approximately 1.5 in about 25 years. This projection assumes about 325,000 sq. ft. of non-residential development per year for 25 years.

The *General Plan* has designated a substantial amount of land for both housing and job-generating land uses. Buildout of the land designated for residential development by the *General Plan* would accommodate a total of about 9,600 dwelling units; this assumes a population of about 30,000 by 2020. By 2025 population is projected to grow to 36,000 and the total number of dwelling units is projected to grow to about 11,520. Much of this

land is located west of the current city limits on land within the City's planning area and sphere of influence. A fraction of this land has been developed, and the prediction of an improved jobs-to-housing ratio has not yet occurred. Substantial capacity for provision of job-generating uses and development remains in the West Patterson area.

A number of factors could affect the ratio of jobs-to-housing in Patterson. A recent residential absorption study for the City suggests that the demand for housing will continue to remain strong in Patterson over the next ten years. This study estimated that approximately 400 additional housing units could be absorbed per year in Patterson (Meyers Group, 2001, p. 9). The same study suggests, however, that the demand for light industrial/commercial development would be more modest, on the order of about 100,000 to 200,000 square feet per year. The study estimated that absorption would begin slowly and ramp up to a peak of about 235,000 sq. ft. by 2008 (Meyers Group, 2001, p. 14). If this absorption rate were to occur, the City's ratio of jobs to housing would improve only slightly over the timeframe of the *General Plan* buildout in 2025. In that case, housing production would continue to outpace job creation in Patterson.

To account for retired persons and other residents who are not employed, another useful relationship to consider is the ratio of jobs to the total number of employed persons, that is the total number of persons who live in Patterson and are reported to be employed, either in the City or elsewhere. According to the 2000 Census, out of a total population of approximately 11,600, about 5,100 persons were part of Patterson's labor force; of those in the labor force about 4,300 persons were employed either in the City or elsewhere, and the remainder were unemployed. Therefore the ratio of jobs (1,650) to employed persons (4,300) is about 0.38. Thus, as total population has risen, the number of jobs provided in Patterson has not kept pace with the number of employable residents.

IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

Development within the West Patterson projects would have a significant impact if it were to:

- Cumulatively exceed official regional or local population projections.
- Induce substantial growth in an area either directly or indirectly (for instance, through projects in an undeveloped area or extension of major infrastructure).
- Displace existing housing, especially affordable housing.

EFFECTS OF PROPOSED WEST PATTERSON PROJECTS

The City of Patterson is currently pursuing an economic development strategy for its West Patterson area that is expected to help provide the opportunity for additional job-generating land uses in Patterson and Stanislaus County for the future. The City plans to do this by establishing a regulatory and infrastructure framework conducive to the development of such uses. The proposed West Patterson projects are a substantial part of this overall economic strategy and could result in large-scale light industrial, business park, commercial, and residential development. For environmental review purposes, development impacts are being analyzed assuming total buildout of the West Patterson projects by 2025. This assumption is conservative because it concentrates impacts in a relatively shorter period, while total buildout is more likely to occur over a longer timeframe such as 2030 or 2040.

Development of the Business Park Plan is expected to generate a total of approximately 16,240 jobs[10] by 2025. The estimated breakdown of jobs by sector would be: Warehouse/ Wholesale, 6,845 jobs; Manufacturing/Assembly, 3,900 jobs; Office/Laboratories, 4,450 jobs; Highway Commercial, 790 jobs; Hotels, 85 jobs; and Retail, 170 jobs. The expanded wastewater treatment facilities would employ about two additional workers. Currently, the Business Park Plan area is primarily agricultural; however, there are few non-agricultural jobs in the Plan area. These jobs are related to the existing Patterson Airport, the Caltrans offices, and the California Department of Forestry. Employment on the proposed percolation ponds sites is also agricultural.

Development of the Patterson Gardens proposal would add about 2,960 residents to Patterson's economy. This component of the project would also include some commercial development and a school; these uses are expected to generate approximately 455 retail jobs, 250 office jobs, and 40 school jobs, that is, a total of approximately 745

[10] All numbers of future jobs are estimates only, and are approximate.

jobs by 2025. Currently, the Patterson Gardens site is in agricultural use and there are no non-agricultural jobs on this site.

Overall, the West Patterson projects are expected to generate a gross total of approximately 16,985 non-agricultural jobs by 2025. A few agricultural jobs exist in the West Patterson project area; all of these jobs would be displaced over time by development of the West Patterson projects.[11]

There are a few existing rural residences on parcels in the West Patterson project area; many are occupied by property owners. The proposed projects would result in the displacement of fewer than 10 existing residences over the span of 25 years. Development of the Keystone Pacific Business Park and the Patterson Gardens Proposal would each displace one residence.

Employment growth estimates for Patterson (total employment of 14,000 by full buildout of the *General Plan* area) do not accurately account for the job-generating potential (16,985 total new jobs) of the light industrial/commercial development proposed by the West Patterson projects. In this analysis, it is assumed that employment growth associated with the West Patterson projects accounts for all future employment growth in the City; to the extent that new jobs are created elsewhere in Patterson, it is likely that job growth in the West Patterson project area would be less than assumed or would be delayed further into the future.

Additional employment due to the West Patterson projects (16,985 total new jobs) would be about 121 percent of total employment projected for Patterson at full buildout of the *General Plan* area (14,000 jobs), and it would be about 137 percent of the projected employment growth at full buildout (14,000-1,650 = 12,350 jobs). If all development proposed by the West Patterson projects were to be built and absorbed by 2025, Patterson would have a total of 18,635 jobs (16,985+1,650 = 18,635 jobs), and a projected population of about 36,000. According to the 2000 Census information, there are approximately 3.68 persons per occupied housing unit in Patterson, which means there would be a total of about 9,750 occupied housing units in Patterson by 2025. With the

[11] The small number of non-agricultural jobs, related to the existing airport, the Caltrans offices, and the California Department of Forestry, in the Business Park Plan area would not be displaced due to the proposed projects.

proposed development, the jobs-to-housing ratio would be about 1.91 by 2025. This ratio would exceed the target jobs-to-housing ratio of 1.5 for the City and the County.

To obtain an estimate of number of employed persons in 2025, it can be assumed that the ratio of employed persons to the total population that existed in 2000 (about 1: 0.37) continued through 2025. If such an assumption is made, there would be an estimated 13,325 employed persons in Patterson, and the ratio of jobs (18,635) to employed persons (13,325) would be about 1.4. This means with development of the West Patterson projects and population growth, by 2025, the number of jobs in Patterson would more than keep pace with the number of employable residents. Thus, by supporting as many as 16,985 jobs in the future, the projects would contribute to the City's efforts to achieve a better ratio of jobs to housing, and thereby substantially improve the jobs/housing imbalance in the City.

The West Patterson projects are intended to generate a number of new jobs that would be higher paying than current jobs in the City. It is expected that as the number and quality of jobs improves, the City would likely reach a threshold where it could support a wider range of retail goods and services than at present. Currently, the City loses over ten million dollars per year in retail-related revenue to other communities (California State Board of Equalization, 2002).

Impact N.1. Development of the proposed West Patterson projects would cause the City to exceed regional population projections. (Less than Significant)

The residential component of the project, the development of the Patterson Gardens proposal, would add about 2,960 residents to Patterson's economy by 2025. According to the 2001 absorption study, with the proposed Patterson Gardens residential development, population and household growth would exceed population projections for Patterson (Meyers Group, 2001, pp. 4-5). According to the City's estimate, the population growth rate in Patterson is estimated to be about 6 percent up to 2010, and to be 3.7 percent after 2010. Using these figures, it is estimated that Patterson would have a population of 30,000 by 2020, which is the projected holding capacity of the City for that year according to the *General Plan*. Additionally, using the population growth rate of 3.7 percent beyond 2020, it can be projected that Patterson would have a population of approximately 36,000 by 2025. Population due to the proposed project (2,960 people)

would be about 8.2 percent of the total projected population (36,000) in Patterson by 2025, and it would be about 12.1 percent of the projected population growth (36,000-11,600=24,400 people) in Patterson by 2025. This project-related population growth would be within the estimates of *General Plan* population projections. Therefore, any population growth induced by the proposed projects would not be a significant impact.

Mitigation Measure. No mitigation necessary.

Impact N.2. Development of the proposed West Patterson projects would induce substantial growth in undeveloped areas and require extension of major infrastructure. (Significant)

The West Patterson projects would be developed in areas that are currently primarily agricultural. The *Patterson General Plan* has already foreseen and designated a substantial amount of previously undeveloped land for this large-scale development, west of the current city limits on land within the City's sphere of influence.

Development of proposed project uses would require substantial infrastructure improvements, including an expansion of the City's wastewater treatment plant and collection facilities, its domestic water system, new roadways, and new or upgraded drainage facilities. It would also entail the expansion of community services, such as new fire (and police) station in the Business Park area, a new school, and recreational amenities in the residential component of the project. The development of these facilities would not be a significant impact for the Patterson Gardens Project because the City has formed a community facilities financing district (a Mello-Roos District) as a mechanism to fund infrastructure improvements necessary to support development of a large potion of the City's sphere of influence, including the Patterson Gardens project.

Another community facilities financing district would be needed for the Business Park Plan area, including the Keystone Pacific Business Park, to provide infrastructure improvements. Without this district, development in the Business Park Plan area would result in potentially significant impacts.

Mitigation Measure N.2.

The City shall, through a combination of development fees, a community facilities

financing district, or other funding mechanisms, ensure that new development pays its share of infrastructure and service costs.

Impact N.3. Development of the proposed West Patterson projects would displace existing housing and existing jobs. (Less than Significant)

Development of the West Patterson projects would result, at most, in the displacement of fewer than 10 existing rural residences over the span of 25 years. Development of the Keystone Pacific Business Park and the Patterson Gardens proposal would each displace one residence. In light of the 987 residential units planned by the Patterson Gardens proposal, displacement of fewer than 15 existing residences would be considered negligible. Development of the West Patterson projects would result in the displacement of a few existing agricultural jobs. In light of the 16,985 jobs that would be added to Patterson's economy by the West Patterson projects, displacement of the comparatively small number of existing agricultural jobs due to the proposed projects would be considered negligible. Therefore, displacement of existing housing and jobs due to the proposed projects would not be a significant impact.

Mitigation Measure. No mitigation necessary.

References

All referenced documents are available for review, by appointment, at City of Patterson offices (33 S. Del Puerto Avenue) except those marked with an asterisk (*), which are at the Stanislaus County Planning Department (1010 10th Street, Suite 3400, Modesto, CA), and except for those identified with an internet website address.

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O. VISUAL RESOURCES

This Section describes the existing visual setting of the West Patterson project area, evaluates the visual impact of the West Patterson projects and describes mitigation measures, where called for, that would lessen potentially significant impacts of the West Patterson projects.

SETTING

REGIONAL AND LOCAL SETTING

The City of Patterson is located within California's Central Valley. This vast, nearly flat plane is bounded by the Sierra Nevada mountain range to the east and by the coastal range to the west. The flatness and openness of the terrain afford expansive vistas. Agriculture defines the region's visual character.

The project area lies near the western edge of the Central Valley in Stanislaus County. The hills of the Diablo Range of the coastal mountains rise abruptly from the valley floor about two miles west of the City. These nearly treeless, undeveloped, grass-covered hills are the most prominent topographic feature throughout the otherwise flat region of Western Stanislaus County, terminating views to the west and forming a backdrop to the area.

The City of Patterson is north and east of the project area. The City's wastewater treatment plant is located about 1.7 miles further east, beyond the City, near the San Joaquin River.

The City's historic downtown owes its distinctive visual character to the foresight of the City's founder, Thomas Patterson, who laid out streets in a pattern modeled after Washington D.C. A circular "hub," El Circulo Avenue, rings the downtown center. Radiating streets emanate from a circular central plaza. The older residential blocks surrounding the downtown center are laid out in a regular axial street grid. Two secondary traffic circles are along El Circulo Avenue at Salado and Del Puerto Avenues

where the circular, radial and grid streets converge. Residences in the older downtown residential district have been built over a number of years, gradually filling in the established block pattern.

In addition to its distinctive street pattern, downtown Patterson's distinctive visual character is defined by its cover of mature trees. East Las Palmas Avenue from First Street to the San Joaquin River is lined on each side with rows of mature palm trees. Figure III.O.1: Eastern and Western Approaches to Patterson, View A, shows the striking formal eastern entrance to the City that these trees create. Planted by the town's founder, these are a valuable visual and historic resource. The trees frame and focus an important view corridor to the distant hills of the Diablo Range.

The City's central circle and wedge-shaped parks east of the circle are lushly planted with mature trees, as are the streets of the older downtown residential district surrounding the historic center of town. These trees provide greenery, shade, and a unifying formal element to the City, framing long views down the streets of the historic downtown. Due to the dense tree canopy of historic downtown, and the orchards that ring its periphery, the downtown is largely screened from view from surrounding areas.

PROJECT VICINITY

INTERSTATE 5 AND THE VILLA DEL LAGO DEVELOPMENT

Interstate 5 follows the western edge of the valley along the base of the Diablo range. Interstate 5 is a designated a California Scenic Highway for its entire length through Stanislaus County. For much of this stretch, I-5 is elevated above the western floor of the San Joaquin Valley, affording panoramic views over the farmlands to the east including the project site.

From I-5, the project area and the City of Patterson beyond are approached on Sperry Avenue. The Villa Del Lago commercial development lies to the north of Sperry Avenue at the freeway exit. Except for a prominent, highway-oriented sign identifying its services, the complex has a minimal visual presence from the I-5 corridor due to its lower elevation on the valley floor. The complex is entered from Rogers Road which extends north from Sperry Avenue and contains detached restaurants, a convenience store, a gas station, and a motel. Its looped street network is in place, defining future building sites (see Figure III.O.1, View B).

A. Las Palmas Avenue Looking Southwest

B. Sperry Avenue across from Villa Del Lago, Looking East

SOURCE: Turnstone Consulting

TURNSTONE CONSULTING

PATTERSON

FIGURE III.O.1: EASTERN AND WESTERN APPROACHES TO PATTERSON

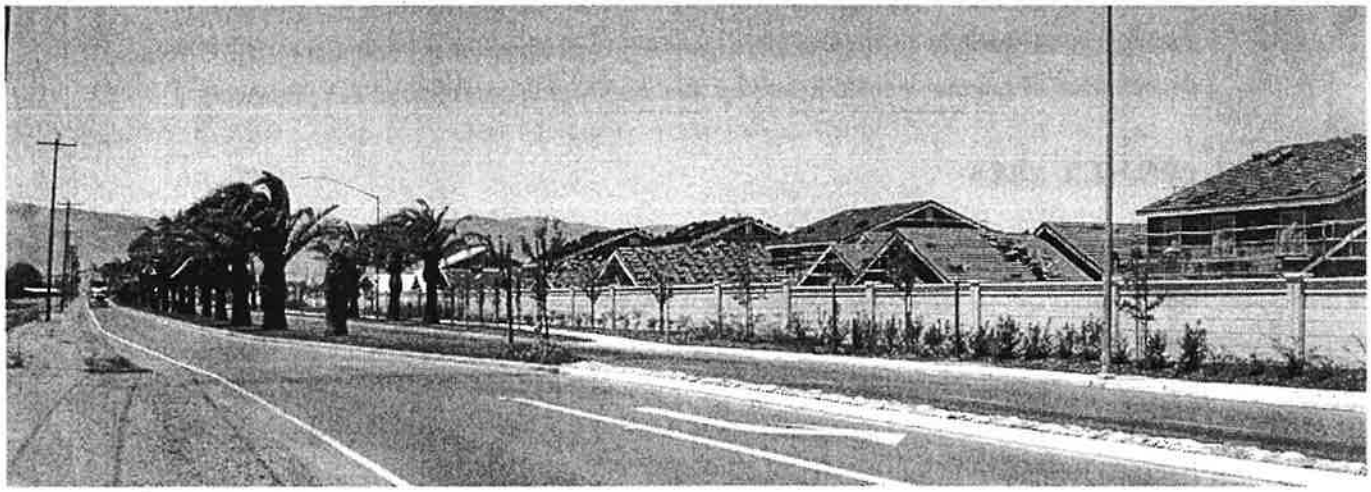
Several hundred feet along the north side of Sperry Avenue have been improved by a sidewalk and a landscaped strip including palm and deciduous trees, shrubs, flower beds and water features. These improvements are consistent with the City of Patterson's plans for the Sperry Corridor as the entrance to the City. On the south side of Sperry Avenue, in the foreground of Figure III.O.1, View B, is the vacant southern portion of the West Patterson Business Park Master Development Plan area. In the distance, the Patterson Gardens site is marked by a walnut orchard.

RESIDENTIAL AND COMMERCIAL DEVELOPMENT

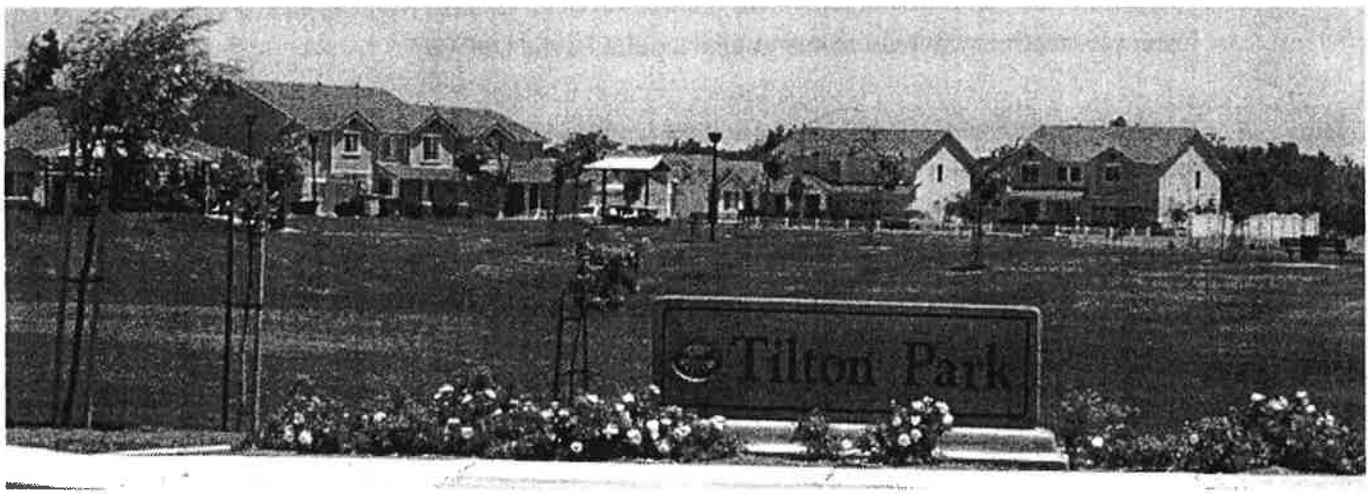
East of Baldwin Road, and north of Sperry Avenue from the project area is a large vacant, uncultivated area of land that is being graded for the future Walker Ranch residential development. (see Figure III.A.1) North of Sperry Avenue from the Patterson Gardens site, and east of American Eagle Avenue is the largely constructed and occupied Heartland Ranch residential development (see Figure III.O.2: Heartland Ranch Residential Development, View A). The north side of Sperry Avenue and its median strip have been improved for the length of the Heartland development including: installation of a sidewalk, curb, median strip and landscaping. (see Figure III.O.2, View B) Rows of regularly-spaced palm trees line the north side of Sperry Avenue and the median strip, defining this western approach to the City of Patterson, recalling the palm-tree-lined eastern approach to the City from East Las Palmas Avenue. A 6-foot-high masonry wall lines the north side of Sperry Avenue. The wall is planted at its base with shrubbery and deciduous trees. The peaked roofs and upper floors of single-family residences, currently under construction, are visible above the wall. On the south (left) side of Sperry Avenue, in this view, is the Patterson Gardens site. East of the Patterson Gardens site, across Ward Avenue lies a relatively recent residential development. Its cover of vegetation is already well established.

The site planning of recent residential areas has a different visual character than older development patterns in and near Patterson's downtown. In contrast to the formal geometric organization of the streets of downtown, recent residential development is characterized by irregular curving streets and cul-de-sacs. This newer street pattern lacks a strong sense of organization and orientation, and shortens views down streets. Often separated from major access streets by walls, they are inward-oriented, lacking a sense of connection to the City.

A. Street View Looking West



B. Sperry Avenue Looking Northwest



C. Tilton Park

SOURCE: Turnstone Consulting

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FIGURE III.O.2: HEARTLAND RANCH RESIDENTIAL DEVELOPMENT

The lack of mature tree cover contrasts newly constructed residential development with the older residential neighborhoods of downtown Patterson. However, new residential development, like the Heartland Ranch, includes street trees as an integral feature and is planned with numerous landscaped public parks scattered throughout the development to provide recreational opportunities, neighborhood meeting places, and visual focal points for the surrounding residential neighborhoods. These spaces will become increasingly inviting as the existing landscaping matures (see Figure III.O.2, View C).

To the north of the Patterson Gardens site across Sperry Avenue is a supermarket and a fast food restaurant. Although the Patterson Gardens site is proximate to the historic downtown, the project area is visually separated from downtown Patterson by the City's dense cover of mature vegetation and by this intervening commercial development.

PROJECT AREA

The visual character of the project area is defined by its flatness, openness and its agricultural use. A strong rectilinear "patchwork" pattern is formed by alternating roads, fields, orchards and row crops. This pattern, familiar throughout the Central Valley, affords expansive views across open land. Figure III.O.3: Views of Project Area, View A, shows the West Patterson Business Park Master Development Plan area to the west of Baldwin Road (left in this view) and the future site of the approved Creekside Meadows residential development to the east of Baldwin Road. The combined flatness and openness of the land and the rectilinear orientation of its features result in a clear sense of linear perspective with lines converging at a point on the horizon.

Randomly scattered structures and buildings, surrounded by clusters of mature trees, provide a counterpoint to this otherwise regular horizontal pattern. Orchards also provide visual variety, providing a sense of spatial enclosure when viewed from nearby and a strong linear elements when viewed from a distance.

The hills of the Diablo Range to the west serve as a backdrop to this agricultural landscape (see Figure III.O.3, View B). The view along Sperry Avenue west to the Diablo Range is the primary view corridor within the project area (see Figure III.O.3, View C). South of Sperry Avenue (left in this view) before Baldwin Road, is the Patterson Gardens site. North of Sperry Avenue, before Baldwin Road, is the vacant site of the approved Walker Ranch residential development. Beyond Baldwin Road, on both sides of Sperry Avenue, is the Business Park Plan area.

A. Baldwin Road Looking North

B. Sperry Avenue Looking Southwest over Patterson Gardens Site

C. Sperry Avenue Looking West at Baldwin Road

SOURCE: Turnstone Consulting

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FIGURE III.O.3: VIEWS OF PROJECT AREA

IMPACTS AND MITIGATION

APPROACH

SIGNIFICANCE CRITERIA

The West Patterson projects would have a potentially significant impact on visual or aesthetic quality if the project would: 1) have a substantial adverse effect on a scenic vista or scenic highway; 2) substantially degrade the existing visual quality of the site and its surroundings; or 3) create intrusive amounts of light and glare.

Note that the Initial Studies for Patterson Gardens and the West Patterson Business Park Master Development Plan found that the West Patterson projects would have a less-than-significant impact with respect to light and glare. Therefore, this impact is not discussed in the analysis that follows.

ASSUMPTIONS

This analysis of visual impacts of the West Patterson projects assumes full buildout of the Patterson Gardens proposal and the Business Park Plan. Under this assumption, the Patterson Gardens area is developed to its planned residential capacity consistent with the plans and design guidelines of the Patterson Gardens Development Plan.

This analysis of visual impacts relies, in part, upon recently constructed residential development and landscape improvements on the north side of Sperry Avenue to draw inferences as to the overall visual impact of the residential development of the Patterson Gardens proposal on the south side of Sperry Avenue.

In assessing the visual impact of the fully realized Business Park Plan, the Keystone Pacific proposal will serve as the model for the type and character of development for the remainder of the Business Park Plan area, since the Keystone Pacific proposal is the only development proposal currently submitted for consideration under the proposed Business Park Plan. This analysis assumes that the entire Plan area would be developed in a similar manner as the Keystone Pacific proposal, with similar building volumes, heights, and site configurations. Street and landscaping improvements of the fully realized Business Park Plan would also be of similar quality and character as the Keystone

proposal. The development would also conform to the proposed zoning for the Business Park Plan area, and would conform with the West Patterson Business Park Master Development Plan design guidelines for new development.

PROJECT IMPACTS AND MITIGATION

Impact O.1. Development of the project area would change views for motorists on Interstate 5. (Less than Significant)

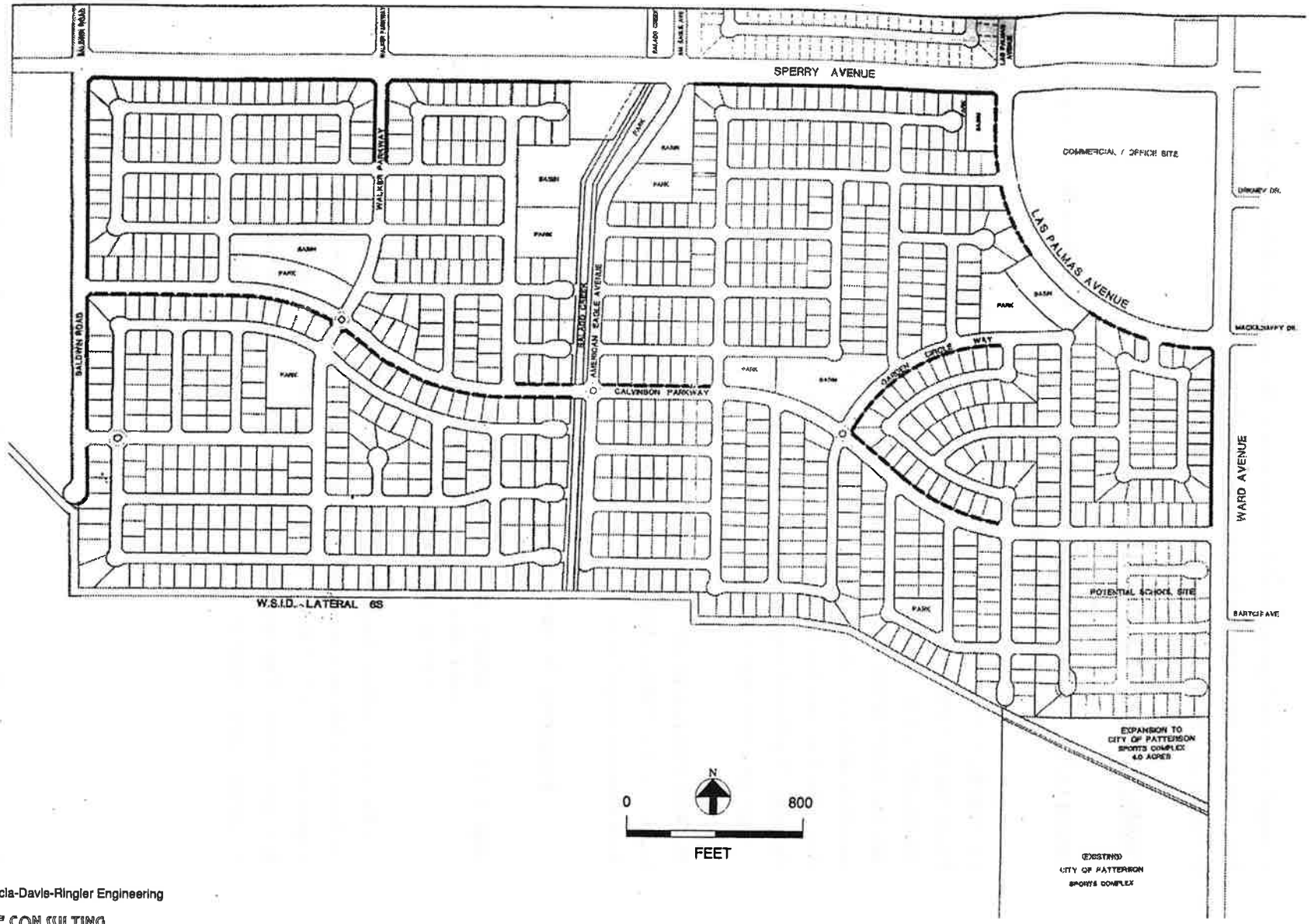
Through this portion of Stanislaus County, Interstate 5 runs along the base of the Diablo Range and is elevated above the project area by about 150-200 feet. Expansive scenic vistas to the east over the project area, currently enjoyed by I-5 motorists, would therefore not be obstructed. For the duration of the trip past the project area, I-5 motorists would view the San Joaquin Valley to the east over the rooftops of the Business Park. The Patterson Gardens development would be visible about one mile in the distance. The West Patterson projects would become increasingly screened by a cover of vegetation over time as their trees mature.

The West Patterson projects would not have a substantial adverse effect on a scenic highway and would therefore not have a significant impact on the visual quality of the West Patterson project area.

Mitigation Measure. No mitigation necessary.

Impact O.2. Development of Patterson Gardens and the Business Park Plan area would alter views of the Diablo Range for pedestrians and motorists on Sperry Avenue. (Less than Significant)

The Patterson Gardens development plan proposes 6-foot-high walls along Sperry, Baldwin, Las Palmas Avenue, Ward Avenue, and Calvinson Parkway (see Figure III.O.4: Patterson Gardens-Wall Plan). These wall would function to screen rear yards which face major streets. They are typical features of much of the suburban landscape in California. These expanses of wall would have a channelizing effect on the streets that



SOURCE: Garcia-Davis-Ringler Engineering

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FIGURE III.O.4: PATTERSON GARDENS-WALL PLAN

they line, blocking short range views into the residential development for motorists and pedestrians. The Patterson Gardens proposal calls for landscaping to soften the visual impact of the proposed walls by providing visual interest and a sense of rhythm and human scale. Houses at the northern perimeter of the Patterson Gardens site would be seen rising from behind the walls in the foreground of the distant hills when looking south and west from Sperry Avenue. Their complex gabled roof forms would echo the contours of the distant hills beyond.

The fully realized Business Park Plan would also alter views of the Diablo Range to the west. Unlike the Patterson Gardens proposal, however, the Plan does not call for 6-foot walls along Sperry Avenue. Rather, walls under the Business Park Plan are to serve as low landscape accents, delineating space and screening parking, but not obstructing views from Sperry Avenue into the Business Park grounds (Development Plan, 2002). The buildings of the Keystone Pacific Business Park would be set back from the Baldwin Road right-of-way by a 20-foot setback and by parking areas. Higher buildings in the Keystone Pacific Business Park would be placed away from the perimeter lots of the site preserving views over and around that site.

The West Patterson projects would not have a substantial adverse effect on a scenic vista and would therefore not have a significant impact on the visual quality of the West Patterson project area.

Mitigation Measure. No mitigation necessary.

Impact O.3. Development of the Patterson Gardens site would change the existing expansive agricultural visual character of the project vicinity. (Less than Significant)

The visual impact of the Patterson Gardens component of the West Patterson projects would be to completely transform the existing expansive and agricultural visual character of the project site. None of the project area's pre-existing visual character would remain within the Patterson Gardens site after the proposal is fully executed.

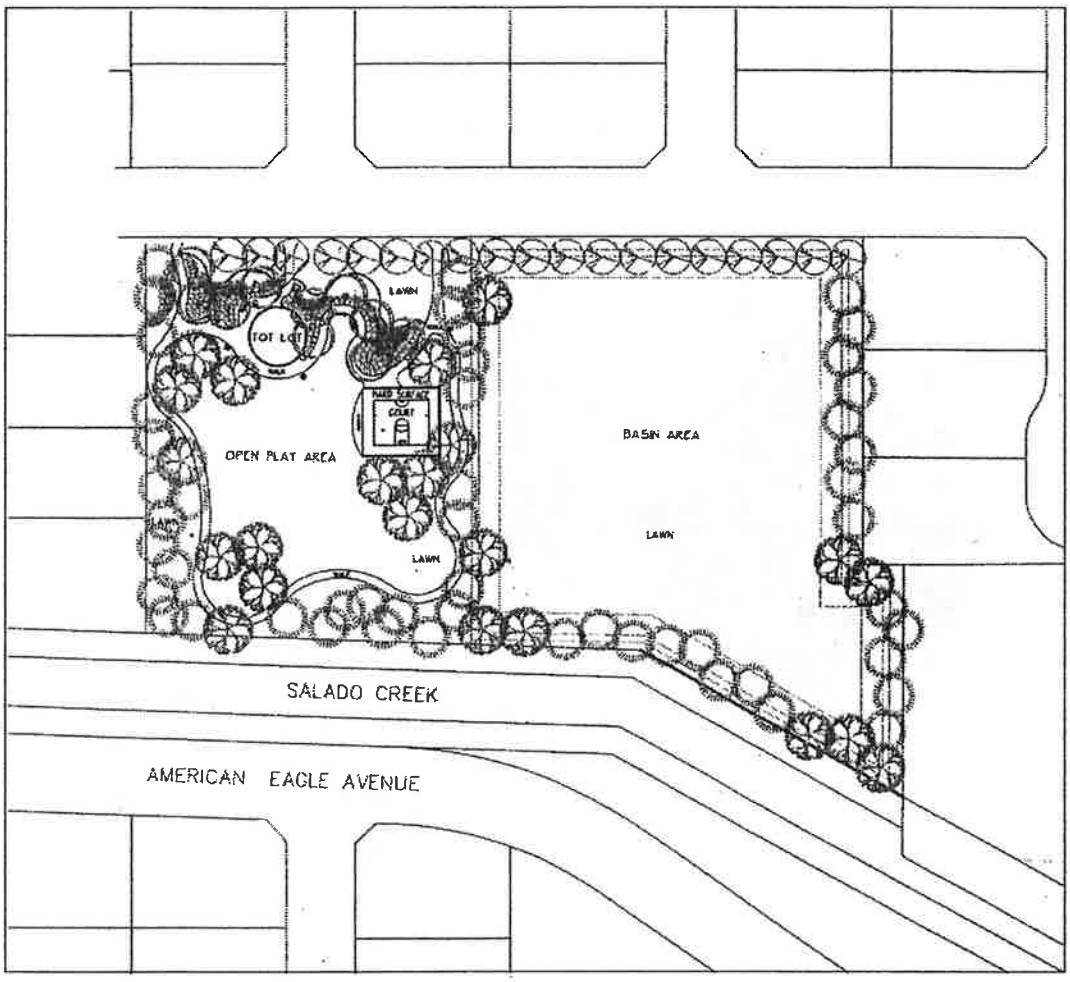
The Patterson Gardens development would not impair any unique or distinguished visual resource, because of its visual and physical separation from the historic downtown core and the older residential neighborhoods near downtown Patterson.

Drawing on the example of Patterson's downtown, the Patterson Gardens proposal employs landscaping to enhance the visual quality of the site. The Patterson Gardens development plan includes a conceptual landscaping plan and landscaping guidelines intended to enhance the visual environment of the new development to create attractive and comfortable residential environments. Landscaped public parks (totaling about 15.8 acres) would provide open space as a visual counterpoint to the proposed residential development (see Figure III.O.5: Patterson Gardens - Proposed Landscaping, A; see also Figure II.16: Patterson Gardens - Preliminary Project Layout). Major arterial and collector roads would be lined with trees and landscaping. In time, these would mature to provide greenery, shade, and a unifying formal element to the streets in a similar fashion as the mature trees that line the streets of the older neighborhood of Patterson (see Figure III.O.5, B). The currently channelized Salado Creek, running through the center of the site, would be reconfigured and lined on each side with a 20-foot-wide landscaped park, including an oak savanna buffer, to become a visual and recreational resource (see Figure III.O.6: Patterson Gardens - Proposed Salado Creek Improvements).

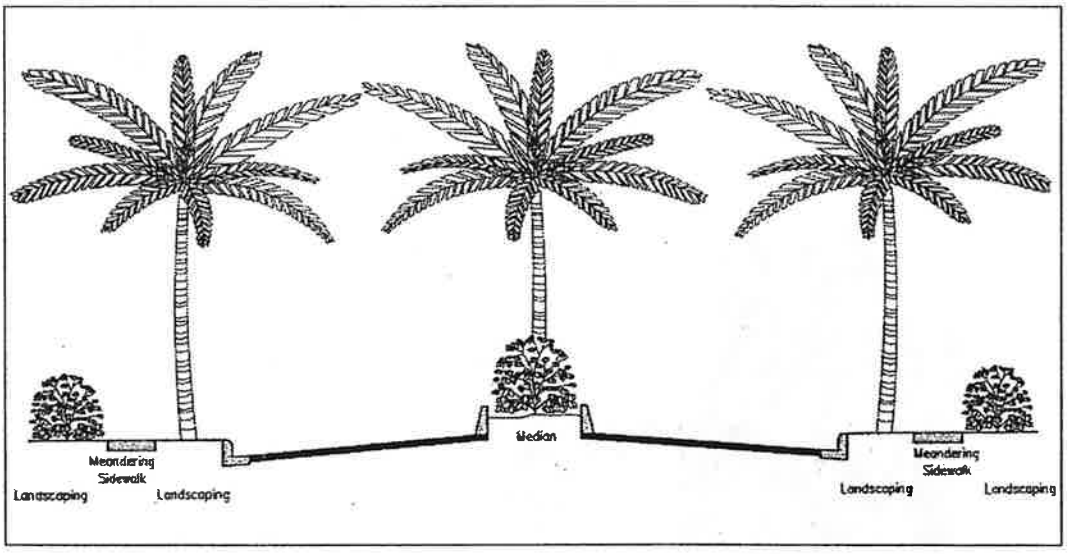
The Patterson Gardens Development Plan also includes a range of prototype house designs to create stylistic cohesiveness and identity for the residential development and ensure the design quality of new construction (see Figure II.O.7: Patterson Gardens - Representative House Designs). The Patterson Gardens development would be visually compatible with recently constructed or approved residential development immediately to the north and east of the Patterson Gardens site. While providing for compatibility and continuity, the Patterson Gardens Development Plan would promote visual variety and interest, and enhance the sense of human scale through the use of varied massing, rooflines and detail. Likewise, designs for the commercial buildings within the Patterson Gardens development would provide visual interest and human scale through the use of varied massing, rooflines and detail (see Figure III.O.8: Patterson Gardens - Representative Commercial Buildings).

Although the Patterson Gardens development would transform the existing agricultural visual character of the area, it would not substantially degrade the visual quality of the site and its surroundings and would therefore, not have a significant environmental impact.

Mitigation Measure. No mitigation necessary.



A. Representaive Park Plan



B. Sperry Avenue Improvements

SOURCE: Garcia Davis Ringler Engineering

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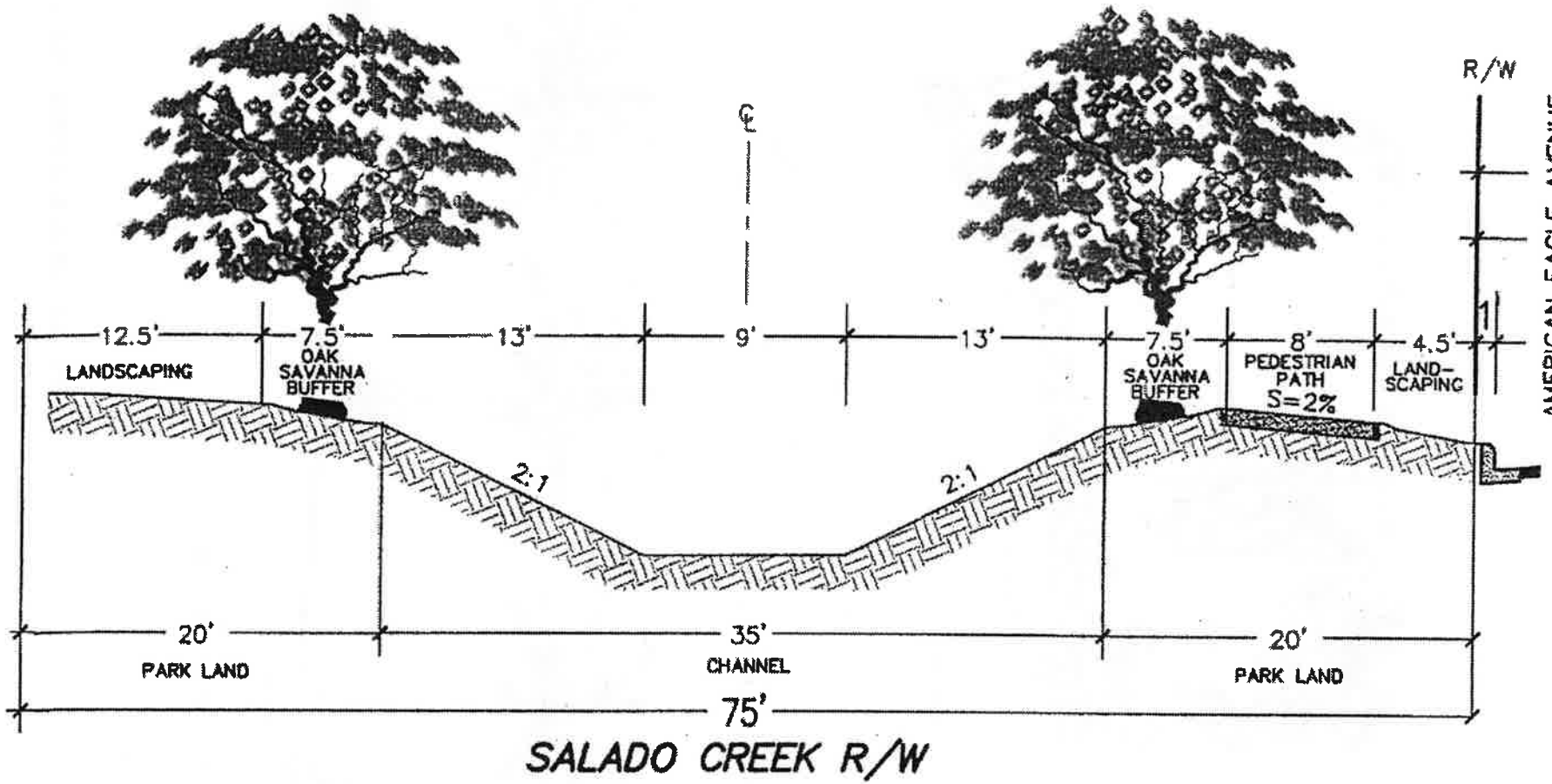
FIGURE III.O.5: PROPOSED LANDSCAPING



SOURCE: Garcia-Davis-Ringler Engineering

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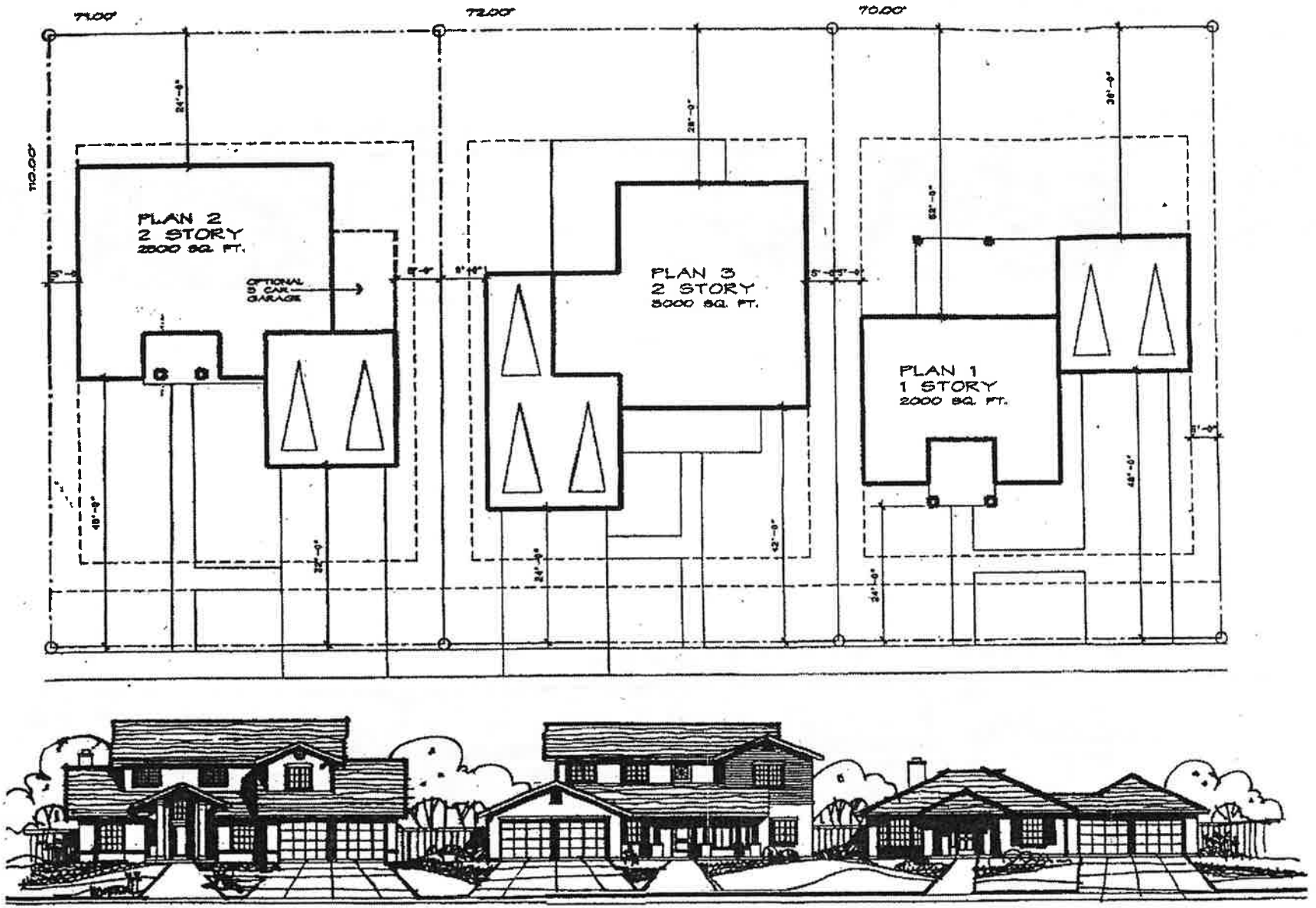
FIGURE III.O.6: PATTERSON GARDENS-PROPOSED SALADO CREEK IMPROVEMENTS



SOURCE: Thom Torvend and Associates

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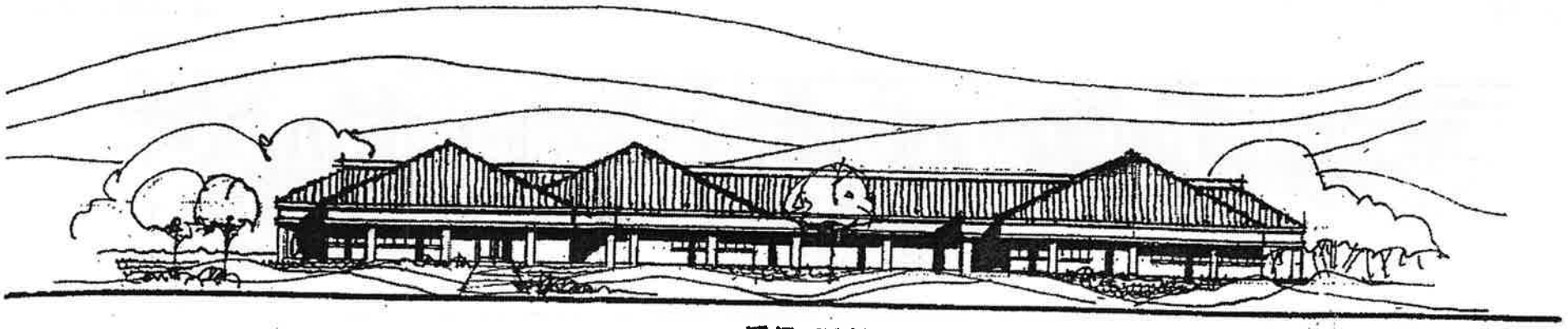
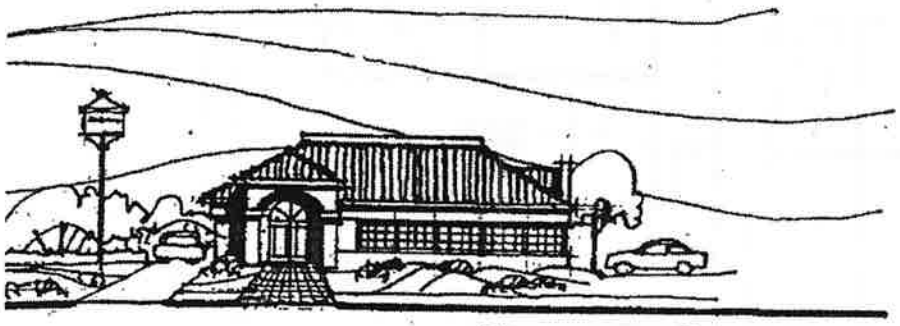
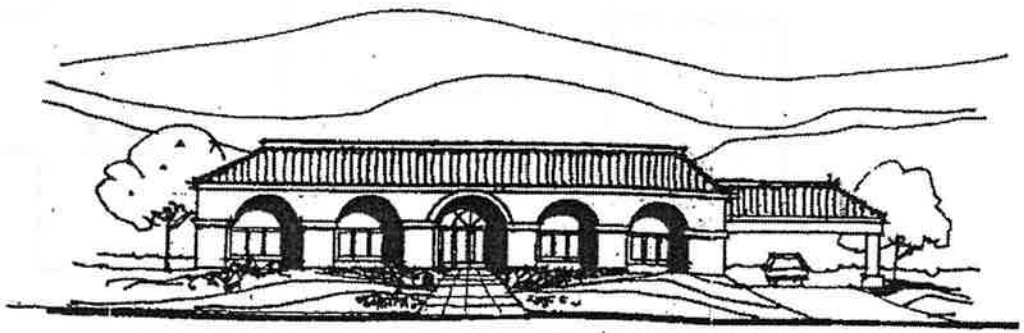
FIGURE III.O.7: PATTERSON GARDENS-REPRESENTATIVE HOUSE DESIGNS







SOURCE: Thom Torvend and Associates

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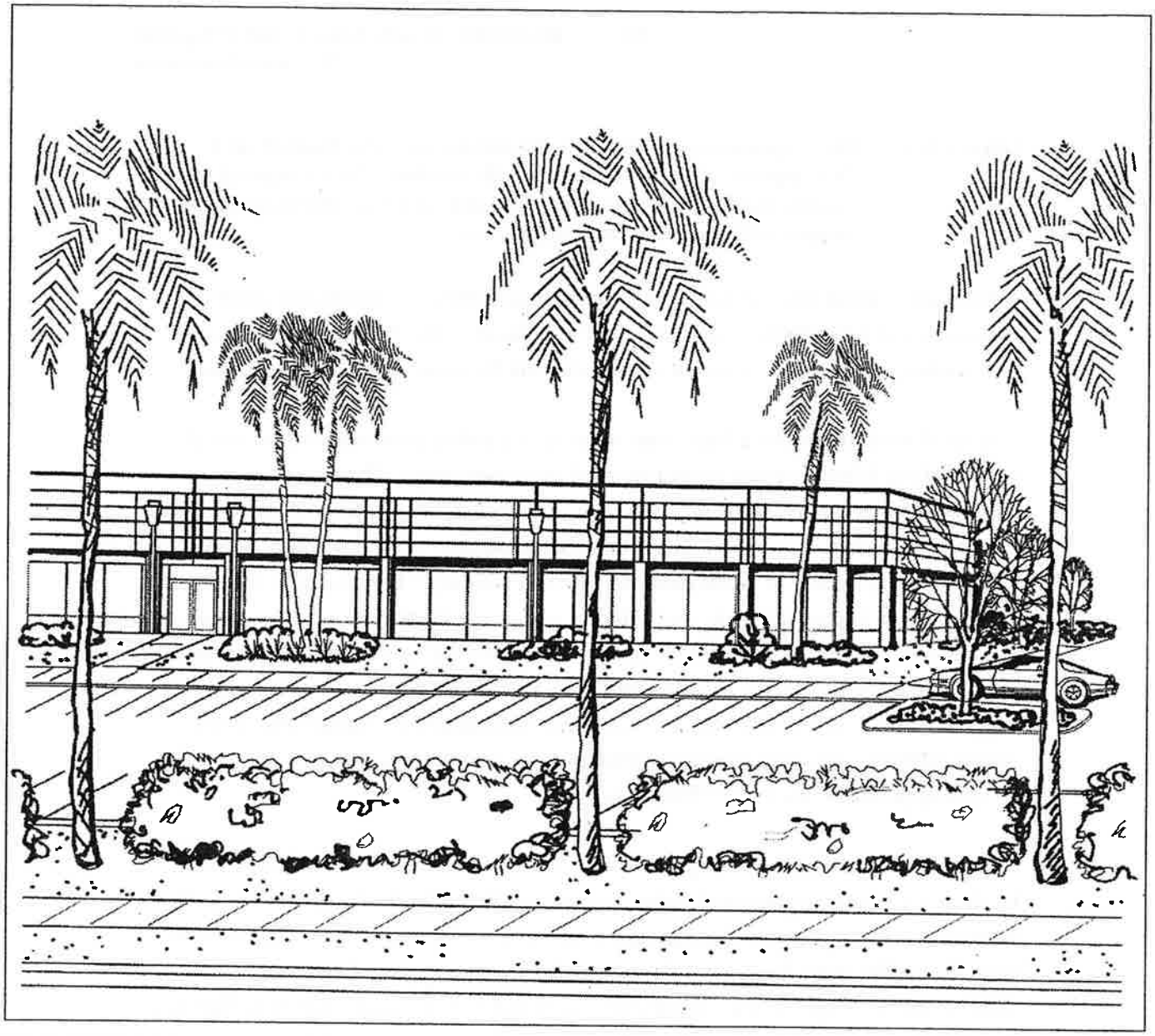
FIGURE III.O.8: PATTERSON GARDENS-REPRESENTATIVE COMMERCIAL BUILDINGS

Impact O.4. Development under the West Patterson Business Park Master Development Plan / Keystone Pacific Business Park Proposal would change the existing expansive agricultural visual character of the project vicinity. (Less than Significant)

Development under the Business Park Plan would completely transform the existing expansive and agricultural visual character of the project site. None of the Plan area's pre-existing visual character would remain after the Business Park is fully executed.

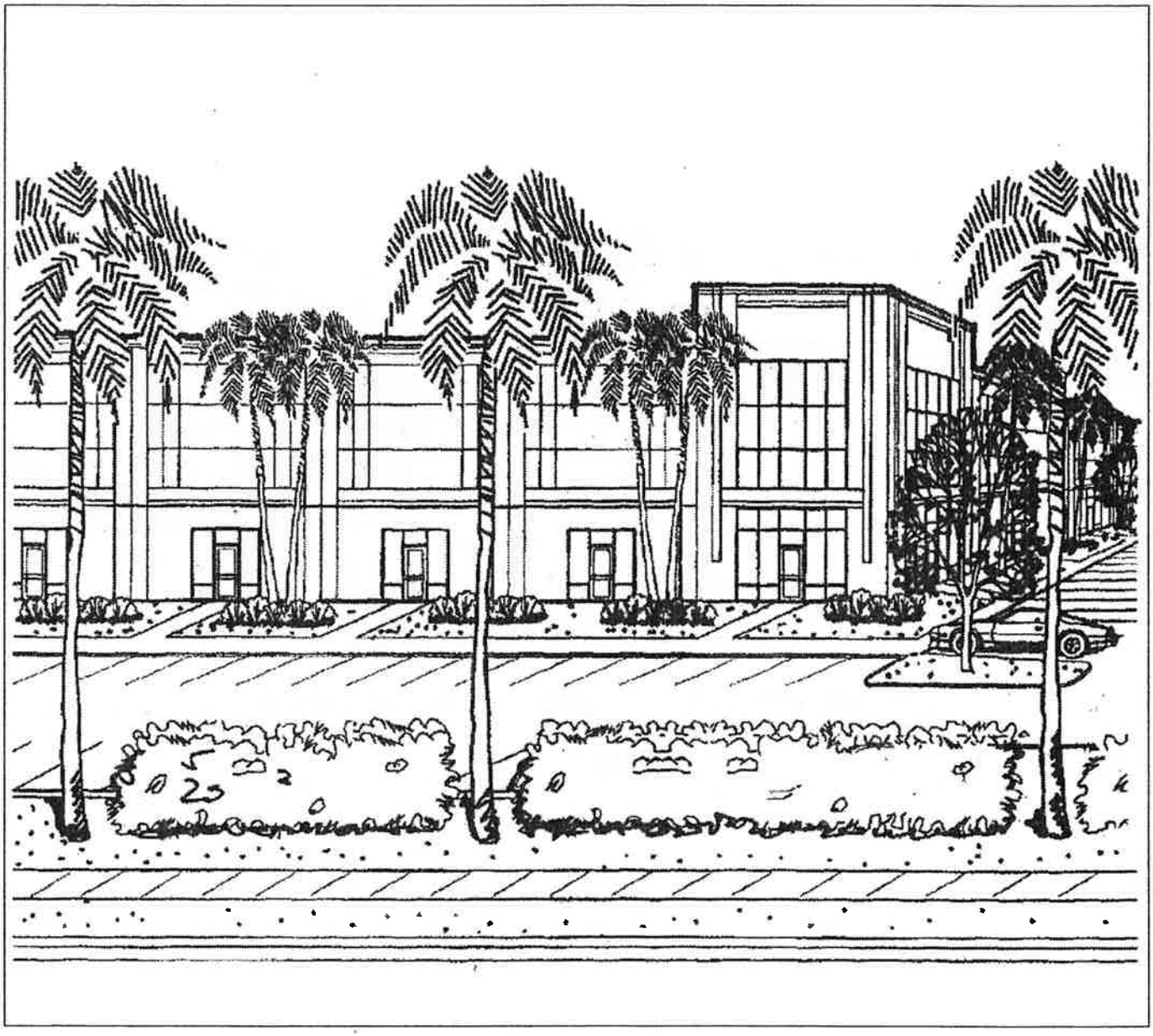
As part of the Business Park Plan, improvements are called for to enhance the visual quality of the West Patterson project area and its surroundings. The Plan establishes design guideline (governing siting, materials, articulation, colors, materials, textures and signage) to promote a sense of human scale and visual interest in new construction while also promoting a sense of visual harmony between buildings. The Plan calls for landscape improvements to provide shade, and to buffer and screen the transition between industrial and abutting residential development on the east side of Baldwin Road, and for landscape improvements to the Sperry Avenue corridor in accordance with the landscaping plan adopted by the City of Patterson. Rows of trees and landscaping lining both sides of Sperry Avenue, and along a proposed median strip, would create a welcoming formal western approach to the City of Patterson.

Figure II.8: Keystone Pacific Business Park - Schematic Master Plan, illustrates how landscaping would be employed under the Business Park Plan by the Keystone Pacific proposal to create a campus-like setting for the development, and buffer the transition between the Keystone Pacific development and the future approved residential uses across Baldwin Road. When viewed from across Baldwin Road, the Keystone Business Park buildings would be viewed through successive layers of trees and landscaping (see Figure III.O.9: Keystone Pacific Business Park-Representative Flex Building, Figure III.O.10: Keystone Pacific Business Park-Light Industrial Building, and Figure III.O.11: Representative Warehouse Building). The Keystone Pacific proposal calls for the construction of median strips for Baldwin Road. Warehouse and light industrial buildings would be separated from Baldwin Road by about 250 feet in total. Landscaped buffer areas, at least 150 feet wide, between warehouse and industrial uses and Baldwin Road would mediate the transition between industrial and residential uses. These buffer areas would contain ponds that would serve as visual amenities as well as storm drainage basins. Beyond this buffer area would be an approximately 60-foot wide landscaped parking area and a 5 to 10-foot-wide landscaped strip at the buildings' foundation. Flex



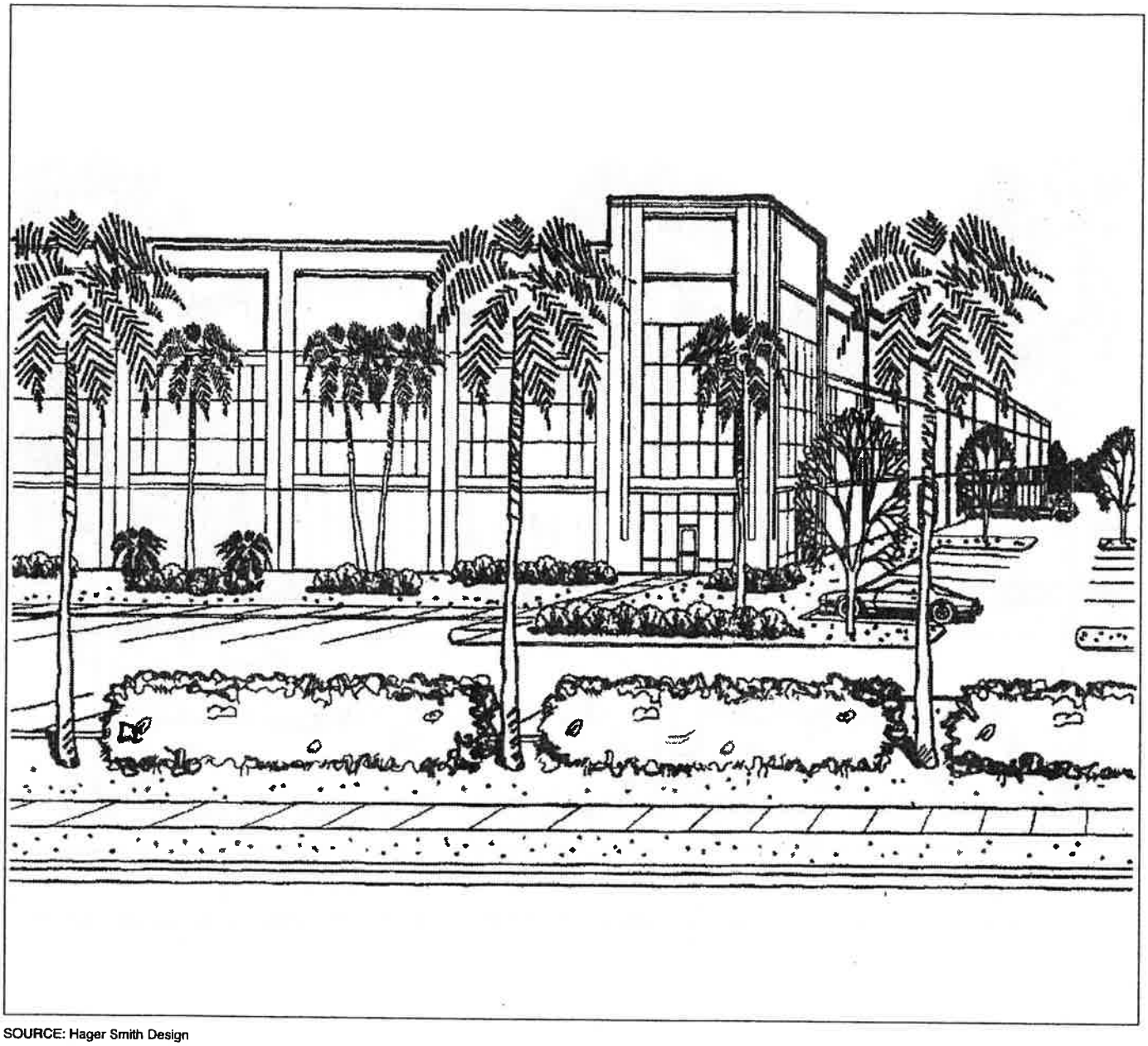
SOURCE: Hager Smith Design

FIGURE III.O.9: KEYSTONE PACIFIC BUSINESS PARK-REPRESENTATIVE FLEX BUILDING



SOURCE: Hager Smith Design

FIGURE III.O.10: KEYSTONE PACIFIC BUSINESS PARK-REPRESENTATIVE LIGHT INDUSTRIAL BUILDING



SOURCE: Hager Smith Design

SOURCE: Hager Smith Design

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FIGURE III.O.11: KEYSTONE PACIFIC BUSINESS PARK-REPRESENTATIVE WAREHOUSE BUILDING

space buildings (similar to office buildings) would be separated from Baldwin Road by about 80 to 90 feet (a 10 to 20-foot-wide landscaped setback, a 60-foot-wide parking area, and a 5 to 10-foot-wide landscaped strip at the building foundation).

Although development under the West Patterson Business Park Master Development Plan would transform the existing agricultural visual character of the Plan area, it would not substantially degrade the visual quality of the area and its surroundings and would therefore, not have a significant environmental impact.

Mitigation Measure. No mitigation necessary.

References

All referenced documents are available for review, by appointment, at City of Patterson offices (33 S. Del Puerto Avenue, Patterson, CA), except those marked with an asterisk (*), which are available for review, by appointment, at the Stanislaus County Planning Department (1010 10th Street, Suite 3400, Modesto, CA), and except for those identified with an internet website address.

Draft West Pattterson Business Park Master Development Plan. August 2002. pp. 35-50.

P. CULTURAL RESOURCES

INTRODUCTION

This section describes the existing cultural resource setting of the West Patterson project area, evaluates the impacts of the West Patterson projects on cultural resources, and describes mitigation measures that would lessen significant impacts and/or measures that would improve the less-than-significant impacts of the West Patterson projects.

The descriptions of setting in this section are based primarily on a report, prepared by Holman and Associates, of archival research and field inspection of the West Patterson project area (Holman, 2002) and on research and field inspections by EDAW of the wastewater treatment facility potential alternative sites (EDAW, 2002). These reports examine the potential for the existence of cultural resources on the project site through an examination of the available archival record and a systematic visual reconnaissance of the project area.

SETTING

BACKGROUND

NORTHERN VALLEY YOKUTS

The area comprising the greater Patterson area was home to the Northern Valley Yokuts. While little is known ethnographically, Yokuts tribal territory extended from the mid-San Joaquin Delta to the Mendota Hills and was bordered by the interior coastal range and the lower foothills. Their main water source was the lower San Joaquin River and its eastern tributaries. This area consisted of wetlands, which included tule marshes and marsh grasslands. The Northern Valley Yokuts lived along the San Joaquin River and its tributaries. Artifactual evidence from four sites in the northernmost part of the tribal area (but not in the greater Patterson area) indicate occupation after AD 1500. There are also pre-AD 1500 artifacts within some of the assemblages which may be Miwok in origin.

There is no indication that the Northern Valley Yokuts lived in or around the immediate West Patterson project area. The closest approximate location was in the Merced area, to the southeast. Records, in the form of notations from the Spanish-Mexican period, mention settlements, ranging from two to three houses to 200-250 or more houses. These occupied the tops of small mounds. These mounds were close to a major waterway and afforded protection from seasonal flooding.

In 1770, at the start of the Spanish-Mexican period, it is estimated that there were about 18,000 Yokuts total. As early as 1800, the Spanish began to explore the interior valleys. In the beginning, the Northern Valley Yokuts greeted the Spanish missionaries and soldiers openly. This changed when they were removed to the missions, which contributed to their demise. When the Mexican Period began in 1822, life did not improve for those who remained. However, the Indians did manage to hold off Mexican settlements on their lands by hostile acts, at least until the 1840s. The death toll mounted after contact with European diseases, mainly malaria.

The Yokuts demise took place after the American Gold Rush of 1849. While Yokuts territory was not a gold-producing area, the miners crossed it to reach the gold fields. The Yokuts were initially driven off their lands or killed if they resisted. The military chose not to intervene. After 1850, the Northern Valley Yokuts received some government land, but far from their native territory. By the 1910 census, the Yokuts population was reduced to 600, and by 1930 1,100 Yokuts are mentioned. There are no specific detailed records after 1930.

PATTERSON AREA HISTORY

Nearly 50 years before Patterson was established in California's Central Valley, the area was an old Spanish Land Grant known as Rancho Del Puerto. On January 30, 1844, the Mexican California Governor, Manuel Micheltoreno, made the rancho land grant in the names of Mariano and Pedro Hernandez. The Hernandez Land Grant extended from present-day Highway 33 to the San Joaquin River (west to east) and between Del Puerto Creek and Marshall Road (north to south). The rancho area lies approximately one mile east of the project area.

After the area became part of the United States, Samuel Reed and Ruben Wade claimed the land on January 7, 1855. President Abraham Lincoln issued a patent to the land on

August 15, 1864, giving Reed and Wade 13,340 acres. That land patent is on display at the Patterson Historical Society Museum. On June 18, 1866, Reed and Wade sold their grant to J. O. Eldredge for $5,000. Eldredge kept the land for two months before selling it to John D. Patterson for $5,400. Patterson had come to California in 1854 by sailing around Cape Horn. He brought Spanish Merino sheep, longhorn cattle, and racing horses to the Central Valley. He was one of the first men to serve on the Stanislaus County Election Board.

Patterson established the Patterson Ranch Company and bought an additional 5,122 acres. This new acreage was west of the Ranch Company headquarters, extending to the southwest corner of Section 30, or at the corner of Sperry and Ward Avenues, just northeast of the Patterson Gardens site. After his death on March 7, 1902, ownership transferred to his brothers, Thomas and William Patterson. Thomas Patterson had moved to California from New York in 1888. He had been a Fresno banker prior to inheriting John D. Patterson's estate. Thomas and William sold their inheritance to the Ranch Company on May 16, 1908, for $540,000 in gold coin. There is no mention of what happened to William Patterson. Thomas began the development of the Patterson Colony.

The town was plotted by subdividing the land into ranches. Thomas wanted to make the town different from all other western towns. He decided to pattern the Colony after Washington, D. C. and Paris. This unique approach used a series of circles with streets radiating outward. The major streets were lined with palm, eucalyptus and sycamore trees. Only the palm trees survive.

Patterson Colony was officially recorded with the *Stanislaus County Recorder* on December 13, 1909. It sprang to life as a tent city in early 1910, when the first settlers arrived from Sweden. In 1914, its founder, Thomas Patterson, died. Thomas' uncle, another John D. Patterson, moved to the area from Toronto, Canada. He became the Colony's manager, continuing Thomas' vision. Thomas' son, John D. "Jack" Patterson, still owned much of the land in 1980.

The first building built in Patterson Colony was the Patterson Ranch Company headquarters, which was also used as the Colony's first post office. Later, it was used by Thomas Patterson to sell his land to newly arriving settlers. It was initially built to be the central point of the town and resides on a circular piece of land, from where the original streets radiate outward. It was constructed between late 1909 and early 1910. Today it is

called the "Center Building" and houses the Patterson Historical Society Museum and the Patterson-Westley Chamber of Commerce. The building is also listed as a California State Historical Landmark. The Patterson Mercantile was also built in 1910. Today, it is the Century 21 Real Estate office.

On the eastern side of the central town circle are two small parks. These were initially the beginning of the ranchette lands. Thomas's vision was to extend the business section of the town westward from his central building and for the ranchettes to extend to the east. It is unclear how, or if, this vision was ever formalized, due to how the town is laid out today. However, the Central Building does have front doors facing both east and west. Both parks appear to be only vestiges of their original design. South Park is designated as the "Veteran's Memorial Park."

The Patterson Water Company was formed on February 9, 1911. Thomas Patterson held most, if not all, of the water rights, since he owned the land. In order to entice settlers to the Colony, he gave one share of the water company for every acre of land purchased. Initially, the only crop that would grow was barley. Construction of the irrigation system also began in 1911. Over the course of the next 18 years, hand-dug canals eventually brought water from the San Joaquin River. The initial canals ended at present-day Highway 33, except for the water used by the Colony. It is unknown when the western side of Patterson received irrigation, or when the various lateral channels were constructed.

Most of the early streets in the Colony were named after either trees and bushes, or numbered. Only on the outskirts of the Colony were men's names connected to various routes. One of these original streets was "Sperry Avenue." Sperry was the superintendent of the old Rancho Del Puerto. Sperry Avenue connects Highway 33 with Interstate 5 and becomes Del Puerto Canyon Road to the west of the freeway.

POTENTIAL CULTURAL RESOURCES

POTENTIAL PREHISTORIC RESOURCES

A 1894 map of Stanislaus County (Stanislaus County, 1894) shows the former alignment of Salado Creek. The Creek flows diagonally from southeast to northwest, passing the West Patterson project area, at its closest point, approximately one-half mile to the

southeast. This, however, does not preclude the possibility that earlier meanders of the Salado Creek did not flow through the project area. Salado Creek was rerouted and channelized through the project area sometime between 1906 and 1912. The US Geologic Survey Map of 1916 also indicates that Black Gulch once ran from the hills through the West Patterson Business Park Plan area. Today, this channel has either been rerouted or buried in a pipe, and only slightly more abundant surface gravels visible today in the area reflect its former course.

Scatters of whole, thick freshwater "clam" shells along the Lateral 6 South canal included many still fresh appearing and articulated. These scatters are restricted to the edges and berms along the canal and result from periodic dredging of the irrigation canal. These scatters do not represent evidence of prehistoric occupation.

Scatters of hard baked red clay soils measuring up to 25 feet wide or more were recognized in several groves of fruit or nut trees, and cultivated fields that were formerly groves of such trees. These scatters at times included fragments of charcoal and at times fire-effected rocks or pebbles. However, they were not accompanied by dark, ashy soils, chert or obsidian lithic debitage (flakes or waste) or artifacts, ground stone, calcined bone or shell. These baked clay scatters reflect the common modern practice of agricultural burning of tree trimmings or truck removal. Several such recent burned piles and at least one yet to be burned were also observed at various locations in the project area. These recently burned piles left heavily fired red clay soils, charcoal, and occasional fire effected rocks. None of these areas represent evidence of prehistoric occupation.

No prehistoric archeological sites within the project vicinity have been identified in the archival record. No prehistoric archeological resources were identified during surface reconnaissance. However, such negative findings cannot preclude the possibility that buried prehistoric resources may be present within the project area.

POTENTIAL HISTORIC PERIOD RESOURCES

The following sites within the West Patterson project area are identified as having potential historical interest (Holman, 2002).

1. Ranch Complex at Bizanelli Property - A wooden house and barn are located at 2300 Sperry Avenue in a complex at the middle of the Bizanelli property. The house is L-shaped and is sided in vertical board and batten painted Hunter's

Green, with a wood shingle roof. The tall, weathered wooden barn is located on the south side of the compound, which sits on a poured concrete foundation. A possible historic trash scatter in the southwest corner of the compound where turn-of-the-nineteenth-to- twentieth-century electrical porcelain, and sparse glass and ceramics are present. A line or cluster of fig trees nearby suggests the possible presence of buried privy holes and/trash pits.

This ranch was indicated at this location on the 1916 USGS when the property was owned by J.F. Donkin (1912) and later E. Donkin (1924). The access road and the ranch complex itself was located on what then was the eastern edge of the parcel, and may have been the residence of the Donkin family. The age of construction is uncertain, although it predated the 1906 map. As no square nails were observed anywhere in the surviving buildings and ground surface, construction post-dated 1890. The likely date of construction would be post-1890 to pre-1906 or circa 1900.

2. Ranch Complex on Patterson Gardens Site - This site is a large ranch complex at the southern edge of the project area reached by an access road off of South Ward Avenue to the east. The channel of Lateral 6 South runs along the southern border of the area. A large redwood barn is located in the northeast portion of the compound, which was constructed entirely with round nails. The barn is very weathered although it bears remains of "barn red" paint on the exterior. The barn was apparently upgraded circa 1960, as it rests on and is surrounded by a poured concrete slab. This slab was inscribed at the southwest corner of the barn exterior with the words "Ward Campbell 1960."

A large intensely burned area approximately 25 feet by 25 feet is located in the southwest corner of the compound proper, where a sparse scatter of ceramic and glass is present. The native soils have been baked hard and rocks present resemble prehistoric fire-cracked rock. Of interest is the presence of a rectangular hole approximately 3 feet by 2 feet in this hard baked fired soil. This may suggest the presence of a privy or other feature. This burned area may represent the location of prunings or fallen trees, but also may represent the location of an older structure such as a residence destroyed or demolished in the past.

In the area is a sparse scatter of white china and glass including at least one fragment of amethyst glass (indicative of manufacture prior to 1915), several wrought iron objects, a fragment of a black-glazed redware doorknob, charcoal, etc. This may represent the location of former trash dumps.

A structure (now removed) and the access road appear on the USGS map of 1916. Both the existing residence and the barn appear on the USGS maps of 1953 and 1971. The historic residence was removed subsequent to 1971. In 1906, all of section 36 was the property of R. B. Morton, while maps of 1912 and

1924 reveal that the property was then held by Blanch B. Morton. It is presumed that the compound included the residence of the Morton family at that time.

3. Ranch Complex at Keystone Pacific Business Park Site - This is the location of an older, circa 1916 or older ranch complex now occupied by a modern agricultural facility at 15019 Baldwin Road. The facility formerly belonged to the Turlock Fruit Company as designated on the mailbox. The compound today is accessed by a driveway from Baldwin Road.

   Two structures appeared at the end of the access road at this location on the USGS map of 1916. The USGS map of 1953 shows that the southern structure had disappeared and that two additional structures were present north and west of this road. By 1971, the USGS map reveals that the western structure had been replaced by the long storage structure now present.

   About 1906, the property was held by John Outhet, and later maps reveal that he continued to hold it at least until 1924. Buried remnants of the earlier twentieth century and possibly older ranch occupation may well lie below the ground and graveled surface of the compound.

4. Refuse Deposits Along the West Bank of Salado Creek - The report identifies three trash scatter sites along Salado Creek that may represent early twentieth century dump sites.

5. Lateral 6 South - The lateral does not appear on the 1916 USGS map but appears in its present configuration on the 1953 map. It, therefore, may be at least 50 years old. The lateral measures approximately 15 feet wide at the edge, has a "V" shaped cross section and is edged by an earthen berm on both sides. In is unlined for most of its length, with the exception of the portion running through the north half of Section 26, where it is lined with poured and smoothed (and now crumpling) concrete slabs.

6. Salado Creek - The modern Salado Creek runs through the Patterson Gardens site. Today it carries water in a relatively straight channel some 20-25 feet wide and at least 10 feet deep. It is unlined and has vertical to sloping sides with the watercourse exhibiting only slight meandering at its bottom. The last 200 feet of the watercourse at the north end of Section 36 has rip-rap of broken, relocated cement slabs dumped haphazardly.

   The present course of Salado Creek represents a man-made realignment of the watercourse northward. Maps before this time indicate that the creek flowed northeasterly, one-half mile to the south of the project area (Government Land Office 1855-1870). The same condition was recorded on a County map of 1894 and Carlton's map of 1906. However, by 1912, Niven's map shows the modern alignment through the project area. Thus, some time between 1906 and 1912, a

major effort was made to change the course of the creek, channelize it, and probably to make it available for irrigation and flood control.

7. The Patterson and Western Railroad (1915-1920) - Circa 1915-1920, a private railroad spur ran along the northern edge of the West Patterson Business Park Plan area, from the San Pedro and Tulare Railroad toward the lower end of Del Puerto Canyon Road to the west. This was a private railroad built on narrow gauge tracks which connected Patterson with the now-defunct town of Jones. Today, a berm of soil is observable on the northern edge of Section 26 in the project area that today serves as a ranch dirt road. The berm is approximately 25 feet wide and is gently raised between ¾ and 1½ feet or more above the adjacent fields. Slightly more gravel appears on the surface. No evidence of tracks or railroad ties were observed.

8. 1855-1870s Road - A Government Land Office Plat of 1855-1870 including the project vicinity indicates that a road ran northward through the Patterson Gardens site, just west of the centerline.

   Despite careful searching, no evidence of this road was identified in the surface reconnaissance. It is possible that it was obliterated when Salado Creek was channelized through the area, fields were leveled and tilled nearby, or is represented by greatly changed ranch roads along the east and west banks of Salado Creek.

9. The Patterson Airport - This small private airport is at least 50 years old as indicated by its presence on the USGS map of 1953.

A study undertaken by EDAW identified the following potential historical resources on the sites of the potential percolation ponds near the San Joaquin River (EDAW, 2002).

10. Refuse Deposits - Two refuse deposits are identified on the potential percolation pond sites. One deposit is approximately 260 meters in length and 50 meters in width. It is primarily situated east of the City's wastewater treatment facility, with only a small portion (less than 10 percent) of the deposit area situated within the facility. Fragmented artifacts are dominated by glass bottle and jar fragments with a lesser percentage of ceramic and crockery. Time-specific items indicate that refuse was disposed of at this locale from the early- to mid-twentieth century.

    The other deposit identified is a light scatter of small ceramic and glass bottle fragments located in an area approximately 20 meters wide and 120 meters in length. Items indicative of a particular time-frame were not observed, and evidence of intensive refuse disposal was not observed on the surface or a newly excavated irrigation ditch that bisects the material.

11. Ranch Complex - This site consists of a single-family residence, a dairy barn and associated milk house, a barn covered with corrugated metal, a shed, and numerous small pens and corrals. Assessors records indicate that these structures date from 1919, with the corrugated metal barn of more recent construction, possibly constructed as late as the 1940s. The configuration of the complex is consistent with a small-scale dairy operation. Integrity of the structures varies from good for the newer barn to poor for the collapsing barn structure erected in 1919.

12. Residence - This site includes a single-family residence and a detached garage with a shed roof. The single-story residence is a wood-frame building with deteriorating concrete/asbestos siding. The building style suggests that the structure was constructed in the late 1930s to 1940s.

13. Dairy Barn and Associated Milk House - The barn is a wood-frame building with a horizontal wood exterior cladding. The monitor roof is covered with corrugated metal overlaying wood shingles and features exposed rafters and a hay hood. The building is approximately thirty feet in height and has a concrete foundation. The associated milk house is a wood-frame building with a composite shiplap wood and concrete exterior surface.

IMPACTS AND MITIGATION

APPROACH

SIGNIFICANCE CRITERIA

Significant Impact on Historical Resources Defined

The CEQA Guidelines (Section 15064.5(b)) establish the criteria for assessing a significant environmental impact on historical resources. They state, "[a] project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment." The CEQA Guidelines define "substantial adverse change" as a "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired." The significance of an historic architectural resource is considered to be "materially impaired" when a project demolishes or materially alters the physical characteristics that justify the inclusion of the resource in the California Register, or that justify the inclusion of the

resource in a local register, or that justify its eligibility for inclusion in the California Register as determined by the lead agency.

Historical and Archeological Resources Defined

The CEQA Guidelines provide a broad definition of "historical resources." They are resources meeting any of the following criteria:

(1) A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources.

(2) A resource included in a local register of historical resources or identified as significant in an historical resource survey.

(3) Any ... building, structure, ... site ... which a lead agency determines to be historically significant or significant in the ... annals of California ... provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources.

Under CEQA (Public Resources Code 5024.1) an historic resource is eligible for listing in the California Register if it:

(A) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

(B) Is associated with the lives of persons important in our past;

(C) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

(D) Has yielded, or may be likely to yield, information important in prehistory or history.

CEQA Guidelines require consideration of unique archeological resources as historical resources (Section 15064.5) A unique archeological resource is defined the Public Resources Code (Section 21083.2) as,

> an archeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets the following criteria:
>
> (1) Contains information needed to answer important research questions and that is a demonstrable public interest in that information;
>
> (2) Has a special and particular quality such as being the oldest of its type or the best available example of its type;
>
> (3) Is directly associated with a scientifically recognized important prehistoric or historic event or person.

ASSUMPTIONS

This analysis assumes development of the West Patterson projects to their full, contemplated capacities, and further, that such development would entail a "material impairment" of historic resources, if any exist within the West Patterson project area.

The assessment of impacts on historical resources, then, involves the assessment of whether historic resources, as defined by CEQA, exist on the project site.

METHODOLOGY

Review of the Archival Record

In evaluating the potential for the existence of historical resources, Holman and Associates and EDAW conducted a review of the available archival record. Research was conducted at the Stanislaus County Library - Patterson Branch; Patterson Historical Society Museum; Central California Information Center, CSU Stanislaus; and through online and in-house resources. Several surveys have been conducted on or adjacent to the project area.

Surface Reconnaissance and Survey

Surface reconnaissance of the West Patterson project area was conducted using transects averaging 100 feet apart (Holman, 2002). The surface was carefully examined for evidence of prehistoric occupation or use (dark soils, fire-effected rock, lithics, ground stone, bones, etc., or historic period resources (trash scatters or dumps, foundations, features such as roads, walls, extant structures, etc.). All parcels were accessible to the surveyors although surface visibility varied according to vegetation and tilling.

The survey of the potential percolation pond sites was conducted following contemporary professional archaeological fieldwork standards consistent with the Secretary of the Interior's Standards and Guidelines for Identification of Cultural Resources (CFR 44720-23). The survey used 7.5 minute USGS topographic maps and Global Positioning System (GPS) instrumentation to locate and orient the survey in the field. A GPS unit with five-meter accuracy was also used to establish site locations. All parcels were accessible to the surveyors. Visibility varied with the type of crop.

PROJECT IMPACTS AND MITIGATION

Impact P.1. Development of the West Patterson project area would remove buildings identified as having potential historical interest. (Less than Significant)

A review of the archival record has revealed that existing buildings and sites within the West Patterson project area and the potential percolation pond sites have not been designated, listed, identified, or determined eligible for listing in any local, state or federal registers of historical resources, nor otherwise been identified as historical resources. However, this does not preclude a lead agency determination that the resource might be an historic resource under CEQA, provided that such a determination was supported by substantial evidence in light of the whole record (CEQA Guidelines, Section 15064.5(a)(3) and (4)).

With respect to the buildings within the West Patterson project area and the potential percolation pond sites, substantial evidence in light of the whole record does not currently support a lead agency determination that existing buildings within the West Patterson project area are historic resources for the purposes of CEQA. The structures do

not appear to possess the requisite architectural distinction or historic significance to be eligible for the California Register of Historical Resources.

Mitigation Measure. No mitigation necessary.

Impact P.2. Development of the West Patterson projects may disturb or eliminate subsurface archeological resources from the prehistoric and historic eras. (Less than Significant)

A review of the archival record and a systematic surface reconnaissance and survey of the project area and percolation pond sites have uncovered no evidence of the presence of archeological resources from the prehistoric or historic eras in the project area. However, the presence of unique archeological resources from the prehistoric or historic eras cannot be conclusively ruled out without excavation or test borings.

As a condition of its approval of building permits, the City of Patterson requires compliance with the procedures set forth in CEQA Guidelines, Section 15064.5(e and f), in the event that previously unknown human remains or archeological resources are accidentally discovered in the course of construction. Compliance with these procedures would ensure that the potential impacts from the West Patterson projects on archeological resources are less than significant.

Mitigation Measure. No mitigation necessary.

References

All referenced documents are available for review, by appointment, at City of Patterson offices (33 S. Del Puerto Avenue, Patterson, CA), except those marked with an asterisk (*), which are available for review, by appointment, at the Stanislaus County Planning Department (1010 10th Street, Suite 3400, Modesto, CA), and except for those identified with an internet website address.

EDAW, *Archaeological Inventory of the West Patterson Wastewater Treatment Facility Expansion Project, Stanislaus County, California*, July 2002.

Holman & Associates, *Report of Historic Archival Research and a Field Inspection of the West Patterson Master Development Plan and Patterson Gardens Projects*, June 2002.

*Stanislaus County, 1894, *Map of the County of Stanislaus*, Compiled from U.S. and County Surveys and Public Records.

Q. GROWTH INDUCEMENT

Growth inducement under CEQA considers the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects that would remove obstacles to population growth (a major expansion of a wastewater treatment plant, for example, might allow for more construction in service areas). This section summarizes the project's direct growth in employment, describes the likelihood of associated induced growth, and notes that the project would not remove obstacles to population growth.

The West Patterson projects propose large-scale light industrial, business park, commercial, and residential development. Development of the light industrial and business park component of the West Patterson projects, in the Business Park Plan area, would include a total of about 9,000,000 sq. ft. of light industrial, business park, and commercial uses. The 820-acre Business Park plan site is owned by 13 different landowners. One of these owners, the Keystone Pacific Corporation, is proposing to construct approximately 2,500,000 sq. ft. of flex, light industrial and warehouse/ distribution uses. Development of the residential component of the West Patterson projects, the Patterson Gardens proposal, would include about 987 residential units and about 300,000 sq. ft. of commercial/office area; about 47 of the proposed 987 residential units would be for senior housing.

Development of the Business Park Plan is expected to add approximately 16,240 jobs to Stanislaus County and Patterson's economy by 2025. Development of the Patterson Gardens proposal would add a total of approximately 740 jobs, plus about 40 jobs related to the potential new school, by 2025 to the region. Overall, the West Patterson projects are expected to generate a gross total of approximately 16,985 non-agricultural jobs by 2025.

Patterson currently has an unemployment rate of about 16 percent, which is substantially higher than the current unemployment rate (about 11 percent) for Stanislaus County as a whole [2000, US Census data]. Accordingly, the City of Patterson and Stanislaus County are jointly pursuing an aggressive economic development strategy for the West Patterson area that is expected to help provide the opportunity for additional job-generating land

uses in Patterson and the west Stanislaus County area for the future. The proposed West Patterson projects are a substantial part of this overall economic strategy. The West Patterson projects are intended to generate a substantial number of new jobs that would be higher paying than current jobs in the City. It is expected that as the number and quality of jobs improves, the City would likely reach a threshold where it could support a wider range of retail goods and services than at present. Currently, the City loses over ten million dollars per year in retail-related revenue to other communities.

Any project-related direct and induced employment growth in Patterson would exceed *General Plan* and/or regional projections. However, employment growth estimates for Patterson (total employment of about 14,000 by full buildout of the *General Plan* area) do not accurately account for the job-generating potential (16,985 total new jobs) of the light industrial/commercial development proposed by the West Patterson projects. Given the current unemployment rates and the jobs-to-housing imbalance in the City, this exceedance of the City's employment growth would not be significant. In this analysis, it can be assumed that employment growth associated with the West Patterson projects accounts for all future employment growth in the City; to the extent that new jobs are created elsewhere in Patterson, it is likely that job growth in the West Patterson project area would be less than assumed or would be delayed further into the future. StanCOG regional projections are composite estimates of an area's development based upon current zoning, general plans, and other local policies, in conjunction with economic and demographic trends driving the area as a whole, county level trends, and local trends. Although neither the City nor County bases its projections on specific local conditions in an area, it is apparent from an evaluation of available vacant land as well as land with development potential in Patterson, its sphere of influence, and unincorporated County land adjacent to it, that the West Patterson project area comprises development sites with potential to create a substantial amount of employment in the City. Given the local development potential, it is not unreasonable to conclude that almost all the employment growth in the City over the next 25 years would be attributable to industrial/commercial development on the West Patterson project area.

Direct increases in employment and business, such as those of the proposed project, typically induce further growth in households, population, housing, employment, and a range of other goods and services to meet the production and consumption needs of the additional economic and residential activity. However, light industrial, office and retail development with the West Patterson projects would not induce any unusual growth because currently there is an imbalance in the City's existing non-residential-to-

residential land uses, and a related imbalance in the City's jobs-to-housing ratio; this proposed light industrial/commercial development is intended to help redress that imbalance.

Development of the Business Park Plan area, the light industrial and business park component of the project, would not directly generate residential growth. It is possible that jobs generated by these commercial/industrial uses could induce workers to relocate to Patterson, thereby resulting in secondary impacts to City facilities and services because of an influx of new residents. However, as discussed in Section III.N, Population, Housing and Employment, residential development has far outpaced the expansion of employment opportunities in Patterson. Thus in the future, the number of new jobs is not expected to exceed the planned housing supply.

Development of the Patterson Gardens proposal, the residential component of the project would add about 2,960 residents to Patterson's population by 2025. Population due to the proposed project would be about 8.2 percent of the total projected population (36,000) in Patterson by 2025, and it would be about 12.1 percent of the projected population growth (36,000-11,600=24,400 people) in Patterson by 2025. This project-related population growth would be within the estimates of *General Plan* population projections (36,000 people by 2025).

Since the West Patterson projects do not have unusual labor requirements and given the current unemployment rates, it would be expected that construction of the project would meet labor needs from within the regional labor market for construction without attracting construction labor from areas beyond the region's borders.

Supplying water to serve the West Patterson projects in addition to existing water demand and other water demand projected in the City's Urban Water Management Plan (UWMP) could induce growth if the volume of water made available were to exceed planned demand. The West Patterson projects are proposed to be supplied with groundwater: at first untreated, and then, if groundwater quality should decline to below Domestic Water Quality Standards, treated by reverse osmosis (see Section III.I, Water Supply). The proposed groundwater supply system would not have growth-inducing effects. Installation of the number of additional pumps (and wellhead treatment systems) projected by the UWMP would accommodate only demand projected in the UWMP.

Under the surface-water-supply project variant (see Section III.I, Water Supply), the City

would need to purchase a substantial excess of surface water entitlements beyond the City's planned demand – entitlements to approximately 13,000 acre-feet annually versus demand of approximately 7,600 acre-feet annually by 2020 – to account for the normal shortfall of actual water *deliveries* from the Central Valley Project and State Water Project relative to contractual entitlements. That surplus of entitlements might encourage planning for new growth that could not be sustained by anticipated water deliveries.[1] Such planning, however, would be prohibited by Policy IV.A.3 of the City of Patterson 1992 General Plan, which states that "[t]he City shall not approve any new development without demonstrated assurance of an adequate water supply to support such development." Accordingly, the surface-water-supply project variant also is not anticipated to have growth-inducing effects.

Development of the West Patterson projects could encourage additional development in Stanislaus County on parcels adjacent to those planned for conversion and result in increased inducement to convert additional prime agricultural land to urban land uses. This potential growth-inducing impact can be partially mitigated by contribution to the California Farmland Conservancy Fund as a condition precedent to the issuance of building permits for the West Patterson projects, in an amount commensurate with the amount of agricultural land proposed for conversion (see Mitigation Measure C.1 in Section III.C, Agricultural Resources). The Farmland Conservancy Fund would fund farmland preservation projects in Stansislaus County that may include the purchase of agricultural easements, land improvement and planning grants, technical assistance or other authorized activities. Such a mitigation measure would not reduce impacts on agricultural resources to less-than-significant levels. The West Patterson projects are expected to be completely built out by 2025 or later; given this long timeframe for the development of the West Patterson projects, any growth-inducing impacts on agricultural parcels adjacent to the West Patterson projects would occur gradually.

Expansion of the Patterson wastewater treatment facilities would result in about 0.3 mgd of excess capacity; this is a reduction of 0.2 mgd compared to existing capacity and demand. Some of the "excess" capacity accommodates higher flows due to infiltration during rainy weather. The extra 0.3 mgd of capacity would not be sufficient to accommodate demand from the Diablo Grande development; therefore, if the City were to choose to accept wastewater from Diablo Grande, further expansion of the treatment

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[1] See *Planning & Conservation League v. Dep't of Water Res.*, 83 Cal. App. 4th 892 (2000).

facilities would be needed. The excess capacity could accommodate some additional growth in Patterson, but would not be growth inducing because it is less excess capacity than currently exists, and because it would not accommodate all growth anticipated in the *Patterson General Plan*. The additional capacity needed to accommodate growth anticipated in the *General Plan* will be studied in an EIR on the Patterson Wastewater Master Plan now in preparation.

Providing wastewater conveyance capacity in new sewer trunk lines proposed to be installed in Sperry Avenue and Ward Avenue as part of the West Patterson projects could make it possible for Patterson to serve other development in the area west of the existing city limits and sphere of influence, if that capacity were not used by Diablo Grande. The non-residential portions of the West Patterson projects are expected to build out over a 25-year period, or longer, based on current estimates of demand for commercial space. The residential portion of the West Patterson projects, in Patterson Gardens, is expected to be built out over a five- to six-year period beginning in about 2004. Therefore, it is not likely that there would be substantial incentives to develop other properties for commercial/industrial use outside of the West Patterson project area for the next ten years or more, or for residential use in the next six years or more. Thus, the availability of sewer conveyance capacity alone would not make development sufficiently more economically attractive to induce growth beyond that already analyzed.

The roadway improvements included in the West Patterson projects would not open new areas to development other than those of the project site. Surrounding areas are already accessible by motor vehicle on existing roadways.

Based on the above discussion, the new infrastructure improvements analyzed in the EIR for the West Patterson projects would not cause growth-inducing impacts, either alone or in combination. Conversion of agricultural land to non-agricultural uses would have a growth-inducing impact that could not be mitigated to a less-than-significant level.

CHAPTER IV. OTHER CEQA CONSIDERATIONS

A. SIGNIFICANT ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED IF THE PROPOSED PROJECT IS IMPLEMENTED

In accordance with the California Environmental Quality Act and the State CEQA guidelines, the purpose of this chapter is to identify significant impacts that could not be eliminated or reduced to less-than-significant levels by implementing mitigation measures included in the proposed project or by other measures that could be implemented.

The project, with mitigation, would have the following unavoidable significant impacts:

- Implementation of the West Patterson projects would directly result in and contribute cumulatively to the permanent loss of prime agricultural land.

Development of the Business Park Plan and Patterson Gardens to their contemplated capacities would result in the irreversible conversion of all of the project area, totaling over 1,100 acres, to urban development, resulting in the permanent and irreversible loss of the land as prime farmland. No mitigation is available to reduce this impact to less-than-significant levels.

- Cumulative traffic, including traffic generated by the West Patterson projects, would contribute to unacceptable levels of service on Interstate 5 in the vicinity of the Sperry Avenue interchange.

Under the Future 2025 Base Conditions, it is estimated that the projected southbound P.M. peak hour traffic on I-5 north of Sperry Avenue would operate at Level of Service (LOS) E. The Future-2025-plus-Project conditions, the same section of I-5 would operate at LOS F both in the southbound direction during the P.M. peak hour, and in the northbound direction during the A.M. peak hour. According to the draft PSR developed by Caltrans for the I-5/Sperry Avenue Interchange, I-5 would fail by the year 2021 north of Sperry Avenue, and by 2029 south of Sperry Avenue. Mitigation would not be sufficient to reduce this impact to a less-than-significant level.

- Emissions from increased motor vehicle activity and new area sources associated with the project could cause or contribute to ongoing violations of the ozone and PM_{10} standards.

Buildout (with operation and occupation) of the West Patterson projects would increase motor vehicle activity in the region by generating and attracting vehicle trips. This would cause increased emissions of ozone precursor pollutants (NO_x and VOC) and particular matter (both PM_{10} and $PM_{2.5}$). Along with motor vehicle emissions, emissions from area sources (new natural gas combustion, landscaping activities and consumer products) and ozone emissions from construction would also increase. There are no established methods to quantify direct $PM_{2.5}$ emissions, or their impacts, but violations of this standard already occur locally. The proposed project would create emissions that could contribute to these ongoing violations. Despite mitigation, the increases in both ozone and PM_{10} would remain above significant levels.

- The cumulative air quality effects of development of the West Patterson projects could delay the region's progress in attaining the air quality standards.

Implementing the West Patterson projects would involve changing the land use designations for some parcels from agricultural use to light industrial use. The West Patterson projects would include measures to minimize the number of new vehicle trips. The West Patterson projects would cause a higher level of industrial development in the area than is currently planned for by the San Joaquin Valley APCD. This would delay the region's progress towards attaining ozone and PM_{10} standards. This unmitigable effect is a cumulative result of the two significant air quality factors mentioned above.

- The expanded wastewater treatment plant and new percolation ponds would result in increased odor generating potential that could affect nearby residents.

The proposed project would result in the expansion of the wastewater treatment plant, the addition of several percolation ponds, and an overall increase in the amount of wastewater treated by the facility. Odors resulting from percolation ponds would be most prevalent during warm weather conditions. In addition, sewage containing industrial wastes may cause odor problems, which can potentially be spread over long distances during times of light wind. Despite mitigation measures to move percolation ponds as far from residences as possible, the objectionable odors which may result from the expanded wastewater treatment facility would cause a significant and unavoidable impact.

- Treatment of groundwater to supply the West Patterson projects would require the disposal of large quantities of concentrated brine created as a byproduct.

The City is proposing to supply the West Patterson projects with goundwater. The quality of the City's groundwater is projected to become unacceptable for domestic uses at some point between 2008 and 2012. At that point, the City is proposing to begin using reverse osmosis desalinization to purify the groundwater. A common byproduct of desalinization is concentrated brine. This brine would require disposal by either evaporation or injection. Until a final disposal method has been decided upon and its foreseeable environmental impacts fully analyzed, this impact is presumed to be significant and unavoidable.

- Pumping groundwater to serve the West Patterson projects and other existing and planned demand could create a severe "cone of depression" beneath the City's well field.

Increasing water supply to the West Patterson project area would involve heavy groundwater pumping in a concentrated area. This could lead to the formation of a significant "cone of depression" beneath and surrounding the well field. A cone of depression could draw poor-quality water from surrounding areas into the well field serving the City of Patterson. In addition, a cone of depression could draw down the local water table, possibly "stranding" nearby wells that are insufficiently deep to draw water from below the cone. This would be most likely to occur to shallow wells located near the City's wells. Finally, a severe cone of depression could result in land subsidence on the surface above the cone. Subsidence could cause property damage, or damage to the wells themselves. The longer and more intensively the City relies on groundwater, the greater the risk that these impacts could manifest and the greater their potential severity. If groundwater pumping to support buildout of the West Patterson projects were to create a severe cone of depression, this would be a significant impact.

- Implementation of the surface water supply variant could cause existing users of a supply obtained by the City to switch to other water sources, with attendant effects on those users.

A variant of the proposed water supply for the West Patterson projects would involve transferring surface water from an existing use to the City. This would result in existing users being forced to reduce water uses, or to find new sources of water. Most current purchasers of the water sought by the City would be water purveyors rather than end

users. This means that the impact of the lost surface water is impossible to predict. The uncertainty associated with this potential impact makes any prediction regarding impacts and mitigation speculative. However, in the interest of complete disclosure, and despite the uncertainty, the impact, even with proposed mitigation, would be significant and unavoidable.

Mitigation measures have been identified in Chapter III of this report that would reduce but not eliminate these significant impacts to agricultural resources, traffic, air quality, and water supply.

B. SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES WHICH WOULD BE CAUSED BY THE PROPOSED PROJECT SHOULD IT BE IMPLEMENTED

Significant irreversible environmental changes would occur with development of the proposed West Patterson project. The loss of agricultural resources on any parcel in the West Patterson project area would not be expected to be reversed once any of the project parcels develop, and would commit future generations to the residential, commercial, and light industrial uses proposed. Development would involve irreversible use of resources to construct buildings and infrastructure, including lumber, concrete, sand, gravel, masonry, metals, and water. However, development would not be expected to involve an unusual commitment of these resources, nor would it be expected to consume any of these resources in a wasteful manner.

Development of buildings and infrastructure, and occupancy of these buildings would use energy resources in the form of fossil fuels, including fuel oil, natural gas, and gasoline or diesel fuel for construction equipment and automobiles and trucks that would use the project site. Because individual buildings would be required to comply with California Code of Regulations Title 24 energy regulations, energy would not be used in a wasteful, inefficient or unnecessary manner. Energy consumption for treatment of groundwater in the future would increase demand for power generation in the region by 2020, but not in excess of expected future capacity.

CHAPTER V. ALTERNATIVES

This chapter identifies alternatives to the proposed West Patterson projects and discusses the environmental effects associated with the alternatives. The California Environmental Quality Act (CEQA) Guidelines specify that an EIR must describe a reasonable range of alternatives to the proposed project, which could feasibly attain most of the basic project objectives. The alternatives considered should focus on elimination or reduction of significant adverse impacts caused by the proposed project. The CEQA Guidelines further state that an EIR need not consider every conceivable alternative to the project. Rather, it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives which are infeasible.

The analysis of alternatives is of benefit to decision makers because it provides more complete information about the impacts of land use decisions, and consequently a better understanding of the inter-relationships among all of the environmental topics under evaluation. The City of Patterson and Stanislaus County must consider approval of an alternative if that alternative would substantially lessen or avoid significant environmental impacts identified for the proposed projects and that alternative is determined to be feasible. The determination of feasibility will be made by the City of Patterson and Stanislaus County decision-makers.

The following alternatives are discussed and evaluated in this chapter:

1. No Project Alternative, including both a No Action Alternative and an Existing General Plan Alternative
2. No Development on Northern Cozzens Property, Keystone Pacific Site, and Patterson Gardens Site
3. Business Park Uses Relocated East
4. Reduced Sphere of Influence
5. Howard Road-Westley Triangle Alternative Location

A. ALTERNATIVE 1: NO PROJECT

CEQA requires an EIR to evaluate a No Project alternative. The purpose of the No Project alternative is to allow decision makers to compare the effects of the proposed project with the effects of not approving a project. In this EIR, the No Project Alternative is analyzed under two scenarios: the No Action Alternative, and the existing General Plan Alternative. The No Action Alternative creates no change to existing conditions. Under this alternative, the West Patterson Business Park Master Development Plan site, including the Keystone Pacific Business Park site, and the Patterson Gardens site would remain in their existing condition and no development would take place. The Existing General Plan Alternative, on the other hand, assumes development of the sites under the existing land use designations established by the City of Patterson and Stanislaus County General Plans, with no amendments to either General Plan. This version of the No Project Alternative allows decision makers to compare the development proposal with development that would be reasonably likely to occur under a continuation of existing General Plan land use designations, if the requested general plan amendments were not approved.

NO ACTION ALTERNATIVE

DESCRIPTION

Under the No Action Alternative, there would be no development of the West Patterson Business Park Master Development Plan (Business Park Plan) site, including the Keystone Pacific Business Park. The City's sphere of influence would not be expanded to include the Keystone and the northern Cozzens properties. The Keystone and northern Cozzens properties would retain their *Agricultural* designation as currently set forth in the City of Patterson and the Stanislaus County General Plans. The Business Park Plan site, including the Keystone Pacific Business Park site, would remain in agricultural use. In addition, under this alternative, there would be no zoning text amendment to establish the new zoning classifications – the *Industrial Business Park* and *Light Industrial* districts – as contemplated by the Business Park Plan.

Under the No Action Alternative, there would be no development on the Patterson Gardens site and this property would not be annexed to the City. The Patterson Gardens site would remain in agricultural use.

ENVIRONMENTAL ANALYSIS

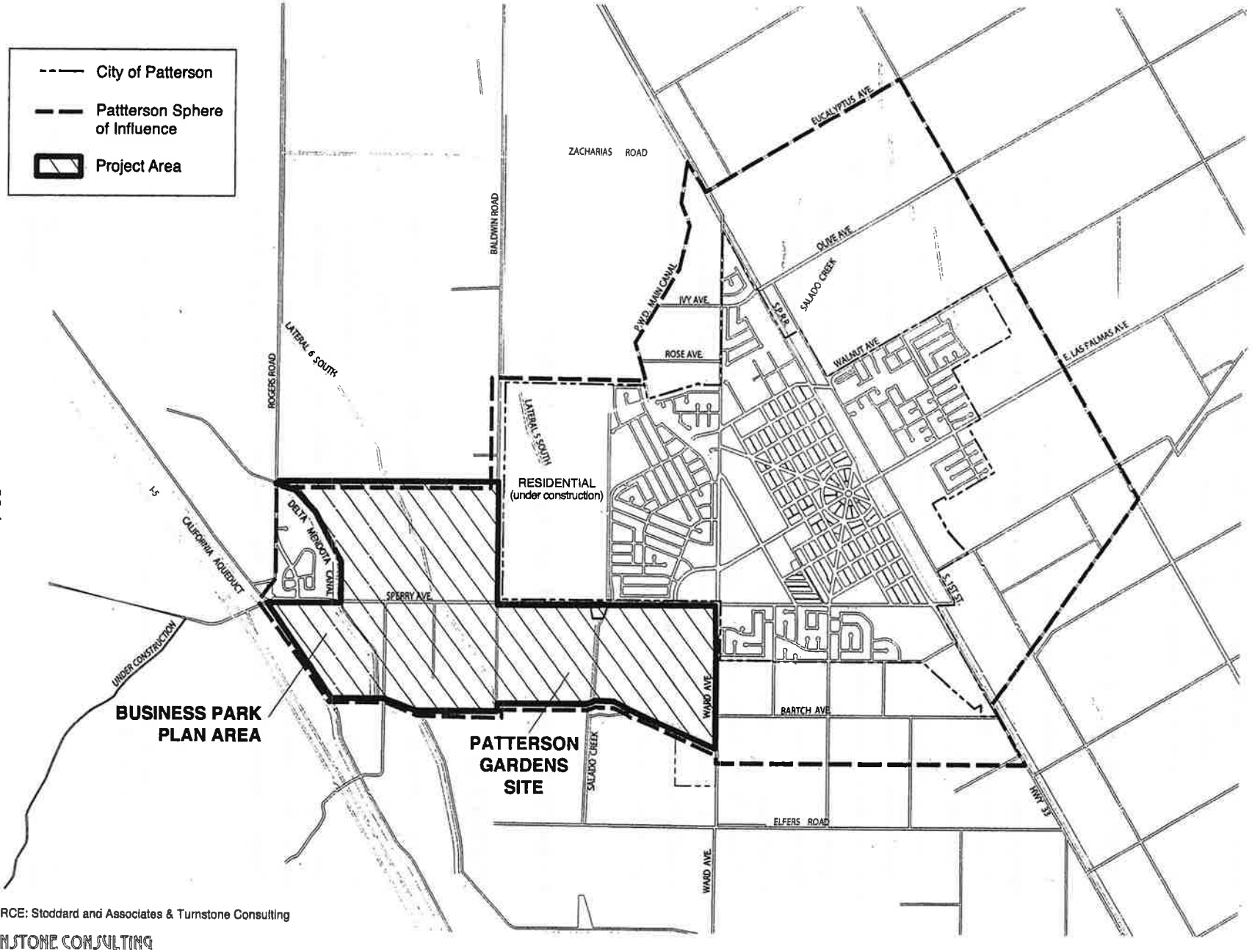
This alternative reflects existing physical conditions in the West Patterson project area. If existing physical conditions in the project area were to continue for the foreseeable future, conditions described in detail in the Environmental Setting for each topic in Chapter III would remain. No additional project-generated traffic would be added to City or County roadways or the I-5/Sperry Avenue interchange from the West Patterson projects area. There would be no loss of agricultural lands and there would be no impacts to biotic habitats or wildlife resources on, and in the vicinity of, the project area. The improvements to the Salado Creek channel would not be undertaken. Under this alternative, the City would still need to expand its wastewater treatment plant by approximately 0.5 million gallons per day to accommodate wastewater from the Creekside Meadows development. In addition, the City would still need to secure additional supplies of water at some point between 2008 and 2012. Other impacts identified for the West Patterson projects would not occur if the No Action Alternative were implemented.

EXISTING GENERAL PLAN ALTERNATIVE

DESCRIPTION

This alternative assumes development in West Patterson in accordance with the land use designations established by the existing City of Patterson and Stanislaus County *General Plans.*[1] Because the 224-acre Keystone property and the 119-acre portion of northern Cozzens property lie outside the City's sphere of influence, this land would be excluded from the boundaries of development under this alternative (see Figure V.1: Alternative 1 - Existing General Plan Alternative). The Keystone and northern Cozzens properties

[1] Where land lies within the City's sphere of influence, the County defers to the City's underlying land use designation.



SOURCE: Stoddard and Associates & Turnstone Consulting

TURNSTONE CONSULTING

FIGURE V.1: ALTERNATIVE 1 - EXISTING GENERAL PLAN ALTERNATIVE

would retain their *Agricultural* designation as set forth in the City and County General Plans, and they would remain in agricultural use. The Keystone Pacific Business Park would not be developed.

Under the Existing General Plan Alternative, those properties that are currently located in the City's sphere of influence would be developed in a manner consistent with existing land use designations. Thus, the southern Cozzens property, Beuhner, Schali, Lewis, Rea, Falzone, Bizzaneli, Anderson Trust and a portion of the Hansen property would be developed with light industrial land uses as established by the City's *General Plan*. The Rea and Falzone properties would be developed with medical and professional office uses and the southern portion of the 30 acres of the western Hansen property would be developed with highway commercial uses. Under the Existing General Plan Alternative, approximately 438 acres would be developed with light industrial, medical professional and highway commercial uses, compared with 819 acres as contemplated by the Business Park Plan.[2]

In addition to the reduced development boundaries, the other fundamental difference between the Existing General Plan Alternative and the proposed project is that, under the Existing General Plan Alternative, there would be no new zoning classifications – the *Industrial Business Park* and *Light Industrial* districts – proposed in the Business Park Plan. As a result, more traditional light industrial uses (e.g., manufacturing and warehousing) would be developed rather than the office/business park uses contemplated by the Business Park Plan. In addition, while the Business Park Plan would not allow uses that are water and sewer intensive (e.g., food processing), these types of uses could be developed under the Existing General Plan Alternative. Because the Business Park Plan would not be approved under this alternative, there would be no established guidelines for the design of development on the Business Park Plan site.

As shown in Table V.1, buildout under the Existing General Plan Alternative would include development of approximately 4,232,000 square feet of light industrial, medical professional and highway commercial development, which is 4,747,000 fewer square feet than that estimated to constitute buildout under the Business Park Plan. This alternative would add approximately 7,765 employees to the western Stanislaus County economy.

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[2] This acreage does not include the 38 acres of public land located in the middle of the Business Park Plan site.

Table V.1: Comparison of Buildout and Employment for Project Alternatives

	BUSINESS PARK PLAN (Proposed Project)	Alternative 1: Existing General Plan	Alternative 2: Eliminate Cozzens, Keystone, and Patterson Gardens	Alternative 3: Move Development to Eastside	Alternative 4: Reduce Sphere of Influence	Alternative 5: Westley Site
Buildout Square Footage	8,978,600	4,232,000	4,776,000	7,802,000	8,978,600	8,978,600
Employment	16,240	7,765	9,250	13,990	16,240	16,240
	PATTERSON GARDENS (Proposed Project)	**Alt. 1**	**Alt. 2**	**Alt. 3**	**Alt. 4**	**Alt. 5**
Dwelling Unit	987	1,063	-0-	987	494	987
Office/ Commercial Square Footage	302,500	-0-	-0-	302,500	150,000	302,500
Employment	706	-0-	-0-	706	355	706

Source: Shute, Mihaly and Weinberger, 2002.

Under this alternative, Sperry Avenue would be improved between Interstate-5 and Baldwin Road to four travel lanes. Baldwin Road would also be improved from Sperry Avenue to the City's northern sphere of influence boundary to include two 14-foot travel lanes and two 6-foot-wide bike lanes. Because the Keystone Pacific Business Park would not be constructed under this alternative, the internal roadways on that parcel – Keystone Pacific Parkway, Keystone Boulevard, and Patrick Drive – would not be constructed.

Under the Existing General Plan Alternative, the 21.4-acre portion of the 305-acre Patterson Gardens site that would have been redesignated to *Commercial Retail* under the proposed project would maintain its *Low Density Residential* land use designation under the City's General Plan. Thus, the 302,500 square feet of general commercial, office and retail uses contemplated by the Patterson Gardens proponent would not be developed and

would be replaced by an additional 76 residential units. Thus, assuming the same proposed residential densities as contemplated by the Patterson Gardens project (3.8 to 4.7 units per acre), this 305-acre site would be developed with approximately 1,063 dwelling units. This alternative assumes annexation of this site to the City.

Because this alternative involves the development of over four million square feet of light industrial, medical professional and highway commercial uses and up to 1,063 dwelling units, the City would need to expand its wastewater treatment plant and collection system and would need to secure new sources of water supply. The City would still need to form a Mello-Roos District to finance the wastewater and water supply infrastructure improvements and would need to collect development impact fees to defray the cost of roadway improvements and other public facilities, such as police and fire protection facilities, school facilities and parks, that are not covered by the Mello-Roos District.

ENVIRONMENTAL ANALYSIS

LAND USE AND ZONING

The potential land use compatibility conflicts arising from the placement of residential uses adjacent to ongoing agricultural operations would be slightly greater with this alternative than with the West Patterson projects inasmuch as this alternative entails an additional 76 residential units on the Patterson Gardens site.

The potential for land use compatibility conflicts arising from the placement of business park and light industrial uses adjacent to residential land uses would, on balance, be greater than with the West Patterson projects. The northern portion of the Plan area would remain undeveloped and the length of the interface between the light industrial uses of the Plan area and the residential uses across Baldwin Road would thereby be shortened. However, development of the Plan area under the Existing General Plan Alternative would take place without the design guidelines and landscape improvements including landscaped buffer areas proposed by the Business Park Plan. These are specifically designed to ease the transition between the Plan area and adjacent residential development.

AGRICULTURAL RESOURCES

The Existing General Plan Alternative would result in the conversion of about 782 acres of prime farmland to urban land uses, about 343 acres less than the 1,125-acre loss that would result from the West Patterson projects (about 30 percent less). Like the proposed project, the loss of prime farmland under this alternative would be a significant and unavoidable direct impact to agricultural resources.

BIOLOGICAL RESOURCES

Under this alternative, impacts to the Patterson Gardens site would be virtually identical to those described for the proposed project. The northern portion of the project area (northern Cozzens and Keystone Pacific properties) would remain in agriculture, thereby reducing the potential impact to Swainson's hawk foraging habitat by approximately 342 acres. Although the types of allowed development would be somewhat modified, impacts to the remainder of the area would be the same as those discussed for the proposed project.

TRAFFIC

The Existing General Plan Alternative would generate about 56 percent fewer trips during the A.M. and P.M. peak hours in comparison to the proposed project. Table V.2 presents estimated peak hour trip generation for this alternative (identified as Alternative 1). While many of the major intersections along Sperry Avenue, and the I-5/Sperry Avenue interchange, would still fall below LOS C in 2025, the impacts of the Existing General Plan Alternative on the regional and local roadway network would be significantly reduced compared to the proposed project. As with the proposed project, the increase in traffic could be accommodated by widening Sperry Avenue to four lanes, adding traffic signals at major intersections, and synchronizing all signalized intersections.

The construction period impacts would be similar but incrementally less than those identified for the proposed West Patterson projects since this alternative assumes much less development.

Table V.2: Trip Generation of Alternatives

Alternatives	Employment	Dwelling Units	A.M. Peak Hour Trips	P.M. Peak Hour Trips
Master Development Plan	16,945	987	8,582	9,360
Alternative 1	7,765	1,063	3,766	4,143
Alternative 2	9,250	-0-	3,860	4,193
Alternative 3	14,696	987	6,620	7,241
Alternative 4	16,591	494	7,167	7,810
Alternative 5 – Westley Site	16,945	987	8,582	9,360

Source: TJKM, 2002

AIR QUALITY

Construction of this alternative would cause impacts similar to those of the project, but at a less intense level. Mitigation for PM_{10} and ozone would be similar to those for the proposed project.

Industrial uses under this alternative would have the potential to generate toxic air contaminants or odors as they would under the proposed project. Similarly, because the wastewater treatment plant would need to be expanded, these impacts would be similar to those for the proposed project.

With over 50 percent fewer vehicle trips, traffic-generated air emissions would be substantially reduced. The reduction would not, however, reduce emissions resulting from buildout of the West Patterson projects to below significance thresholds established by the San Joaquin Valley Air Pollution Control District. Therefore, this alternative would result in significant, unavoidable air quality effects, as with the proposed project.

NOISE

Although construction activities under this alternative would be less widespread than under the proposed project, existing residences could still be exposed to construction noise as would occur with the project.

Reductions in traffic volumes on local streets with this alternative would reduce traffic-generated noise levels compared to those identified with the proposed project. Reducing traffic volumes by about 50 percent would reduce noise levels by about 3 dBA, which would be a noticeable change. However, traffic levels in 2025 without the proposed project would increase ambient noise sufficiently that the addition of traffic with development under the Existing General Plan Alternative would continue to result in significant noise impacts. Because design guidelines would not be adopted for the area designated Light Industrial, buffers included in the Business Park Plan may not be established for new buildings along Baldwin Road, potentially resulting in greater operational noise across from residential uses in this portion of the Plan area. Mitigation measures identified for the project would continue to be applicable and would reduce noise impacts to less-than-significant levels. Noise impacts to residences from business park development along the northern end of Baldwin Road in the West Patterson project area would be reduced with the Existing General Plan Alternative because the Keystone Pacific property would remain in agricultural use.

HYDROLOGY AND WATER QUALITY

Under this alternative, improvements to the Salado Creek channel (on the Patterson Gardens site) would be completed, and therefore on-site flooding conditions would be expected to be similar to those under the proposed project. The mitigation of on-site flooding impacts and placement of housing in a flood hazard zone under this alternative would also be similar to that specified for the Patterson Gardens portion of the project.

The potential for construction-period water quality degradation would be reduced in comparison to the proposed project since there would be considerably less grading under the Existing General Plan Alternative. The potential for increased discharge of urban pollutants would be reduced because less land would be developed with urban uses relative to the proposed project. As with the proposed project, certain types of industrial development would be required to comply with the General Permit for Storm Water

Discharges Associated with Industrial Activity. Under this alternative, there would be less of a decrease in the rate of regional groundwater salt loading relative to the proposed project since more of the Business Park Plan site would remain in agricultural production. Stormwater pollution prevention plans would be required for all construction sites over five acres, to prevent water quality impacts during construction.

WATER SUPPLY

The Existing General Plan Alternative would increase the water demand in the City by about 56 percent, as compared to the 83 percent increase in demand created by the proposed project. As with the proposed project, the major water resource impact would be the limitation of potable groundwater. Without treatment the City's groundwater supply is unlikely to be sufficient to supply current demand (which includes approved but unbuilt residential development) much beyond the early part of the next decade. It is estimated that groundwater of drinking water quality would be exhausted at some point between 2009 and 2014, as compared with exhaustion between 2008 and 2012 under the proposed project. In either timeframe, with treatment, an adequate quantity of groundwater is available to meet the City's future water needs.

As with the proposed project, potential water-related impacts differ greatly depending upon whether surface water or treated groundwater is used for the water supply conversion. If surface water is procured, the area would have a net increase in supply and groundwater levels would remain very stable over drought periods; thus, it is unlikely that cones of depression would be formed due to heavy groundwater pumping.

The groundwater level is expected to drop considerably during drought conditions since the area must rely more heavily on the underlying groundwater. Heavy groundwater pumping can also result in ground subsidence and has the potential to interfere with other groundwater users in the vicinity of the City's well field. The extent of the cone of depression impacts relate to the rate at which water is being withdrawn: thus, these impacts would be greater under the proposed project than under the Existing General Plan Alternative.

WASTEWATER

This alternative would generate less wastewater than the proposed project (see Table V.3). The Keystone Pacific Business Park site and the northern portion of the Cozzens property would remain in agricultural use, and would continue to treat wastewater using onsite septic systems. Because this alternative would replace the commercial uses proposed for Patterson Gardens with residential uses, Patterson Gardens would generate slightly more wastewater than the proposed project. Development of the Business Park Plan area would generate approximately 232,950 gallons per day (gpd).

Table V.3: Wastewater Generation – Alternative 1

LAND USES	Homes	Buildings (square feet)	Population (living & working)	Unit Value	Flow gal/unit/d	Flow rates gal/d	
						Alt. 1	Prop'd project
West Patterson Projects							
Patterson Gardens							
Residential	1,063		3,189	Resident	100	318,900	296,000
Commercial/Retail	--	--	--	--	--	--	22,500
Business Park Plan		4,232,000	7,765	Employee	30	232,950	487,350
TOTALS						**551,850**	**805,850**

Source: Lee & Ro, 2002; SMW, 2002; Turnstone, 2002.

Overall, this alternative would generate approximately 551,850 gpd of wastewater from the West Patterson projects. This represents approximately 254,000 gpd less than the proposed project. The City would still expand its wastewater treatment facilities to accommodate wastewater from the Creekside development. This alternative, therefore, would require expansion of the City's wastewater collection and treatment facilities (0.8 mgd), including construction of approximately 100 acres of new percolation ponds.

Most of the project region (where urban development has not occurred) is comprised of farmland. Those areas not in farmland are located within the flood plain and riparian habitat of the San Joaquin River. Consequently, the construction of new percolation ponds would cause loss of either agricultural resources or natural habitat. Although the total acreage of land conversion would be less (100 acres of new ponds rather than 120

acres), this alternative would still be expected to result in significant unavoidable impacts related to farmland conversion, and significant impacts related to loss of Swainson's hawk foraging habitat, construction noise, short-term construction-related emissions, and odors, all of which could be mitigated to less-than-significant levels with the mitigation measures identified in Section III.J, Wastewater.

POPULATION, HOUSING, AND EMPLOYMENT

The 4,232,000 sq. ft. of light industrial and commercial development in the Existing General Plan Alternative would be expected to add approximately 7,765 jobs to Stanislaus County and Patterson's economy by 2025. Compared to the proposed project, this alterative would generate about 9,180 fewer jobs. Should all the land designated for non-residential development in the *General Plan* be built out and absorbed by the year 2025, the number of jobs in Patterson is projected to grow to about 14,000 jobs by that year. It is possible that about 4,585 remaining jobs [14,000- (1,650+7,765)= 4,585 jobs] of the projected 14,000 could be generated by non-residential development in other parts of the City. With the existing jobs (1,650), and jobs provided by this alternative and other non-residential development, by year 2025, Patterson's jobs-to-housing ratio would be about 1.43 (14,000 jobs to 9,750 occupied housing units); jobs-to-employed residents ratio would be about 1.05 by the same year (14,000 jobs to 13,325 employed residents). Therefore, unlike the proposed project, this alternative would make it more difficult for Patterson to achieve the target jobs-to-housing ratio of 1.5, but the number of employable residents would keep pace with the number of jobs in Patterson. However, it is possible that with this alternative it would take longer than 2025 to achieve General Plan-projected non-residential buildout and absorption, and provide 14,000 jobs.

The residential component of this alternative would add about 1,063 residential units, an additional 76 units compared to the proposed project. Residential development due to this alternative would be about 3,190 residents to Patterson's economy by 2025, about 230 additional residents compared to the proposed project. Population due to this alternative (3,190 people) would be about nine percent of the total projected population (36,000) in Patterson by 2025, and it would be about 13 percent of the projected population growth (36,000-11,600=24,400 people) in Patterson by 2025. As with the proposed project, the increase in population due to this alternative would fall within *General Plan* projections.

VISUAL RESOURCES

Impacts on visual resources under this alternative would, on balance, be greater than with the West Patterson projects. The northern portion of the Plan area would remain undeveloped, reducing visual impacts to that extent, however, development of the Plan area under the Existing General Plan Alternative would take place without the design guidelines and landscape improvement proposed by the Business Park Plan, that would enhance the visual quality of the Business Park development.

OTHER TOPICS

Impacts related to geology and seismicity, hazards, community services, and cultural resources with this alternative would be essentially the same as those described for the proposed project, except that there would be no development on the Keystone and northern portion of the Cozzens property.

As with the proposed project, most impacts related to growth inducement would be limited or negligible. However, like the proposed project, development of the site under this alternative could result in increased inducement to convert additional prime agricultural land in the project vicinity to urban land uses. This growth inducing impact of Alternative 1 would be significant and unavoidable.

B. ALTERNATIVE 2 – NO DEVELOPMENT ON NORTHERN COZZENS PROPERTY, KEYSTONE PACIFIC SITE, AND PATTERSON GARDENS SITE

DESCRIPTION

This alternative evaluates a development program that reduces the overall size of the Business Park Plan to 476 acres. As with the Existing General Plan Alternative, the 119-acre portion of the northern Cozzens property and the 224-acre Keystone Pacific property would not be developed. The City's sphere of influence would not be expanded to

include these properties and these properties would retain their *Agricultural* designation as set forth in the City and County General Plans. These properties would remain in agricultural use.

The Business Park Plan site (absent Keystone and northern Cozzens) under Alternative 2 would accommodate approximately 4,776,000 square feet of industrial and business park development (see Table V.1). This is 4,202,600 square feet less development than proposed as part of the Business Park Plan. The light industrial and business park development under this alternative would be expected to add approximately 9,250 employees to the western Stanislaus County economy. Buildout of the Business Park Plan would likely occur over a longer period of time since the Keystone Pacific Business Park would not act as a stimulus to encourage additional business park development in the area.

The 987 residential units and the 302,500 square feet of commercial-retail and office space on the Patterson Gardens site would also be eliminated under Alternative 2.

Under this alternative, Sperry Avenue would be improved between I-5 and Baldwin Road to four travel lanes. Baldwin Road would also be improved to include two 14-foot travel lanes and two 6-foot-wide bike lanes, from Sperry Avenue to the City's existing northern sphere of influence boundary. Because the Keystone Pacific Business Park would not be constructed under this alternative, internal roadways on the Keystone Pacific parcel– Keystone Pacific Parkway, Keystone Boulevard, and Patrick Drive – would not be constructed.

Because this alternative involves the development of over four million square feet of light industrial development, the City would need to expand its wastewater treatment plant and collection system and would need to secure new sources of water supply. The City would still need to form a Mello-Roos District to finance the wastewater and water supply infrastructure improvements and would need to collect development impact fees to defray the cost of roadway improvements and other public facilities, such as police and fire protection facilities, school facilities and parks, that are not covered by the Mello-Roos District.

ENVIRONMENTAL ANALYSIS

LAND USE AND ZONING

Land use compatibility issues arising from the placement of commercial and light industrial uses adjacent to residential land uses would be lessened under this alternative from those of the West Patterson projects since the northern portion of the Plan area would remain undeveloped and the length of the interface between the light industrial uses of the Plan area and the residential uses across Baldwin Road would thereby be shortened. The design guidelines and landscape improvements proposed by the Business Park Plan, designed to ease the transition between the Plan area and adjacent residential development, would remain in place under this alternative.

AGRICULTURAL RESOURCES

Alternative 2 would result in the conversion of about 476 acres of prime farmland to urban land uses, about 649 acres less than the 1,125-acre loss that would result from the West Patterson projects (about 58 percent less). Like the proposed project, the loss of prime farmland under this alternative would be a significant and unavoidable direct impact to agricultural resources.

BIOLOGICAL RESOURCES

Under this scenario, the northern portion of the Business Park project area (northern Cozzens and Keystone Pacific Business Park) would not be developed, reducing the potential impact to Swainson's hawk habitat by approximately 342 acres.

This alternative would require the expansion of the City's wastewater treatment facilities. Although the total acreage of land conversion for these facilities would be less (70 acres of new ponds rather than 120 acres), this alternative would result in potentially significant impacts to Swainson's hawk foraging habitat, which could be mitigated to less-than-significant levels through implementation of the mitigation measures identified in Chapter III.

TRAFFIC

Alternative 2 would generate about 55 percent fewer trips during the A.M. and P.M. peak hours in comparison to the proposed project, as shown in Table V.2. While some intersections along Sperry Avenue, and the I-5/Sperry Avenue interchange, would still fall below LOS C in 2025, the impacts resulting from buildout under this alternative on the regional and local roadway network would be substantially reduced compared to the proposed project. As with the proposed project, the increase in traffic could be accommodated by widening Sperry Avenue to four-lanes, adding exclusive left turn lanes and traffic signals at major intersections, and synchronizing all signalized intersections. This alternative would contribute to significant cumulative impacts on I-5, although to a lesser extent than the West Patterson projects.

The construction period impacts would be similar but incrementally less than those identified for the proposed West Patterson projects since this alternative assumes much less development, and buildout could occur over a shorter period of time.

AIR QUALITY

While traffic-generated air emissions would be substantially reduced, under Alternative 2 the regional impacts from new motor vehicle activity and area sources would not be reduced to a less-than-significant level.

Similar to the proposed project and Alternative 1, mitigation would be appropriate for construction impacts to PM_{10} and ozone. Industrial development under this alternative would also cause potential TAC and odor impacts, as identified for the project.

NOISE

Because improvements would occur along Baldwin Road, existing residences could still be exposed to construction noise as would occur with the project. Reductions in traffic volumes on local streets with this alternative would reduce traffic-generated noise levels compared to those identified with the proposed project. Reducing traffic volumes by about 45 percent would reduce noise levels by nearly 3 dBA, which could be a noticeable change. However, as with Alternative 1, traffic levels in 2025 without the proposed project would increase ambient noise sufficiently that the addition of traffic with

development under Alternative 2 would continue to result in significant noise impacts to existing residences, and residences under construction adjacent to Sperry Avenue and Baldwin Road. As with the proposed project, the Business Park Plan area would be subject to design guidelines intended to provide a buffer along Baldwin Road that would reduce noise impacts to adjacent residences. Noise impacts to residences from business park development along the northern end of Baldwin Road in the West Patterson project area would be reduced with Alternative 2 because the Keystone Pacific parcel would remain in agricultural use.

Because Alternative 2 would not include new residential uses in the Patterson Gardens parcel, Alternative 2 would not introduce new residential uses to an existing or future noise environment that could be incompatible due to excessive traffic noise or noise from agricultural operations or aircraft.

HYDROLOGY AND WATER QUALITY

Under this alternative, the Patterson Gardens portion of the project would not be developed and, therefore, Salado Creek improvements within the project site boundaries, including the increase in conveyance capacity from 300 cfs to 500 cfs, would not be completed. On-site flooding would be expected to continue at the site on a more frequent basis under this alternative than under the proposed project. However, no housing would be placed in a flood hazard zone under this alternative.

The potential for construction-period water quality degradation would be reduced, in comparison to the proposed project, because less development would occur within the Business Park Plan boundaries (i.e., no development would occur at the northern Cozzens and Keystone properties) and no development would occur at Patterson Gardens. The potential for increased discharge of urban pollutants would also be reduced with the decrease in the amount of urban development. As with the proposed project, certain types of industrial development may be required to comply with the General Permit for Storm Water Discharges Associated with Industrial Activity. Under this alternative, there would be less of a decrease in the rate of regional groundwater salt loading relative to the proposed project since more of the project site would remain in agricultural production.

WATER SUPPLY

Alternative 2 would increase the water demand in the City by 36 percent, as compared to the 83 percent increase in demand created by the West Patterson projects. As discussed above, the major water resource impact of growth in the City is due to the limitation of potable groundwater. As with the proposed project, the City would likely use untreated groundwater to supply existing and new demand until the quality of that groundwater deteriorated to below applicable drinking water standards, which is anticipated to occur at some point between 2008 and 2012. At that point, the City would either begin treatment of groundwater through wellhead desalination or switch to a surface water supply, to be used conjunctively with groundwater through an aquifer storage and recovery system. Treated groundwater would provide a feasible water supply for Alternative 2, though the City may elect to use surface water supplies if such a supply can be obtained when needed.

As with the proposed project, potential water related impacts differ greatly depending upon whether surface water supply or treated groundwater is used for the water supply conversion. If the City were to obtain surface water supplies, the net increase in supply and groundwater levels would remain stable throughout drought periods and it is unlikely that cones of depression would be formed due to heavy groundwater pumping.

The groundwater level is expected to drop considerably during drought conditions since the area must rely more heavily on the underlying groundwater. Heavy groundwater pumping can also result in ground subsidence and has the potential to interfere with other groundwater users in the vicinity of the City's well field. The extent of the cone of depression impacts would relate to the rate at which water was being withdrawn; thus, these impacts would be considerably reduced in comparison to the proposed project.

WASTEWATER

This alternative would generate less wastewater than the proposed project (see Table V.4). The Keystone Pacific Business Park site, the northern portion of Cozzens property, and Patterson Gardens would remain in agricultural use, and would continue to treat wastewater using onsite septic systems. Land uses for the Business Park Plan area would generate approximately 277,500 gpd of wastewater.

Table V.4: Wastewater Generation -- Alternative 2

LAND USES	Homes	Buildings (square feet)	Population (living & working)	Unit Value	Flow gal/unit/d	Flow rates gal/d Alt. 2	Flow rates gal/d Prop'd project
West Patterson Projects							
Patterson Gardens							
Residential	--	--	--	Resident	--	--	296,000
Commercial/Retail	--	--	--	Employee/ Customer	--	--	22,500
Business Park Plan		4,776,000	9,250	Employee	30	277,500	487,350
TOTALS						**277,500**	**805,850**

Source: Lee & Ro, 2002; SMW, 2002; Turnstone, 2002.

Overall, Alternative 2 would generate approximately 277,500 gpd of wastewater from West Patterson. This represents approximately 528,350 gpd less than the proposed project. The City would still expand its wastewater treatment facilities by approximately 0.5 mgd to accommodate wastewater from the approved Creekside Development. This alternative would require additional expansion of the City's wastewater collection and treatment facilities by at least an additional 0.3 mgd, including construction of approximately 70 acres of new percolation ponds.

Most of the project region (where urban development has not occurred) is comprised of farmland. Those areas not in farmland are located within the flood plain and riparian habitat of the San Joaquin River. Consequently, the construction of new percolation ponds would cause loss of either agricultural resources or natural habitat. Although the total acreage of land conversion would be less (70 acres of new ponds rather than 120 acres), this alternative would still be expected to result in significant impacts related to farmland conversion, and significant impacts related to loss of Swainson's hawk foraging habitat, construction noise, short-term construction-related emissions, and odors, all of which could be mitigated to less-than-significant levels with the mitigation measures identified in Chapter III.J, Wastewater.

POPULATION, HOUSING, AND EMPLOYMENT

The 4,776,000 sq. ft. of industrial and commercial development in Alternative 2 would be expected to add approximately 9,250 jobs to Stanislaus County and Patterson's economy by 2025. Compared to the proposed project, this alterative would generate about 7,695 fewer jobs. Should all the land designated for non-residential development in the *General Plan* be built out and absorbed by the year 2025, the number of jobs in Patterson is projected to grow to about 14,000 jobs by that year. It is possible that about 3,100 remaining jobs [14,000- (1,650+9,250)= 3,100 jobs] of the 14,000 projected could be generated by non-residential development in other parts of the City. With the existing jobs (1,650), and jobs provided by this alternative and other non-residential development, by year 2025, Patterson's jobs-to-housing ratio would be about 1.43 (14,000 jobs to 9,750 occupied housing units); jobs-to-employed residents ratio would be about 1.05 by the same year (14,000 jobs to 13,325 employed residents). Therefore, unlike the proposed project, this alternative would make it more difficult for Patterson to achieve the target jobs-to-housing ratio of 1.5, but the number of employable residents would keep pace with the number of jobs in Patterson. However, it is possible that with this alternative it would take longer than 2025 to achieve General Plan-projected non-residential buildout and absorption, and provide 14,000 jobs.

Under this alternative, there would be no development on the Patterson Gardens site and this property would not be annexed to the City. The Patterson Gardens site would remain in agricultural use.

As with the proposed project, a community facilities financing district would be needed to provide infrastructure improvements for this alternative. Without this district, development with this alternative would result in potentially significant impacts.

VISUAL RESOURCES

Impacts on visual resources under this alternative would be less than with the West Patterson projects. The northern portion of the Plan area would remain undeveloped, lessening visual impacts to that extent. The design guidelines and landscape improvements, proposed under the West Patterson Business Park Master Development Plan to enhance the visual quality of the Business Park development, would remain in

place under this alternative. Thus, visual impacts for the remainder of the Business Park Plan area would be the same as with the proposed project.

OTHER TOPICS

Impacts related to geology and seismicity, hazards, community services, and cultural resources with this alternative would be essentially the same as or less than those described for the proposed project, except that development would occur on less acreage.

As with the proposed project, most impacts related to growth inducement would be limited or negligible. However, like the proposed project, development of the site under this alternative could result in increased inducement to convert additional prime agricultural land in the project vicinity to urban land uses. This growth inducing impact of Alternative 2 would be significant and unavoidable.

C. ALTERNATIVE 3 -- BUSINESS PARK USES RELOCATED EAST

DESCRIPTION

Like the Existing General Plan Alternative and Alternative 2, this alternative would allow development of the Business Park Plan site with the exception of the 119-acre northern Cozzens property and the 224-acre Keystone Pacific property. The Keystone Pacific Business Park would not be constructed and no development would occur on the northern portion of the Cozzens site. The City's sphere of influence would not be expanded to include these properties and they would retain their *Agricultural* designation as set forth in the City and County's General Plan. These properties would remain in agricultural use.

Under Alternative 3, however, a sizable portion of the light industrial and business park uses that would have been developed on the northern Cozzens and Keystone properties would instead be developed southeast of downtown Patterson on land designated in the City's General Plan for *Light Industrial* and *Heavy Industrial* uses. This 231-acre site is within the City's sphere of influence and planning area, and is located west of Sycamore

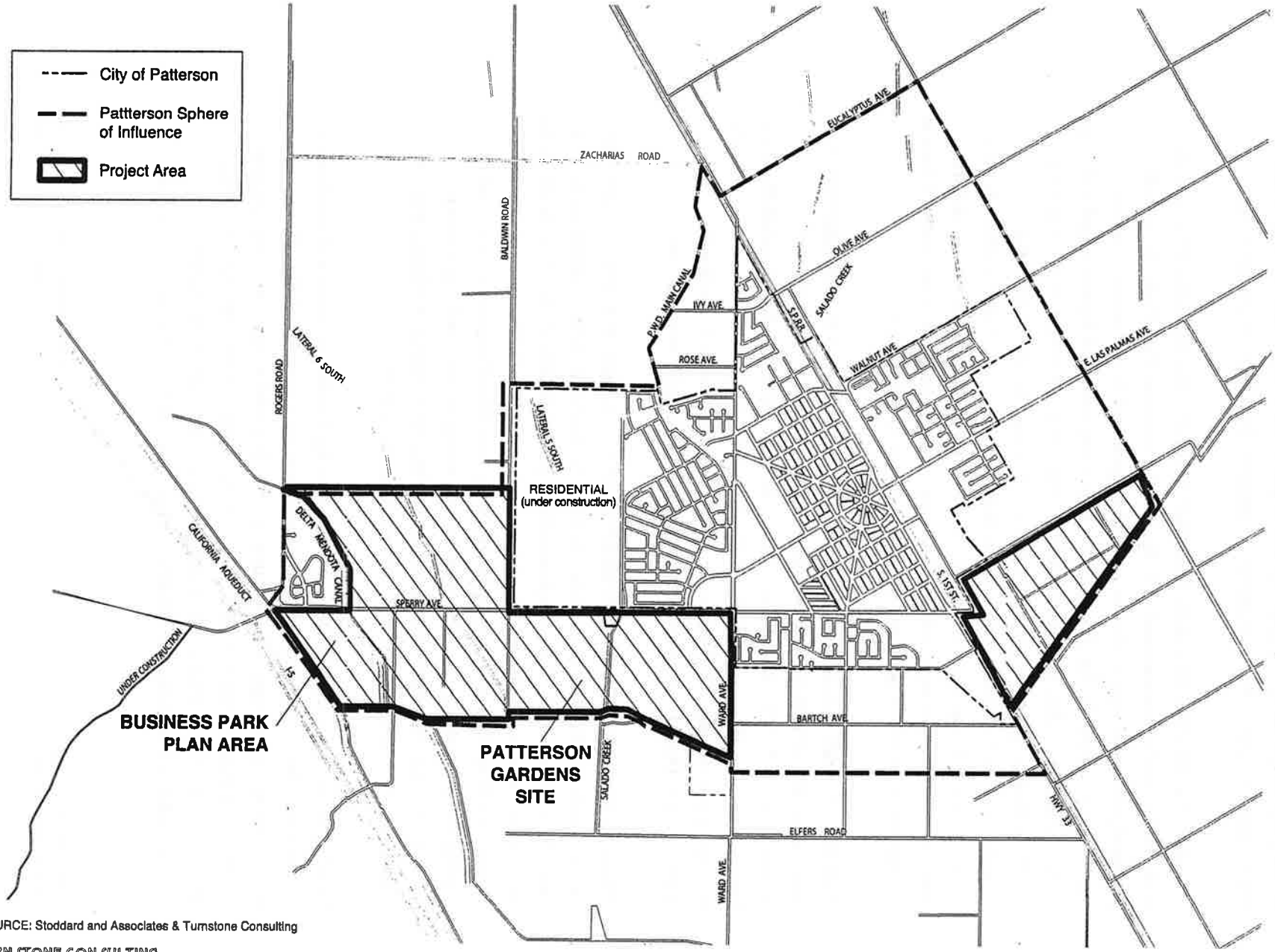
Avenue, east of Highway 33, south of Orange and north of the Patterson Water District Main Canal (see Figure V.2: Alternative 3 - Business Park Uses Relocated East).

It is likely that the City and County would seek to regulate the development of this site with development provisions similar to those in the Business Park Plan. As with the proposed project, the uses on this land would be governed by the two new zoning classifications created by the Business Park Plan – the *Industrial Business Park* and *Light Industrial* districts. This alternative would include the development of a mix of uses similar to those proposed as part of the project. The light industrial uses (e.g., manufacturing and assembly processes) would generally be developed south of Acacia, east of Highway 33 and west of Lateral 3 North, while the business park type uses (e.g., research and development) would be developed south of Orange Avenue, north of Acacia Avenue, between Highway 33 and Sycamore Avenue (see Figure V.2).

Alternative 3 would include the development of approximately 3,027,000 square feet of light industrial and business park uses in the eastern Patterson location, while approximately 4,775,000 square feet of these same uses would be developed on the West Patterson site. Buildout of the light industrial and business park uses on both sites would result in approximately 7,802,000 square feet of development and would add approximately 14,000 employees to the western Stanislaus County economy.

The Keystone Pacific Business Park would not act as a stimulus to encourage additional business park development to the area, and thus buildout of both sites would likely occur over a longer period of time in comparison to the proposed project. In addition, given the eastern site's inaccessibility to I-5 (in comparison to the West Patterson site), the City's eastside would likely not be developed until long after West Patterson is fully built out. The Patterson Gardens component of the project would remain unchanged under Alternative 3; the site would be annexed to the City and would be developed with 987 homes and 302,500 square feet of retail and commercial uses.

Development of about eight million square feet of light industrial, retail and commercial uses and up to 987 dwelling units would necessitate the expansion of the City's wastewater treatment plant and collection system. In addition, the City would need to secure new sources of water supply. The City and County would still need to form a Mello-Roos District to finance the wastewater and water supply infrastructure improvements and to collect development impact fees to defray the cost of roadway



SOURCE: Stoddard and Associates & Turnstone Consulting

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FIGURE V.2: ALTERNATIVE 3 - BUSINESS PARK USES RELOCATED EAST

improvements and other public facilities, such as police and fire protection facilities, school facilities and parks, that are not covered by the Mello-Roos District.

ENVIRONMENTAL ANALYSIS

LAND USE AND ZONING

Land use compatibility issues arising from the placement of commercial and light industrial uses adjacent to residential land uses would be lessened under this alternative from those of the West Patterson projects since the northern portion of the Plan area would remain undeveloped and the length of the interface between the light industrial uses of the Plan area and the residential uses across Baldwin Road would be shortened. Redesignating the portion of the eastside area, currently heavy industrial, to light industrial, and locating light industrial uses to this area would not place light industrial uses adjacent to residential land uses. The design guidelines and landscape improvements proposed by the Business Park Plan, would remain in place under this alternative and are assumed to be extended to this eastside site to provide buffers between the light industrial development and adjacent uses.

AGRICULTURAL RESOURCES

The impact of Alternative 3 on agricultural resources would be less than with the West Patterson projects. Note, however, that the 231-acre eastside site, although designated Light Industrial and Heavy Industrial under the City's General Plan, is currently in agricultural use and is "prime farmland" (see Figure III.C.1: Prime Farmland in Western Stanislaus County). By developing the eastside site instead of the northern Cozzens and Keystone Pacific parcels, totaling 343 acres, Alternative 3 would result in the conversion of about 112 acres less than the West Patterson projects (about 10 percent less). Like the proposed project, the loss of prime farmland under this alternative would be a significant and unavoidable direct impact to agricultural resources.

BIOLOGICAL RESOURCES

Under this alternative, the Patterson Gardens project would remain unchanged, and impacts to biological resources on this site would remain the same as identified in Chapter III. Like Alternative 2, this alternative would allow for development of the

Business Park Plan site with the exception of the northern Cozzens and Keystone Pacific properties. A portion of the development that would have occurred on these properties would be developed on lands currently zoned for industrial uses east of the City. The northern Cozzens and Keystone Pacific properties would remain in agricultural production and thereby continue to provide potential foraging habitat for Swainson's hawks and other raptor species. Like Alternative 2, this alternative would result in potentially significant impacts to Swainson's hawk foraging habitat, which could be mitigated to less-than-significant levels.

TRAFFIC

Development levels under Alternative 3 would generate about 23 percent fewer trips during the A.M. and P.M. peak hours in comparison to the proposed project (See Table V.2, p. V.9). Traffic impacts would nonetheless continue to be significant at numerous arterial intersections and at the I-5/Sperry Avenue interchange. Trip distribution would be quite different under this alternative since approximately 40 percent of the trips would be generated by light industrial uses that would be developed east of the City. Access to I-5, nonetheless, would still be provided via Sperry Avenue; thus development would contribute to congested conditions along Sperry Avenue and its intersections. Eastbound A.M. and westbound P.M. peak hour traffic volumes on Sperry Avenue would be higher than under the proposed project, because existing and future residents of the Walker Ranch and Heartland Ranch residential neighborhoods would travel on Sperry Avenue to access employment opportunities on the City's eastside. As with the proposed project, the increase in traffic could be accommodated by widening Sperry Avenue to four lanes, adding traffic signals at major intersections, and synchronizing all signalized intersections. This alternative would contribute less traffic to the future significant cumulative traffic impacts on I-5 than the proposed project. The project contribution would continue to be considerable, however, and would remain significant and unavoidable.

The construction period impacts would be slightly reduced in comparison to those identified for the proposed West Patterson projects since this alternative would result in less development.

AIR QUALITY

The 23 percent reduction in vehicle trips with development under Alternative 3 would slightly reduce the level of traffic-generated air emissions. The reduction would not be sufficiently large to substantially reduce traffic-generated air emissions. Therefore, air quality impacts would be essentially the same as those identified for the West Patterson projects, and mitigation measures identified would apply to Alternative 3.

Similar to the proposed project and Alternatives 1 and 2, mitigation would be appropriate for construction impacts to PM_{10} and ozone. Development of light industrial and business park uses southeast of downtown would cause substantially similar potential impacts from the emissions of TAC and odors. However, the potential impacts would occur southeast of downtown and would not affect residences under construction near the Keystone Pacific property.

NOISE

Because development would occur on the Patterson Gardens parcel and on designated land southeast of downtown, existing residences could be exposed to construction noise as would occur with the project. The slight reduction in vehicle trips in Alternative 3 would not noticeably reduce traffic-generated noise levels compared with the proposed project. Traffic would be distributed on different local streets, however, reducing localized traffic noise along Baldwin Road. Noise levels along Sperry Road would remain similar to those calculated for the West Patterson projects. Traffic-related noise would increase east of State Route 33, and could increase along Orange Avenue west of Sycamore, as Orange Avenue provides an essentially direct connection to I-5 via Sperry Avenue. Because this portion of Orange Avenue is in an industrial area, noise increases would not be considered significant. Noise mitigation measures identified for the West Patterson projects in Section III.G, Noise, would be applicable to Alternative 3.

HYDROLOGY AND WATER QUALITY

The Patterson Gardens proposal would be unchanged under Alternative 3, and thus the water quality and hydrology impacts resulting from this component of the project would be equivalent. Improvements to the Salado Creek channel would be completed, and therefore on-site flooding conditions would be expected to be identical to those under the

proposed project. The mitigation of on-site flooding and placement of housing in a flood hazard zone under this alternative would also be identical to the mitigation specified for the Patterson Gardens portion of the project.

The changes in construction-period water quality degradation under Alternative 3 would be reduced slightly since this alternative would result in approximately one million square feet less development, and thus less grading would occur. The potential for increased discharge of urban pollutants would also be nominally reduced in comparison to the proposed project. Certain types of industrial development may be required to comply with the General Permit for Storm Water Discharges Associated with Industrial Activity. Under this alternative, there would be less of a decrease in the rate of regional groundwater salt loading relative to the proposed project since more of the Business Plan site would remain in agricultural production.

The 231-acre east Patterson site is not located within a special flood hazard zone as mapped by FEMA, and therefore regional storm-related flooding problems would not be expected.

WATER SUPPLY

Alternative 3 would increase the water demand in the City by 75 percent, compared to the 83 percent increase in demand created by the proposed project. As discussed above, the major water resource impact of growth in the City is due to the limitation of potable groundwater. As with the proposed project, the City would likely use untreated groundwater to supply existing demand until the quality of that groundwater deteriorates to below applicable drinking water standards. Although the amount of water demand associated with Alternative 3 would be less than that associated with the proposed project, the date that the City would need to begin treatment of groundwater or switch to a surface water supply remains unchanged. Water supply conversion would be needed at some point between 2008 and 2012.

As with the proposed project, potential water-related impacts differ greatly depending upon whether treated groundwater or a surface water supply is utilized for the water supply conversion. If surface water is procured, the area will have a net increase in supply and groundwater levels will remain very stable over drought periods and it is unlikely that cones of depression would form due to heavy groundwater pumping.

While an adequate quantity of groundwater is available to serve the development levels anticipated under Alternative 3, the groundwater level would likely drop considerably during drought conditions. Heavy groundwater pumping could also result in ground subsidence and has the potential to interfere with other groundwater users in the vicinity of the City's well field. The extent of the cone of depression impacts are in relation to the rate at which water is being withdrawn: thus, these impacts would be greater under the proposed project than under Alternative 3.

WASTEWATER

This alternative would generate slightly less wastewater than the proposed project (see Table V.5). The Keystone Pacific Business Park site and the northern portion of the Cozzens property would remain in agricultural use, and would continue to treat wastewater using onsite septic systems. Most of the wastewater generated by the light industrial and business park uses proposed for these properties would be generated in the eastern portion of the City, and would continue to be in the City's wastewater treatment plant service area. Land uses for Patterson Gardens and buildout of the remaining portions of the Business Park Master Plan area would be the same as under the proposed project.

Table V.5: Wastewater Generation -- Alternative 3

LAND USES	Homes	Buildings (square feet)	Population (living & working)	Unit Value	Flow gal/unit/d	Flow rates gal/d	
						Alt. 3	Prop'd project
West Patterson Projects							
Patterson Gardens							
Residential	987		2,960	Resident	100	296,000	296,000
Commercial/Retail	--	302,500	740	Employee/ Customer	30	22,500	22,500
East and West Business Park Uses		7,802,000	13,990	Employee	30	419,700	487,350
TOTALS						**738,200**	**805,850**

Source: Lee & Ro, 2002; SMW, 2002; EDAW, 2002.

Overall, Alternative 3 would generate approximately 738,200 gpd of wastewater from the West Patterson projects. This represents approximately 67,150 gpd less than the proposed project. The City would expand its wastewater treatment facilities by approximately 0.5 mgd to accommodate wastewater from the approved Creekside Development and the proposed Patterson Gardens, and an additional 0.5 mgd to accommodate wastewater from the light industrial and business park uses east and west of Patterson.

This alternative, therefore, would require expansion of the City's wastewater collection and treatment facilities (1.0 mgd), including construction of approximately 120 acres of new percolation ponds. Because the total acreage of land conversion would be about the same as the proposed project, this alternative would be expected to result in similar impacts, and similar mitigation measures.

POPULATION, HOUSING, AND EMPLOYMENT

The 8,104,500 sq. ft. of industrial and commercial development in Alternative 3 would be expected to add approximately 14,695 jobs to Stanislaus County and Patterson's economy by 2025. Compared to the proposed project, this alterative would generate about 2,250 fewer jobs. By 2025, total Patterson jobs including those generated by this alternative would be about 16,345 jobs by 2025 (1,650+14,695= 16,345 jobs). With this alternative, by year 2025 Patterson's jobs-to-housing ratio would be about 1.67 (16,345 jobs to 9,750 occupied housing units); jobs-to-employed residents ratio would be about 1.22 by the same year (16,345 jobs to 13,325 employed residents). Therefore, as with the proposed project, this alternative would exceed the target jobs-to-housing ratio of 1.5 for the City and the County, and the number of jobs would more than keep pace with the number of employable residents.

As with the proposed project, the residential component of this alternative would add about 987 residential units and about 2,960 residents to Patterson's economy by 2025, and like the proposed project, the increase in population due to this alternative would fall within *General Plan* projections.

VISUAL RESOURCES

Impacts on visual resources under this alternative would be less than those of the West Patterson projects. The northern portion of the Plan area would remain undeveloped,

lessening visual impacts to that extent. The design guidelines and landscape improvements, proposed under the West Patterson Business Park Master Development Plan to enhance the visual quality of development in the business park, would remain in place under this alternative, and would, presumably, be extended to the east side site. Locating development away from the base of the Diablo Range would better preserve views from within the City of those hills in comparison to the proposed project. This alternative would also have less impact on views across the valley for I-5 motorists because some of the development that would otherwise have occurred adjacent to I-5 would instead be located about three miles away from the freeway under Alternative 3.

OTHER TOPICS

Impacts related to geology and seismicity, hazards, community services, and cultural resources with this alternative would be essentially the same as those described for the proposed project.

As with the proposed project, most impacts related to growth inducement would be limited or negligible. However, like the proposed project, development of the site under this alternative could result in increased inducement to convert additional prime agricultural land in the project vicinity to urban land uses. This growth inducing impact of Alternative 3 would be significant and unavoidable.

D. ALTERNATIVE 4 – REDUCED SPHERE OF INFLUENCE

DESCRIPTION

Alternative 4 was developed to reduce the amount of productive agricultural land that would be converted to urban uses under the proposed project. The Business Park Plan development program under this alternative is identical to that of the proposed project. This is, the City's sphere of influence would be expanded to include the northern Cozzens and Keystone properties and these properties would be developed as contemplated by the Business Park Plan. Under Alternative 4, however, the City's

sphere of influence would be reduced on the east and on the south sides, as shown in Figure V.3, Alternative 4 - Reduced Sphere of Influence, and as described below:

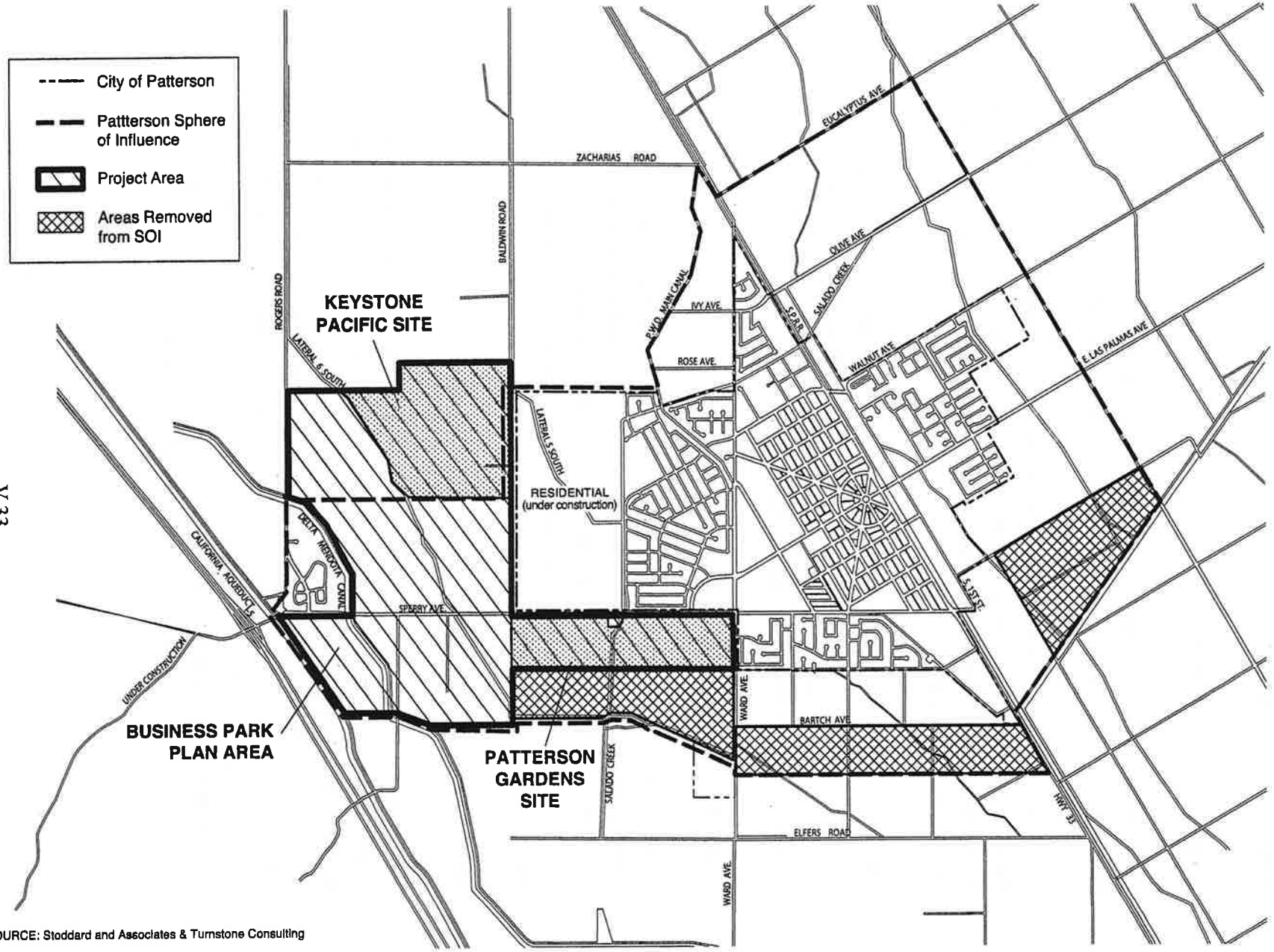
- The sphere of influence would be reduced east of the City so that Orange Avenue would form the new sphere boundary, thereby preserving approximately 152 acres of land that is currently in agricultural production. The area of land to be removed from the City's sphere is located south of Orange Avenue, north of the Main Canal, between Locust Avenue and Sycamore Avenue, as shown in Figure V.3. These 152 acres are designated as *Light Industrial* and *Heavy Industrial* in the City's General Plan and *Urban Transition* in the County's General Plan. Once removed from the City's sphere of influence, this land would be redesignated to *Agriculture* in the County's General Plan. This land would remain in agricultural use.

- The City's sphere of influence boundary would be reduced south of the City so that Bartch Avenue, between Ward Avenue and Highway 33, would form the new southern boundary. Approximately 214 acres of land designated as *Low Density Residential* in the City's General Plan would be removed from the City's sphere, and would be redesignated to *Agriculture* in the County General Plan. This land would remain in agricultural use.

- The City's southern sphere of influence, at the Patterson Gardens site, would also be reduced by about 150 acres. The City's sphere boundary would be relocated northward, essentially removing the Patterson Gardens site's southern half from the sphere. The area removed from the sphere would be redesignated to *Agriculture* in the County General Plan and would remain in agricultural production.

Under this alternative, the reduction in the City's sphere would result in the elimination of approximately half of the residential and commercial development on the Patterson Gardens site. Thus, 494 homes (instead of 987) and approximately 150,000 square feet of retail and commercial uses (instead of 302,500 square feet) would be developed on that site. The reduced Patterson Gardens site would be annexed to the City.

Because this alternative involves the development of almost nine million square feet of industrial space and up to approximately 500 dwelling units, the City would need to expand its wastewater treatment plant and collection system and would need to secure new sources of water supply. The City and County would need to form a Mello-Roos District to finance the wastewater and water supply infrastructure improvements and would need to collect development impact fees to defray the cost of roadway improvements and other public facilities, such as police and fire protection facilities, school facilities and parks, that are not covered by the Mello-Roos District.



SOURCE: Stoddard and Associates & Turnstone Consulting

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FIGURE V.3: ALTERNATIVE 4 - REDUCED SPHERE OF INFLUENCE

ENVIRONMENTAL ANALYSIS

LAND USE AND ZONING

The potential for land use compatibility conflicts arising from the placement of residential uses adjacent to ongoing agricultural operations would be lessened with this alternative because it would include about half of the residential units as proposed under the West Patterson projects, and these would be placed at the northern portion of the Patterson Gardens site, adjacent to existing and proposed residential development. Such an arrangement would shorten the length of the interface between the residences and the surrounding agicultural operations.

The potential for land use compatibility conflicts arising from the placement of business park and light industrial uses adjacent to residential land uses would also be lessened by shortening the length of the interface between Business Park Plan uses and proposed residences of the Patterson Gardens site, along Baldwin Road.

AGRICULTURAL RESOURCES

Alternative 4 would result in the conversion of about 975 acres of prime farmland to urban land uses, about 150 acres less than the 1,125-acre loss that would result from the West Patterson projects (about 13 percent less). Like the proposed project, the loss of prime farmland under this alternative would be a significant and unavoidable direct impact to agricultural resources.

BIOLOGICAL RESOURCES

This alternative calls for the same level of development as the proposed project and the specific impacts to biological resources and required mitigation are the same as discussed in Chapter III. Cumulative long-term effects within the region on Swainson's hawks and other foraging raptors would likely be less under this alternative because of the redesignation of over 500 acres currently within the City of Patterson's sphere of influence to agricultural use. The degree of benefit would depend on the types of agricultural uses that the land is placed under (e.g., alfalfa and grain fields provide higher quality habitat than do orchards, vineyards, and other perennial crops).

TRAFFIC

Alternative 4 would generate about 16 percent fewer trips during the A.M. and P.M. peak hours in comparison to the proposed project, as shown in Table V.2, p. V.9. Traffic impacts would be slightly reduced in comparison to the proposed project; most of the intersections along Sperry Avenue, and the I-5/Sperry Avenue interchange would fall below LOS C in 2025, resulting in the same significant traffic impacts as those identified for the proposed project. The increase in traffic under Alternative 4 could be accommodated by widening Sperry Avenue to four lanes, adding traffic signals at major intersections, and synchronizing all signalized intersections, as for the proposed project. The significant, unmitigable cumulative traffic impact on I-5 would remain under this alternative.

Construction-period impacts would be similar to, but incrementally less than, those identified for the proposed West Patterson projects since this alternative would include slightly less development.

AIR QUALITY

Although the Patterson Gardens proposal would be reduced by half, under this alternative, the development program of the Business Park Plan would be identical. The air quality impacts from project construction and operation would be reduced slightly in comparison to the proposed project but would nonetheless be significant. Impacts related to potential exposure of residences to TAC or odors and regional emissions from motor vehicle activity and area sources would each be similar to those of the project. Thus, while impacts would be slightly less than the West Patterson projects, the mitigation measures identified would apply to Alternative 4.

NOISE

Noise impacts from Alternative 4 would be essentially the same as those identified for the proposed project. Existing residences could be exposed to construction noise, as would occur with the project. The number of sensitive receptors (residences) along Ward Avenue on the Patterson Gardens site would be reduced with the reduction in the City's sphere of influence and a related reduction in the amount of development on the Patterson Gardens site. Other impacts, including noise impacts along Baldwin Road and Sperry Road, would not change substantially because the amount of traffic would not be

significantly reduced. Mitigation measures identified for the West Patterson projects would apply to development under this alternative.

HYDROLOGY AND WATER QUALITY

Under this alternative, the improvements to the Salado Creek channel within the Patterson Gardens site boundaries would be completed, and therefore on-site flooding conditions would be expected to be identical to those under the proposed project. The mitigation of on-site flooding and placement of housing in a flood hazard zone under this alternative would be similar to the mitigation specified for the proposed project, although fewer housing units would be placed in the potential area of inundation relative to the proposed project.

The potential for construction-period water quality degradation would be reduced on the Patterson Gardens site because less development would occur.

The potential for construction-period water quality degradation on the Business Park Plan site would be identical to the proposed project since Alternative 4 calls for the same amount of development as the Business Park Plan. The potential for increased discharge of urban pollutants would also be identical to the Business Park Plan. The land use under this alternative would also reduce the contribution to regional groundwater salt concentrations at the same rate as the proposed project.

WATER SUPPLY

Alternative 4 would result in an equivalent demand for waste as the proposed project. It would increase the water demand in the City by 83 percent. Accordingly, the water supply impacts of Alternative 4 would be identical to those of Alternative 3, discussed above.

WASTEWATER

This alternative would generate less wastewater than the proposed project (see Table V.6). Under this alternative, the Patterson Gardens proposal would be reduced in size, and would generate approximately 159,700 gpd less wastewater than under the proposed project. All other land uses would be the same as the proposed project, and would generate approximately the same amount of wastewater as the proposed project.

Table V.6: Wastewater Generation -- Alternative 4

LAND USES	Homes	Buildings (square feet)	Population (living & working)	Unit Value	Flow gal/unit/d	Flow rates gal/d Alt. 4	Flow rates gal/d Prop'd project
West Patterson Projects							
Patterson Gardens							
Residential	494		1,482	Resident	100	148,200	296,000
Commercial/Retail	--	150,000	355	Employee/ Customer	30	10,600	22,500
Business Park Plan		8,978,600	16,240	Employee	30	487,350	487,350
TOTALS						**646,150**	**805,850**

Source: Lee & Ro, 2002; SMW, 2002; EDAW, 2002.

Overall, Alternative 4 would generate approximately 646,150 gpd of wastewater from West Patterson. This represents approximately 159,700 gpd less than the proposed project. The City would still expand its wastewater treatment facilities by approximately 0.5 mgd to accommodate wastewater from the Creekside Development and Patterson Gardens, plus additional expansion for the Business Park Plan.

This alternative, therefore, would require a 0.85 mgd expansion of the City's wastewater collection and treatment facilities, including construction of approximately 105 acres of new percolation ponds. Although the total acreage of land conversion would be less (105 acres of new ponds rather than 120 acres), this alternative would still be expected to result in the same impacts with the same mitigation measure, as those identified for the proposed project.

POPULATION, HOUSING, AND EMPLOYMENT

The approximately 9,128,600 sq. ft. of light industrial and commercial development in Alternative 4 would be expected to add approximately 16,595 jobs to Stanislaus County and Patterson's economy by 2025. Compared to the proposed project, this alterative would generate about 350 fewer jobs. By 2025, total Patterson jobs including those generated by this alternative would be about 18,240 jobs by 2025 (1,650+16,595= 18,245 jobs). With this alternative, by year 2025 Patterson's jobs-to-housing ratio would be

about 1.87 (18,245 jobs to 9,750 occupied housing units); jobs-to-employed residents ratio would be about 1.36 by the same year (18,245 jobs to 13,325 employed residents). Therefore, as with the proposed project, this alternative would exceed the target jobs-to-housing ratio of 1.5 for the City and the County, and the number of jobs would more than keep pace with the number of employable residents.

The residential component of this alternative would add about 494 residential units and about 1,480 residents to Patterson's economy by 2025, about 493 fewer units and 1,480 fewer residents compared to the proposed project. Similar to the proposed project, the increase in population due to this alternative would fall within *General Plan* and/or regional projections.

As with the proposed project, a community facilities financing district would be needed to provide infrastructure improvements for this alternative. Without this district, development with this alternative could result in potentially significant impacts.

OTHER TOPICS

Impacts related to geology and seismicity, hazards, community services, visual resources, and cultural resources with this alternative would be essentially the same as those described for the proposed project.

As with the proposed project, most impacts related to growth inducement would be limited or negligible. Like the proposed project, development of the site under this alternative could also result in increased inducement to convert additional prime agricultural land in the project vicinity to urban land uses. This growth inducing impact of Alternative 4 would be significant and unavoidable. However, by removing 516 acres of farmland from the City's sphere of influence and redesignating these areas for agriculture, this alternative would offset growth-inducing impacts of the alternative on agricultural resources by directing future residential and light industrial development pressure away from agricultural areas to the south and east of the City.

E. ALTERNATIVE 5 – HOWARD ROAD-WESTLEY TRIANGLE ALTERNATIVE LOCATION

DESCRIPTION

This alternative would include development of approximately nine million square feet of light industrial and business park uses, 302,500 square feet of commercial retail and office uses, and 987 residential units at a 1,300-acre site located approximately five miles north of the West Patterson site. This site was one of the locations along the I-5 corridor under consideration by the County for the development of the light industrial and business park uses.[17]

LOCATION

The Howard Road – Westley Triangle site (Westley site) extends from the San Joaquin/Stanislaus County line on the north, to Howard Road on the south (see Figure V.4: Alternative 5 - Howard Road/ Westley Triangle Alternative Site). The site is approximately 5.5 miles long and is located between I-5, on the west, and the California Aqueduct on the east. Land to the east of the Westley site, between the California Aqueduct and the Delta Mendota Canal, is primarily flat and in agricultural use. Vegetation on the Westley site includes non-native grassland, orchards and croplands. Approximately 790 acres of the Westley site are planted in orchard and 220 acres are cropland.

Two creeks cross the Westley site area. Ingram Creek is located just north of the Howard Road/I-5 interchange and flows from the southwest into the San Joaquin River. Martin Creek, located approximately three miles north of the Howard Road/I-5 interchange, flows from the southeast, crossing the California Aqueduct and terminating at the Delta Mendota Canal. Areas surrounding Martin Creek are primarily undeveloped agricultural lands.

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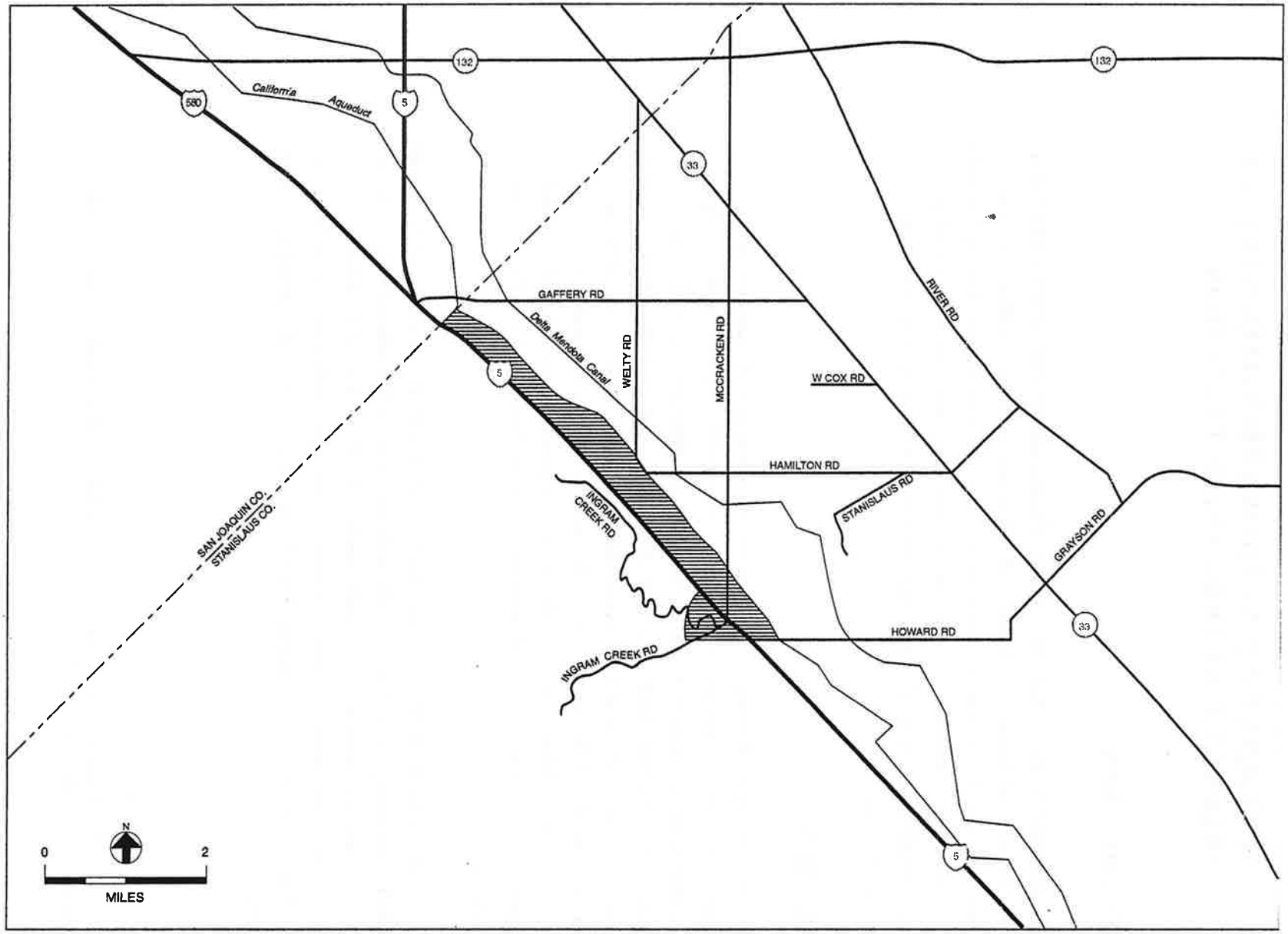
[17] EDAW (prepared for Stanislaus County), *I-5 Corridor Industrial/Business Park Feasibility Study*, March 12, 1999.



SOURCE: Turnstone Consulting

TURNSTONE CONSULTING

PATTERSON

FIGURE V.4: ALTERNATIVE 5 - HOWARD ROAD/WESTLEY TRIANGLE ALTERNATIVE SITE

The Westley site area, near the I-5/Howard Road interchange, is developed with highway commercial uses. Uses near this site include gas stations, several fast-food and sit-down restaurants, lodging accommodations, and a truck stop. Travelers along I-5 are the primary customers of these uses, as the nearest town (Westley) is approximately four miles away. Regional access to the Westley site is available from the I-5/Howard Road interchange.

DEVELOPMENT PROGRAM

The development program contemplated for the Westley Site Alternative includes a similar range of land uses and an equivalent amount of development as that proposed for the West Patterson projects site. The vast majority of the Westley site would be developed with light industrial and business park uses. These uses would extend from Gafferty Road, on the north to McCracken Road on the south. Approximately 8,814,000 square feet of these uses would be developed at this location. Approximately 465,000 square feet of office, retail and highway commercial uses would be developed near the I-5/Howard Road interchange. The residential portion of the development program (i.e., 987 single-family and senior dwelling units) would be located at the southern end of the site, near McCracken Road.

Assuming that Stanislaus County chose to adopt a regulatory tool similar to the Business Park Plan to govern development of the light industrial and business park uses on the Westley site, such a plan would include the establishment of the *Industrial Business Park* and *Light Industrial* classifications, as contemplated by the Business Park Plan. The *Industrial Business Park* and *Light Industrial* districts under the Westley Site Alternative, would restrict the range of allowable uses as set forth in the County's *Planned Industrial* zoning district. Thus, like the type of development contemplated by the Business Park Plan, the light industrial and business park type uses at the Westley site would not be water and sewer intensive (e.g., food processing).

Buildout of the Westley site would result in an amount of employment equal to implementation of the West Patterson projects: roughly 16,900 employees would be added to the western Stanislaus County economy.

VEHICULAR ACCESS

Regional access to the Westley site is provided by the I-5/Howard Road interchange. Howard Road provides access to the southern end of the site, as does McCracken Road. Howard Road forms the southern boundary of the Westley site and is a two-lane rural road that carries approximately 3,000 vehicles per day. Howard Road runs in an east/west direction from SR 33 and bends northern to become McCracken Road near the I-5 interchange. To the east of SR 33, Howard Road becomes Grayson Road, which is a four-lane arterial, and carries approximately 4,600 vehicles per day. Grayson Road also provides access to Modesto. McCracken Road is a two-lane road that runs in a north-south direction and extends from the Howard Road/I-5 Interchange to SR 132 (east of SR 33). McCracken Road provides direct access to Modesto and carries approximately 420 vehicles per day. Gafferty Road forms the northern border of, and serves as the northernmost access road to, the Westley site. It carries approximately 360 vehicles per day. Hamilton Road is a two-lane roadway that extends from SR 33 to I-5 and carries approximately 170 vehicles per day. Hamilton Road becomes Ingram Road west of I-5.

INFRASTRUCTURE

The Westley site area is not currently served by public water and sewer. The existing highway commercial uses at the site rely on well water and septic systems. Development under this alternative would require the establishment of a Mello-Roos or other financing vehicle for the provision of public services.

ENVIRONMENTAL ANALYSIS

LAND USE AND ZONING

The Stanislaus County General Plan designates the southernmost portion of the Westley site (i.e., the Howard Road/I-5 interchange area) as *Highway Commercial/Planned Development* and *Industrial*. The area between Howard Road and the east side of I-5 is designated *Highway Commercial/Planned Development*. A strip of *Highway Commercial/Planned Development* also borders the east side of I-5, then transitions to *Industrial* eastward to the California Aqueduct. Agricultural land surrounds the remainder of the Westley site area.

The area is currently developing with uses prescribed under the *Highway-Commercial/ Planned Development* designation. The light industrial and business park uses would be consistent with the County's anticipated development scenario for the area which envisions first generation (motel/hotel, restaurants, truck repairs), second generation (distribution, warehousing, heavy equipment repair), and third generation uses (large scale sales and marketing facilities, mixed uses, local and regional facilities). Second generation uses would be allowed consistent with the existing *Industrial* zoning. The residential, commercial and office uses anticipated under this alternative would require a general plan amendment and rezoning before this type of development could occur.

AGRICULTURAL RESOURCES

The approximately 1,300-acre Howard Road - Westley Triangle site is classified as "Prime Farmland" by the United States Department of Agriculture. (See Figure III.C.I: Prime Farmland in Western Stanislaus County.) Seven parcels (about 612 acres in total) are subject to active Williamson Act contracts. Under this alternative, it is assumed that rezoning and adoption of a development plan for the site would increase incentives for property owners to file a Notice of Nonrenewal which would terminate the contract after 10 years from filing. The amount of prime farmland that would be converted under Alternative 5 would be roughly comparable to the approximately 1,125 acres of prime farmland that would be lost under the West Patterson projects. As with the West Patterson projects, this impact would be significant and unavoidable.

BIOLOGICAL RESOURCES

The Westley Triangle site lies in an area known to be of concern to the U.S. Fish & Wildlife Service and the California Department of Fish & Game because of its potential value to the San Joaquin kit fox. At present, both the Delta Mendota Canal, California Aqueduct, and lands lying between and west of these watercourses are considered potentially important as part of a regional kit fox movement corridor. Development in this corridor could adversely affect the movement of kit foxes through the area. Unlike most of the proposed project that lies primarily east of these canals, development of this alternative could result in a greater level of significant adverse impacts to the kit fox over its entire area.

Because of the need for additional and expanded wastewater treatment facilities at both Westley and Patterson, this alternative would result in greater conversion of existing

agricultural lands than the proposed project. Construction of these facilities could result in significant impacts to Swainson's hawks and other raptors.

TRAFFIC

Traffic impacts identified in and around Patterson would not occur with this alternative. Cumulative growth assumed in the StanCOG model shows that traffic in Patterson would increase, however. Therefore, many of the Sperry Avenue improvements described in the 2025 future baseline would still be needed.

Currently, there is very little traffic on roadways in the vicinity of the Westley site and roadways operate at level of service (LOS) A or better.

Existing Plus Project Traffic

The StanCOG countywide gravity based traffic model was used to forecast average daily traffic and AM and PM peak hour traffic. The results of the traffic assignment on the six roadways in the Westley study area are shown in Table V.7.

Table V.7: Westley Site Traffic Projections

Scenarios	Existing		Existing + Project		2025 Base		2025 + Project	
Location	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
Gaffery Rd.	41	43	909	873	1662	1604	1585	1723
Hamilton Rd.	15	15	1826	2012	474	349	2098	2287
McCracken Rd.	36	58	1144	1371	229	277	1541	1803
Howard Rd.	357	265	1115	1089	693	607	1463	1515
Grayson Rd.	404	404	855	856	745	941	1282	1320
SR 33	214	212	464	487	1106	1228	1158	1258

Source: TJKM, 2002.

Buildout at the Westley site would result in an additional 1,000 to 2,000 vehicles per hour on roadways in the project vicinity. The increased traffic volumes on Hamilton Road would require two additional travel lanes (a total of four lanes) as a result of development under this alternative. Table V.8 shows the number of lanes that would be needed to accommodate the projected volumes in each scenario. While the other Westley

site roadways would not require widening under the "existing plus project" scenario, major intersections would require traffic control and appropriate channelizations, with exclusive left turn lanes.

Table V.8: Number of Lanes Needed

Scenarios	Existing		Existing + Project		2025 Base		2025 + Project	
Location	**A.M.**	**P.M.**	**A.M.**	**P.M.**	**A.M.**	**P.M.**	**A.M.**	**P.M.**
Gaffery Rd.	2	2	2	2	4	4	4	4
Hamilton Rd.	2	2	4	4	2	2	4	4
McCracken Rd.	2	2	2	2	2	2	4	4
Howard Rd.	2	2	2	2	2	2	2	2
Grayson Rd.	2	2	2	2	2	2	2	2
SR 33	2	2	2	2	2	2	2	2

Source: TJKM, 2002.

Interchange Constraints and Improvements

To accommodate the projected traffic levels forecast under the Westley alternative, significant improvements would be needed at the Howard Road/I-5 interchange northbound and southbound ramps. The proximity of this interchange to the Ingram Creek Road/McCracken Road/Howard Road intersection, however, provides a significant obstacle to the expansion of the interchange. Assuming the County and Caltrans were to proceed with an interchange expansion project, the following improvements would be required:

- All ramps would require signalization and underpass and overpass structures would require widening to accommodate additional lanes and standard shoulders.
- An exclusive southbound left-turn lane should be added to the southbound off-ramp. A second through-lane and an exclusive right-turn lane should be added to the eastbound approach on Ingram Creek Road. An exclusive left-turn lane should be added to the westbound approach and left turns should be permitted from both lanes (split phase). The on- and off-ramp intersections should be signalized.

- Due to the close proximity of the northbound on-ramp to McCracken Road, the existing northbound on-ramp should be abandoned and replaced with a new "hook" ramp. The northbound off-ramp should be integrated into the Howard Road/McCracken Road/Ingram Creek intersection and the new five-leg intersection should be signalized. The east leg of this intersection should be converted to one-way (two outbound lanes only). The northbound approach should provide two though-lanes and a left-turn pocket. The northbound on-ramp should be widened to allow for two lanes at the intersection that merge to one lane onto the freeway. The new southbound approach should provide two though lanes and an uncontrolled "free" right-turn lane.

Caltrans is often opposed to this "hook" ramp design. Construction of other types of ramps and related frontage road improvements could substantially increase costs associated with this interchange.

Future Cumulative (2025) Traffic

In the "future baseline 2025 scenario," Gaffery Road and SR 33 would experience substantial increases in traffic volumes (see Table V.8). Gaffery Road would require widening to four lanes; all other Westley site roadways could remain at two lanes.

With the addition of project traffic in 2025, there would be a substantial increase in traffic on all Westley site roadways. Traffic increases would vary from 1,100 to 2,200 vehicles per hour during the PM peak hour. Hamilton Avenue and McCracken Road would need to be widened to four lanes to accommodate the projected increase in traffic.

AIR QUALITY

Because this alternative would include the same range of land uses and the same square footage of development as the proposed project, it would generate a similar quantity of air emissions during construction and upon buildout. New infrastructure related to water supply, storm drainage, or wastewater collection and treatment could cause marginally increased construction activities and associated emissions, when compared to the project. Grading, site preparation, and heavy construction equipment use for this alternative would cause similar construction-related air quality impacts to PM_{10} and ozone as the project.

The light industrial land uses that could occur under the West Patterson projects would cause similar impacts under this alternative from potential exposure of residences to TACs and odors if new industrial land uses would be located near existing or future residences. Upon operation, violations of the regional air quality standards would continue to occur with this alternative and cumulative development, because similar levels of new motor vehicle activity and area source emissions would occur compared to the project. These emissions would contribute to existing violations of the PM_{10} and ozone standards. Thus, this alternative would cause significant air quality impacts similar to those described for the proposed project, and mitigation measures identified would apply to Alternative 5.

NOISE

This alternative would bring new noise sources to the Westley site, which is predominantly agricultural in use with few existing rural residences in the vicinity. Because the range of development under this alternative would be similar to that of the West Patterson projects, similar new noise sources would be attracted to the Westley site and similar consequences of noise exposure could occur for the existing rural residences when compared to the proposed project. Noise from existing agricultural operations near the Westley site could adversely affect new residences with this alternative, as it would with the proposed project, but this alternative would not expose new residences to noise from existing aircraft operations because the Westley site is not located near the Patterson Airport or any other landing strip.

The nature of construction noise and potential of exposure of existing and future residences to noise from construction activities would be similar to the proposed project because to build this alternative, a similar range of equipment would be needed for a similar construction duration. Construction of new infrastructure serving the Westley site could also bring increased noise to sensitive receptors located along pipeline routes or construction access routes.

This alternative would create traffic noise impacts and potential impacts from incompatible land uses that would be similar to those of the proposed project because the new development would introduce industrial land uses, which would attract commuter traffic and truck trips, and it would involve development of sensitive land uses with new residences. The increased traffic, including the truck traffic, could cause substantial

noise increases for a relatively smaller number of existing sensitive receptors near the Westley site, including rural residences along McCracken Road and Welty Road.

According to the traffic analysis for this alternative, future improvements would likely be necessary for McCracken Road. When compared to Baldwin Road under the proposed project, traffic projections for year 2025 along McCracken Road under this alternative exceed (by approximately 20 percent) the future 2025 traffic for the project's Baldwin Road. Since existing or future residences along McCracken Road could be located in close proximity to the improved centerline, future traffic could cause significant noise impacts. Measures similar to those recommended for Baldwin Road under the proposed project would be appropriate for this alternative to minimize traffic noise exposure along McCracken Road if residential uses were proposed in the future. Similar measures to develop a circulation system that would minimize exposure of residences to truck activity at the light industrial uses would also be appropriate for this alternative.

HYDROLOGY AND WATER QUALITY

Under this alternative, no development would occur in West Patterson and therefore improvements to the Salado Creek channel would not be completed. On-site flooding would be expected to continue at the Patterson Gardens site at a frequency similar to existing conditions. However, no housing would be placed in a flood hazard zone under this alternative. The Westley site is not located within a special flood hazard zone as mapped by FEMA, and therefore regional storm-related flooding problems would not be expected at this site.

The potential for construction-period water quality degradation would be similar as for the proposed West Patterson projects since a similar amount of grading would occur under both scenarios. The potential for increased discharge of urban pollutants would be expected to be similar to the proposed project. Under this alternative (similar to the proposed project) land uses at the two sites would be expected to decrease the rate of regional groundwater salt loading relative to the existing conditions.

WATER SUPPLY

The Westley site is located along the periphery of the major groundwater aquifer and, as a result, there would be less available groundwater to serve this site, in comparison to the West Patterson projects site. It is unclear whether adequate groundwater is available to

service the anticipated development levels; the County would likely need acquire a surface water supply either through transfer or conversion, such as that proposed in the surface-water variant to the proposed project water supply (see Section III.I, Water Supply). The Westley site, however, would complicate the operation of the Aquifer Storage and Recovery system (ASR system) proposed to "bank" surface water by injecting it into the groundwater aquifer through groundwater production wells. Further engineering study would be necessary to determine whether the Westley site's location near the edge of the aquifer would allow operation of the ASR system.

WASTEWATER

Because this alternative would include the same range of land uses and the same square footage of development as the proposed project, it would generate a similar amount of wastewater as the proposed project. However, the Westley site is not currently served by a public sewer system. This alternative, therefore, would require construction of a new wastewater collection system, treatment plant and approximately 90 acres of percolation ponds in the Westley area. In addition, the City would still expand its wastewater treatment facilities by approximately 0.5 mgd to accommodate wastewater from the approved Creekside Development. This 0.5 mgd expansion would require about half of the percolation pond surface area (50 acres) as the proposed project, requiring conversion of approximately 65 acres of undeveloped land near the existing Patterson treatment plant, and resulting in similar impacts on a reduced scale.

Similar to Patterson, much of the region around Westley consists of farmland and non-native grassland. Because Westley is located farther from the San Joaquin River than the Patterson wastewater treatment plant, fewer trees are located in Westley that could support raptor nests. Also, Westley's distance from the San Joaquin River (approximately 5 miles) is expected to reduce the value of the land as foraging habitat for Swainson's Hawk. Nevertheless, construction of wastewater treatment facilities could result in significant adverse impacts to raptors, including Swainson's hawk. The Westley region is also considered part of a San Joaquin kit fox movement corridor, connecting kit fox populations to the north and south (USFWS, 1998). Construction of a new wastewater treatment facility near Westley could adversely affect movement of the San Joaquin kit fox.

Overall, the Westley site alternative would result in more land conversion than the proposed project. Although the percolation pond acreage would be similar, this

alternative would require construction of a new wastewater treatment plant in Westley. This alternative, therefore, would result in similar significant environmental effects as the proposed project, and greater significant unavoidable loss of agricultural resources.

POPULATION, HOUSING, AND EMPLOYMENT

The approximately 9,281,100 sq. ft. of industrial and commercial development under the Westley site alternative would be expected to add approximately 16,950 jobs to the unincorporated Westley area in Stanislaus County. With this alternative, Patterson would lose an opportunity of generating a portion of the nearly 17,000 jobs assumed to result from development in the West Patterson area by year 2025. Therefore, unlike the proposed project, this alternative could make it more difficult for Patterson to achieve the target jobs-to-housing ratio of 1.5, and the number of employable residents would continue to outpace the number of jobs in Patterson.

The residential component of this alternative would develop about 987 residential units in the Westley area. No residential units or residents would be added to Patterson.

VISUAL RESOURCES

Interstate 5 is designated a scenic highway through Stanislaus County for the views it affords motorists of the San Joaquin Valley to the east and the hills of the Diablo Range to the west. Alternative 5 would line the west side of I-5 with urban development for a distance of about 5.5 miles, obscuring views of the San Joaquin valley for I-5 motorists. The impact would be greater than that identified for the proposed project because of the length of development along I-5 and because, at the Westley Triangle site the freeway is less elevated, so new buildings adjacent to the freeway would create more view blockage. The impact of the Westley site alternative on visual resources would be significant and unavoidable.

OTHER TOPICS

Impacts related to geology and seismicity, hazards, and cultural resources with this alternative would be similar to those described for the proposed project, but in a new location. No new community services would be needed in Patterson; however, to the extent that police and fire services are provided to the area by mutual aid agreements, demands could be similar to those described for the proposed project.

Similar to the proposed project, most impacts related to growth inducement would be limited or negligible. Unlike the proposed project, growth inducement impacts would not occur in Patterson but in the unincorporated Westley area. Like the proposed project, development of the Westley site could result in increased inducement to convert additional prime agricultural land in the Westley area to urban land uses. This growth inducing impact of Alternative 5 would be significant and unavoidable.

F. ENVIRONMENTALLY SUPERIOR ALTERNATIVE

The No Project – No Action Alternative is considered the environmentally superior alternative because impacts associated with development of the site would be reduced to the greatest extent. Impacts identified for the proposed project that would be avoided or reduced with the No Project – No Action Alternative include: loss of agricultural land, impacts to special status species, increased traffic and associated air quality and noise impacts, impacts upon water supply, wastewater, drainage and hydrology, and visual impacts.

In cases like this where the No Project Alternative is the environmentally superior alternative, CEQA requires that the second most environmentally superior alternative be identified. Comparison of the environmental impacts associated with each alternative, as described above, indicates that Alternative 2, No Development on Northern Cozzens Property, Keystone Pacific Site, and Patterson Gardens Site, is the environmentally superior alternative after the No Project – No Action Alternative. This alternative would generally be associated with less severe impacts than the proposed project with respect to land use, agricultural resources, biological resources, traffic, air quality, noise, hydrology and water quality, water supply, wastewater, and visual resources.

Alternative 4, Reduced Sphere of Influence, would ease development pressures on about 500 acres of agricultural land by removing it from the City's sphere of influence. However, Alternative 4 would result in a roughly comparable amount of development as the proposed project and would therefore result in more significant impacts and require more mitigation than Alternative 2.

References

All referenced documents are available for review, by appointment, at City of Patterson offices (33 S. Del Puerto Avenue, Patterson, CA), except those marked with an asterisk (*), which are available for review, by appointment, at the Stanislaus County Planning Department (1010 10th Street, Suite 3400, Modesto, CA), and except for those identified with an internet website address.

U.S. Fish and Wildlife Service, 1998. *Recovery Plan for Upland Species of the San Joaquin Valley, California.* (p. 319).

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