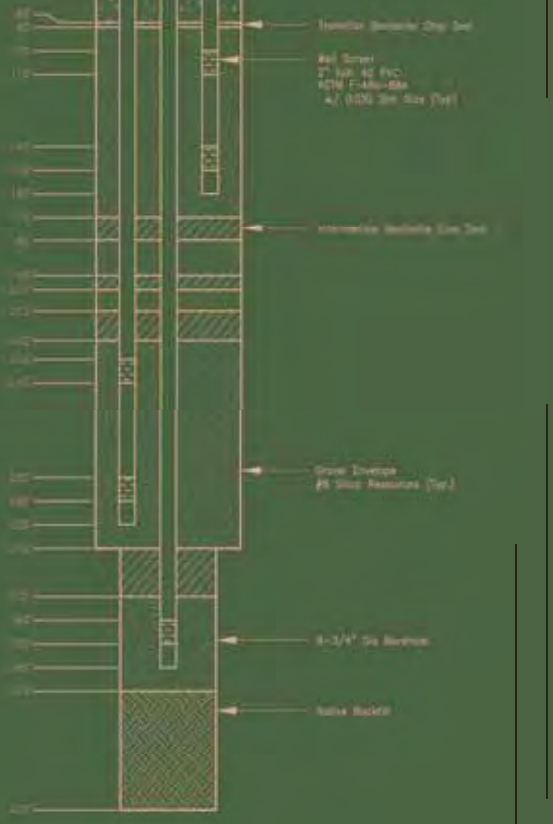
# Draft
# Diablo Water District
# Well Utilization Project
# Phase 2 and Future Phase 3
# Environmental Impact Report



## Prepared for:

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August 2008

# Draft

# Diablo Water District Well Utilization Project Phase 2 and Future Phase 3

# Environmental Impact Report

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# Contents

# Tables

**On Page**

# Figures

**Follows Page**

# Acronyms and Abbreviations

| | |
|---|---|
| $\mu g/m^3$ | micrograms per cubic meter |
| AB | Assembly Bill |
| ABAG | Association of Bay Area Governments |
| AC | Agricultural Core |
| AL | Agricultural Lands |
| Alquist-Priolo Act | Alquist-Priolo Earthquake Fault Zoning Act |
| ARB | California Air Resources Board |
| ASTM | American Society for Testing and Materials |
| BAAQMD | Bay Area Air Quality Management District |
| BART | Bay Area Rapid Transit |
| basin plan | water quality control plan |
| BAT | Best Available Technology |
| Bay Area | San Francisco Bay Area |
| BCDC | Bay Conservation and Development Commission |
| BMPs | best management practices |
| BNSF | Burlington Northern Santa Fe |
| CAA | federal Clean Air Act |
| CAA Amendments | CAA Amendments of 1990 |
| CAAQS | California Ambient Air Quality Standards |
| Cal-OSHA | California Occupational Safety and Health Administration |
| Caltrans | California Department of Transportation |
| CBSC | California Buildings Standards Code |
| CCAA | California Clean Air Act |
| CCC | Contra Costa County |
| CCCFCD | Contra Costa County Flood Control and Water Conservation District |
| CCR | California Code of Regulations |
| CCWD | Contra Costa Water District |
| CEQA | California Environmental Quality Act |
| CESA | California Endangered Species Act |
| CFR | Code of Federal Regulations |
| cfs | cubic feet per second |
| City | City of Oakley |

| | |
|---|---|
| CMU | concrete masonry unit |
| CNDDB | California Natural Diversity Database |
| CNEL | Community Noise Equivalent Level |
| CO | Commercial |
| CO | carbon monoxide |
| Corps | U.S. Army Corps of Engineers |
| CRHR | California Register of Historical Resources |
| CVP | Central Valley Project |
| CVRWQCB | Central Valley Regional Water Quality Control Board |
| CWA | Clean Water Act |
| dB | decibels |
| dBA | A-weighted decibel |
| DDT | dichloro-diphenyl-trichloroethane |
| Delta | Sacramento–San Joaquin River Delta |
| DFG | California Department of Fish and Game |
| DHS | California Department of Health Services |
| DI | drop inlet |
| DOC | California Department of Conservation |
| DPA | The Delta Protection Act of 1992 |
| DPC | Delta Protection Commission |
| DTSC | California Department of Toxic Substances Control |
| DWD | Diablo Water District |
| DWR | California Department of Water Resources |
| EBRPD | East Bay Regional Park District |
| EC | electrical conductivity |
| ECCC HCP/NCCP | Eastern Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan |
| ECCFPD | East Contra Costa Fire Protection District |
| EIR | environmental impact report |
| EO | Executive Order |
| EPA | U.S. Environmental Protection Agency |
| ESA | federal Endangered Species Act |
| FEMA | Federal Emergency Management Agency |
| FIRMs | Flood Insurance Rate Maps |
| FMMP | Farmland Mapping and Monitoring Program |
| FPMP | Fugitive PM10 Management Plan |
| FRHZs | Fault Rupture Hazard Zones |
| FTA | Federal Transit Administration |
| General Construction Permit | NPDES General Permit for Construction Activities |
| General Dewatering Permit | Central Valley RWQCB Order Number 5-00-175, NPDES Permit Number CAG995001 |

| | |
|---|---|
| GHG | greenhouse gas |
| HCD | Housing and Community Development Department |
| HMMSPP | Hazardous Materials Management/Spill Prevention Plan |
| IPCC | Intergovernmental Panel on Climate Change |
| ISAC | Invasive Species Advisory Committee |
| ISD | Ironhouse Sanitary District |
| LAFCO | Local Agency Formation Commission |
| $L_{dn}$ | day-night level |
| $L_{eq}$ | equivalent sound level |
| $L_{max}$ | maximum sound level |
| $L_{min}$ | minimum sound level |
| LMRP | Land and Resource Management Plan |
| LOS | Level of Service |
| LSCE | Luhdorff & Scalmanini Consulting Engineers |
| LV | Los Vaqueros |
| $L_{xx}$ | percentile-exceeded sound level |
| MBTA | Migratory Bird Treaty Act |
| MCL | maximum contaminant level |
| mg/L | milligrams per liter |
| mg/y | million gallons per year |
| mgd | million gallons per day |
| MMT-$CO_2$eq | million metric tons of carbon dioxide equivalent |
| MOU | memorandum of understanding |
| mph | miles per hour |
| MS4 | municipal separate storm sewer system |
| msl | above mean sea level |
| MTC | Metropolitan Transportation Commission |
| NAAQS | National Ambient Air Quality Standards |
| NISC | National Invasive Species Council |
| NMFS | National Marine Fisheries Service |
| $NO_2$ | nitrogen dioxide |
| NOI | Notice of Intent |
| $NO_X$ | oxides of nitrogen |
| NPDES | National Pollutant Discharge Elimination System |
| NRCS | Natural Resources Conservation Service |
| OES | Office of Emergency Services |
| OHP | California Office of Historic Preservation |
| PG&E | The Pacific Gas and Electric Company |

| | |
|---|---|
| PM10 | particulate matter 10 microns in diameter or less |
| PM2.5 | particulate matter 2.5 microns or less in diameter |
| ppm | parts per million |
| PPV | peak particle velocity |
| PRC | Public Resources Code |
| proposed project | The Well Utilization Project |
| PS | Public and Semi-Public |
| PVC | polyvinyl chloride |
| RBWTP | Randall-Bold Water Treatment Plant |
| RCRA | Resource Conservation and Recovery Act |
| RMP | risk management plan |
| ROG | reactive organic gases |
| ROW | right-of-way |
| RWQCBs | Regional Water Quality Control Boards |
| SFBAAB | San Francisco Bay Area air basin |
| SIPs | State Implementation Plans |
| SL | Single Family Residential—Low |
| SM | Single Family Residential—Medium |
| $SO_2$ | sulfur dioxide |
| SPCCP | spill prevention, control, and countermeasure program |
| SR 4 | State Route 4 |
| sq ft | square feet |
| State Water Board | State Water Resources Control Board |
| SV | Single Family Residential—Very Low |
| SWPPP | stormwater pollution prevention plan |
| TACs | toxic air contaminants |
| TCMs | traffic control measures |
| TDS | total dissolved solids |
| TMDL | total maximum daily load |
| TMF | technical, managerial, and financial |
| UBC | Uniform Building Code |
| USC | United States Code |
| USDA | U.S. Department of Agriculture |
| USFWS | U.S. Fish and Wildlife Service |
| USGS | U.S. Geological Survey |
| UWMP | Urban Water Management Plan |
| V/C | ratio of traffic volume to capacity |
| Williamson Act | California Land Conservation Act |
| WWTP | Wastewater Treatment Plant |

Chapter 1
# Introduction

## Background

Diablo Water District's (DWD's) overall goal is to provide a safe, dependable, and adequate supply of high-quality potable water to the residents and businesses in its service area. As part of achieving this objective, DWD is developing groundwater supply in addition to its surface water supply. DWD's primary supply is, and will remain, surface water from Contra Costa Water District (CCWD) that is treated at the Randall-Bold Water Treatment Plant (RBWTP) prior to delivery to customers. At ultimate buildout of DWDs entire anticipated service area in 2040, groundwater is anticipated to provide no more than about 20% of the district's total water supply, with the primary surface water supply providing 80% or more. An exception would be in the event of an emergency or drought where a greater percentage of groundwater may be used as a temporary measure.

Groundwater supply is being implemented to increase supply reliability, provide operational flexibility, and meet future needs for additional maximum day supply capacity. The groundwater supply would provide a reliable emergency water supply during droughts or outages of the surface RBWTP. The Well Utilization Project (proposed project) would allow DWD to reduce its surface water supply purchases from CCWD and to delay purchase of additional RBWTP capacity because the groundwater could be used to help meet high water demands in summer.

The groundwater supply initially would replace a portion of DWD's surface water supply, which is purchased from CCWD. DWD currently has an agreement with CCWD for at least 15 million gallons per day (mgd) surface water treatment capacity and can purchase an additional 15 mgd of capacity, for a total surface water supply of 30 mgd to meet the maximum day demand. At ultimate buildout of its entire anticipated service area in 2040, 35 mgd of water supply would be required to meet the maximum day demand. Therefore, up to 5 mgd of groundwater supply would be required after year 2030 to meet the maximum day demand. However, as discussed further in Chapter 2, DWD may ultimately develop more groundwater capacity to enhance supply reliability and operational flexibility (up to a total of 7 mgd ultimate capacity) if there are no significant adverse impacts to the groundwater basin.

DWD participates in regional water supply planning for the East Contra Costa County area along with 11 other East County agencies. The proposed project fulfills statewide priorities and regional goals to assist in meeting goals for the Sacramento–San Joaquin River Delta (Delta) by reducing dependence on imported surface supply and improving water supply reliability by providing alternative supply sources.

# Project Purpose, Need, and Objectives

## Project Purpose

The objective of the proposed project is to provide a safe and reliable source of drinking water to the residents of the DWD service area, without compromising groundwater resources and impacting the surrounding water table.

## Project Objectives

DWD's overall objective is to provide a safe, adequate, and reliable supply of high-quality potable water to the residents and businesses of its service area. Specific proposed project objectives are to:

- Provide a reliable emergency water supply during droughts or outages of the surface RBWTP.
- Provide a groundwater supply to supplement DWD's surface water supply, which is purchased from CCWD. Initially, groundwater would replace a portion of the surface water supply. After 2030, groundwater would supplement surface water supply to meet ultimate supply needs to buildout at a ratio of 20% groundwater and 80% surface water.
- Allow DWD to reduce its surface water supply purchases from CCWD and to delay purchase of additional RBWTP treatment capacity, since the groundwater could be used to help meet high water demands in summer.

# Document Organization

In addition to Chapter 1, "Introduction," this environmental impact report (EIR) comprises the following chapters:

- Chapter 2, "Project Description,"
- Chapter 3, "Hydrology, Hydrogeology, Water Quality, and Water Supply,"
- Chapter 4, "Transportation,"
- Chapter 5, "Air Quality,"
- Chapter 6, "Noise,"

- Chapter 7, “Biological Resources,”
- Chapter 8, “Land Use, Agricultural Resources, and Recreation,”
- Chapter 9, “Population, Housing, and Socioeconomics,”
- Chapter 10, “Utilities and Public Services,”
- Chapter 11, “Visual Resources,”
- Chapter 12, “Public Health and Environmental Hazards,”
- Chapter 13, “Cultural Resources,”
- Chapter 14, “Geology and Soils,”
- Chapter 15, “Growth-Inducing Impacts,”
- Chapter 16, “Alternatives Analysis,”
- Chapter 17, “Cumulative Impacts,”
- Chapter 18, “References Cited,” and
- Chapter 19, “Report Preparation.”

Chapter 2
# Project Description

## Overview of Well Utilization Project

With DWD's proposed project, groundwater supply from multiple well sites is conveyed in dedicated well supply pipelines to the RBWTP, where it is treated (disinfected and fluoridated) at a blending facility. The groundwater then is blended with the treated surface water prior to delivery to customers.

The blending ratio of groundwater to surface water is controlled automatically to maintain good water quality with a delivered water hardness goal of less than 140 milligrams per liter (mg/L). With this blending strategy, the proportion of groundwater to surface water is expected to be about 1 part groundwater to 4 parts surface water. The blended supply delivered to customers will consist of about 20% groundwater and 80% surface water.

The proposed project consists of multiple phases to provide groundwater supply, as described below. Figure 2-1 is a conceptual schematic of the first three phases.

The first phase was completed in 2006 and consists of a well and pump station in Glen Park in the city of Oakley; the blending facility at the RBWTP; and an 18-inch-diameter, 18,250-foot-long pipeline that conveys water from the Glen Park well to the blending facility. The Glen Park well has a maximum capacity of up to 2 mgd during high-demand periods but is operated at lower rates when demands are lower (currently at an annual average day rate of about 0.75 mgd).

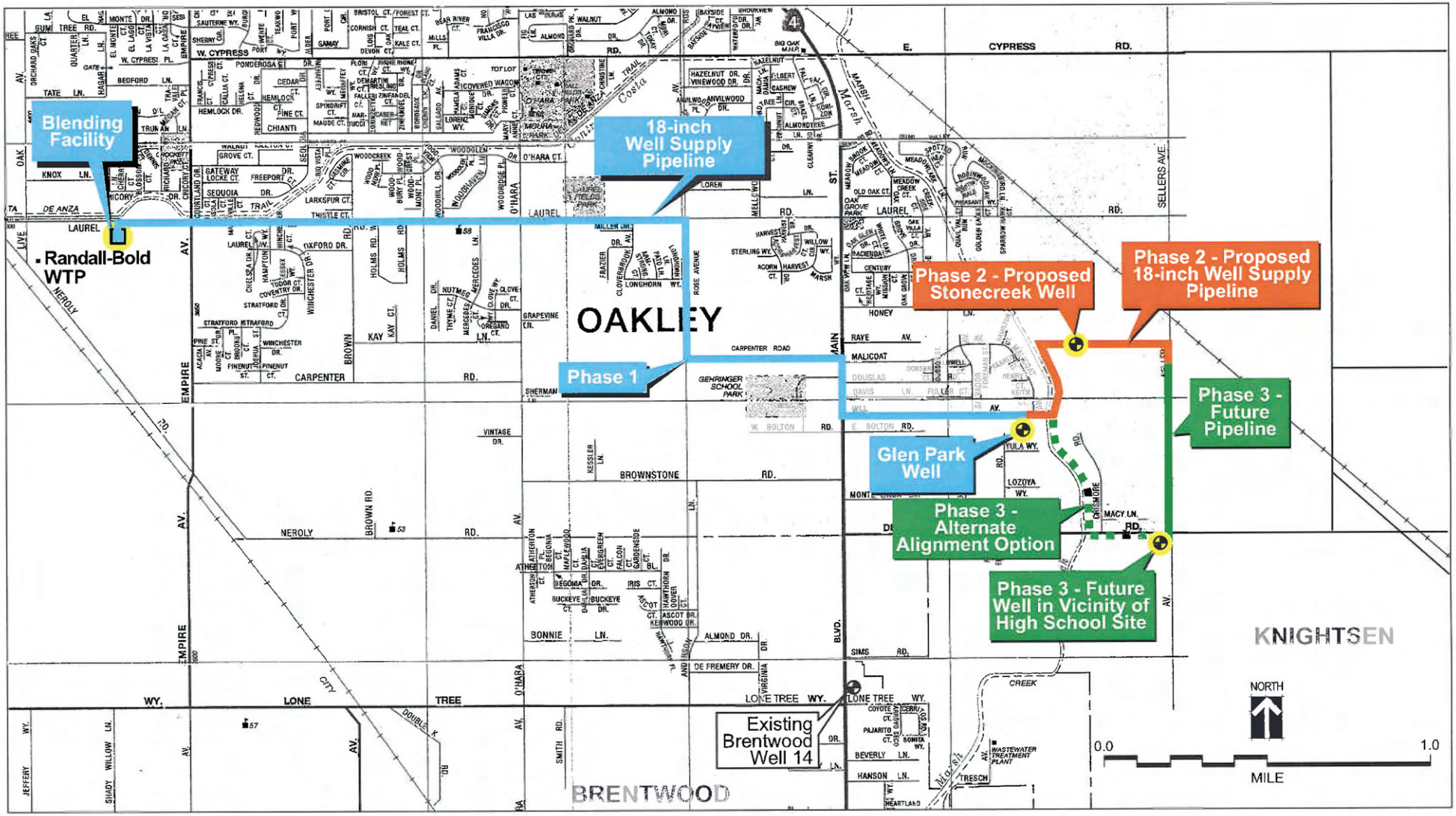
The second phase, which is evaluated herein, would consist of a second well and pump station at a proposed future park in the future Stonecreek subdivision in the City of Oakley and an 18-inch-diameter, 2,100-foot-long pipeline to convey water from the well to the existing 18-inch well supply pipeline at Glen Park. It is anticipated that the second well would have a production capacity of approximately 1 to 2 mgd. The actual capacity would be determined when the well is drilled and tested. In addition, the well supply pipeline would be extended from the Stonecreek well site east to Sellers Avenue to support the third phase of the proposed project. This pipeline would be constructed as part of construction of the Stonecreek subdivision to avoid having to trench within new streets and disrupt residents when the third well is added later to the proposed project.

A future third phase may consist of a third well within the vicinity of the future Liberty Union High School site at the southwest corner of Delta Road and Sellers Avenue, with a pipeline within the right-of-way (ROW) of Sellers Avenue to convey water from this third well to the Phase 2 pipeline in the Stonecreek subdivision. As an alternative alignment, the pipeline for the third phase (see Figure 2-1) may instead follow Marsh Creek south from the Marsh Creek crossing and then proceed east along Delta Road to Sellers Avenue. It is anticipated that this well would have a similar production capacity and layout as the Glen Park and Stonecreek wells; the actual capacity would be determined by future testing. It is anticipated that this well and pipeline would be implemented within the next 5 years. The actual timing for this well will depend on the schedule for development of the school site.

When three wells are completed, DWD intends to suspend further groundwater development while continuing its long-term groundwater monitoring program, as defined in its Assembly Bill (AB) 3030 Groundwater Management Plan. DWD will continue to monitor groundwater pumping, water levels and water quality to verify whether there are any impacts from its operations. If impacts on the groundwater basin are found to be insignificant, DWD may consider implementing additional wells in the long term.

DWD may install additional wells as future phases to provide up to a total of 7 mgd of ultimate groundwater capacity, which would be 20% of the total supply projected at buildout (year 2040). DWD would base this decision on the performance of its existing wells, and a determination that the groundwater basin can accommodate the pumping with no adverse impacts. Implementing the first three wells does not commit DWD to implementing additional wells in the future. The long-term performance of the first three wells will be used to determine the feasibility of additional wells. If DWD decides to implement additional wells in the future, it would conduct additional environmental review consistent with the California Environmental Quality Act (CEQA). No specific locations have been determined for such future wells; their installation would require evaluation and siting studies.

The existing 18-inch-diameter well supply pipeline is sized for the anticipated ultimate groundwater use of 7 mgd to allow flexibility to meet future demands. It is more economically and environmentally practical to install a larger pipeline now than to install a smaller pipeline for the proposed project and then have to install a second, larger pipeline to accommodate possible later phases of the project. If a second pipeline were installed in the future, it would increase project costs and result in a second round of construction disturbance impacts, including traffic, noise, and dust impacts.




CDM

W:\REPORTS\DWD\Second Well_Stonecreek_07\Figures\First Stage of DWD Well Utilization.fh9 JJT 12/13/07

**Figure 2-1**
Project Facilities

# Proposed Project Description

## Phase 2 Facilities and Location

The proposed project consists of multiple phases as described in the overview above. Phase 2 would include the following facilities.

- Construction and testing of a new water supply well in a future city park within the proposed Stonecreek subdivision in Oakley.
- Construction of a pump station at the new Stonecreek well site.
- Installation of about 2,300 linear feet of 18-inch-diameter well supply pipeline to convey water from the new well pump station to the existing 18-inch well supply pipeline at the Glen Park well site. The existing 18-inch pipeline would then convey the groundwater to the existing blending facility.
- Installation of about 2,700 linear feet of 18-inch-diameter well supply pipeline as part of the Stonecreek subdivision construction that would extend from the new Stonecreek well east to Sellers Avenue.

The proposed Phase 2 facilities addressed herein are all located in the city of Oakley in eastern Contra Costa County (CCC). Figure 2-1 shows the location of the facilities.

The proposed project components are described further below.

## Well and Pump Station

The well and pump station would be located in the proposed Stonecreek Park, a future city of Oakley neighborhood park that will be constructed as part of the proposed Stonecreek subdivision. The well and pump station would be located in the northeastern most corner of the park. Access to the site would be from an adjacent future city street.

Stonecreek Park is a proposed neighborhood park of approximately 3 acres located east of Marsh Creek and west of the proposed extension of Teton Road into the Stonecreek subdivision. The future park will include open lawn/play area, picnic tables, and children's playground equipment and is adjacent to the Marsh Creek Trail. Existing land uses surrounding the park include rural residential uses to the north, south, and east of the site and Contra Costa County Flood Control and Water Conservation District's (CCCFCD's) Marsh Creek channel ROW to the west. The proposed Stonecreek suburban residential uses will be east of the park, and there is approved and planned suburban residential use to the north of the park.

Below is a more detailed description of the key well design factors and pump station building features.

## Well

DWD drilled a test hole and monitoring well at the Stonecreek site in March/April 2007 to assess underlying hydrogeologic conditions and suitability for siting of a production well. Figure 2-2 shows the profiles of the test hole and monitoring well. The production well would be drilled in the vicinity of the monitoring well and test hole. When the production well is constructed, testing would be performed to verify assumptions regarding pumping impacts and to select the optimal operating capacity for the future well pump station.

Key factors in well design for this site will be completion depth and operating capacity. As with DWD's Glen Park well, aquifer materials below 200 feet would be targeted to avoid impacts on zones in which shallower domestic wells in the general area are completed. This completion depth also would provide drawdown required for pumping at higher capacities typical of municipal water supply facilities and give vertical separation from shallow aquifers and surficial sources of contamination. The vertical separation would allow for a deep sanitary seal to protect the drinking water source from potential hazards to drinking water quality. Source protection is required by the California Department of Public Health under the Drinking Water Source Assessment and Protection Program.

Based on review of information available to date from the test hole and monitoring well, it is anticipated that the capacity of a production well at the Stonecreek site could range from 1 to 2 mgd, which is consistent with experience with the nearby Glen Park site. DWD would size the well station components for the maximum 2-mgd capacity to provide future flexibility to handle peak demands, although the facility may be operated at lower rates consistent with the water quality objectives for the blended water.

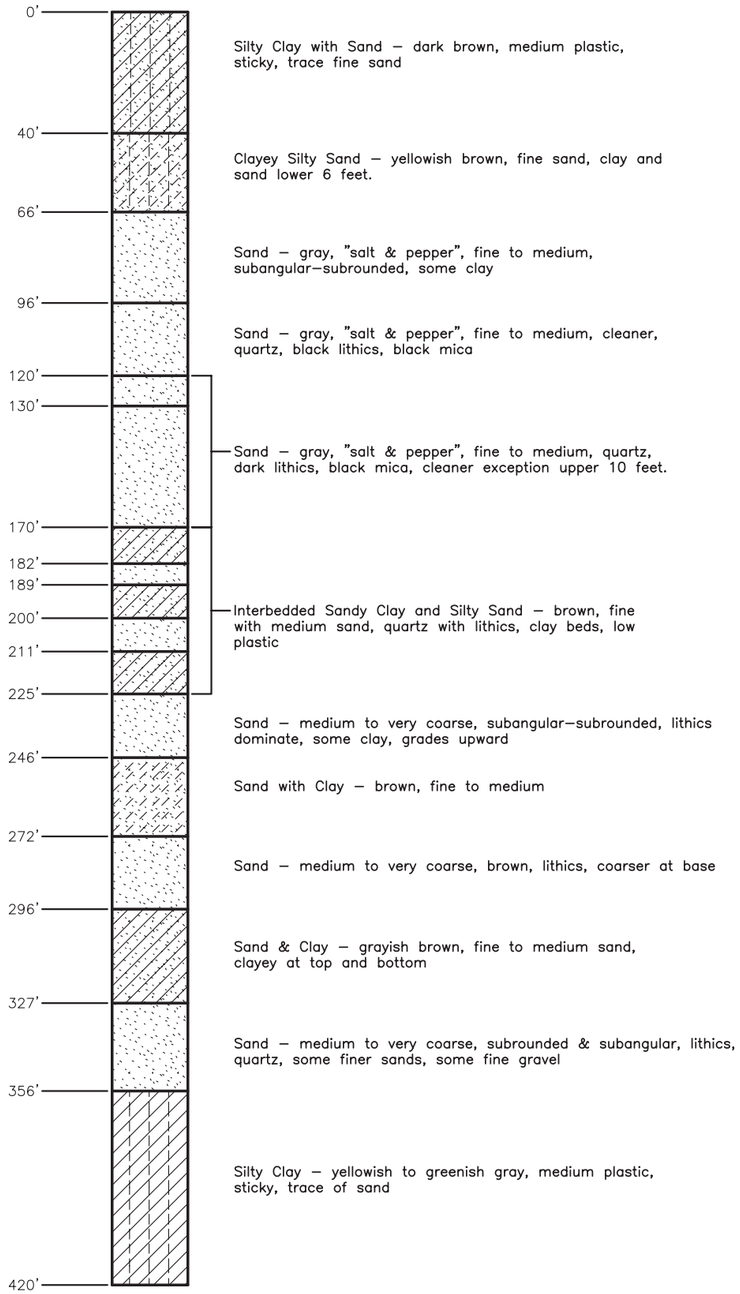
The Stonecreek well design will be based on data obtained from the test hole and monitoring well constructed at the site. Based on these data, aquifer materials occurring at 200 to 300 feet below ground surface would be targeted for well completion. The final well design and specifications would be prepared during the project design phase. The plans and specifications for the Stonecreek well will comply with county and state well standards.

## Well Pump Station

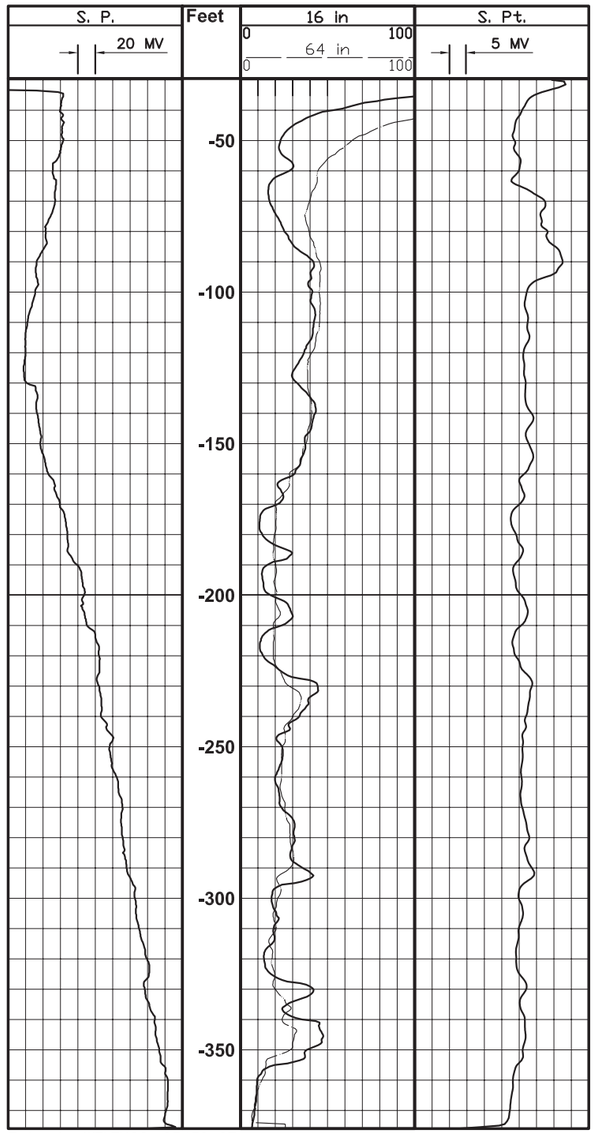
A pump station building will be constructed to enclose the Stonecreek production well. Figure 2-3 shows a conceptual Stonecreek well pump station footprint. The footprint delineates dimensions for two different areas.

- One area represents the actual space that the Stonecreek well pump station would occupy. This footprint area (1,750 square feet [sq ft]) includes the building (700 sq ft) plus a paved area around the building for maintenance access and deliveries.

## TEST HOLE LITHOLOGY

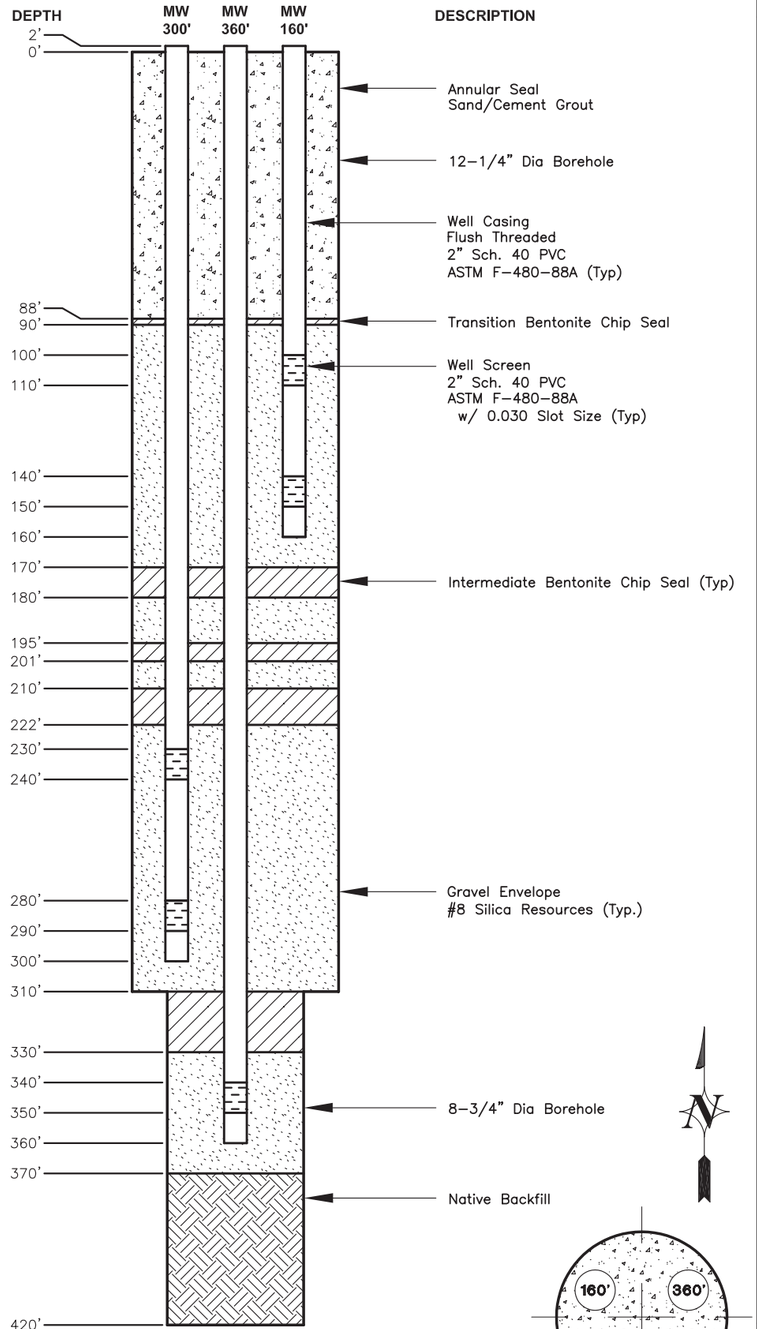



## TESTHOLE ELECTRICAL LOG

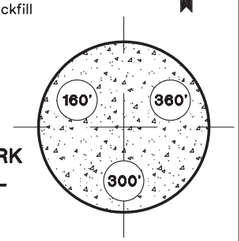



E–log by WELENCO, 03/30/07

## STONECREEK PARK MONITORING WELL PROFILE




AS-BUILT




**STONECREEK PARK MONITORING WELL LAYOUT**

SHEET: 1 / OF: 1

MONITORING WELL PROFILE
Stonecreek Park Monitoring Well
Diablo Water Company

LUHDORFF & SCALMANINI CONSULTING ENGINEERS

REVISIONS

| NO. | DATE | REVISION |
|---|---|---|
| | | |

DATE: APRIL 2007
JOB NO. : 06–2–071
DESIGN BY: TDE
DRAWN BY: DWT
CHECKED BY: KWU/TDE
FILE: STONECREEK.DWG

**Figure 2-2**
Well Profile

CAD FILE: G:/Projects/Diablo Water District/06–2–071/Stonecreek Park (MW).dwg CFG FILE: LSCE2500.PCP_MRG DATE: 04–11–07 11:02am

## LEGEND

- FOOTPRINT AREA FOR FUTURE PUMP STATION/FEE PARCEL AREA (1,750 SF±)
- EASEMENT AREA FOR FUTURE PUMP STATION (4,250 SF±)
- DRIVEWAY PAVERS
- MH ○ STORM DRAIN (SD) MANHOLE
- STONECREEK DROP INLET (SD)

85'

RADIO ANTENNA

ELECTRICAL TRANSFORMER & EQUIPMENT PAD

FEE PARCEL 1750 SF±

25'

S89°27'05"E 85.00'

55.00'

20.00'

10'

8'

15'

18.00'

50'

N00°32'55"E 50.00'

S00°32'55"W 50.00'

MCC

WELL

PUMP ROOM

CHEMICAL ROOM

17.00'

20.00'

N00°32'55"E 38.00'

EASEMENT 2,144 SF±

N89°27'05"W 38.00'

MH

MH

N89°27'05"W 85.00'

WELL PUMP STATION BUILDING

STORM DRAIN CONSTRUCT ~400 LF OF 42"–48" GRAVITY SD FROM DI NORTH TO EXIST MH IN SUBDIVISION 8737

DI

EXISTING MONITORING WELL (LOCATION IS APPROXIMATE)

TETON ROAD

24" SDFM

SIDEWALK

10" SS

12" W

PROPERTY LINE

Scale in Feet

0' 5' 10' 20'

CAD FILE: G:/Projects/Diablo Water District/Stonecreek/Figure 2-2.dwg CFG FILE: LSCE2500.PCP_MRG DATE: 06-05-08 3:53pm

WELL PUMP STATION LAYOUT

Diablo Water District
Well Utilization Project
Stonecreek Well Pump Station
Oakley, California

LUHDORFF & SCALMANINI CONSULTING ENGINEERS

REVISIONS

| NO. | DATE | REVISION |
|---|---|---|
| | | |

DATE: JUNE 2008
JOB NO.: 06-2-071
DESIGN BY: JDF
DRAWN BY: DWT
CHECKED BY: WAG
FILE: FIGURE 2-2.dwg

FIGURE:

2-3

- The second area is a proposed utility easement/future well maintenance access area (around the first area) that could be used as park space but would need to be left void of trees and other park features (such as playground equipment, park benches, and tables) that would limit future access to the well head. The second area (3,200 sq ft total including footprint area or 1,450 sq ft excluding the footprint area) provides access to the well for future major maintenance event, such as well rehabilitation, and would rarely be used (maybe once every 10 or 20 years).

The pump station building layout is similar to DWD's Glen Park station. Key features at the proposed well pump station site are as follows.

- **Pump Station Building.** The well and pumping facilities would be enclosed in an approximately 700 square-foot structure with double doors and a removable roof to allow access to the well head. It is anticipated that the building architecture (concrete masonry unit [CMU] walls with metal roof) would be similar to DWD's Glen Park station. The building architecture will be finalized during design with input from the City of Oakley (City) to be compatible with the overall park features. The entire developed area, including the paved access road and paved areas for maintenance vehicles and activities, would be approximately 1,750 sq ft. No fencing or walls are proposed around the building site.
- **Chemical Room.** The footprint for the Stonecreek well pump station building includes a chemical room that can accommodate both sodium hypochlorite and a manganese sequestering agent. Both chemicals are stored in 55-gallon drums, and the chemicals are directly metered (injected) into the well station piping.
- **Pump and Motor.** The well pump and motor would be installed within the building to minimize pumping noise.
- **Paved Access Area around Building.** There would be a paved area around the building for normal maintenance access and deliveries. Access would occur from Teton Road. No fencing or gate is proposed around the access area. The paving material will be determined during final design with input from the City to be compatible with the overall park features. A type of concrete paving block (solid, not with grass) may be both technically feasible and more aesthetic than asphalt.
- **Sanitary Sewer.** A sump and a sanitary sewer drain and/or drain hub would be located in the chemical room. When the Stonecreek subdivision improvements are constructed, there will be a 10-inch sewer located in Teton Road adjacent to the site. The sewer would convey flow north to the existing Ironhouse Sanitary District sewer system. Until the Stonecreek sanitary sewer system is in place, the floor will drain to a floor sump, which is the typical design, and DWD operators will pump and properly dispose of liquids that accumulate in the sump. The contents of the sump could include sodium hypochlorite and/or the manganese sequestering agent that should not be discharged to the storm sewer. The design will include provisions for connecting the chemical room drain to the sanitary sewer in Teton Road when it becomes available.

- **Storm Drain Discharge.** The station piping would be equipped with a pump control valve that allows pumped groundwater to go to a storm water inlet at well startup and well shutdown. The pump control valve functions to (1) prevent hydraulic shock or slam from well startup and shutdown; (2) provide an outlet for flushing the well for a few minutes to remove heterotrophic bacteria that may have built up while the well was off; and (3) provide flexibility for maintenance, testing, and rehabilitation activities, which often require discharging somewhere other than the system. The discharge outlet would be located upstream of the chlorine feed point because chlorinated water cannot be discharged to the storm drain system.

  To accommodate such discharges, it is anticipated that a storm drain from the pump station building would tie into a DI in Teton Road located due east of the pump station building. This DI is at the termination of the future 24-inch storm drain force main from Stonecreek subdivision into the gravity storm drain that will convey flow north. DWD would construct this DI and the missing link of gravity storm drain to the north through the future Subdivision 8994. This missing piece of storm drain (about 400 linear feet) would connect to an existing manhole in existing Subdivision 8737 in Teton Road at the future intersection with Bridalveil Way.

- **Electrical Service.** The well site would require new service from The Pacific Gas and Electric Company (PG&E). The location of the PG&E service point and meter will be determined during final design. The PG&E service options to be evaluated during final design depends on DWD's desired timing for implementation of the project and include the following options:

  - **Option 1:** Obtain power supply provided from the Stonecreek subdivision utility improvements at Teton Road adjacent to the site, assuming that 480/277 volts AC, three-phase system will be available at this location. The two other options identified below would allow the proposed project to move forward if the subdivision is delayed.
  - **Option 2:** Construct a temporary overhead line from nearest overhead power source, which is expected to be Sellers Avenue, with the temporary line run easterly through the Stonecreek property.
  - **Option 3:** Extend an underground line to site from nearest improved underground source capable of providing 480/277 volt AC, three-phase power. The specific tie-in location will be determined during design (e.g., perhaps in Subdivision 8737, located to the north on the Teton Road alignment).

## Pipeline

The proposed project would install an 18-inch-diameter polyvinyl chloride (PVC) well supply pipeline to connect the well at Stonecreek Park to the existing 18-inch well supply pipeline at Glen Park.

As shown on Figure 2-4, the well supply pipeline would extend easterly from the east side of Glen Park to the east side of the CCCFCD's Marsh Creek channel ROW, and then northerly within the ROW to the Stonecreek Park site. In Stonecreek Park, the alignment would continue along the southern boundary of the park, and then head north to the well site. The pipeline would be installed in the park behind the proposed sidewalk. DWD will obtain easements from the CCCFCD and from the City for the pipelines within the Marsh Creek ROW and the parks. No existing public streets would be affected by the construction.

The pipeline alignment on the east side of the CCCFCD channel would be in the East Bay Regional Park District's (EBRPD's) Marsh Creek Trail, a paved hiking and biking trail along the channel. Under a license agreement with the CCCFCD, EBRPD operates a hiking and biking trail on the east side of the channel. Along this part of pipeline alignment, surrounding land uses include Glen Park, suburban residences near Glen Park and west of the channel, grassland and agricultural land to the east of the channel, and the future Stonecreek Park and subdivision lands east of the channel.

A pipeline also would be extended easterly through the proposed Stonecreek subdivision in future public street rights-of-way to Sellers Avenue, as shown on Figure 2-4. This portion of the pipeline would be constructed by the developer and paid for by DWD as part of the subdivision utility improvements in the future streets of Warm Springs Court; Greenbrook Way; and the western half of Sellers Avenue adjacent to the development, which will be improved as part of the subdivision. The pipeline would be capped and not used until such time in the future that a third well is added to the system. Installing this part of the pipeline with the subdivision improvements would avoid having to go back in and cut new street pavement and would avoid future disruption of traffic and residents.

Figures 2-5a and 2-5b show representative cross sections at various locations between Glen Park and the future Stonecreek Park. There are no existing utilities along this alignment. Figure 2-6 shows representative cross sections at various locations in the Stonecreek subdivision for the extension between the Stonecreek well and Sellers Avenue. The Figure 2-6 cross sections also show the other proposed utilities that will be constructed as part of the Stonecreek subdivision.

The pipelines would be used to convey groundwater supply from the well to the blending facility and would not have laterals for service to customers. Valves would be located approximately every 1,000 feet to allow for shutoff and repair operations. Hydrants would be placed infrequently as needed for pipe flushing (water system operations). Pipeline design and construction would comply with DWD standards, which include a minimum cover of 4 feet and maximum cover of 6 feet, and perpendicular crossings of other utilities to the extent possible. If needed, air release valves would be located at high points along the pipeline.

# Future Phase 3 Facilities and Location

The Future Phase 3 would involve similar facilities as Phase 2, as follows.

- Construction of a new water supply well on the site of the future Liberty Union High School, at the southwest corner of Delta Road and Sellers Avenue.
- Construction of a pump station at the well site.
- Installation of 18-inch-diameter well supply pipeline to convey water from the new well pump station north along Sellers Avenue to the well supply pipeline at the east edge of the Stonecreek subdivision (described under Phase 2 above). As an alternative, the new pipeline would traverse west along Delta Road, and north along Marsh Creek, to connect with the Phase 2 pipeline at the Marsh Creek pipeline crossing

The proposed Phase 3 facilities addressed herein are located either within the city of Oakley or in unincorporated Contra Costa County. Figure 2-1 shows the location of the facilities.

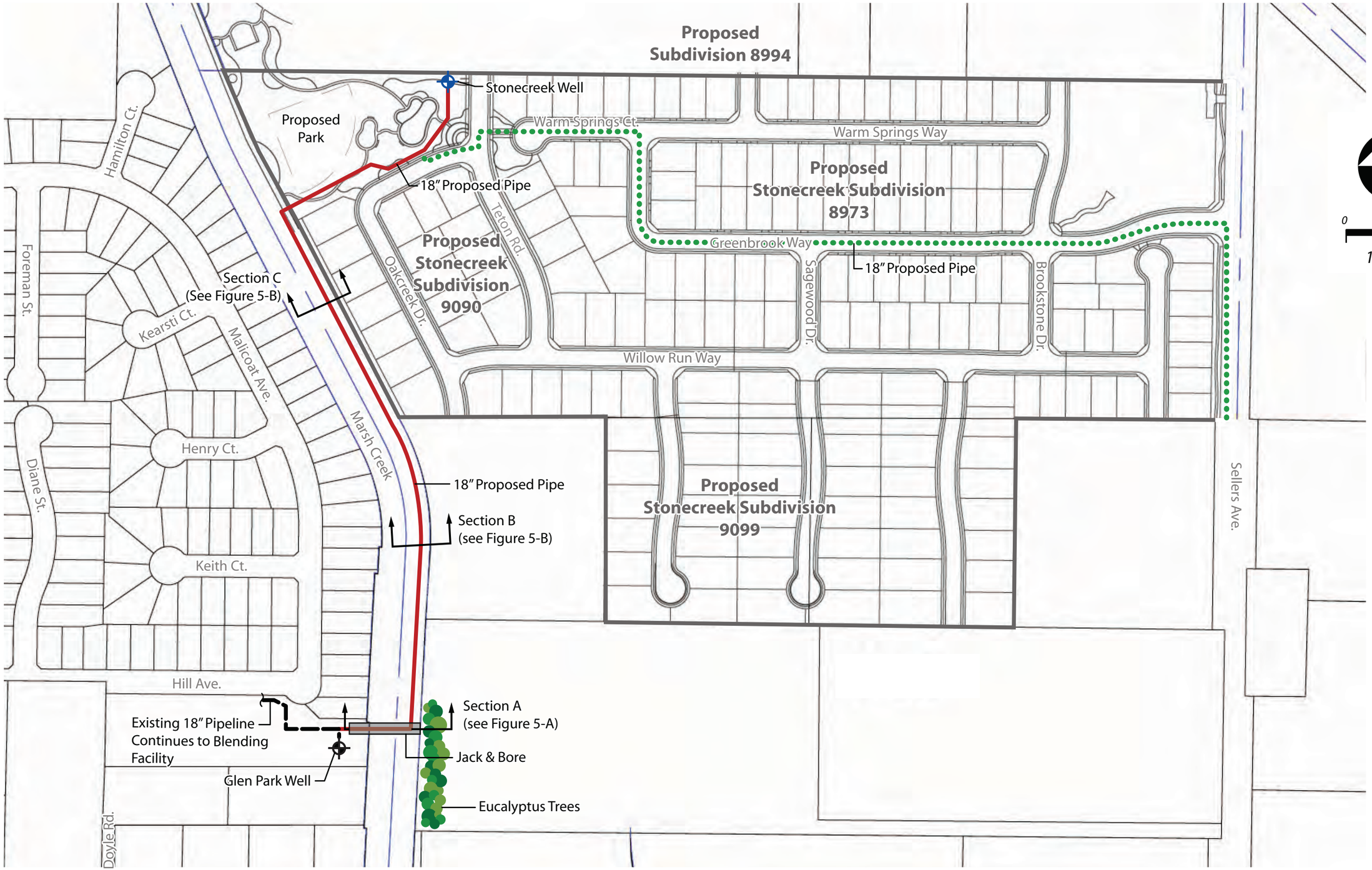
The individual project components, including well capacity, would be similar to those described for Phase 2, above. Prior to construction, a test hole and monitoring well would be installed to assess underlying hydrogeologic conditions and suitability for siting of a production well. The production well would be drilled in the vicinity of the monitoring well and test hole if conditions are found to be favorable. When the production well is constructed, testing would be performed to verify assumptions regarding pumping impacts and to select the optimal operating capacity for the future well pump station.

# Operation and Maintenance

Proposed project design is based on varying well flows during the year, depending on the hardness of the surface water supply, because of DWD's water quality objective not to exceed 140 mg/L hardness in the water supply to its customers. The wells most likely would operate near capacity during the summer months and might not operate at all during the winter periods, when the surface water from the RBWTP might exceed 140 mg/L hardness.

The wells would operate at higher flow rates to meet peak needs during the higher demand summer months. During lower demand periods, the amount of groundwater pumping would be less in order to maintain the target ratio of groundwater to surface water (1 part groundwater to 4 parts surface water). The actual pumping rate would depend on the level of customer demand.

The maximum amount of groundwater that could be used during the peak summer demand period would be up to 2 mgd with only the Glen Park well and about 3 to 4 mgd with both the Glen Park well and the Stonecreek well. When a




CDM

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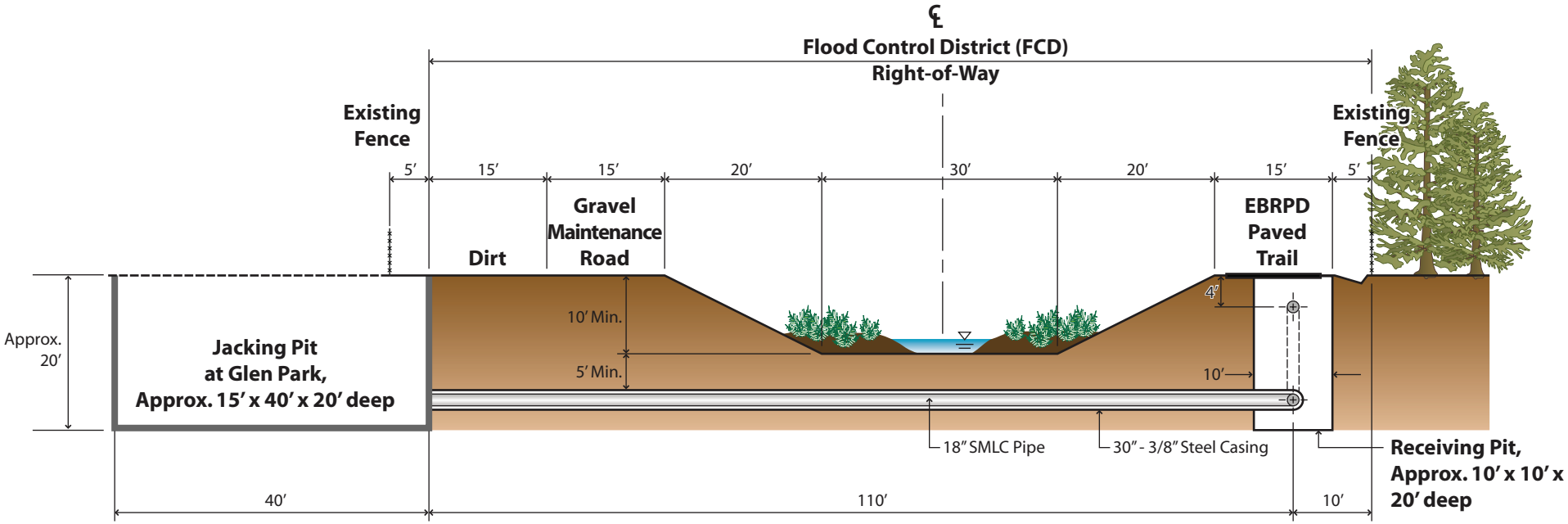
**Figure 2-4**
Pipe Alignment




**Section A**
Glen Park/Marsh Creek Crossing

Horizontal and Vertical

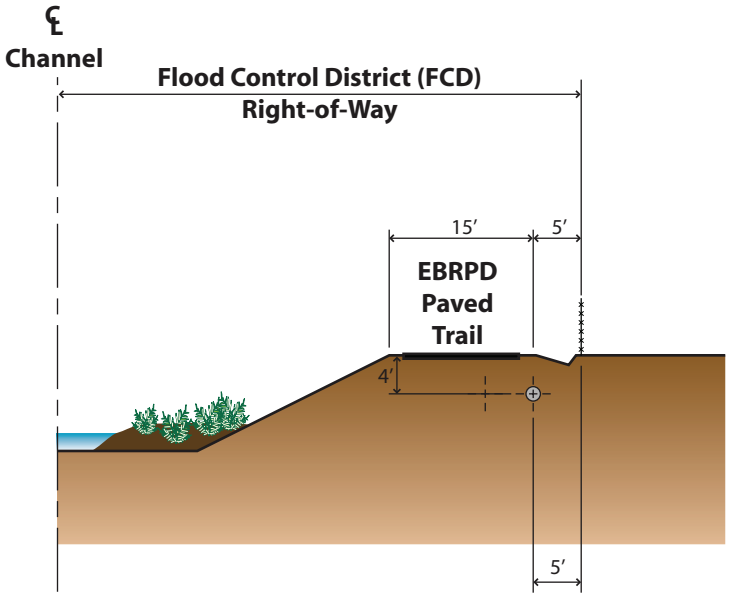
0 10 20

1″=20′

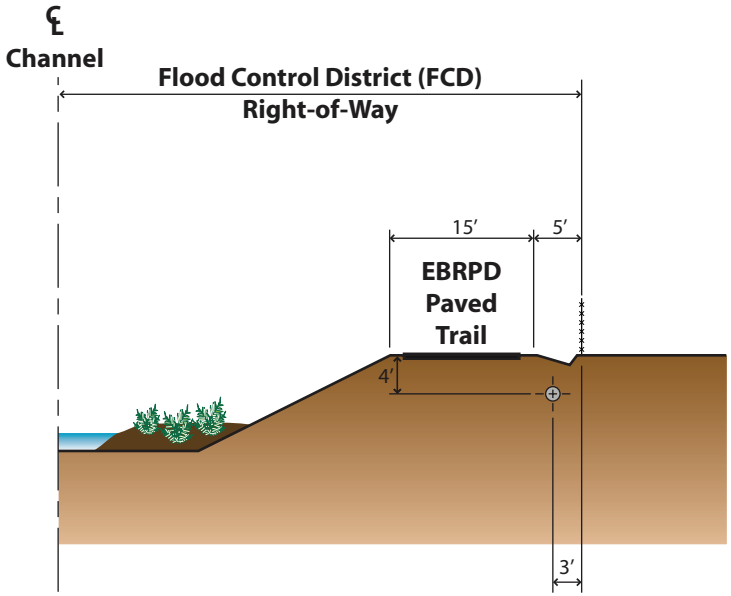
W:\REPORTS\DWD\Second Well_Stonecreek_07\Stonecreek Pipeline X sec at Channel Cross Fig 5-A.ai 11/09/07 JJT

CDM

**Figure 2-5a**
Stonecreek Pipeline - Cross Section at Channel Crossing




**Section B**
Mid Reach Crossing




**Section C**
Near Stonecreek Park

Horizontal and Vertical

0 10 20

1"=20′

W:\REPORTS\DWD\Second Well_Stonecreek_07\Stonecreek Pipeline Typ X Sec Fig 5-B.ai 11/07/07 JJT

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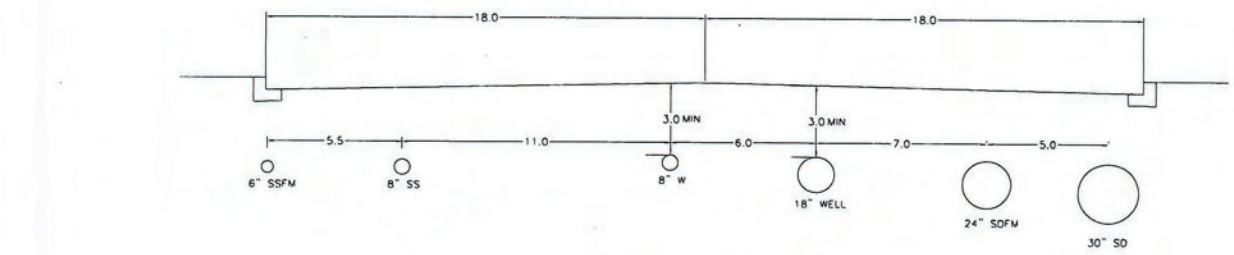
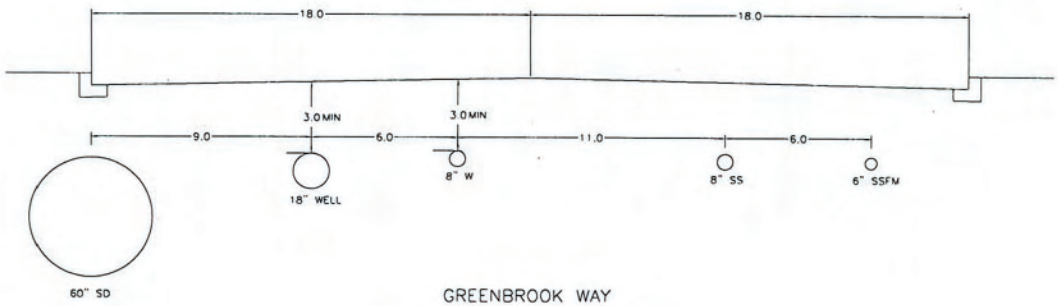
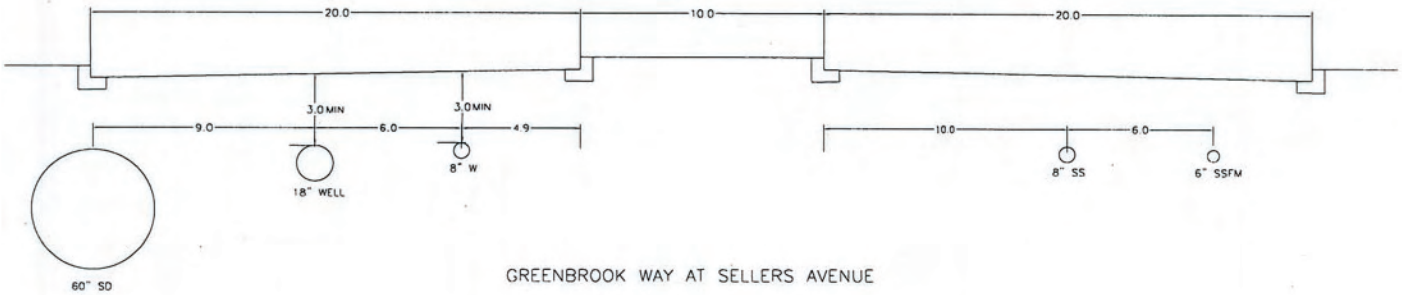
**Figure 2-5b**
Stonecreek Pipeline - Typical Cross Sections
Between Channel Crossing and Stonecreek Park




WARM SPRINGS COURT




GREENBROOK WAY




GREENBROOK WAY AT SELLERS AVENUE

**Figure 2-6**
Pipe Sections in 8973

third well is implemented, the maximum capacity during high demand periods is anticipated to increase to 4 to 5 mgd with all three wells operating.

The maximum pumping rates would occur only during the higher demand periods of the year, with lower pumping rates occurring during periods of lower demand and/or higher hardness surface water. There may be some times during the year when no groundwater is used because of high hardness surface water, which would prevent meeting the hardness target for the blended water supply.

The annual average pumping rate (average daily pumping rate over the entire year) is controlled by varying well flows over the year to meet the water quality objectives. The pumping rate is anticipated to be about 20% of the total annual average demand. Currently average day demand is about 5 mgd, with average annual groundwater supply of about 1 mgd. When average day demands increase to 10 to 12.5 mgd, average annual groundwater pumping would be about 2 to 2.5 mgd, with a maximum pumping rate of 4 to 5 mgd during peak summer periods with all three wells operating. At buildout of DWD's service area, groundwater supply potentially may provide about 3.5 mgd on an average annual basis, with a maximum pumping rate up to 7 mgd during summer peak periods, if additional wells are constructed in future phases.

Routine maintenance would consist of daily checks of the well site when operating, weekly inspection and calibration of chemical feed pumps and equipment at the well site, monthly checking of chemicals at the well site, chemical deliveries as needed at the well site, and repairs as needed at the well site and pipeline.

# Construction Schedule and Methods

## Schedule

Construction of Phase 2 is expected to begin in summer/fall 2009. The exact timing for construction of Phase 3 has not been determined at this time but is expected to occur sometime between 2012 and 2014. It is anticipated that construction of each well would take about 2 months. The wells would be constructed prior to the pump stations. Construction of the Phase 2 well pump station and pipeline between Glen Park and Stonecreek well site would be concurrent and would last about 6 months. Construction of the Phase 3 well pump station and pipeline would be of a similar duration.

Under Phase 2, the portion of the pipeline between Stonecreek Park and Sellers Avenue would be constructed when the developer constructs the Stonecreek subdivision improvements. The timing for these improvements will be determined by the development schedule.

Anticipated construction methods are discussed below.

## Well Construction

Drilling, construction, and testing of each production well would last for 2 to 3 weeks. The well drilling phase must be conducted continuously until completed to protect the integrity of the borehole. Based on the expected well depth of up to approximately 300 feet, a continuous drilling phase of 3 to 4 days and nights is anticipated as part of the project. Drilling noise will be controlled using sound barriers to avoid disturbing nearby residential development.

The wells would be constructed using standard drilling equipment. Power would be supplied by a trailer-mounted diesel generator. Cuttings and spoils from the borehole would be evaluated and spread at the site or removed to a repository that accepts drilling fluids and cuttings. Well construction operations would also use compressors, generators, supply trucks to deliver materials, and a loader and dump truck for handling cuttings and fluids.

## Pump Station Building Construction

The proposed pump station buildings would be constructed by conventional methods. During construction, ready-mix trucks would deliver concrete for the foundations to the sites; backhoes, graders, compactors, and bulldozers would be used for earthmoving; and supply trucks would deliver materials and equipment used in the construction process. Additional equipment likely to be used includes welding machines, air compressors, and various air- and electric-powered hand tools.

The well and pump station sites are relatively flat and would require minimal grading. In the case of Phase 2, rough grading has been done as part of the overall Stonecreek subdivision improvements.

## Pipeline Construction

The pipeline would be constructed by bore and jack methods from Glen Park to the eastern side of the CCCFCD ROW. The bore and jack method requires the use of a horizontal boring machine or auger to drill a hole, and a hydraulic jack to push a casing through the hole under the crossing. As the boring proceeds, a steel casing pipe is jacked into the hole and the pipeline is installed in the casing.

For the bore and jack crossing of Marsh Creek, a 30-inch casing would contain the 18-inch well supply pipeline. The larger jacking pit (approximately 10 to 15 feet wide and 35 to 40 feet long) would be located in Glen Park on the east side of the well pump station building. The smaller receiving pit (approximately 10 feet wide and 10 feet long) would be located on the east side of the channel.

The remaining pipeline installation between Glen Park and the Stonecreek well site, as well as the future Phase 3 pipeline, would use standard open-cut trenching techniques, using speed shoring or trench box bracing as needed for the specific

site conditions. The pipeline trench would be approximately 4 feet wide and 6 feet deep. There would typically be active work areas of about 5 feet on one side of the trench and 10 to 12 feet on the other side for access by trucks and loaders, requiring a 20- to 30-foot-wide construction easement. The fence along the east side of the CCCFCD ROW would be removed during construction to allow access, and replaced upon completion of construction.

Construction equipment would include backhoes, front-end loaders, dump trucks, flat-bed delivery trucks, a crane, and compactors. It is anticipated that soil removed from the pits and pipeline trench would be stockpiled and reused. If existing soil is not appropriate for backfilling, it would be hauled away by dump truck, and new material would be imported.

The developer would construct the portion of the pipeline between the Stonecreek well site and Sellers Avenue as part of Stonecreek subdivision utilities, such as water, sewer, storm drain, electric, and other services. Construction of these improvements would be consistent with the approved subdivision improvement plans and would be installed prior to the street improvements (pavement, curb and gutter, sidewalks).

## Required Permits and Approvals

The following permits and approvals would be required for the well, pump station, and pipeline construction:

- City Encroachment Permit for construction in public rights-of-way (Glen Park, Stonecreek Park);
- Contra Costa County Department of Health Services permit for well construction;
- California Department of Health Services review and approval of Drinking Water Source Assessment and Protection Program documentation, and amendment to DWD's operating permit for the water distribution system;
- CCCFCD Encroachment Permit for construction in the Marsh Creek channel ROW;
- EBRPD Encroachment Permit for construction in the Marsh Creek Trail; and
- permit/approval for discharge to the city storm drain system from the City and/or Central Valley Regional Water Quality Control Board (CVRWQCB).

# Environmental Commitments

As part of the project planning process, DWD will incorporate certain environmental commitments and best management practices (BMPs) into the proposed project to avoid or minimize potential impacts. These requirements will be included as part of the project specifications for the Contractor to incorporate as part of the project construction. DWD and the appropriate county

agencies also will coordinate planning, engineering, and design phases of the proposed project. Because the environmental commitments have been incorporated into the proposed project by DWD, they will not be restated in the impact analysis sections but instead will be incorporated by reference.

## Standard Design Features and Construction Practices

DWD determined the following types of commitments to be potentially feasible and implementable measures to reduce or mitigate certain short-term, construction-related effects. These measures would be implemented at a site-specific level, as appropriate, depending on the location of construction and surrounding land uses. The identified measures include the following.

- Stopping work immediately if a conflict with a utility facility occurs and contacting the affected utility to (1) notify it of the conflict, (2) aid in coordinating repairs to the utility, and (3) coordinate to avoid further conflicts in the field.
- Constructing structures in accordance with Uniform Building Code and County General Plan Standards to resist seismic effects and to meet the implementation standards outlined in the Contra Costa County general plan.

## Access Point/Staging Areas

DWD will establish staging areas for equipment storage and maintenance, construction materials, fuels, lubricants, solvents, and other possible contaminants in coordination with the construction contractor. Practices and procedures for construction activities along city and county streets will be consistent with the policies of the affected local jurisdiction.

Staging areas will have a stabilized entrance and exit and will be located at least 100 feet from bodies of water. If an off-road site is chosen, the selected site will be surveyed by qualified biological and cultural resources personnel to verify that no sensitive resources are located on the site that would be disturbed by staging activities. If sensitive resources are found, an appropriate buffer zone will be staked and flagged to avoid impacts. If impacts on sensitive resources cannot be avoided, the site will not be used. No equipment refueling or fuel storage will take place within 100 feet of a water body.

For areas where construction activities do not occur in the road ROW, the biological and cultural resources personnel will determine whether the selected staging area meets the criteria identified above and whether additional environmental clearance is required for the site. If sensitive resources are identified on the site that cannot be protected by environmental commitments for similar resources, an alternate site will be selected.

# Stormwater Pollution Prevention Plan

A stormwater pollution prevention plan (SWPPP) will be developed by a qualified engineer or erosion control specialist and implemented prior to construction. The objectives of the SWPPP will be to (1) identify pollutant sources that may affect the quality of stormwater associated with construction activity, and (2) identify, construct, and implement stormwater pollution prevention measures to reduce pollutants in stormwater discharges during and after construction. DWD and/or its contractor(s) will develop and implement a spill prevention and control program as part of the SWPPP to minimize effects from spills of hazardous, toxic, or petroleum substances during construction of the proposed project. The program will be a component of the SWPPP, which will be completed before any construction activities begin. Implementation of this measure would comply with state and federal water quality regulations. The SWPPP will be kept on site during construction activity and will be made available upon request to representatives of the RWQCB. The SWPPP will include but is not limited to the following items:

- a description of potential pollutants to stormwater from erosion;
- management of dredged sediments and hazardous materials present on site during construction (including vehicle and equipment fuels); and
- details of how sediment and erosion control practices will comply with state and federal water quality regulations.

# Traffic Control Plan

In coordination with affected jurisdictions, DWD will develop and implement a traffic control plan, which will include an emergency access plan to reduce construction-related effects on the local roadway systems and to avoid hazardous traffic and circulation patterns during the construction period. All construction activities will follow the standard construction specifications and procedures of these jurisdictions.

The traffic control plan will include an emergency access plan that provides for access in and adjacent to the construction zone for emergency vehicles. The emergency access plan, which requires coordination with emergency service providers before construction, will require effective traffic direction, substantially reducing the potential for disruptions to response routes.

The traffic control plan will include, but not be limited to, the following actions.

- Coordinate with the affected jurisdictions on construction hours of operation.
- Follow guidelines of the local jurisdiction for road closures caused by construction activities.
- Provide alternate routes for bicyclists and pedestrians in the event of interference or damage to existing bike lanes.

- Limit total construction trips per day at each project location to 40 trips or fewer.
- Install traffic control devices as specified in Caltrans' Manual of Traffic Controls for Construction and Maintenance Works Zones.
- Provide notification of road closures in the immediate vicinity of the open trenches in the construction zone.
- Provide access to driveways and private roads outside the immediate construction zone.
- Provide alternate routes for bicyclists and pedestrians during sidewalk, bike lane, and recreation trail closures.
- Provide notification to the public of temporary closures of sidewalks, bike lanes, and recreation trails.
- Consult with emergency service providers and develop an emergency access plan for emergency vehicles access in and adjacent to the construction zone, substantially reducing the potential for disruptions to response routes.

## Dust Suppression Plan or Fugitive PM10 Management Plan

Fugitive dust is a major contributor to total particulate matter 10 microns in diameter or less (PM10) emissions within the Bay Area Air Quality Management District (BAAQMD). DWD will implement a Fugitive PM10 Management Plan (FPMP). The purpose of an FPMP is to achieve a PM10 control efficiency of 50%.

The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

- applying water on haul roads;
- wetting equipment and excavation faces;
- spraying water on buckets during excavation and dumping;
- hauling materials in properly tarped or watertight containers;
- restricting vehicle speeds to 10 miles per hour (mph);
- covering excavated areas and material after excavation activity ceases;
- reducing the excavation size and/or number of excavations;
- employing additional dust suppression techniques if dust is observed leaving the work site;
- monitoring particulates using real-time particulate monitors and monitoring PM10;
- implementing quality assurance/quality control plans to ensure the validity of the fugitive dust measurements, including periodic instrument calibration,

operator training, daily instrument performance (span) checks, and a record keeping plan; and

- notifying the Division of Air Resources in writing within 5 working days if the action level of 150 micrograms per cubic meter ($\mu g/m^3$) is exceeded; the notification will include a description of the control measures implemented to prevent further exceedances.

If dust suppression techniques used at the site do not lower particulates to an acceptable level (i.e., below 150 $\mu g/m^3$ and no visible dust), work will be suspended until appropriate corrective measures are approved to remedy the situation.

# Fire Control Plan

DWD will develop and implement a fire management plan in consultation with the appropriate fire suppression agencies to verify that the necessary fire prevention and response methods are included in the plan. The plan will include fire precaution, presuppression, and suppression measures consistent with the policies and standards in the affected jurisdictions.

# Spill Prevention, Control and Counter Measure Plan

DWD or its contractor will develop and implement a spill prevention, control, and countermeasure plan (SPCCP) to minimize the potential for and effects from spills of hazardous, toxic, or petroleum substances during construction and operation activities. The SPCCP will be completed before any construction activities begin. Implementation of this measure will comply with state and federal water quality regulations.

DWD will review and approve the SPCCP before onset of construction activities. DWD will routinely inspect the construction area to verify that the measures specified in the SPCCP are properly implemented and maintained. DWD will notify its contractors immediately if there is a noncompliance issue and will require compliance.

The federal reportable spill quantity for petroleum products, as defined in *40 CFR 110*, is any oil spill that:

- violates applicable water quality standards,
- causes a film or sheen on or discoloration of the water surface or adjoining shoreline, or
- causes a sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines.

If a spill is reportable, the contractor's superintendent will notify DWD, and DWD will take action to contact the appropriate safety and clean-up crews to

ensure that the SPCCP is followed. A written description of reportable releases must be submitted to the Central Valley RWQCB. This submittal must contain a description of the release, including the type of material and an estimate of the amount spilled, the date of the release, an explanation of why the spill occurred, and a description of the steps taken to prevent and control future releases. The releases would be documented on a spill report form.

Chapter 3

# Hydrology, Hydrogeology, Water Quality, and Water Supply

This chapter examines the potential impacts of the proposed project related to hydrology, hydrogeology, water quality, and water supply. The aspects of water resources that are specifically analyzed are surface water hydrology and flooding, groundwater hydrology, surface water quality, groundwater quality and water supply.

## Regulatory Setting

### Federal

#### Clean Water Act

The Clean Water Act (CWA) is the primary federal law that protects the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. Passed in 1972, it operates on the principle that any discharge of pollutants into the nation's waters is prohibited unless specifically authorized by a permit; permit review is the CWA's primary regulatory tool. The following paragraphs provide additional details on specific sections of the CWA.

The CWA requires National Pollutant Discharge Elimination System (NPDES) permits for discharge of pollutants from any point source into *waters of the United States*, which includes oceans, bays, rivers, streams, lakes, ponds, and wetlands. In 1987, the CWA was amended to require that the U.S. Environmental Protection Agency (EPA) establish regulations for permitting under the NPDES permit program of municipal and industrial stormwater discharges. EPA published final regulations regarding stormwater discharges on November 16, 1990. The regulations require that municipal separate storm sewer system (MS4) discharges to surface waters be regulated by a NPDES permit.

In addition, CWA requires the states to adopt water quality standards for water bodies and have those standards approved by the EPA. Water quality standards consist of designated beneficial uses (e.g., wildlife habitat, agricultural supply, fishing, etc.) for a particular water body, along with water quality criteria necessary to support those uses. Water quality criteria are prescribed concentrations or levels of constituents—such as lead, suspended sediment, and

fecal coliform bacteria—or narrative statements that represent the quality of water that supports a particular use. Because California has not established a complete list of acceptable water quality criteria, the EPA established numeric water quality criteria for certain toxic constituents in the form of the California Toxics Rule (*40 CFR 131.38*).

Water bodies not meeting water quality standards are deemed "impaired" and, under CWA Section 303(d), are placed on a list of impaired waters for which a total maximum daily load (TMDL) must be developed for the impairing pollutant(s). A TMDL is an estimate of the total load of pollutants from point, nonpoint, and natural sources that a water body may receive without exceeding applicable water quality standards (with a "factor of safety" included). Once established, the TMDL is allocated among current and future pollutant sources to the water body.

Marsh Creek is listed on the CWA Section 303(d) List as being impaired for mercury and metals. Resource extraction is suspected as being the potential source of the impairments.

## CWA Permits for Discharge to Surface Waters

Section 402 of the CWA regulates discharges to surface waters through the NPDES program, administered by the EPA. In California, the California State Water Resources Control Board (State Water Board) is authorized by the EPA to oversee the NPDES program through the nine Regional Water Quality Control Boards (RWQCBs) (see related discussion under *Porter-Cologne Water Quality Control Act* below). The NPDES program provides for both general permits (those that cover a number of similar or related activities) and individual permits.

### Construction Activities

Most construction projects that disturb 1 acre of land or more are required to obtain coverage under the NPDES General Permit for Construction Activities (General Construction Permit), which requires the property owner to file a Notice of Intent (NOI) to discharge stormwater and to prepare and implement a SWPPP. The SWPPP includes a site map and a description of proposed construction activities, along with demonstration of compliance with relevant local ordinances and regulations. The SWPPP must also describe the project specific BMPs that will be implemented to prevent or reduce the discharge of construction-related pollutants, including sediments, into stormwater runoff and surface drainage. Permittees are required to conduct monitoring and reporting to ensure that BMPs are correctly implemented and effective in controlling the discharge of construction-related pollutants into stormwater runoff.

Combined, the Phase II and future Phase III will be greater than 1 acre and will need to obtain coverage under the NPDES General Construction Permit.

### Dewatering Activities and Discharges

On June 18, 2002 the Central Valley RWQCB adopted Order Number 5-00-175, NPDES Permit Number CAG995001 (General Dewatering Permit). This general NPDES permit covers the discharge to waters of the United States of clean or relatively pollutant-free wastewater that poses little or no threat to water quality. The following categories are covered by this order: well development water; construction dewatering; pump/well testing; pipeline/tank pressure testing; pipeline/tank flushing or dewatering; condensate discharges; water supply system discharges; miscellaneous dewatering/low threat discharges.

DWD will need to obtain a General Dewatering Permit for the proposed project during the jack and boring construction under Marsh Creek and for the well discharge during construction. The construction discharge is expected to last 2 to 3 days and will discharge an average of 100,000 to 200,000 gallons per day. As a result, an NPDES Low Threat Discharge and Dewatering Permit will need to be obtained for this discharge.

## Municipal Separate Storm Sewer System Permit

MS4s are any conveyance or system of conveyances that are owned or operated by a state or local government entity and are designed for collecting and conveying stormwater that is not part of a publicly owned treatment works (i.e., not a combined sewer). MS4 regulations apply to MS4s serving populations of 100,000 or more, although some MS4s with populations under 100,000 can be designated for permit coverage.

The RWQCBs issue MS4 permits that regulate stormwater discharges in the vicinity and downstream of the proposed project area. Such permits regulate stormwater discharges in the project area. They are required to establish controls to the maximum extent practicable and effectively prohibit nonstormwater discharges to the MS4. The MS4 permits detail requirements for new development and significant redevelopment projects and include specific sizing criteria for treatment BMPs.

The Contra Costa MS4 Permit No. CA0029912, Order No. 99-058 Provision A.1 exempts certain discharges in the county. Under Order 99-058 the State Water Board considers potable water discharges of less than 20,000 gallons as exempt non-stormwater discharges. Also under Order No. 99-058, potable water discharges of greater than 20,000 gallons are considered exempt if the following conditions are met:

1. Discharger (e.g., water district, fire district, municipality (if they are a water purveyor) shall notify the Water Board and municipality of planned discharge activities that exceed 20,000 gallons at least two weeks before the discharge.
2. The discharge must comply with all local municipal codes and agencies' requirements.

3. The discharger shall submit a non-stormwater discharge control plan to the Water Board, local municipality, and Contra Costa Clean Water Program for review at least two weeks in advance of discharge.
4. The discharge control plan shall include the following information:
    a. Exact location of discharge into stream.
    b. Map showing discharge path to creek.
    c. Discharge rate.
    d. Duration of the discharge and the total anticipated volume.
    e. Description of BMPs to prevent and monitor erosion along the discharge path and at the discharge point.
    f. Description of BMPs for dechlorination.
    g. Monitoring protocols for pH and chlorine residual testing.
5. The discharger shall submit a report regarding the discharge activities to the Water Board, local municipality, and Contra Costa Clean Water Program within 5 days of the end of the discharge. The report shall include:
    a. Summary of the discharge rate, duration, and total volume.
    b. Before and after photographs at the discharge point.
    c. Results of chlorine residual, pH, and erosion monitoring during the discharge.
    d. Verification that the discharge was consistent with the discharge control plan.
6. The Water Board will delegate the oversight and enforcement of requirements to the local municipality should they elect this option.

During operation, the proposed project will discharge no more than 10,000 gallons of well water through the City of Oakley's storm drain system into Marsh Creek and will comply with the discharge requirements contained in the Contra Costa County MS4 Permit.

## Clean Water Act Water Quality Certification

Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification from the state in which the discharge would originate, or, if appropriate, from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge would originate. Therefore, all projects that have a federal component and may affect the quality of the state's waters (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with CWA Section 401. Section 401 certification or waiver is under the jurisdiction of the Central Valley RWQCB.

Phase II and the future Phase III would not need to obtain water quality certification under Section 401 because there will be no discharging of fill material into waters of the United States.

### Safe Drinking Water Act

The 1986 federal Safe Drinking Water Act requires each state to develop a wellhead protection plan to describe how areas around wells will be protected from potential contamination. A major element of a wellhead protection program is the determination of protection zones around public supply wellheads. Within these zones, potential protection measures could include limitations on land uses to preclude industrial or agricultural uses with the potential to result in spills of chemicals or overuse of fertilizers and other chemicals.

### Federal Flood Insurance Program

Congress responded to increasing costs of disaster relief by passing the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. These acts reduce the need for large publicly funded flood control structures and disaster relief by restricting development on floodplains. The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program and issues Flood Insurance Rate Maps for communities participating in the program. These maps delineate flood hazard zones in the community.

## State

### Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act provides the statutory authority for the State Water Board and the RWQCBs to regulate water quality and was amended in 1972 to extend the federal CWA authority to these agencies (see *Clean Water Act* above). Porter-Cologne established the State Water Board and divided the state into nine regions, each overseen by a RWQCB. The State Water Board is the primary state agency responsible for protecting the quality of the State's surface and groundwater supplies, but much of the daily implementation of water quality regulations is carried out by the nine geographically separated RWQCBs.

### Basin Plan

The Porter-Cologne Water Quality Control Act provides for the development and periodic review of water quality control plans (also known as basin plans). The

October 2007 Central Valley RWQCB Basin Plan for Marsh Creek (Central Valley Regional Water Quality Control Board 2007) designates beneficial uses and water quality objectives for water bodies in the region. Specific objectives are provided for the larger water bodies within the region as well as general objectives for ocean waters, bays and estuaries, inland surface waters, and groundwaters. In general, narrative objectives require that degradation of water quality not occur because of increases in pollutant loads that will impact the beneficial uses of a water body. Water quality criteria apply within receiving waters and do not apply directly to runoff; therefore, water quality criteria from the Central Valley RWQCB Basin Plan are used as benchmarks for comparison in the quantitative assessments and are also examined in the qualitative assessments in the discussion of project impacts below. Basin plans are primarily implemented by using the NPDES permitting system to regulate waste discharges so that water quality objectives are met.

Marsh Creek is the receiving water for the Phase II and future Phase III wells. The Central Valley RWQCB Basin Plan lists beneficial uses of major water bodies within this region, including Marsh Creek.

## California Department of Public Health

The Drinking Water Program of the California Department of Public Health (DPH) regulates public water systems; oversees water recycling projects; permits water treatment devices; certifies drinking water treatment and distribution operators; supports and promotes water system security; provides support for small water systems and for improving technical, managerial, and financial (TMF) capacity; and provides funding opportunities for water system improvements.

Phase II and the future Phase III wells will be in compliance with DPH drinking water regulations.

## California Fish and Game Code Sections 1600–1616 (Lake- or Streambed Alteration Agreement Program)

Under Sections 1600–1616 of the California Fish and Game Code, the California Department of Fish and Game (DFG) regulates projects that affect the flow, channel, or banks of rivers, streams, and lakes. Section 1602 requires public agencies and private individuals to notify and enter into a streambed or lakebed alteration agreement with DFG before beginning construction of a project that will:

- divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake; or
- use materials from a streambed.

Section 1602 contains addition prohibitions against the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake.

Sections 1601–1607 may apply to any work undertaken within the 100-year floodplain of any body of water or its tributaries, including intermittent stream channels. In general, however, it is construed as applying to work within the active floodplain and/or associated riparian habitat of a wash, stream, or lake that provides benefit to fish and wildlife. Sections 1601–1607 typically do not apply to drainages that lack a defined bed and banks, such as swales, or to very small bodies of water and wetlands such as vernal pools.

# Local

## Contra Costa Water District

DWD receives surface water delivers from CCWD and blends the surface water with groundwater at the RBWTP. For surface water deliveries, CCWD complies with federal and state water quality regulations.

## Ironhouse Sanitary District

Ironhouse Sanitary District (ISD) is the local agency responsible for wastewater treatment in the area. Current and future development that will use water deliveries from DWD will discharge wastewater into the ISD system for treatment and ultimately be delivered to the San Joaquin River.

## City of Oakley General Plan

The *City of Oakley 2020 General Plan* contains policies and goals that pertain to water resources within the Growth Management Element (City of Oakley 2002). The following goals and policies pertain to water services in the City of Oakley:

### Water Services Goal

**4.8** Assure the provision of potable water availability in quantities sufficient to serve existing and future residents.

### Water Services Policies

**4.8.1** Coordinate future development with all water agencies to ensure facilities are available for proper water supply.

**4.8.2** Encourage the development of locally controlled supplies to meet the growth needs of the City.

**4.8.3** Encourage the conservation of water resources throughout the City.

**4.8.4** Ensure that new development pays the costs related to the need for increased water system capacity.

**4.8.5** Ensure that water service systems be required to meet regulatory standards for water delivery, water storage, and emergency water supplies.

**4.8.6** Encourage water service agencies to establish service boundaries and to develop supplies and facilities to meet future water needs based on the growth policies in the General Plan.

**4.8.7** Encourage urban development within the existing water district Spheres of Influence adopted by the Local Agency Formation Commission; expansion into new areas within the Urban Limit Line beyond the Spheres should be restricted to those areas where urban development can meet all growth management standards included in this General Plan.

**4.8.8** Discourage the development of rural residences or other uses that will be served by well water or an underground domestic water supply, if a high nitrate concentration is found following County Health Services Department testing.

**4.8.9** Encourage rural residences currently served by well water or an underground domestic water supply, to connect to municipal water service when it becomes available. Upon connection to municipal water service, any water well(s) may be maintained for irrigation purposes only.

**4.8.10** Identify and develop opportunities, in cooperation with water service agencies, for use of nonpotable water, including ground water, reclaimed water, and untreated surface water, for other than domestic use.

**4.8.11** Identify, monitor, and regulate land uses and activities that could result in contamination of groundwater supplies to minimize the risk of such contamination.

**4.8.12** Reduce the need for water system improvements by encouraging new development to incorporate water conservation measures to decrease peak water use.

**4.8.13** Encourage the use of reclaimed water as a supplement to existing water supplies.

**4.8.14** All proposals for development, including requests for building permits, within 1,000 feet of the Contra Costa Canal property line shall be referred to Contra Costa Water District for comment to ascertain the District's standards for the proposed development project.

### Water Services Programs

**4.8.A** At the project approval stage, the City shall require new development to demonstrate that adequate water quantity and quality can be provided. The City shall determine whether 1) capacity exists within the water system if a development project is built within a set period of time, or 2) capacity will be provided by a funded program or other mechanism. This finding will be based on information furnished or made available to the City from consultations with the appropriate water agency, the applicant, or other sources.

**4.8.B** Encourage water service agencies to meet all regulatory standards for water quality prior to approval of any new connections to that agency.

**4.8.C** Cooperate with other regulatory agencies to control point and non-point water pollution sources to protect adopted beneficial uses of water.

**4.8.D** Encourage water serving agencies to prepare written drought contingency plans and hold public hearings on these plans. These plans should identify the size of needed drought capacity reserves. In requests for capacity verification for new development, the City shall require that the serving agency exclude these reserves from its operating capacities for the purpose of the verification.

## Contra Costa County General Plan

The *Contra Costa County General Plan* contains goals and policies that are applicable to hydrology and water quality include the following (Contra Costa County 2005).

### Drainage and Flood Control Goals

**7-O** To protect and enhance the natural resources associated with creeks and the Delta, and their riparian zones, without jeopardizing the public health, safety, and welfare.

**7-P** To protect creeks and riparian zones identified as valuable from damage caused by nearby development activity.

### Drainage and Flood Control Policies

**7-38** Watershed management plans shall be developed which encourage the development of detention basins and erosion control structures in watershed areas to reduce peak stormwater flows, as well as to provide wildlife habitat enhancement.

**7-39** Land use plans and zoning shall be the primary means for flood plain management in preference to structural improvements, where possible.

**7-56** All residential and non-residential uses proposed in areas of special flood hazards, as shown on FEMA maps, shall conform to the requirements of County Floodplain management applied to all ordinances, approved entitlements (land use permits, tentative, final, and parcel maps, development plan permits, and variances) and ministerial permits (buildings and grading permits).

## Water Resources Goals

**8-T** To conserve, enhance and manage water resources, protect their quality, and assure an adequate long-term supply of water for domestic, fishing, industrial and agricultural use.

**8-U** To maintain the ecology and hydrology of creeks and streams and provide an amenity to the public, while at the same time preventing flooding, erosion and danger to life and property.

**8-V** To preserve and restore remaining natural waterways in the county which have been identified as important and irreplaceable natural resources.

**8-W** To employ alternative drainage system improvements which rely on increased retention capacity to lessen or eliminate the need for structural modifications to watercourses, whenever economically possible.

**8-X** To enhance opportunities for public accessibility and recreational use of creeks, streams, drainage channels and other drainage system improvements.

## Water Resources Policies

**8-74** Preserve watersheds and groundwater recharge areas by avoiding the placement of potential pollution sources in areas with high percolation rates.

**8-75** Preserve and enhance the quality of surface and groundwater resources.

**8-76** Ensure that land uses in rural areas be consistent with the availability of groundwater resources.

**8-77** Provide development standards in recharge areas to maintain and protect the quality of groundwater supplies.

## Flood Hazard Goals

**10-G** To ensure public safety by directing development away from areas which may pose a risk to life from flooding, and to mitigate flood risks to property.

**10-H** To mitigate the risk of flooding and hazards to life, health, structures, transportation and utilities due to subsidence, especially in the San Joaquin–Sacramento Delta area.

## Flood Hazard Policies

**10-34** In mainland areas affected by creeks, development within the 100-year flood plain shall be limited until a flood management plan can be adopted, which may include regional and local facilities if needed. The riparian habitat shall be protected by providing a cross section of channel suitable to carry the 100-year flow. Flood management shall be accomplished within the guidelines contained in the Open Space/Conservation Element.

**10-35** In mainland areas along the rivers and bays affected by water backing up into the watercourse, it shall be demonstrated prior to development that adequate protection exists either through levee protection or change of elevation.

**10-37** A uniform set of flood damage prevention standards should be established by the cooperative efforts of all County, State, and federal agencies with responsibilities for flood control works and development in flood-prone areas in the County.

**10-38** Flood-proofing of structures shall be required in any area subject to flooding; this shall occur both adjacent to watercourses as well as in the Delta or along the waterfront.

**10-40** Planning Agency and Flood Control District review of any significant project proposed for areas in the County which are not presently in Flood Zones shall include an evaluation of the potential downstream flood damages which may result from the project.

## General Flood Hazard Policies

**10-41** Buildings in urban development near the shoreline and in flood-prone areas shall be protected from flood dangers, including consideration of rising sea levels caused by the greenhouse effect.

**10-42** Habitable areas of structures near the shore line and in flood-prone areas shall be sited above the highest water level expected during the life of the project, or shall be protected for the expected life of the project by levees of an adequate design.

**10-43** Rights–of-way for levees protecting inland areas from tidal flooding shall be sufficiently wide on the upland side to allow for future levee widening to support additional levee height.

**10-44** The County shall review flooding policies in the General Plan on an annual basis, in order to incorporate any new scientific findings regarding project sea level rise due to the greenhouse effect.

**10-45** The County shall review flooding policies as they relate to properties designated by FEMA as within both the 100- and the 500-year floodplains.

### Policies Regarding Flooding Attributable to Levee or Dam Failure, or Tsunami

**10-51** In order to protect lives and property, intensive urban and suburban development shall not be permitted in reclaimed areas unless flood protection in such areas is constructed, at a minimum, to the standards of the Flood Disaster Protection Act of 1973. Levees protecting these areas shall meet the standards of the U.S. Army Corps of Engineers.

**10-52** Delta levees shall be rehabilitated and maintained to protect beneficial uses of the Delta and its water. Only those uses appropriate in areas subject to risk of flooding and seismic activity, such as agriculture and recreation, should be planned and approved. This policy shall not apply to Bethel Island or Discovery Bay.

**10-53** Development of levee rehabilitation plans should consider methods to foster riparian habitat to the fullest extent possible consistent with levee integrity.

**10-55** The potential effects of dam or levee failure are so substantial that geologic and engineering investigation shall be warranted as a prerequisite for authorizing public and private construction of either public facilities or private development in affected areas.

**10-57** Dam and levee failure, as well as potential inundation from tsunamis and seiche, shall be a significant consideration of the appropriateness of land use proposals.

**10-60** Structures for human occupancy, and particularly critical structures, and potentially dangerous commercial or industrial facilities (e.g., plants for the manufacture or storage of hazardous materials) shall be protected against tsunami hazard.

# Environmental Setting

This section discusses the existing conditions relating to hydrology and water quality in the project area, as well as federal, state, and local regulations relating to hydrology and water quality that would apply to the proposed project. As necessary, the environmental setting discussion is divided into discussions of the individual components that make up the proposed project.

# General Climate

The San Joaquin Valley is surrounded on the west by the Coast Ranges, on the south by the San Emigdio and Tehachapi Mountains, on the east by the Sierra Nevada and on the north by the Delta and Sacramento Valley. The climate of the valley floor around the project area is arid to semiarid with dry, hot summers and mild winters. Summer temperatures may be higher than 100°F for extended periods of time; winter temperatures are only occasionally below freezing. The region averages only 9.8 inches of annual rainfall. The winter snowpack, which accumulates above 5,000 feet elevation, primarily in the Sierra Nevada, supplies the vast majority of water in the basin. Streams on the western side of the valley contribute little to the water totals because the Coast Range is too low to accumulate a snowpack in large quantities and its eastern slope is subject to a rain shadow phenomenon, therefore producing only seasonal runoff.

# Surface Water Hydrology

Marsh Creek is the primary waterway near the proposed project. Marsh Creek's headwaters originate around the eastern base of Mount Diablo, and it meanders east for approximately 6 miles until it drains into Marsh Creek Reservoir. From Marsh Creek Reservoir, Marsh Creek meanders north and slightly east. A few unnamed tributaries drain into Marsh Creek during this stretch. Two named creeks, Dry Creek and Sand Creek, drain into Marsh Creek between the Main Canal and the Mokelumne Aqueduct near the City of Brentwood. Marsh Creek continues north until it passes the small community of Knightsen, and Marsh Creek slightly banks west and passes the city of Oakley prior to draining into Big Break and Dutch Slough.

The CCCFCD manages flows in the creek channel. The City of Brentwood's Wastewater Treatment Plant (WWTP) has begun discharging treated effluent flows into Marsh Creek. Flow in Marsh Creek represents seasonal variation from precipitation and upstream inflows including municipal stormwater drains. Table 3-1 contains monthly minimum, average, and maximum flow data for Marsh Creek from August of 2000 to April of 2008 upstream of the Brentwood effluent discharge. The data was obtained from the U.S. Geological Survey (USGS) Nation Water Information System Web Interface. Throughout the year, Marsh Creek may have less than 1 cubic foot per second (cfs), or up to 862 cfs.

**Table 3-1.** Marsh Creek Flow near Brentwood (11337600) from 2000 to 2008

| Month | Minimum | Average | Maximum |
|---|---|---|---|
| January | 0.3 | 24.4 | 862.0 |
| February | 0.5 | 22.3 | 383.0 |
| March | 0.5 | 18.6 | 192.0 |
| April | 0.7 | 20.1 | 499.0 |
| May | 0.5 | 6.8 | 70.0 |
| June | 0.7 | 4.4 | 10.0 |
| July | 1.2 | 3.8 | 7.8 |
| August | 1.4 | 4.4 | 13.0 |
| September | 1.0 | 3.8 | 14.0 |
| October | 0.6 | 3.2 | 95.0 |
| November | 0.4 | 3.1 | 115.0 |
| December | 0.3 | 20.3 | 719.0 |

Source: U.S. Geological Survey 2008.

# Groundwater and Hydrogeology

The California Department of Water Resources (DWR) delineates groundwater basins throughout California through California's Groundwater Bulletin 118. The proposed project is located in the San Joaquin Valley Groundwater Basin, Tracy Subbasin (Groundwater Basin Number 5-22.15), in the northwestern portion of the subbasin. Review of hydrographs for the Tracy Subbasin indicate that except for seasonal variation resulting from recharge and pumping, the majority of the water levels in wells have remained relatively stable over at least the last 10 years (California Department of Water Resources 2006). However, there is a lack of significant historical level data in the project area, and DWD recognizes the need for continued groundwater level monitoring in the DWD district. A survey was conducted of all wells within a 0.5-mile radius of the existing Glen Park well, and the results indicated that the majority of these wells are shallow and typically less than 100 feet (Luhdorff & Scalmanini Consulting Engineers 2007). Similarly, shallow wells are expected to be located in the vicinity of the Phase 2 and future Phase 3 project sites.

The Tracy Subbasin is comprised of continental deposits of Late Tertiary to Quaternary age. These deposits include the Tulare Formation, Older Alluvium, Flood Basin Deposits, and Younger Alluvium (California Department of Water Resources 2006). The cumulative thickness of these deposits increases from a few hundred feet near the Coast Range foothills on the west to about 3,000 feet along the eastern margin the basin (California Department of Water Resources 2006).

Detailed hydrogeologic studies pertaining to the eastern Contra Costa County are relatively limited. Luhdorff & Scalmanini Consulting Engineers (LSCE) conducted a search of water well drillers reports on file at DWR for a report on local and regional hydrogeological conditions for several east county agencies including DWD. Well reports that were reviewed were in the vicinity of approximately 2 miles west of Oakley, through the Delta Islands just east of the county line, and south through Brentwood to about 2 miles south of Byron. Between 400 and 500 well logs were collected and classified into depth zones of 100-foot intervals. The majority of these wells were found to be less than 300 feet deep (Luhdorff & Scalmanini Consulting Engineers 1999).

At present, there is limited available data on land subsidence in eastern Contra Costa County. However, as an element of its AB 3030 Groundwater Management Plan, DWD will assess its operations and pumping for the potential to induce land subsidence. This would include reviewing available monitoring data in the county and early identification of impacts to groundwater levels that might forewarn of subsidence.

## Surface Water Quality

Physical and chemical characteristics of the watershed, hydrologic and climatic factors, and urban and agricultural discharges affect the water quality of Marsh Creek (City of Brentwood 1998). Based on the State Water Board's 303(d) list, Marsh Creek's water quality from Marsh Creek Reservoir to the San Joaquin River is impaired for mercury and metals (California State Water Resources Control Board 2006).

In addition, data collected upstream of the Brentwood WWTP's discharge (which is upstream of the proposed project) indicates maximum concentrations of bromoform, carbon tetrachloride, dibromochloromethane, bromodichloromethane, bis(2-ethylhexyl)phthalate, aluminum, barium, chromium (VI), cyanide, iron, manganese, chloride, electrical conductivity (EC), sulfate, and total dissolved solids (TDS) would exceed their applicable criterion. Although the Brentwood WWTP's discharges affect the water quality of Marsh Creek downstream of the plant, this effect was determined to be less than significant in a previous CEQA document (City of Brentwood 1998).

## Groundwater Quality

Groundwater quality has constrained groundwater development in some parts of eastern Contra Costa County. According to DWR Bulletin 118, the northern part of the Tracy Subbasin is characterized as a sodium water type with a combination of bicarbonate, chloride, and mixed bicarbonate-chloride water type (California Department of Water Resources 2006). TDS, an indication of salt content, was tested in San Joaquin County and Contra Costa County. TDS ranged from 50 to

3,520 mg/L and average 463 mg/L (California Department of Water Resources 2006).

DWD's project wells are evaluated in terms of suitability for municipal supply. Under DPH requirements, the wells must meet all state drinking water standards. DWD has found that hardness in groundwater may affect customer satisfaction and has established a blending target to mitigate the impact to aesthetic quality. Otherwise, the District seeks to develop sources that meet all DPH drinking water standards.

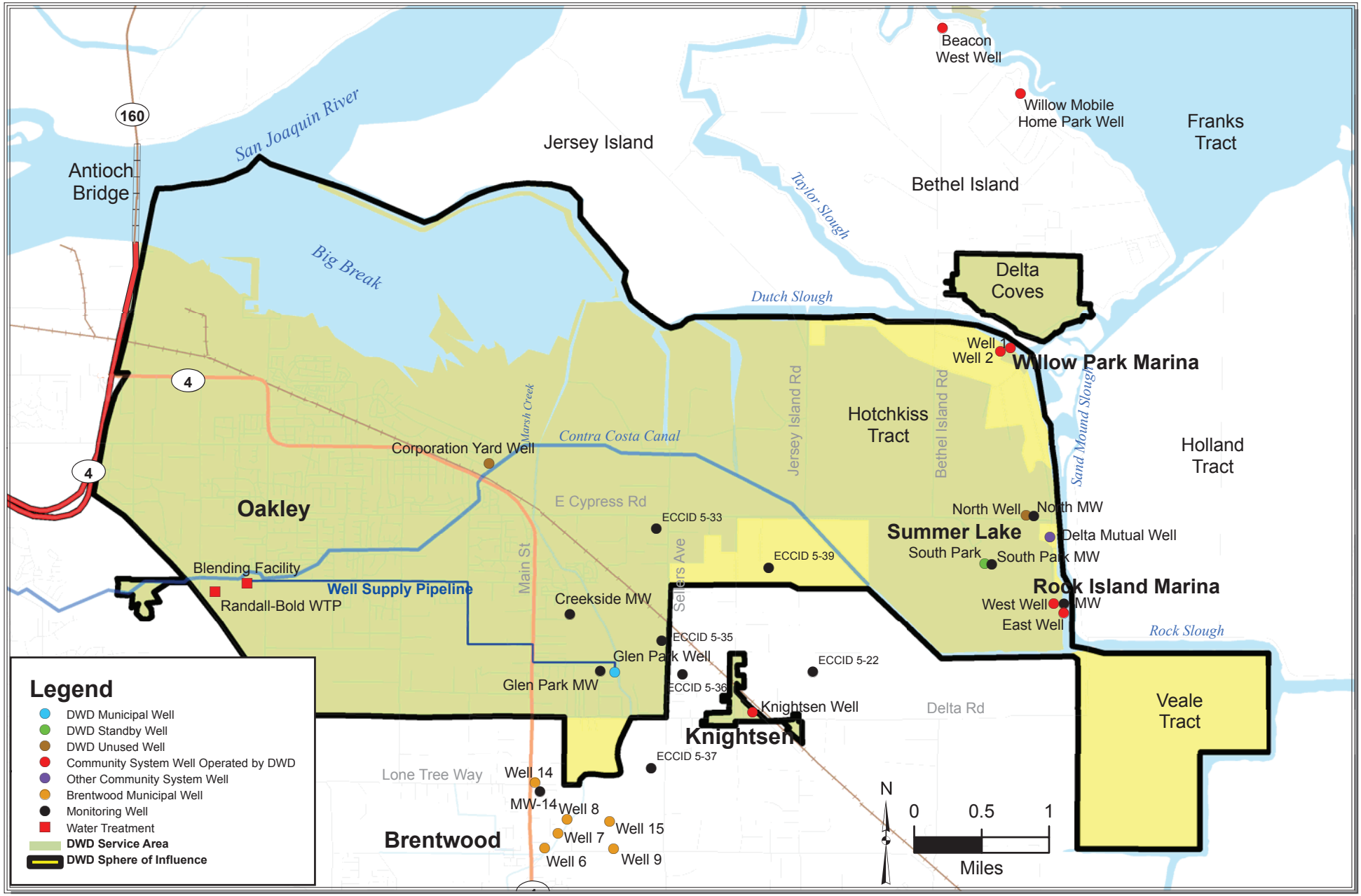
# Water Supply

The primary source water for DWD comes from the Central Valley Project (CVP) purchased from the CCWD. In addition, to surface water, DWD also pumps groundwater. Figure 3-1 includes the DWD service area, including the existing Glen Park well along with other wells in the area. The CVP water is conveyed through the Contra Costa Canal and treated at the RBWTP in Oakley. Current and buildout (year 2040) DWD water supplies are summarized in Table 3-2 for normal and single-dry years; and in Table 3-3 for multiple dry years.

**Table 3-2.** DWD Water Supply for Normal and Single Dry Years

| Norma Year or Single Dry Year | Average Day | Max Day = 2 x Average Day | Annual Supply = 365 x Average Day | |
|---|---|---|---|---|
| | mgd | mgd | mg | af |
| Current | | | | |
| Surface Water | 7.5 | 15 | 2,738 | 8,400 |
| Ground Water | 1 | 2 | 365 | 1,120 |
| **Total** | **8.5** | **17** | **3,103** | **9,520** |
| Year 2040 (Buildout) | | | | |
| Surface Water | 15 | 30 | 5,475 | 16,800 |
| Ground Water | 2.5 | 5 | 913 | 2,800 |
| **Total** | **17.5** | **35** | **6,388** | **19,600** |

Source: Urban Water Management Plan (Diablo Water District 2005).
Notes: mgd = million gallons a day; mg = million gallons; af = acre-feet.

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LUHDORFF & SCALMANINI CONSULTING ENGINEERS

**Figure 3-1**
**Diablo Water District Service Area and Well Locations**

**Table 3-3.** DWD Water Supply for Multiple Dry Years

| | Average Day | Maximum Day | Annual Supply = 365 x Average Day | |
|---|---|---|---|---|
| Multiple Dry Years | mgd | mgd | mg | af |
| Current | | | | |
| Surface Water | 7.5 | 15 | 2,738 | 8,400 |
| Ground Water | 1 | 2 | 365 | 1,120 |
| Total | 8.5 | 17 | 3,103 | 9,520 |
| Year 2040 (Buildout) | | | | |
| Surface Water (1) | 12.5 | 25 | 4,562 | 14,000 |
| Ground Water (1) | 5 | 5 | 1,826 | 5,600 |
| Total | 17.5 | 30 (2) | 6,388 | 19,600 |

Source: Urban Water Management Plan (Diablo Water District 2005).

Notes: mgd = million gallons a day; mg = million gallons; af = acre-feet.

(1) After 2010, surface water deliveries in multiple dry years will be reduced to 85% of normal in the second and subsequent years of a multiple dry year period. Groundwater supply will be used more intensively during droughts to make up for reduced surface water availability, i.e., groundwater increases supply reliability during droughts.

(2) During multiple year droughts with reduced supplies, customers will be required to implement conservation measures to reduce summer peak demand, e.g., reduced outdoor water uses during the day.

## Flooding

FEMA provides information on flood hazard and frequency for cities and counties on Flood Insurance Rate Maps (FIRMs). FEMA identifies designated zones to indicate flood hazard potential. In general, flooding occurs along waterways, with infrequent localized flooding also occurring as a result of constrictions of storm drain systems or surface water ponding. The project area crosses or is adjacent to Marsh Creek. The FIRM (#0607660360A) was accessed on the FEMA website to determine areas of possible 100-year flooding. It appears that portions of Phase II will be located in Zone X, which is defined as areas located within the 100-year floodplain with average depths less than 1 foot (Federal Emergency Management Agency 2002).

# Project Impacts and Mitigation Measures

This section describes the proposed project's impacts on hydrology and water quality. First, it describes the methods used to determine the proposed project's impacts and lists the thresholds used to conclude whether an impact would be significant. Mitigation measures to avoid, minimize, rectify, reduce, eliminate,

or compensate for significant impacts immediately follow each impact discussion, as necessary.

# Methods

The evaluation of effects on hydrology, hydrogeology, water quality and water supply is based on professional standards and the information in the following citations. The key effects were identified and evaluated based on the physical characteristics of the project study area and the magnitude, intensity, and duration of activities. It is assumed that the DWD would conform to relevant building standards, grading permit requirements, and erosion control requirements.

The majority of this chapter was drawn from the following citations (a complete reference list can be found in Chapter 18, "References Cited"):

- DWD groundwater management plan for AB 3030 (Luhdorff & Scalmanini Consulting Engineers 2007),
- DWD Urban Water Management Plan Final Report (Diablo Water District 2005),
- DWD Facilities Plan (Camp Dresser & McKee 2006), prepared for DWD.
- DWR's Groundwater Bulletin 118,
- assessment of potential impacts from Glen Park well (Luhdorff & Scalmanini Consulting Engineers 2004), and
- State Water Board, CWA Section 303(d) List of Impaired Limited Segments (2006).

# Thresholds of Significance

For the purposes of this analysis, an impact pertaining to hydrology and water quality was considered significant if it would result in any of the following, which are based on professional practice and Appendix G of the CEQA Guidelines (*14 California Code of Regulations [CCR] 15000 et seq.*):

- substantial alteration in the quantity or quality of surface runoff;
- substantial degradation of water quality;
- violation of any water quality standards or waste discharge requirements;
- substantial reduction in groundwater quantity or quality;
- creation of or contribution to runoff that would exceed the capacity of an existing or planned stormwater management system;
- substantial alteration of the existing drainage pattern of the site area, such that flood risk and/or erosion and siltation potential would increase;

- placement of structures that would impede or redirect floodflows within a 100-year floodplain; or
- exposure of people, structures, or facilities to significant risk from flooding, including flooding as a result of the failure of a levee or dam.

# Impacts and Mitigation Measures

## Alternative 1: Proposed Project

### Impact HYD-1: Impacts on Marsh Creek from Construction Related Hazardous Materials

Construction of the proposed project will require use of heavy equipment and construction material which could potentially impact water quality in Marsh Creek. Construction activities often expose disturbed and loosened soils to erosion from rainfall, runoff, and wind. Most natural erosion occurs at slow rates, but the rate increases when the land is cleared or altered and left disturbed. Construction activities remove the protective cover of vegetation and reduce natural soil resistance to rainfall impact erosion.

Sheet erosion occurs when slope length and runoff velocity increases on disturbed areas. As runoff accumulates, it concentrates into rivulets that cut grooves (rills) into the soil surface. If the flow is sufficient, these rills may develop into gullies. If proper BMPs are not implemented, this could occur with the proposed project. Excessive stream and channel erosion may occur if runoff volumes and rates increase as a result of construction activities or operation of a project. However, construction of the proposed project would be done on relatively flat terrain.

This impact is considered potentially significant. Implementation of the following mitigation measures would ensure that this impact would be less than significant.

#### Mitigation Measure HYD-MM-1: Design and Implement a Stormwater Pollution Prevention Plan

DWD will obtain coverage under a NPDES General Construction Permit and design and implement a SWPPP during construction. The SWPPP will contain BMPs that will be designed to protect water the surface water quality of Marsh Creek. As part of this process, the DWD will implement multiple erosion and sediment control BMPs in areas with potential to drain to Marsh Creek. These BMPs will be selected to achieve maximum sediment removal and represent the best available technology (BAT) that is economically achievable. BMPs to be implemented as part of this mitigation measure may include, but are not limited to, the following measures.

- Temporary erosion control measures (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, sandbag

dikes, grass buffer strips, high infiltration substrates, grassy swales and temporary revegetation or other ground cover) will be employed to control erosion from disturbed areas.

- Drainage facilities in downstream off-site areas will be protected from sediment using BMPs acceptable to the county and the RWQCB.
- Grass or other vegetative cover will be established on the construction site as soon as possible after disturbance.

Final selection of BMPs will be subject to review by DWD. DWD or its agent will perform routine inspections of the construction area to verify that the BMPs specified in the SWPPP are properly implemented and maintained. DWD will notify its contractors immediately if there is a noncompliance issue and will require compliance.

#### Mitigation Measure HYD-MM-2: Implement Measures to Maintain Surface Water Quality and Groundwater Quality

If an appreciable spill has occurred even though an SPPC has been implemented and results determine that project activities have adversely affected surface or groundwater quality, a detailed analysis will be performed by a registered environmental assessor to identify the likely cause of contamination. This analysis will conform to American Society for Testing and Materials (ASTM) standards, and will include recommendations for reducing or eliminating the source or mechanisms of contamination. Based on this analysis, DWD and its contractors will select and implement measures to control contamination, with a performance standard that surface water quality and groundwater quality must be returned to baseline conditions.

#### Conclusion

Implementation of Mitigation Measures HYD-MM-1 and HYD-MM-2 will reduce this impact to less than significant.

## Impact HYD-2: Impacts on Groundwater Resources from Construction or Excavation below the Water Table

Trenching and excavation associated with the jack and bore underneath Marsh Creek may reach a depth that can expose the water table, in which an immediate and direct path to the groundwater basin would become available for contaminants to enter the groundwater system during construction. Primary construction-related contaminants that could reach groundwater would include increased sediment, oil and grease, and construction-related hazardous materials.

These impacts are considered potentially significant. Implementation of mitigation measures HYD-MM-1, HYD-MM-2, and the following mitigation measure (HYD-MM-3) would ensure that impacts would be lowered below significance thresholds.

### Mitigation Measure HYD-MM-3: Provisions for Dewatering

If there is a need to discharge any dewatered effluent to surface water, DWD or its contractors will obtain an NPDES permit from the RWQCB. Depending on the volume and characteristics of the discharge, coverage under RWQCB's General Construction Permit or General Dewatering Permit is possible. As part of the permit, the permittee will design and implement measures as necessary so that the discharge limits identified in the relevant permit are met. As a performance standard, these measures will be selected to achieve maximum sediment removal and represent the BAT that is economically achievable. Implemented measures may include retention of dewatering effluent until particulate matter has settled before it is discharged, use of infiltration areas, and other BMPs. Final selection of water quality control measures will be subject to approval by DWD.

DWD will verify that coverage under the appropriate NPDES permit has been obtained before allowing dewatering activities to begin. DWD or its agent will perform routine inspections of the construction area to verify that the water quality control measures are properly implemented and maintained. DWD will notify its contractors immediately if there is a noncompliance issue and will require compliance.

### Conclusion

Implementation of Mitigation Measure HYD-MM-3 will reduce this impact to less than significant.

## Impact HYD-3: Operational Related Impacts to Groundwater and Groundwater Quality

When groundwater is withdrawn from an aquifer, groundwater levels are lowered around the well, creating a cone of depression. Additional pumping could increase the amount of drawdown and decrease the productivity of existing wells in the area. Under certain conditions this could result in a lowered water table, which in turn could adversely impact shallow wells and impacting the flow of Marsh Creek. Further discussion of flow impacts to Marsh Creek is analyzed in Impact HYD-9.

The proposed project would both consist of similar pumping capacities as the existing Glen Park well. Pumping will range from 0.5 mgd to 2 mgd. This water would be transported via 18-inch pipeline to the Randall-Bold Blending Facility for treatment. The Phase 2 and future Phase 3 wells will be similar in depth to the existing Glen Park well. Depth would be approximately 320 feet with a 200-foot annular seal.

In 2002, LSCE conducted an investigation of potential impacts on wells near the existing Glen Park well. The investigation included approximately 35 wells—including the Knightsen municipal well (Alternative 2), private domestic wells and irrigation wells—identified within 2,500 feet of the Glen Park well site. Thirty-four of these wells are shallower than 200 feet. The deep annular seal of

the Glen Park well was found to effectively isolate these wells from significant pumping impacts. Due to the shallow depths and relatively small capacities of these wells and the presence of the confining clay layers between these wells and the Glen Park well, impacts to these wells were not expected to occur. The one other existing deep well, located approximately 2,450 feet from the Glen Park well site, is a 6-inch diameter well completed to a depth of 290 feet. This and other wells in the vicinity have been closely monitored and to date have exhibited no adverse impacts from the Glen Park well operation.

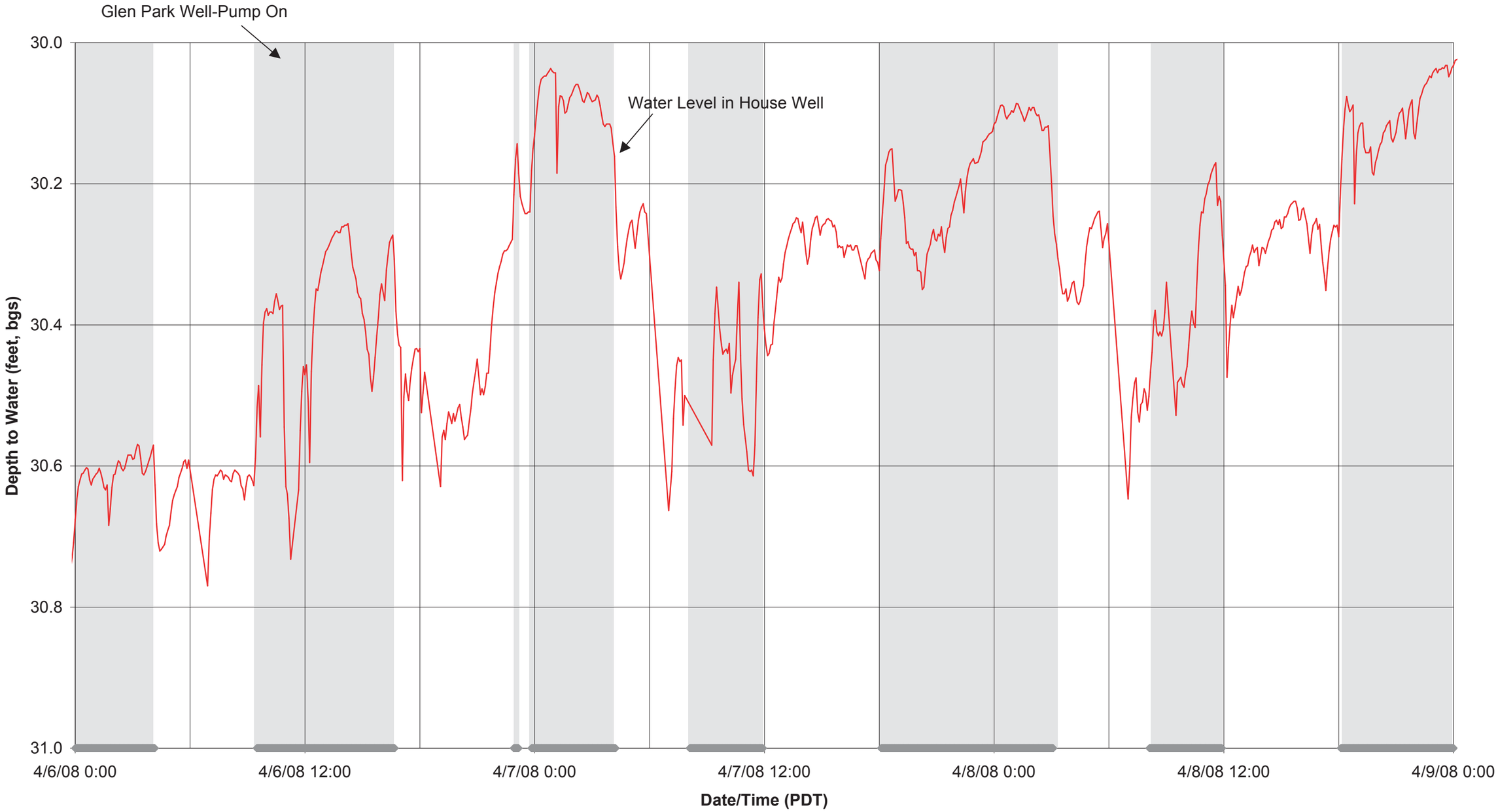
Preliminary testing is an important part of the project design in which potential impacts are evaluated and design elements included so that impacts can be avoided. For the Glen Park site, a 7-day test was performed to quantify potential impacts from pumping and assess prior assumptions concerning potential impacts on groundwater levels and local wells. The monitoring findings are summarized as follows (Luhdorff & Scalmanini Consulting Engineers 2004):

- Pumping in the Glen Park well at capacities up to 1,500 gallons per minute (gpm) and for 7 days at 1,100 gpm had no measurable or discernable impact on water levels in nearby shallow wells.
- Pumping did not have a measurable impact on groundwater levels at the nearby Brentwood municipal well site.
- During the testing of the Glen Park well, it was found that water quality was essentially the same as found in the monitoring well previously installed in Glen Park and is suitable for municipal use.

In addition, initial monitoring of monitoring wells installed at the Stone Creek site indicated that similar results as observed at Glen Park can be expected for the new site. Additional testing during the well construction phase will be performed for additional confirmation.

The closest municipal well is Brentwood Well 14 at Lone Tree Way and Main Street, approximately 1 mile southeast of the Glen Park well. The groundwater investigation for Glen Park considered and evaluated potential impacts on Brentwood Well 14. The investigation determined that DWD pumping at 3 mgd total capacity (assuming the Phase 1, Phase 2 and Phase 3 wells are all pumping at 1 mgd) could theoretically induce an estimated 10 feet of drawdown in the Brentwood well after 30 days of continuous pumping. This impact would not be expected to adversely affect the capacity of Brentwood Well 14 (Camp Dresser & McKee 2002) under current estimates of available drawdown in the well. To date, pumping at 1 to 2 mgd at Glen Park has proven to have less impact on both deep and shallow surrounding wells than previously estimated.

The District performs routine and case-by-case monitoring to ensure that operational impacts to other groundwater users are in compliance with its stated policies regarding mitigation. Routine monitoring is detailed in the District's GWMP. An example of case-by-case monitoring is illustrated in Figure 3-2. This figure shows water level fluctuations in a nearby shallow house well plus pumping times (shaded) for the District's Glen Park well. The owner of the nearby well previously expressed concern that the District production well was




LUHDORFF & SCALMANINI
CONSULTING ENGINEERS

**Figure 3-2**
**Water Level Comparison with Glen Park Operation**
**Oakley, CA**

adversely affecting water levels in the shallow house well. By superimposing the pump cycles onto the hydrograph, it was demonstrated that drawdown impacts were not propagated to the shallower well when the Glen Park well was running. In this case, the house well water level fluctuated between about 30 and 31 feet below ground surface while the Glen Park pumping level exceeded 100 feet. The house well is located within 450 feet of the Glen Park well. Continued monitoring and other measures detailed in the District's GWMP will be used to demonstrate mitigation on a permanent basis.

Operation of the Phase 2 and future Phase 3 wells could potentially cause water quality degradation to occur if the pumping induces vertical movement of groundwater from one aquifer to another. However, based on groundwater investigations conducted from 1999 through present, it has been determined that the proposed groundwater pumping at a rate of 1 to 2 mgd would not induce groundwater quality degradation locally or regionally (Camp Dresser & McKee 2002; Luhdorff & Scalmanini Consulting Engineers 2004, 2007). Because the Phase 2 and future Phase 3 wells are located almost 1 mile apart, it is not expected that the groundwater depression cones from each well will influence a vertical groundwater exchange between the upper and lower aquifer zones resulting in any degradation of water quality.

A possible scenario for the proposed project would be water quality degradation by introducing nitrate from the shallower aquifer and manganese from the deep aquifer. The groundwater investigation conducted in 1999 determined that the proposed groundwater pumping at a rate of 1 to 2 mgd would not induce groundwater quality degradation locally or regionally (Camp Dresser & McKee 2002). Groundwater quality impacts are unlikely to occur given the presence of multiple clay layers between the aquifers, and the 200-foot annular seal on the proposed well.

Such impacts to groundwater resources and groundwater quality are considered to be significant. Implementation of mitigation measures HYD-MM-4 and HYD-MM-5 would reduce these impacts to less than significant.

### Mitigation Measure HYD-MM-4: Lower or Replace Groundwater Pumps, Provide Alternative Source Water or Install a New Well for Affected Residences

In the event local wells (such as the Knightsen or the City of Brentwood's municipal wells, or private wells) are adversely affected (i.e., lowering of groundwater below existing pumps or degradation of water quality), mitigation actions would be made on a case-by-case basis tailored to specific setting, degree of impact, and nature of the problem. Mitigation measures may include, but are not limited to, supplying the property or city with a different source of water that is equal in cost to the owner as the previous source water, lowering or replacing pumps, or installing new wells.

### Mitigation Measure HYD-MM-5: Project Design for Impact Avoidance

DWD will design all projects to avoid potential impacts as required by the specific well site characteristics. Key factors of the District's production wells

are deep completion depth to avoid impacts to shallower domestic wells, and adequate horizontal separation from other wells in the deeper zone to minimize mutual interference. Aquifer materials below 200 feet are targeted to avoid impacts to zones in which shallower domestic wells in the area are typically completed. The deeper completion depth also provides a margin of available water level drawdown required for pumping capacities typical of municipal well facilities. The vertical separation from shallow aquifers and potential surficial sources of contamination provides drinking water source protection, which is reviewed for all municipal supply wells by the state Department of Public Health under the Drinking Water Source Assessment and Protection Program. When the production well is constructed, the District conducts testing at full-scale production rates to verify assumptions regarding well capacity and pumping impacts, in order to confirm the appropriate operating capacity to avoid impacts.

### Conclusion

Implementation of Mitigation Measures HYD-MM-4 and HYD-MM-5 will reduce this impact to less than significant.

## Impact HYD-4: Impacts on Hydrology and Water Quality from Increased Impervious Surface

Construction of the proposed project is expected to only slightly increase the amount of impervious surfaces once complete. This small increase would result in only a minimal increase in storm-related runoff. Similarly, the proposed pipeline would be buried and is not expected to result in increased amounts of impervious surfaces. As a result, runoff from the facilities is not expected to exceed the capacity of drainage systems, create localized flooding, or contribute to a cumulative flooding impact downstream.

### Conclusion

Less-than-significant impact and therefore no mitigation required.

## Impact HYD-5: Potential Impacts from Pipeline Rupture

The possibility of a rupture in any of the pipelines as a result of seismic activity poses a potential adverse impact on water quality. However, if a rupture were to occur, DWD could shut off the system to minimize water quality impacts by limiting the volume of water that could cause erosion to Marsh Creek. In addition, the pipeline would be designed to meet relevant seismic and other standards to avoid potential for pipeline rupture from seismic activity or other geologic hazards.

### Conclusion

Less-than-significant impact and therefore no mitigation required.

## Impact HYD-6: Potential Drawdown Impacts on Marsh Creek Hydrology from Groundwater Pumping and Increased Flow from Well Water Discharge

The Glen Park well is approximately 115 feet west of Marsh Creek. Investigations indicated that pumping would not create a drawdown effect on Marsh Creek or affect trees along the corridor due to the multiple confining clay layers separating Marsh Creek from the pumping depth. Extensive testing at the Glen Park and Stone Creek sites have shown that drawdown impacts are confined to the deeper completion zones of the aquifer. Additionally, operation of the Glen Park well has shown to have no effect on Marsh Creek Hydrology. Because the proposed project will be further away from Marsh Creek and the 200-foot annular seal will be installed as part of the proposed project, effects of a potential drawdown on Marsh Creek will also be lowered. The proposed project will have no impacts on the Marsh Creek Hydrology.

In addition, the proposed project will involve discharging a maximum of 10,000 gallons per day to Marsh Creek during operation. There will be two discharges of 5,000 gallon at 1,000 gallons per minute. This will slightly increase the flow in Marsh Creek. The discharge will go through the City of Oakley's storm drain system and will not significantly change the hydrology of Marsh Creek to a point that would result in increased sedimentation.

### Conclusion

Less-than-significant impact and therefore no mitigation required.

## Impact HYD-7: Potential Impacts on Temperature in the Marsh Creek from Well Discharge

Operation of the proposed project will require a well discharge to Marsh Creek. This discharge will likely have a different temperature than the ambient conditions of Marsh Creek. Temperature gradients have been known to impact certain fish species. However, it is expected that the temperature of the well water will be cooler than the ambient Marsh Creek water, which is generally beneficial to fish species.

### Conclusion

Less-than-significant impact and therefore no mitigation required.

## Impact HYD-8: Potential Impacts on Electrical Conductivity and/or Total Dissolved Solids in Marsh Creek and the San Joaquin River

Groundwater may have a higher EC and more TDS than surface water. The proposed project discharge to Marsh Creek could impact the beneficial uses of Marsh Creek. DWD monitors groundwater quality for the existing Glen Park

well. Table 3-4 contains data from the Glen Park well and Marsh Creek. The Marsh Creek data is derived from a monitoring program conducted by CCWD. Both the EC and TDS measurements from the Glen Park well are less than the ambient EC and TDS of Marsh Creek. As a result, the well discharge would actually be beneficial to the water quality of Marsh Creek with respect to EC and TDS.

**Table 3-4.** EC and TDS from the Glen Park Well compared to Marsh Creek

| Date | EC (µmohs) | TDS (mg/L) |
|---|---|---|
| **Existing Glen Park Well** | | |
| May 4, 2004 | 930 | NA |
| July 5, 2006 | 993 | 620 |
| **Marsh Creek (CCWD MI5 Sample Point)** | | |
| October 13, 2005 | 1,100 | 650 |
| March 14, 2005 | 1,400 | 960 |
| February 7, 2006 | 1,400 | 850 |

Sources: Glen Park Data is from Luhdorff & Scalmanini Consulting Engineers 2007. Marsh Creek Data is from Contra Costa Water District 2008.

In addition, the potable water that is returned to ISD in the form of waste water may also impact the San Joaquin River EC and TDS. ISD is required to meet effluent salinity standards as part of their NPDES permit. ISDs ability to meet the effluent requirements of their NPDES permit is discussed in detail in Chapter 17, Cumulative Impacts. During periods of low flow, EC and TDS may impact the San Joaquin River more than during periods of higher flow. Typically, periods of lower flow occur during the time of the year when water demand is at its highest. When water demand is high, there would be 4 parts surface water to 1 part groundwater ratio. This would result in lower EC values than shown in Table 3-4.

In addition, as stated in Chapter 17, Cumulative Impacts, DWD will work with ISD and the City of Oakley to ensure that future development installs comparable alternatives to water softeners that do not increase the salt loads to the San Joaquin River and impact ISD's ability to meet their stringent NPDES permit requirements thereby offsetting the incremental salt loading added by the proposed project.

## Conclusion

This impact is considered less than significant.

## Impact HYD-9: Flooding Impacts

According to the FEMA FIRM, portions of the Phase II pipeline will be located in Zone X, which is defined as areas of the 100-year flood, but depths are less than 1 foot. However, because the pipeline will be underground, it will not impede or redirect flood flow. In addition, the proposed project would not expose people or structures to a substantial risk of loss from flooding.

### Conclusion

Less-than-significant impact and therefore no mitigation required.

## Impact HYD-10: Construction of DWD facilities in the Contra Costa County Flood Control and Water Conservation Districts ROW of Marsh Creek

DWD will receive an encroachment permit for construction within the CCCFCD ROW. At completion of the proposed project facilities in the CCCFCD ROW, all facilities will be underground. As a result, DWD facilities will not increase the size of the floodplain in the ROW. However, due to the close proximity to Marsh Creek, it is critical that proper construction related BMPs are implemented to ensure that there is no impact to Marsh Creek. This impact is considered to be significant.

### Conclusion

Implementation of Mitigation Measures HYD-MM-1 and HYD-MM-2 will reduce this impact to less than significant.

Chapter 4
# Transportation

This chapter describes the environmental setting for transportation resources in and near the project area and examines the potential impacts of the proposed project on transportation.

# Regulatory Setting

Traffic analysis in the State of California is guided by policies and standards set at the state level by the California Department of Transportation (Caltrans) and by local jurisdictions. Because the proposed project is located in the city of Oakley, it will adhere to the adopted transportation policies of that jurisdiction.

## City of Oakley General Plan

The *City of Oakley 2020 General Plan* presents its goals and policies regarding transportation in the Circulation Element (City of Oakley 2002). Goals and policies that may influence the proposed project include the following.

### Goals and Policies

**3.1** Provide an efficient and balanced transportation system.

**3.1.1** Strive to maintain Level of Service D as the minimum acceptable service standard for intersections during peak periods (except those facilities identified as Routes of Regional Significance).

**3.1.2** For those facilities identified as Routes of Regional Significance, maintain the minimum acceptable service standards specified in the East County Action Plan Final 2000 Update, or future Action Plan updates as adopted.

**3.1.3** Keep roadway facilities in optimal condition.

**3.1.4** Consistent with the California Vehicle Code, direct trucks to appropriate truck routes.

**3.2** Promote and encourage walking and bicycling.

**3.2.1** Provide maximum opportunities for bicycle and pedestrian circulation on existing and new roadway facilities.

**3.4** Minimize the intrusion of through traffic on residential streets.

**3.4.1** Direct non-local traffic onto collector streets and arterials.

**3.4.2** Maintain traffic speeds and volumes on neighborhood streets consistent with residential land uses.

**3.4.3** Provide adequate capacity on collector and arterial streets to accommodate travel within the city.

## Contra Costa County General Plan

The *Contra Costa County General Plan* presents its goals and policies regarding transportation in the Circulation Element (Contra Costa County 2005). Policies that may influence the proposed project include the following.

### Policies

**5-4** Development shall be allowed only when transportation performance criteria are met and necessary facilities and/or programs are in place or committed to be developed within a specified period of time.

**5-5** Right of way shall be preserved to meet requirements of the Circulation Element and to serve future urban areas indicated in the Land Use Element.

**5-9** Existing circulation facilities shall be improved and maintained by eliminating structural and geometric design deficiencies.

**5-16** Emergency response vehicles shall be accommodated in development project design.

**5-25** Planning and provision for a system of safe and convenient pedestrian ways, bikeways and regional hiking trails shall be continued as a means of connecting community facilities, residential areas, and business districts, as well as points of interest outside the communities utilizing existing public and semi-public right-of-way.

**5-L** Increase the opportunities for bicycle use in Contra Costa County for transportation as well as recreational purposes.

# Environmental Setting

This section discusses the existing conditions related to transportation in and near the project area. Elements of the local transportation system that will be

discussed include roadways, public transit, rail; aviation, and nonmotorized transportation.

The transportation infrastructure consists primarily of rural roads and local streets. Land in and near the project area is designated as predominately Single Family Residential, with the exception of Glen Park, a neighborhood park in a residential area adjacent to the project area.

# Roadways

Main Street (State Route 4 [SR 4]), Delta Road, and Sellers Avenue are the primary thoroughfares that provide access to and from the project area. SR 4 serves as a major regional route, providing east-west travel across northern Contra Costa County. Hill Avenue intersects SR 4 less than 1 mile west of the project area and provides access to the existing well supply pipeline at Glen Park where the pipeline alignment of the proposed Phase 2 will extend and join it. Sellers Avenue and Delta Road—both two-lane rural undivided roads—border the project area to the east and south, respectively, and intersect south of the project area.

## Level of Service

Level of Service (LOS) is the primary measurement used to determine the operating quality of a roadway segment or intersection. In general, LOS is measured by the ratio of traffic volume to capacity (V/C) or by the average delay experienced by vehicles on the facility. The quality of traffic operation is graded into one of six LOS designations—A, B, C, D, E, or F—with LOS A representing the best range of operating conditions and LOS F representing the worst.

The City defines roadway LOS according to methods presented in the *Highway Capacity Manual* (Transportation Research Board 2000). LOS is calculated along roadway segments by comparing the actual number of vehicles using a roadway (volume of traffic) to its carrying capacity. For signalized and all-way-stop-controlled intersections, the LOS is measured by the average delay (seconds per vehicle) experienced by vehicles that travel through the intersection. For two-way-stop-controlled intersections, the LOS depends on the amount of delay experienced by vehicles on the stop-controlled approaches.

LOS standards are used to evaluate the transportation impacts of long-term growth. In order to monitor roadway operations, cities and counties adopt standards by which the minimum acceptable roadway operating conditions are determined and deficiencies can be identified. As described under the *Regulatory Setting* section in this chapter, the City has adopted LOS D as its standard. Any roadway that operates at a level lower than this standard is considered deficient.

Of the roadways that will provide access to and from the project area (i.e., Main Street, Delta Road, Sellers Avenue, and Hill Avenue), Main Street is identified as experiencing traffic congestion that exceeds the adopted standard of LOS D near the project area. The *City of Oakley 2020 General Plan* indicates that south of Laurel Road, the daily traffic volume on Main Street is greater than 21,000, which exceeds the roadway capacity of 16,200; thus, this segment is operating at LOS F (City of Oakley 2002). Similarly, the unsignalized intersection at Main Street and Delta Road was identified as operating over capacity at LOS F (City of Oakley 2002).

# Public Transit

The city of Oakley is located in a Transit Corridor, as described in the *Contra Costa County General Plan* (Contra Costa County 2005). Bay Area Rapid Transit (BART) serves the neighboring city of Pittsburg, and an extension is planned into the area, but currently Oakley is not serviced by regional mass transit.

Bus service in the city of Oakley is currently provided by Tri-Delta Transit. Tri-Delta Transit provides bus links to the Pittsburg/Bay Point BART station. Tri-Delta also provides paratransit. Table 4-1 summarizes the bus routes that run along streets that could be potentially affected by project construction.

**Table 4-1.** Transit Service

| Route | Description |
|---|---|
| 300 | Pittsburg BART/Brentwood (Weekdays Only) |
| 383 | Hillcrest Park & Ride/Oakley (Weekdays Only) |
| 391 | Pittsburg BART/Brentwood Park & Ride (Weekdays Only) |
| 393 | Baypoint/Brentwood Park & Ride (Weekends and Holidays Only) |

Source: Tri-Delta Transit 2008.

# Railroad

The Burlington Northern Santa Fe (BNSF) Railroad routinely carries freight through Oakley. This line runs through the northern portion of Oakley, passing within approximately a quarter of a mile of the project area.

# Airport

No commercial airports are located in the area near Oakley. Oakland International Airport and Sacramento International Airport are the nearest such

facilities. Byron Airport, located approximately 16 miles south of the city of Oakley, is a general aviation airport, serving as a charter and private aviation facility (City of Oakley 2002).

## Parking

The City's general plan does not assess parking, but field observation in the project area indicates that parking supply appears to be adequate.

## Nonmotorized Transportation

Bicycle facilities in Oakley are presently limited. The Marsh Creek Regional Trail is the one bicycle route in the project area. The Marsh Creek Regional Trail, which runs along Marsh Creek, is a 7-mile-long paved trail for pedestrians, horses, and bicycles.

# Project Impacts and Mitigation Measures

## Methods

This section describes the impact analysis relating to transportation for the proposed project. The proposed project was evaluated for transportation impacts using a literature review to establish baseline information and to perform a qualitative analysis of impact of the proposed project in the context of applicable local plans.

## Thresholds of Significance

For this analysis, an impact pertaining to transportation was considered significant under CEQA if it would result in any of the following environmental effects, which are based on professional practice and State CEQA Guidelines Appendix G (*14 CCR15000* et seq.). Implementation of Phase 2 and future Phase 3 of the proposed project were considered to have a significant impact on transportation or traffic if it would:

- substantially increase traffic (i.e., result in a substantial increase in the number of vehicle trips, the V/C ratio on roads, or congestion at intersections);
- exceed an LOS standard established by the county congestion management agency for designated roads or highways;
- result in a change in air traffic patterns that results in substantial safety risks;

- substantially increase hazards because of a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- result in inadequate emergency access;
- result in inadequate parking capacity; or
- conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

# Impacts and Mitigation Measures

## Alternative 1: Proposed Project

### Impact T-1: Cause a Substantial Increase in Traffic as a Result of a Substantial Increase in the Number of Vehicle Trips, the Volume-to-Capacity Ratio on Roads, or Congestion at Intersections

Vehicles associated with the Phase 2 and future Phase 3 of the proposed project would access the project area via Main Street, Sellers Avenue, Delta Road, and Hill Avenue. Construction activities that would have the potential to generate traffic would consist of trucks hauling equipment and materials to the pump station and pipeline alignment, the delivery of backfill to the work sites, and the daily arrival and departure of construction workers to and from the work sites.

Construction of the Phase 2 of the proposed project, expected to begin in the summer/fall of 2009, would occur over a period of approximately 8 months. Construction of the Phase 3 of the proposed project is expected to be of similar duration but is not expected to occur until sometime between 2012 and 2014. Construction workers would be commuting to and from the project area, most likely in personal automobiles or small trucks. Construction-generated traffic would be temporary and therefore would not result in any significant long-term degradation in operating conditions on any project-associated roadways.

The primary off-site impacts from the movement of construction trucks include short-term and intermittent lessening of roadway capacities due to slower movements and larger turning radii of the trucks compared to passenger vehicles. The temporary increase in traffic is not considered to be significant in relation to the existing traffic load and capacity of the street system because truck and worker vehicle trips would be dispersed throughout the day.

As discussed in Chapter 2, “Project Description,” a traffic control plan would be developed and implemented by DWD, in coordination with affected jurisdictions, and incorporated into the proposed project as an environmental commitment.

#### Conclusion

There are no impacts and therefore no mitigation is required.

## Impact T-2: Cause an Exceedance of a Level-of-Service Standard Established by the County Congestion Management Agency for Designated Roads or Highways

Construction-generated traffic associated with the Phase 2 and Phase 3 of the proposed project would be temporary and therefore would not result in any significant impact to LOS for designated roads or highways. Operation of the proposed project would not affect LOS.

### Conclusion

There are no impacts and therefore no mitigation is required.

## Impact T-3: Cause a Change in Air Traffic Patterns that Results in Substantial Safety Risks

The proposed project would not affect air traffic.

### Conclusion

There are no impacts and therefore no mitigation is required.

## Impact T-4: Substantially Increase Hazards Due to Design Features or Incompatible Uses

The proposed project would not include any unusual design features or incompatible uses that would increase transportation-related hazards.

### Conclusion

There are no impacts and therefore no mitigation is required.

## Impact T-5: Inadequate Emergency Access

Neither construction activities related to Phase 2 and Phase 3of the proposed project nor operation of Phase 2 and Phase 3 pumping stations would obstruct emergency access.

### Conclusion

There are no impacts and therefore no mitigation is required.

## Impact T-6: Inadequate Parking Capacity

Project engineers propose to store equipment and trucks and to provide parking for construction worker vehicles on site. The traffic control plan (discussed in Chapter 2, “Project Description”) would include the development of a construction parking plan to ensure that construction workers would park only in

designated areas. Therefore, no long-term displacement of on-street parking would occur as a result of proposed project construction or operation.

### Conclusion

There are no impacts and therefore no mitigation is required.

## Impact T-7: Conflict with Adopted Policies, Plans, or Programs Supporting Alternative Transportation

All adverse impacts to alternative transportation would be temporary and would not affect any adopted policies, plans, or programs. Public transit is limited in and around Oakley and no adverse effects are expected.

### Conclusion

There are no impacts and therefore no mitigation is required.

Chapter 5
# Air Quality

This chapter describes the impacts on air quality and climate change that would result from the proposed project. The key sources of data and information used in the preparation of this chapter are listed and briefly described below.

# Regulatory Setting

The proposed project is located in Contra Costa County, in the Bay Area Air Quality Management District (BAAQMD). The BAAQMD has jurisdiction over air quality issues in Contra Costa County, in addition to the other counties surrounding the San Francisco Bay. The BAAQMD administers air quality regulations developed at the federal, state, and local levels. Federal, state, and local air quality regulations applicable to the proposed project are described below, as well as existing conditions relating to air quality and climate change in the project area.

## Air Quality Regulatory Setting

This section discusses the local, state, and federal policies and regulations that are relevant to the analysis of air quality in the project area being considered.

Air pollution control programs were established in California before federal requirements were enacted. However, federal Clean Air Act (CAA) legislation in the 1970s resulted in a gradual merging of state and federal air quality programs, particularly those relating to industrial sources. Air quality management programs developed by California since the late 1980s generally have responded to requirements established by CAA.

The enactment of the California Clean Air Act (CCAA) in 1988 and the CAA Amendments of 1990 (CAA Amendments) have produced additional changes in the structure and administration of air quality management programs. The CCAA requires preparation of an air quality attainment plan for any area that violates state standards for carbon monoxide (CO), sulfur dioxide ($SO_2$), nitrogen dioxide ($NO_2$), or ozone. Locally prepared attainment plans are not required for areas that violate the state standards for particulate matter 10 microns or less in diameter (PM10), but the California Air Resources Board (ARB) currently is addressing PM10 attainment issues.

The air quality management agencies of direct importance in Contra Costa County include the EPA, ARB, and BAAQMD. The EPA has established federal standards for which the ARB and BAAQMD have primary implementation responsibility. ARB and BAAQMD are responsible for ensuring that state standards are met. The BAAQMD is responsible for implementing strategies for air quality improvement and recommending mitigation measures for new growth and development. At the local level, air quality is managed through land use and development planning practices, which are implemented in the county through the general planning process. The BAAQMD is responsible for establishing and enforcing local air quality rules and regulations that address the requirements of federal and state air quality laws.

California and the federal government have established standards for several different pollutants. For some pollutants, separate standards have been set for different measurement periods. Most standards have been set to protect public health. For some pollutants, standards have been based on other values (such as protection of crops, protection of materials, or avoidance of nuisance conditions). State and federal standards for a variety of pollutants are summarized in Table 5-1.

## Federal

The CAA, enacted in 1963 and amended several times thereafter (including the CAA Amendments), establishes the framework for modern air pollution control. The CAA directs the EPA to establish ambient air standards for six pollutants: CO, $SO_2$, $NO_2$, particulate matter, ozone, and lead. The standards are divided into primary and secondary standards. Primary standards are designed to protect human health, including the health of "sensitive" populations such as asthmatics, children, and the elderly, within an adequate margin of safety. Secondary standards are designed to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

The CAA Amendments are the primary legislation that governs federal air quality regulations. The CAA Amendments delegate primary responsibility for clean air to the EPA. The EPA develops rules and regulations to preserve and improve air quality, as well as delegating specific responsibilities to state and local agencies.

Areas that do not meet the federal ambient air quality standards shown in Table 5-1 are called *nonattainment* areas. For these nonattainment areas, the CAA requires states to develop and adopt State Implementation Plans (SIPs), which are air quality plans showing how air quality standards will be attained. The SIP, which is reviewed and approved by the EPA, must demonstrate how the federal standards will be achieved. Failing to submit a plan or secure approval could lead to the denial of federal funding and permits for such improvements as highway construction and sewage treatment plants. In California, the EPA has delegated authority to prepare SIPs to the ARB, which, in turn, has delegated that authority to individual air districts. In cases where the SIP is submitted by the

**Table 5-1.** Ambient Air Quality Standards Applicable in California

| Pollutant | Symbol | Average Time | Standard (parts per million) | | Standard (micrograms per cubic meter) | | Violation Criteria | |
|---|---|---|---|---|---|---|---|---|
| | | | California | National | California | National | California | National |
| Ozone* | $O_3$ | 1 hour | 0.09 | NA | 180 | NA | If exceeded | NA |
| | | 8 hours | 0.070 | 0.075 | 137 | 147 | If exceeded | If fourth highest 8-hour concentration in a year, averaged over 3 years, is exceeded at each monitor within an area |
| Carbon monoxide | CO | 8 hours | 9.0 | 9 | 10,000 | 10,000 | If exceeded | If exceeded on more than 1 day per year |
| | | 1 hour | 20 | 35 | 23,000 | 40,000 | If exceeded | If exceeded on more than 1 day per year |
| (Lake Tahoe only) | | 8 hours | 6 | NA | 7,000 | NA | If equaled or exceeded | NA |
| Nitrogen dioxide | $NO_2$ | Annual average | 0.030 | 0.053 | 57 | 100 | If exceeded | If exceeded on more than 1 day per year |
| | | 1 hour | 0.18 | NA | 339 | NA | If exceeded | NA |
| Sulfur dioxide | $SO_2$ | Annual average | NA | 0.030 | NA | 80 | NA | If exceeded |
| | | 24 hours | 0.04 | 0.14 | 105 | 365 | If exceeded | If exceeded on more than 1 day per year |
| | | 1 hour | 0.25 | NA | 655 | NA | If exceeded | NA |
| Hydrogen sulfide | $H_2S$ | 1 hour | 0.03 | NA | 42 | NA | If equaled or exceeded | NA |
| Vinyl chloride | $C_2H_3Cl$ | 24 hours | 0.01 | NA | 26 | NA | If equaled or exceeded | NA |
| Inhalable particulate matter | PM10 | Annual arithmetic mean | NA | NA | 20 | NA | NA | NA |
| | | 24 hours | NA | NA | 50 | 150 | If exceeded | If exceeded on more than 1 day per year |
| | PM2.5 | Annual arithmetic mean | NA | NA | 12 | 15 | NA | If 3-year average from single or multiple community-oriented monitors is exceeded |
| | | 24 hours | NA | NA | NA | 35 | NA | If 3-year average of 98$^{th}$ percentile at each population-oriented monitor within an area is exceeded |
| Sulfate particles | $SO_4$ | 24 hours | NA | NA | 25 | NA | If equaled or exceeded | NA |
| Lead particles | Pb | Calendar quarter | NA | NA | NA | 1.5 | NA | If exceeded no more than 1 day per year |
| | | 30-day average | NA | NA | 1.5 | NA | If equaled or exceeded | NA |

Notes: All standards are based on measurements at 25ºC and 1 atmosphere pressure.
National standards shown are the primary (health effects) standards.
NA = not applicable.

* The U.S. Environmental Protection Agency recently replaced the 1-hour ozone standard with an 8-hour standard of 0.08 part per million. EPA issued a final rule that revoked the 1-hour standard on June 15, 2005. However, the California 1-hour ozone standard will remain in effect.

Source: California Air Resources Board 2008a.

state but fails to demonstrate achievement of the standards, the EPA is directed to prepare a federal implementation plan.

## State

Responsibility for achieving California's air quality standards, which are more stringent than federal standards, is placed on the ARB and local air districts and is to be achieved through district-level air quality management plans that will be incorporated into the SIP. In California, the EPA has delegated authority to prepare SIPs to the ARB, which in turn has delegated that authority to individual air districts.

The ARB traditionally has established state air quality standards, maintaining oversight authority in air quality planning, developing programs for reducing emissions from motor vehicles, developing air emission inventories, collecting air quality and meteorological data, and approving SIPs.

Responsibilities of air districts include overseeing stationary source emissions, approving permits, maintaining emissions inventories, maintaining air quality stations, overseeing agricultural burning permits, and reviewing air quality–related sections of environmental documents required by CEQA.

The CCAA of 1988 substantially added to the authority and responsibilities of air districts. The CCAA designates air districts as lead air quality planning agencies, requires air districts to prepare air quality plans, and grants air districts authority to implement transportation control measures. The CCAA focuses on attainment of the state ambient air quality standards, which, for certain pollutants and averaging periods, are more stringent than the comparable federal standards.

The CCAA requires designation of attainment and nonattainment areas with respect to state ambient air quality standards. The CCAA also requires that local and regional air districts expeditiously adopt and prepare an air quality attainment plan if the district violates state air quality standards for CO, $SO_2$, $NO_2$, or ozone. These clean air plans are specifically designed to attain these standards and must be designed to achieve an annual 5% reduction in district-wide emissions of each nonattainment pollutant or its precursors. Where an air district is unable to achieve a 5% annual reduction in district-wide emissions of each nonattainment pollutant or its precursors, the adoption of "all feasible measures" on an expeditious schedule is acceptable as an alternative strategy (*Health and Safety Code Section 40914[b][2]*). No locally prepared attainment plans are required for areas that violate the state PM10 standards, but the ARB is currently addressing PM10 attainment issues.

The CCAA requires that the state air quality standards be met as expeditiously as practicable but, unlike the CAA, does not set precise attainment deadlines. Instead, the act established increasingly stringent requirements for areas that will require more time to achieve the standards.

The CCAA emphasizes the control of "indirect and area-wide sources" of air pollutant emissions. The CCAA gives local air pollution control districts explicit authority to regulate indirect sources of air pollution and to establish traffic control measures (TCMs). The CCAA does not define *indirect and area-wide sources*. However, Section 110 of the CAA defines an indirect source as:

> a facility, building, structure, installation, real property, road, or highway, which attracts, or may attract, mobile sources of pollution. Such term includes parking lots, parking garages, and other facilities subject to any measure for management of parking supply.

*TCMs* are defined in the CCAA as "any strategy to reduce trips, vehicle use, vehicle miles traveled, vehicle idling, or traffic congestion for the purpose of reducing vehicle emissions."

AB 1493 of 2002 required the ARB to develop and adopt the nation's first greenhouse gas (GHG) emission standards for automobiles. The legislature declared in AB 1493 that global warming was a matter of increasing concern for public health and environment in the state. It cited several risks that California faces from climate change, including a reduction in the state's water supply; an increase in air pollution caused by higher temperatures; harm to agriculture; an increase in wildfires; damage to the coastline; and economic losses caused by higher food, water, energy, and insurance prices. Further, the legislature stated that technological solutions to reduce GHG emissions would stimulate California's economy and provide jobs.

California's AB 32, the Global Warming Solutions Act of 2006, codifies the state's GHG emissions target by requiring the state's global warming emissions to be reduced to 1990 levels by 2020. In the short term, it directs the ARB to enforce the statewide cap that would begin phasing in 2012. AB 32 was signed and passed into law by Governor Arnold Schwarzenegger on September 27, 2006.

# Local

## City of Oakley General Plan

Oakley is located within the BAAQMD, which is considered a nonattainment air basin because it exceeds some of the allowable levels for various air pollutants. Cooperation among all agencies in the district is necessary to achieve desired improvements to air quality. The City can participate and contribute its share in those efforts through proper planning for land use and transportation and through educational outreach. As part of the City's planning effort, the *City of Oakley 202 General Plan* contains the following goals, policies, and programs (City of Oakley 2002).

### Goal

**6.2** Maintain or improve air quality in the City of Oakley.

### Policies

**6.2.1** Support the principles of reducing air pollutants through land use, transportation, and energy use planning.

**6.2.2** Encourage transportation modes that minimize contaminant emissions from motor vehicle use.

**6.2.3** Interpret and implement the General Plan to be consistent with the regional Bay Area Air Quality Management Plan (AQMP), as periodically updated.

**6.2.4** Ensure location and design of development projects so as to conserve air quality and minimize direct and indirect emissions of air contaminants.

**6.2.5** Encourage air quality improvement through educational outreach programs, such as Spare the Air Day.

### Programs

**6.2.A** Minimize impacts of new development by reviewing development proposals for potential impacts pursuant to CEQA and the BAAQMD Air Quality Handbook. Apply land use and transportation planning techniques such as:

- Incorporation of public transit stops;
- Pedestrian and bicycle linkage to commercial centers, employment centers, schools, and parks;
- Preferential parking for car pools and van pools;
- Traffic flow improvements; and
- Employer trip reduction programs.

**6.2.B** Control dust and particulate matter by implementing the AQMD's fugitive dust control measures, including:

- Restricting outdoor storage of fine particulate matter;
- Requiring liners for truck beds and covering of loads;
- Controlling construction activities and emissions from unpaved areas; and
- Paving areas used for vehicle maneuvering.

**6.2.C** Work with the Bay Area Air Quality management District (BAAQMD) and the Association of Bay Area Governments (ABAG) and, to the extent feasible, meet federal and State air quality standards for all pollutants. To ensure that new measures can be practically enforced in the region, participate in future amendments and updates of the AQMP.

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- Restricting outdoor storage of fine particulate matter;
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- Controlling construction activities and emissions from unpaved areas; and
- Paving areas used for vehicle maneuvering.

**6.2.C** Work with the Bay Area Air Quality management District (BAAQMD) and the Association of Bay Area Governments (ABAG) and, to the extent feasible, meet federal and State air quality standards for all pollutants. To ensure that new measures can be practically enforced in the region, participate in future amendments and updates of the AQMP.

## Contra Costa County General Plan

The *Contra Costa County General Plan* contains goals and policies related to air quality in Chapter 8 of the Conservation Element (Contra Costa County 2005). The following are goals and polices related to air quality:

### Goals

**8-AA** To Meet Federal Air Quality Standards for all air pollutants.

**8-AB** To continue to support Federal, state and regional efforts to reduce air pollution in order to protect human and environmental health.

**8-AC** To restore air quality in the area to a more healthful level.

**8-AB** To reduce the percentage of Average Daily Traffic (ADT) occurring at peak hours.

### Policies

**8-98** Development and roadway improvements shall be phased to avoid congestion

**8-99** The free flow of vehicular traffic shall be facilitated on major arterials.

**8-100** Vehicular emissions shall be reduced throughout the County.

**8-101** A safe, convenient and effect bicycle and trail system shall be created and maintained to encourage increased bicycles use and walking as an alternative to driving.

**8-102** A safe and convenient pedestrian system shall be created and maintained in order to encourage walking as an alternative to driving.

**8-103** When there is a finding that a proposed project might significantly affect air quality, appropriate mitigation measures shall be imposed.

**8-104** Proposed projects shall be reviewed for their potential to generate hazardous air pollutants.

**8-105** Land uses which are sensitive to air pollution shall be separated from air pollution.

**8-106** Air quality planning efforts shall be coordinated with other local, regional and state agencies.

**8-107** New housing in infill and peripheral areas which are adjacent to existing residential areas shall be encouraged.

# Climate Change Regulatory Setting

The current regulatory setting related to climate change and GHG emissions is summarized below.

## Federal

Twelve U.S. states and cities (including California), in conjunction with several environmental organizations, sued to force the EPA to regulate GHGs as a pollutant pursuant to the CAA (*Massachusetts vs. Environmental Protection Agency et al.* [U.S. Supreme Court No. 05–1120. Argued November 29, 2006—Decided April 2, 2007). The court ruled that the plaintiffs had standing to sue, that GHGs fit within the CAA's definition of a pollutant, and that the EPA's reasons for not regulating GHGs were insufficiently grounded in the CAA.

Despite the Supreme Court ruling, there are no promulgated federal regulations to date limiting GHG emissions.

## State

California Executive Order S-3-05 established the following GHG emission reduction targets for California:

- reduce GHG emissions to 2000 levels by 2010;
- reduce GHG emissions to 1990 levels by 2020; and
- reduce GHG emissions to 80% below 1990 levels by 2050.

California AB 1493 required ARB to develop and adopt the nation's first GHG emission standards for automobiles. The legislature declared in AB 1493 that global warming was a matter of increasing concern for public health and environment in the state. It cited several risks that California faces from climate change, including reduction in the state's water supply; increased air pollution creation by higher temperatures; harm to agriculture; increase in wildfires; damage to the coastline; and economic losses caused by higher food, water energy, and insurance prices. Further the legislature stated that technological solutions to reduce GHGs would stimulate California economy and provide jobs.

California AB 32, the Global Warming Solutions Act of 2006, codifies the state's GHG emissions target by requiring global warming emissions be reduced to 1990 levels by 2020 and directing ARB to enforce the statewide cap that would begin phasing in by 2012. AB 32 was signed and passed into law by Governor Arnold Schwarzenegger on September 27, 2006. Key AB 32 milestones are as follows:

- June 30, 2007—Identification of "discrete early action greenhouse gas emissions reduction measures."
- January 1, 2008—Identification of the 1990 baseline GHG emissions level and approval of a statewide limit equivalent to that level. Adoption of reporting and verification requirements concerning GHG emissions.
- January 1, 2009—Adoption of a scoping plan for achieving GHG emission reductions.
- January 1, 2010—Adoption and enforcement of regulations to implement the "discrete" actions.
- January 1 1011—Adoption of GHG emission limits and reduction measures by regulation.
- January 1, 2012—GHG emission limits and reduction measures adopted in 2011 become enforceable.

CARB identified the following early actions in its April 20, 2007 report.

- Group 1—Three new GHG-only regulations are proposed to meet the narrow legal definition of "discrete early action greenhouse gas reduction measures" in Section 38560.5 of the Health and Safety Code. These include the Governor's Low Carbon Fuel Standard, reduction of refrigerant losses from motor vehicle air conditioning maintenance, and increased methane capture from landfills. These actions are estimated to reduce GHG emissions between 13 and 26 Million Metric tons of carbon dioxide equivalent (MMT-$CO_2$ eq.)[1] annually by 2020 relative to projected levels. If approved for listing by the Governing Board, these measures will be brought to hearing in the next 12 to 18 months and take legal effect by January 1, 2010. When these actions take effect, they would influence GHG emissions associated with vehicle fuel combustion and air conditioning but would not affect project site design or implementation otherwise. Thus, the proposed project is consistent with these measures.
- Group 2—ARB is initiating work on another 23 GHG emission reduction measures in 2007–2009, with rulemaking to occur as soon as possible where applicable. These GHG measures relate to the following sectors: agriculture, commercial, education, energy efficiency, fire suppression, forestry, oil and gas, and transportation.
- Group 3—ARB staff has identified 10 conventional air pollution control measures that are scheduled for rulemaking in 2007–2009. These control measures are aimed at criteria and toxic air pollutants, but will have concurrent climate co-benefits through reductions in $CO_2$ or non-Kyoto pollutants (i.e., diesel particulate matter, other light-absorbing compounds and/or ozone precursors) that contribute to global warming.

[1] GHG emissions other than carbon dioxide are commonly converted into carbon dioxide equivalents which takes into account the differing global warming potential (GWP) of different gases. For example, the IPCC finds that $N_2O$ has a GWP of 310 and methane has a GWP of 21. Thus emission of one ton of $N_2O$ and one ton of methane is represented as the emission of 310 tons of $CO_2$ eq and 21 tons of $CO_2$ eq, respectively. This allows for the summation of different GHG emissions into a single total.

Proposed Groups 2 and 3 measures that could become effective during construction of the proposed project and could pertain to construction-related equipment operations include the following.

- Measure 2-6, Education: Guidance/protocols for local governments to facilitate GHG emission reductions.
- Measure 2-9, Energy Efficiency: Light-covered paving, cool roofs and shade trees.
- Measures 2-13, 2-14, 2-20, 3-2, 3-4, Transportation: Emission reductions for light-duty vehicles, heavy-duty vehicles, tire inflation program, and reductions for on-road diesel trucks and off-road diesel equipment (non-agricultural).
- Measure 3-10, Fuels: Evaporative standards for aboveground tanks.

These measures have not yet been adopted. Some proposed measures will require new legislation to implement, some will require subsidies, some have already been developed, and some will require additional effort to evaluate and quantify.

# Local

## Bay Area Air Quality Management District

BAAQMD presently has no guidance concerning CEQA evaluation of GHG emissions and no regulatory requirements.

## Bay Area Clean Air Plan

The 2005 Ozone Strategy is the Bay Area's portion of California's SIP to achieve the national ozone standard. The BAAQMD prepared the Bay Area 2005 Ozone Strategy in cooperation with the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG). The Ozone Strategy is a roadmap showing how the Bay Area will achieve compliance with the state 1-hour air quality standard for ozone as expeditiously as practicable and how the region will reduce transport of ozone and ozone precursors to neighboring air basins.

Ozone conditions in the Bay Area have improved significantly over the years. Ozone levels—as measured by peak concentrations and the number of days over the state 1-hour ozone standard—have declined substantially as a result of aggressive programs by BAAQMD; MTC; and regional, state and federal partners. This represents great progress in improving public health conditions for Bay Area residents. The 2005 Ozone Strategy provides useful background information on topics including the Bay Area's emission inventory, historical ozone trends, and the implementation status of past control measures.

The 2005 Ozone Strategy identifies 20 TCMs that cover various transportation strategies (Bay Area Air Quality Management District, Metropolitan Transportation Commission, and the Association of Bay Area Governments 2006):

- TCM 1: Support voluntary employer-based trip reduction programs
- TCM 3: Improve areawide transit service
- TCM 4: Improve regional rail service
- TCM 5: Improve access to rail & ferries
- TCM 6: Improve intercity rail service
- TCM 7: Improve ferry service
- TCM 8: Construct carpool/express bus lanes on freeways
- TCM 9: Improve bicycle access & facilities
- TCM 10: Youth transportation
- TCM 11: Install freeway/arterial metro traffic operations system
- TCM 12: Improve arterial traffic management
- TCM 13: Transit use incentives
- TCM 14: Improve rideshare/vanpool services and incentives
- TCM 15: Local clean air plans, policies and programs
- TCM 16: Intermittent control measure/public education
- TCM 17: Conduct demonstration projects
- TCM 18: Transportation pricing reform
- TCM 19: Pedestrian travel
- TCM 20: Promote traffic calming

TCMs often have benefits that are overlapping and complementary. For example, measures that improve bicycle and pedestrian safety, enhance transit service, and encourage development near transit all interact to make transit, walking, and cycling more viable transportation options.

Due to the overlapping benefits of these TCMs, it is difficult to capture these synergistic effects, although assumptions must be made about individual projects and programs when calculating emission reductions, but it is difficult to capture these synergistic effects.

TCMs have multiple benefits that go beyond air quality. Beyond the traditional benefits of reduced motor vehicle emissions, TCMs include projects and programs that may improve mobility (including for people with limited access to automobiles) and reduce traffic congestion, gasoline consumption, GHG emissions, and water pollution from urban runoff (Bay Area Air Quality

Management District, Metropolitan Transportation Commission, and the Association of Bay Area Governments 2006).

# Environmental Setting

## Existing Conditions

This section discusses the existing conditions related to air quality and climate change and identifies sensitive receptors in the project area. Ambient air quality is affected by climatological conditions, topography, and the types and amounts of pollutants emitted. The following discussion describes relevant characteristics of the air basin and offers an overview of conditions affecting pollutant ambient air concentrations in the basin.

### Project Area

#### Regional Climate and Meteorology

The Bay Area climate is characterized by moderately wet winters and dry summers. Winter rains, which generally occur from December through March, account for about 75% of the average annual rainfall. During rainy periods pollution levels are low.

The proposed project is located in the city of Oakley, in the San Francisco Bay Area air basin (SFBAAB). The project area lies in the Diablo Valley, just south of the Carquinez Strait region of the Bay Area and east of the Coast Ranges. The valley is broad, approximately 10 miles long and 5 miles wide. On the western side of Diablo Valley, the mountains of the Coast Range stand between 1,500 and 2,000 feet high.

Prevailing winds are from the northwest, particularly during the summer. During summer and fall months, high pressure offshore, coupled with thermal low pressure in the Central Valley, caused by high inland temperatures, sets up a pressure pattern that draws marine air eastward through the Carquinez Strait. The wind is strongest in the afternoon (up to 15–20 miles per hour) because that is when the pressure gradient between the East Pacific high and the thermal low is greatest. On clear nights, a surface inversion separates low layer flow from upper layer flow, and the terrain directs the flow toward the Carquinez Strait and downvalley.

Sometimes the pressure gradient reverses and flow from the east occurs. In the summer and fall months, this can cause elevated pollutant levels. Typically, for this to occur, high pressure is centered over the Great Basin or the Pacific Northwest, setting up an east to west or northeast to southwest pressure gradient. These high pressure periods have low wind speeds and shallow mixing depths, thereby allowing the localized emissions to build up. Furthermore, the air mass

from the east is warmer, thereby increasing photochemical activity, and contains more pollutants than the usual cool, clean marine air from the west. During the winter, easterly flow through the Carquinez Strait is more common. Between storms, with the high pressure system no longer offshore, high pressure over inland areas causes easterly flow.

The Diablo Valley has relatively high pollution potential. During the winter, pollution dispersion is limited due to the blocking effect of the terrain to the west and east, light winds at night and the surface inversion. During the summer, ozone is transported into Diablo Valley from both the Central Valley and the central Bay Area. The inland valleys of the Bay Area are prone to high summer temperatures and abundant sunshine (smog-making conditions).

The average annual high temperatures in the project area range from the 50s in the winter to the 80s and 90s in the summer. The Coast Range blocks marine flow and prevents the moderating effect of large water bodies, resulting in this relatively large seasonal temperature variation. The annual precipitation is relatively low, with an average of about 17 inches (Bay Area Air Quality Management District 1999).

## Criteria Pollutants

The federal and state governments have established ambient air quality standards for the following six criteria pollutants: ozone, CO, $NO_2$, $SO_2$, particulate matter (PM10 and particulate matter 2.5 microns or less in diameter [PM2.5]), and lead. Ozone, $NO_2$, and particulate matter generally are considered to be "regional" pollutants as these pollutants or their precursors affect air quality on a regional scale. Pollutants such as CO, $SO_2$, lead, and particulate matter are considered to be local pollutants that tend to accumulate in the air locally. Particulate matter is considered to be a localized pollutant as well as a regional pollutant. Within the project area, CO, PM10, and ozone are considered pollutants of concern. Toxic air contaminants (TACs) are discussed below also, although no state or federal ambient air quality standards exist for these pollutants. Brief descriptions of these pollutants are provided below, and a complete summary of California Ambient Air Quality Standards (CAAQS) and National Ambient Air Quality Standards (NAAQS) is provided in Table 5-1.

## Ozone

Ozone is a respiratory irritant that increases susceptibility to respiratory infections. It is also an oxidant that can cause substantial damage to vegetation and other materials. Ozone is a severe eye, nose, and throat irritant. Ozone also attacks synthetic rubber, textiles, plants, and other materials. Ozone causes extensive damage to plants by leaf discoloration and cell damage.

Ozone is not emitted directly into the air, but is formed by a photochemical reaction in the atmosphere. Ozone precursors—reactive organic gases (ROG)

and oxides of nitrogen ($NO_X$)—react in the atmosphere in the presence of sunlight to form ozone. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer air pollution problem. The ozone precursors, ROG and $NO_X$, are mainly emitted by mobile sources and by stationary combustion equipment.

State and federal standards for ozone have been set for an 8-hour averaging time. The state 8-hour standard is 0.070 parts per million (ppm), not to be exceeded, while the federal 8-hour standard is 0.075 ppm, not to be exceeded more than three times in any 3-year period. The state has established a 1-hour ozone standard of 0.09 ppm, not to be exceeded, and the federal 1-hour ozone standard of 0.12 ppm recently has been replaced by the 8-hour standard. State and federal standards are summarized in Table 5-1.

## Carbon Monoxide

CO is essentially inert to plants and materials but can have significant effects on human health. CO is a public health concern because it combines readily with hemoglobin and reduces the amount of oxygen transported in the bloodstream. CO can cause health problems such as fatigue, headache, confusion, dizziness, and even death.

Motor vehicles are the dominant source of CO emissions in most areas. High CO levels develop primarily during winter when periods of light winds combine with the formation of ground-level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures.

State and federal CO standards have been set for 1- and 8-hour averaging times. The state 1-hour standard is 20 ppm, not to be exceeded, whereas the federal 1-hour standard is 35 ppm, not to be exceeded more than 1 day per year. The state 8-hour standard is 9.0 ppm, not be exceeded, and the federal 8-hour standard is 9 ppm, not to be exceeded more than 1 day per year. State and federal standards are summarized in Table 5-1.

## Inhalable Particulates

Inhalable particulates can damage human health and retard plant growth. Health concerns associated with suspended particulate matter focus on those particles small enough to reach the lungs when inhaled. Particulates also reduce visibility and corrode materials. Particulate emissions are generated by a wide variety of sources, including agricultural activities, industrial emissions, dust suspended by vehicle traffic and construction equipment, and secondary aerosols formed by reactions in the atmosphere.

The federal and state ambient air-quality standard for particulate matter applies to two classes of particulates: PM10 and PM2.5. The state PM10 standards are 50 micrograms per cubic meter ($\mu g/m^3$) as a 24-hour average and 20 $\mu g/m^3$ as an annual arithmetic mean. The federal PM10 standard is 150 µg/m3 as a 24-hour average. The state PM2.5 standard is 12 $\mu g/m^3$ as an annual arithmetic mean. The federal PM2.5 standards are 15 $\mu g/m^3$ for the annual arithmetic mean and 35 $\mu g/m^3$ for the 24-hour average. State and federal standards are summarized in Table 5-1.

## Toxic Air Contaminants

TACs are pollutants that may be expected to result in an increase in mortality or serious illness or that may pose a present or potential hazard to human health. Health effects include cancer, birth defects, neurological damage, damage to the body's natural defense system, and diseases that lead to death. Although ambient air quality standards exist for criteria pollutants, no standards exist for TACs.

Many pollutants are identified as TACs because of their potential to increase the risk of developing cancer or because of their acute or chronic health risks. For TACs that are known or suspected carcinogens, ARB consistently has found that there are no levels or thresholds below which exposure is risk-free. Individual TACs vary greatly in the risk they present. At a given level of exposure, one TAC may pose a hazard that is many times greater than another. For certain TACs, a unit risk factor can be developed to evaluate cancer risk. For acute and chronic health risks, a similar factor called a hazard index is used to evaluate risk. In the early 1980s, the ARB established a statewide comprehensive air toxics program to reduce exposure to air toxics. The Toxic Air Contaminant Identification and Control Act (AB 1807) created California's program to reduce exposure to air toxics. The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588) supplements the AB 1807 program by requiring a statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks. The TAC of most concern with regard to the proposed project is diesel exhaust particulate matter, which was identified by the ARB as a TAC in October 2000.

## Greenhouse Gases and Climate Change/Global Warming

Global climate change is a problem caused by combined worldwide GHGs, and mitigating global climate change will require worldwide solutions. Combined gases in Earth's atmosphere, called atmospheric GHGs, play a critical role in Earth's radiation budget by trapping infrared radiation emitted from Earth's surface that otherwise could have escaped into space. This phenomenon, known as the "greenhouse effect," keeps Earth's atmosphere near the surface warmer than it would be otherwise and allows for successful habitation by humans and other forms of life. Increases in these gases lead to more absorption of radiation and further warm the lower atmosphere, thereby increasing evaporation rates and temperatures near the surface. Emissions of the GHGs in excess of natural

ambient concentrations are thought to be responsible for the enhancement of the greenhouse effect and to contribute to what is termed "global warming," a trend of unnatural warming of Earth's natural climate.

Naturally occurring GHGs include water vapor, $CO_2$, methane, nitrous oxide ($N_2O$), ozone, and certain fluorocarbons. Certain human activities, however, add to the levels of most of these naturally occurring gases. $CO_2$ is released to the atmosphere when solid waste, fossil fuels (oil, natural gas, and coal), and wood and wood products are burned. $N_2O$ is emitted during agricultural and industrial activities, as well as during combustion of solid waste and fossil fuels. $CO_2$ and $N_2O$ are the two GHGs released in the greatest quantities from mobile sources burning gasoline and diesel fuel. Because of the relatively long life of primary GHGs in the atmosphere, which results in the accumulation over time and well-mixing of these gases in the atmosphere, their impact on the atmosphere is mostly independent of the point of emission.

Climate change is a global problem, and GHGs are global pollutants, unlike criteria air pollutants (such as ozone precursors) and TACs, which are pollutants of regional and local concern. Worldwide, California is the 12$^{th}$ to 16$^{th}$ largest emitter of $CO_2$ (California Energy Commission 2006) and is responsible for approximately 2% of the world's $CO_2$ emissions (California Energy Commission 2006).

The Intergovernmental Panel on Climate Change (IPCC) has been established by the World Meteorological Organization and United Nations Environment Programme to assess scientific, technical, and socioeconomic information relevant to the understanding of climate change, its potential impacts, and options for adaptation and mitigation. The IPCC predicts substantial increases in temperatures globally of between 34 and 44°F (1.1 and 6.4°Celsius), depending on the scenario) (Intergovernmental Panel on Climate Change 2007).

This may affect the natural environment in California by creating the following conditions, among others:

- rising sea levels along the California coastline, particularly in San Francisco and the Delta, as a result of ocean expansion;
- extreme-heat conditions, such as heat waves and very high temperatures, which could last longer and become more frequent;
- an increase in heat-related human deaths, infection diseases, and a higher risk of respiratory problems caused by deteriorating air quality;
- reduced snowpack and stream flow in the Sierra Nevada, affecting winter recreation and water supplies;
- a potential increase in the severity of winter storms, affecting peak stream flows and flooding;
- changes in growing season conditions that could affect California agriculture, causing variations in crop quality and yield; and

- changes in distribution of plant and wildlife species due to changes in temperature, competition from colonizing species, changes in hydrologic cycles, changes in sea levels, and other climate-related effects.

These changes in California's climate and ecosystems are occurring at a time when California's population is expected to increase from 34 million to 59 million by the year 2040 (California Energy Commission 2005). As such, the number of people potentially affected by climate change, as well as the amount of anthropogenic GHG emissions expected under a "business as usual" scenario, are expected to increase. Similar changes as those noted above for California also would occur in other parts of the world, with regional variations in resources affected and vulnerability to adverse effects.

GHG emissions in California are attributable to human activities associated with industrial/manufacturing, utilities, transportation, residential, and agricultural sectors as well as natural processes (California Energy Commission 2006). Transportation is responsible for 41% of the state's GHG emissions, followed by the industrial sector (23%), electricity generation (20%), agriculture and forestry (8%), and other sources (8%) (California Energy Commission 2006). Emissions of $CO_2$ and $N_2O$ are byproducts of fossil fuel combustion, among other sources. Methane, a highly potent GHG, results from off-gassing associated with agricultural practices and landfills, among other sources. Sinks of $CO_2$ include uptake by vegetation and dissolution into the ocean.

## Monitoring Data

Existing air quality conditions in the project area can be characterized in terms of the ambient air quality standards that the federal and state governments have established for various pollutants (Table 5-1) and by monitoring data collected in the region. Monitoring data concentrations are typically expressed in terms of ppm or $\mu g/m^3$. There are nine air quality monitoring stations located in Contra Costa County:

- 5551 Bethel Island Road, Bethel Island;
- 2975 Treat Boulevard, Concord;
- 583 W. 10$^{th}$ Street, Pittsburg;
- 1865 Rumrill Boulevard, San Pablo
- Kendall Avenue, Crockett;
- 521 Jones Street, Martinez;
- 7$^{th}$ Street, Richmond;
- 140 W. Richmond Avenue, Richmond;
- and 326 Third Street, Rodeo.

The closest air quality monitoring station to the project area is located at Bethel Island. The Bethel Island, Pittsburg-10$^{th}$ Street, and San Pablo-Rumrill stations

monitor ozone, CO, and PM10. The Concord-Treat station monitors ozone, CO, PM10, and PM2.5. The Crockett-Kendall, Martinez-Jones, Richmond-7th Street, Richmond-Richmond Avenue, and Rodeo-Third Street stations do not monitor pollutants addressed in this draft EIR. Air quality monitoring data from the Contra Costa monitoring stations is summarized in Table 5-2. These data represent air quality monitoring data for the last three years (2004–2006) in which complete data is available.

As shown in Table 5-2 during the 3-year monitoring period, the Bethel Island monitoring station has experienced no violations of the federal 1-hour ozone standard, ten violations of the state 1-hour ozone standard, one violation of the federal 8-hour ozone standard, no violations of the federal and state CO standards, no violations for the federal 24-hour PM10 standard, and two violations of the state 24-hour PM10 standard. The Pittsburg-10th Street station has experienced no violations of the federal 1-hour ozone standard, three violations of the state 1-hour ozone standard, one violation of the federal 8-hour ozone standard, no violations of the federal and state CO standards, no violations for the federal 24-hour PM10 standard, and four violations of the state 24-hour PM10 standard. The San Pablo-Rumrill station has experienced no violations of the federal 1-hour ozone standard, one violation of the state 1-hour ozone standard, no violations of the federal 8-hour ozone standard, no violations of the federal and state CO standards, and no violations for the federal 24-hour PM10 standard. The Concord-Treat station has experienced no violations of the federal 1-hour ozone standard, ten violations of the state 1-hour ozone standard, four violations of the federal 8-hour ozone standard, no violations of the federal and state CO standards, no violations for the federal 24-hour PM10 standard, four violations of the state 24-hour PM10 standard, and one violation for the federal 24-hour PM2.5 standard.

## Attainment Status

If monitored pollutant concentrations meet state or federal standards over a designated period of time, the area is classified as being in *attainment* for that pollutant. If monitored pollutant concentrations violate the standards, the area is considered a *nonattainment* area for that pollutant. If data are insufficient to determine whether a pollutant is violating the standard, the area is designated unclassified.

The EPA has classified Contra Costa County as a marginal nonattainment area with regards to the federal 8-hour ozone standard. The EPA revoked the federal 1-hour ozone standard on June 15, 2005, and Contra Costa is no longer subject to the standard. Prior to this policy change, Contra Costa County was classified as a nonattainment area with regards to the federal 1-hour ozone standard. With regards to the federal CO standard, the EPA has classified urbanized areas of Contra Costa County (described in the Technical Support Document from 3/29/85, *50 FR 12540*) as a moderate (≤ 12.7 ppm) maintenance area, while the rest of Contra Costa County is classified as an unclassified/attainment area. The EPA has classified Contra Costa County as an unclassified/attainment area with regards to the federal PM10 and PM2.5 standards.

The ARB has classified Contra Costa County as a serious nonattainment area with regards to the state the 1-hour ozone standard and a nonattainment area with regards to the state 8-hour ozone standard. With regards to the state CO standard, ARB has classified Contra Costa County as an attainment area. The ARB has classified Contra Costa County as a nonattainment area with regards to the state PM10 and PM 2.5 standards. Contra Costa County's attainment status for each of these pollutants relative to the NAAQS and CAAQS is summarized in Table 5-3.

**Table 5-3.** Federal and State Attainment Status for Contra Costa County

| Pollutant | Federal | State |
|---|---|---|
| 1-hour $O_3$ | NA[a] | Serious nonattainment |
| 8-hour $O_3$ | Marginal nonattainment | NA[b] |
| CO | Moderate (≤ 12.7 ppm) maintenance area for the urbanized areas of Contra Costa County (described in the Technical Support Document from March 29, 1985, *50 FR 12540*); unclassified/attainment area for the rest of Contra Costa County | Attainment |
| PM10 | Unclassified/attainment | Nonattainment |
| PM2.5 | Unclassified/attainment | Nonattainment |

[a] Previously in nonattainment area; no longer subject to the 1-hour standard because of EPA revocation of the 1-hour standard on June 15, 2005.

[b] The ARB approved the 8-hour ozone standard on April 28, 2005, and it became effective on May 17, 2006. However, the ARB has not yet designated areas for this standard.

## Climate Change Existing Conditions

### California

Worldwide, California is the 12th to 16th largest emitter of $CO_2$ (California Energy Commission 2006) and is responsible for approximately 2% of the world's $CO_2$ emissions (California Energy Commission 2006).

Transportation is responsible for 41% of the state's GHG emissions, followed by the industrial sector (23%), electricity generation (20%), agriculture and forestry (8%) and other sources (8%) (California Energy Commission 2006). Emissions of carbon dioxide and $N_2O$ are byproducts of fossil fuel combustion, among other sources. Methane, a highly potent GHG, results from off-gassing associated with agricultural practices and landfills, among other sources. Sinks[2] of carbon dioxide include uptake by vegetation and dissolution into the ocean. California GHG emissions in 2002 totaled approximately 491 MMT-$CO_2$ eq.

[2] A *carbon dioxide sink* is a resource that absorbs carbon dioxide from the atmosphere. The classic example of a sink is a forest in which vegetation absorbs carbon dioxide and produces oxygen through photosynthesis.

**Table 5-2.** Ambient Air Quality Monitoring Data Measured at the Bethel Island, Pitttsburg-10th Street, San Pablo–Rumrill, and Concord-Treat Monitoring Stations



| | Bethel Island | | | Pittsburg-10th St. | | | San Pablo-Rumrill | | | Concord-Treat | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Pollutant Standards** | **2004** | **2005** | **2006** | **2004** | **2005** | **2006** | **2004** | **2005** | **2006** | **2004** | **2005** | **2006** |
| **Ozone ($O_3$)** | | | | | | | | | | | | |
| Maximum 1-hour concentration (ppm) | 0.103 | 0.089 | 0.116 | 0.090 | 0.094 | 0.105 | 0.105 | 0.066 | 0.061 | 0.097 | 0.098 | 0.117 |
| Maximum 8-hour concentration (ppm) | 0.081 | 0.077 | 0.090 | 0.081 | 0.078 | 0.093 | 0.069 | 0.057 | 0.050 | 0.083 | 0.082 | 0.092 |
| Number of days standard exceeded[a] | | | | | | | | | | | | |
| NAAQS 1-hour (>0.12 ppm) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CAAQS 1-hour (>0.09 ppm) | 1 | 0 | 9 | 0 | 0 | 3 | 1 | 0 | 0 | 1 | 1 | 8 |
| NAAQS 8-hour (>0.075 ppm) | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 |
| **Carbon Monoxide (CO)** | | | | | | | | | | | | |
| National[b] Maximum 8-hour concentration (ppm) | 0.91 | 0.91 | 1.04 | 1.91 | 1.73 | 1.92 | 1.83 | 1.33 | 1.40 | 2.00 | 1.51 | 1.30 |
| California[c] Maximum 8-hour concentration (ppm) | 0.91 | 0.91 | 1.04 | 1.91 | 1.73 | 1.92 | 1.83 | 1.33 | 1.40 | 2.00 | 1.51 | 1.30 |
| Maximum 1-hour concentration (ppm) | 1.2 | 1.1 | 1.3 | 4.1 | 3.3 | 3.3 | 3.2 | 2.8 | 2.5 | 2.7 | 2.2 | 1.7 |
| Number of days standard exceeded[a] | | | | | | | | | | | | |
| NAAQS 8-hour (≥9 ppm) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CAAQS 8-hour (≥9.0 ppm) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NAAQS 1-hour (≥35 ppm) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CAAQS 1-hour (≥20 ppm) | | | | | | | | | | | | |
| **Particulate Matter (PM10)**[d] | | | | | | | | | | | | |
| National[b] maximum 24-hour concentration (μg/m$^3$) | 40.0 | 61.8 | 82.1 | 61.9 | 54.1 | 57.8 | 62 | 62 | 61 | 48.3 | 40.3 | 83.6 |
| National[b] second-highest 24-hour concentration (μg/m$^3$) | 37.2 | 42.5 | 47.7 | 46.3 | 41.3 | 51.5 | 42 | 40 | 58 | 43.3 | 32.6 | 60.9 |
| State[c] maximum 24-hour concentration (μg/m$^3$) | 42.2 | 63.5 | 84.3 | 64.0 | 57.0 | 58.9 | – | – | – | 50.7 | 42.2 | 80.5 |
| State[c] second-highest 24-hour concentration (μg/m$^3$) | 38.2 | 44.5 | 50.0 | 48.5 | 42.4 | 54.5 | – | – | – | 45.8 | 33.8 | 54.0 |
| National annual average concentration (μg/m$^3$) | 18.9 | 17.9 | 18.8 | 21.1 | 19.5 | 19.4 | 21 | 18 | 21 | 18.1 | 15.9 | 18.1 |
| State annual average concentration (μg/m$^3$)[e] | 19.5 | 18.5 | 19.4 | 21.7 | 20.1 | 19.9 | – | – | – | – | 16.4 | 18.5 |
| Number of days standard exceeded[a] | | | | | | | | | | | | |
| NAAQS 24-hour (>150 μg/m$^3$)[f] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CAAQS 24-hour (>50 μg/m$^3$)[f] | 0 | 1 | 1 | 1 | 1 | 2 | – | – | – | 1 | 0 | 3 |

| Pollutant Standards | Bethel Island | | | Pittsburg-10th St. | | | San Pablo-Rumrill | | | Concord-Treat | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2004 | 2005 | 2006 | 2004 | 2005 | 2006 | 2004 | 2005 | 2006 | 2004 | 2005 | 2006 |
| **Particulate Matter (PM2.5)** | | | | | | | | | | | | |
| National[b] maximum 24-hour concentration (μg/m$^3$) | – | – | – | – | – | – | – | – | – | 73.7 | 48.9 | 62.1 |
| National[b] second-highest 24-hour concentration (μg/m$^3$) | – | – | – | – | – | – | – | – | – | 51.2 | 48.7 | 62.1 |
| State[c] maximum 24-hour concentration (μg/m$^3$) | – | – | – | – | – | – | – | – | – | 73.7 | 48.9 | 62.1 |
| State[c] second-highest 24-hour concentration (μg/m$^3$) | – | – | – | – | – | – | – | – | – | 51.2 | 48.7 | 48.5 |
| National annual average concentration (μg/m$^3$) [e] | – | – | – | – | – | – | – | – | – | – | 9.1 | 9.5 |
| State annual average concentration (μg/m$^3$) [e] | – | – | – | – | – | – | – | – | – | 11.5 | 9.3 | 10.0 |
| Number of days standard exceeded[a] | | | | | | | | | | | | |
| NAAQS 24-hour (>35 μg/m$^3$) | – | – | – | – | – | – | – | – | – | 1 | 0 | 0 |

Notes: CAAQS = California ambient air quality standards.
NAAQS = national ambient air quality standards.
– = insufficient data available to determine the value.

[a] An exceedance is not necessarily a violation.

[b] National statistics are based on standard conditions data. In addition, national statistics are based on samplers using federal reference or equivalent methods.

[c] State statistics are based on local conditions data, except in the South Coast Air Basin, for which statistics are based on standard conditions data. In addition, State statistics are based on California approved samplers.

[d] Measurements usually are collected every 6 days.

[e] State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.

[f] Mathematical estimate of how many days concentrations would have been measured as higher than the level of the standard had each day been monitored.

Sources: California Air Resources Board 2008b; U.S. Environmental Protection Agency 2008.

### Bay Area

BAAQMD prepared an inventory of GHG emissions in the 9-county Bay Area in November 2006. Transportation is responsible for 51% of the Bay Area's emissions, followed by the industrial/commercial sector (26%), power plants (7%), oil refining (6%) and domestic use (11%) (Bay Area Air Quality Management District, Metropolitan Transportation Commission, and the Association of Bay Area Governments 2006). Total GHG emissions in 2002 were estimated at 85.4 MMT-$CO_2$ eq.

## Sensitive Land Uses

The BAAQMD generally defines a sensitive receptor as a facility or land use that houses or attracts members of the population, such as children, the elderly, and people with illnesses, who are particularly sensitive to the effects of air pollutants. Examples of sensitive receptors include schools, hospitals, convalescent facilities, and residential areas. There are a number of rural residences in close proximity to the proposed project.

# Project Impacts and Mitigation Measures

## Methods

### Project Construction

As discussed above, the BAAQMD has not established significance thresholds for construction emissions, nor is quantification of such emissions required. However, to achieve a better understanding of the likely approximate level of construction-related emissions generated by project conditions and provide decision makers with this information, modeling was conducted, using the URBEMIS 2007 model, to estimate emissions associated with construction of the proposed project.

Construction of the proposed project would result in the temporary generation of emissions of ROG, $NO_X$, CO, particulate matter (PM2.5 and PM10), and $CO_2$ that would result in short-term impacts on ambient air quality in the area. Emissions would originate from mobile and stationary construction equipment exhaust, employee vehicle exhaust, dust from clearing the land, exposed soil eroded by wind, and ROG from architectural coatings and asphalt paving. Construction-related emissions would vary substantially depending on the level of activity, length of the construction period, specific construction operations, types of equipment, number of personnel, wind and precipitation conditions, and soil moisture content.

To estimate construction emissions, URBEMIS 2007 analyzes the type of construction equipment used and the duration of the construction period associated with construction of each of the land uses. Because construction

impacts vary substantially from day to day, construction is expect to be spread over a 6-month period commencing in summer/fall 2009, with most construction activities occurring concurrently.

A detailed inventory of construction equipment that will be used for the proposed project was provided by the project applicant. However, URBEMIS 2007 model default settings for equipment horsepower and load factor were used to identify the type and number of equipment that would be operating on a typical 8-hour workday during the construction period for well construction, pump station building construction, and pipeline construction activities. Table 5-4 summarizes the anticipated construction equipment and construction vehicle activity data used in the estimation of construction emissions for each project component.

**Table 5-4.** Anticipated Construction Equipment

| Equipment Pieces by Phase | Number of Equipment Pieces |
|---|---|
| Well construction | |
| Trailer-mounted diesel generator | 1 |
| Tractor/loader/backhoe | 1 |
| Dump truck | 1 |
| Pump station building construction | |
| Ready-mix trucks | 1 |
| Backhoes | 1 |
| Graders | 1 |
| Compactors | 2 |
| Bulldozers | 1 |
| Supply trucks | 1 |
| Welding machines | 2 |
| Air compressors | 2 |
| Pipeline construction | |
| Horizontal boring machine/auger | 1 |
| Backhoes | 1 |
| Front-end loaders | 1 |
| Dump trucks | 1 |
| Crane | 1 |
| Compactors | 2 |
| Flat-bed delivery trucks | 1 |

### Project Operation

The proposed project would not result in any direct operational emissions. This is a result of less energy usage required by the proposed project than would be required to pump water from the Delta, which would be associated with the no project alternative. This decreased electricity use would have an indirect effect on greenhouse gas emissions. This impact is discussed below.

## Thresholds of Significance

This impact discussion utilizes the thresholds identified below to determining the level of impacts associated with the proposed project, unless otherwise specified. Criteria for determining the significance of impacts related to air quality were developed based on the environmental checklist form in Appendix G of the State CEQA Guidelines (*14 CCR 15000 et seq.*). An impact related to Air Quality was considered significant if it would:

- conflict with or obstruct implementation of the applicable air quality management plan;
- violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors);
- expose sensitive receptors to substantial pollutant concentrations; or
- create objectionable odors affecting a substantial number of people.

The State CEQA Guidelines further state that the significance criteria established by the applicable air quality management or air pollution control district may be relied on to make the determinations above. Therefore, impacts to air quality were assessed based on information contained in the *BAAQMD CEQA Guidelines: Assessing the Air Quality Impacts of Projects and Plans* (1999).

### Project Construction

The BAAQMD has not set significance thresholds for construction-related air pollutant emissions. For the assessment of construction impacts, the BAAQMD does not require quantification of construction emissions. Instead, it requires implementation of effective and comprehensive feasible control measures to reduce PM10 emissions (Bay Area Air Quality Management District 1999). PM10 emitted during construction activities varies greatly depending on the level of activity, the specific operations taking place, the equipment being operated, local soils, and weather conditions. Despite this variability in emissions, experience has shown that there are a number of feasible control measures that

can be reasonably implemented to reduce PM10 emissions during construction; these measures are summarized in Table 5-5. According to the BAAQMD, if all control measures listed in Table 5-5 are implemented (as appropriate, depending on the size of the project area), air pollutant emissions from construction activities would be considered less than significant (Bay Area Air Quality Management District 1999).

**Table 5-5.** BAAQMD Feasible Control Measures for Construction Emissions of PM10

| |
|---|
| **Basic Control Measures. The following controls should be implemented at all construction sites.** |
| ▪ Water all active construction areas at least twice daily. |
| ▪ Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least 2 feet of freeboard. |
| ▪ Pave, apply water three times daily, or apply (nontoxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites. |
| ▪ Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites. |
| ▪ Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets. |
| **Enhanced Control Measures. The following measures should be implemented at construction sites greater than 4 acres in area.** |
| ▪ Hydroseed or apply (nontoxic) soil stabilizers to inactive construction areas (i.e., previously graded areas inactive for 10 days or more). |
| ▪ Enclose, cover, water twice daily, or apply (nontoxic) soil binders to exposed stockpiles (e.g., dirt and sand). |
| ▪ Limit traffic speeds on unpaved roads to 15 mph. |
| ▪ Install sandbags or other erosion control measures to prevent silt runoff to public roadways. |
| ▪ Replant vegetation in disturbed areas as quickly as possible. |
| **Optional Control Measures. The following control measures are strongly encouraged at construction sites that are large in area, located near sensitive receptors, or for any other reason may warrant additional emissions reductions, but the project applicant is not required to implement.** |
| ▪ Install wheel washers for all exiting trucks, or wash off the tires or tracks of all trucks and equipment leaving the site. |
| ▪ Install windbreaks or plant trees or vegetative wind breaks at windward side(s) of construction areas. |
| ▪ Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph. |
| ▪ Limit the area subject to excavation, grading, and other construction activity at any one time. |
| Source: Bay Area Air Quality Management District 1999. |

Construction equipment also emits CO and ozone precursors. According to the BAAQMD, emissions from construction activities have already been included in the emission inventory that forms the basis for the BAAQMD's regional air quality plans and are not expected to impede attainment or maintenance of ozone and CO standards in the Bay Area (Bay Area Air Quality Management District 1999). Consequently, construction-related emissions of CO and ozone precursors are considered less than significant.

# Impacts and Mitigation Measures

## Impact AQ-1: Generation of Significant Levels of Emissions from Project Construction

As indicated above, the BAAQMD does not require quantification of construction emissions, as air pollutant emissions from construction activities are considered less than significant if all fugitive dust control measures listed in Table 5-5 are implemented (as appropriate, depending on the size of the project area). DWD will incorporate certain environmental commitments and BMPs into the proposed project alternatives to avoid or minimize potential impacts. DWD will implement a Fugitive PM10 Management Plan (FPMP) as an environmental commitment. The purpose of an FPMP is to achieve a PM10 control efficiency of 50%. Implementation of the FPMP will ensure that construction emissions are less than significant.

Construction activities would also generate emissions of ozone precursors, CO, and PM10. As discussed above, the BAAQMD has not established significance thresholds for these construction-related emissions, nor does the BAAQMD require quantification of such emissions, as they are already included in the emission inventory that is the basis for the BAAQMD's regional air quality plans and are not expected to impede the BAAQMD's attainment or maintenance of ozone and CO standards (Bay Area Air Quality Management District 1999). However, to achieve a better understanding of the likely approximate level of construction-related emissions generated by project conditions and provide decision makers with this information, modeling was conducted, using the URBEMIS 2007 model, to estimate emissions associated with construction of the proposed project. Criteria pollutant emissions from construction activities are presented in Table 5-6.

**Table 5-6.** Emissions of Criteria Pollutants from Construction Activities (Pounds per Day)

| Construction phase | ROG | $NO_X$ | CO | PM10 | PM2.5 | $CO_2$ |
|---|---|---|---|---|---|---|
| Well construction | 2.3 | 28.8 | 9.1 | 0.9 | 0.8 | 3,064.2 |
| Pump station construction | 5.4 | 35.8 | 20.9 | 2.3 | 2.1 | 2,927.6 |
| Pipeline construction | 2.4 | 23.3 | 10.8 | 1.0 | 0.9 | 3,041.9 |

The FPMP will ensure that construction emissions are less than significant.

### Conclusion

This impact is considered less than significant with implementation of the required BAAQMD control measures and the FPMP.

## Impact AQ-2: Elevated Health Risk from Exposure to Construction-Related Diesel Particulate Matter

Construction activities are anticipated to involve the operation of diesel-powered equipment for various activities. In October 2000, the ARB identified diesel exhaust as a TAC. As described above, construction activities are anticipated to occur over a 6-month period starting in Summer/Fall 2009. The assessment of cancer health risks associated with exposure to diesel exhaust is typically associated with chronic exposure, in which a 70-year exposure period is often assumed. However, while excess cancer can result from exposure periods of less than 70 years, acute exposure periods (i.e., exposure periods of two to three years) to diesel exhaust are not anticipated to result in an increased health risk, as health risks associated with exposure to diesel exhaust are typically seen in exposures periods that are chronic in nature. Because construction activities will occur over a 6-month period and will not result in long-term emissions of diesel exhaust at the project site, this impact is considered less than significant.

## Conclusion

This impact is considered less than significant.

## Impact AQ-3: Increase in Greenhouse Gas Contaminant Emissions

As previously discussed, implementation of the proposed project would result in electricity usage from pumping groundwater. However, compared to surface water deliveries via the CCWD, energy usage for groundwater pumping would be less than the energy used for surface water deliveries which would be associated with the no project alternative. Reducing the amount of water pumped from the Delta would indirectly reduce greenhouse gas emissions, as lower electricity usage would not require as much electricity generation. Because electricity generation often entails the burning of fossil fuels, which result in GHG emissions, lowering electricity consumption can reduce GHG emissions. Table 5-7 summarizes electricity usage and associated GHG emissions associated with current delivery practices, as well as groundwater pumping associated with the proposed project.

**Table 5-7.** Greenhouse Gas Emissions

| Delivery vs Pumping | kWh/Mg | kWh | $CO_2$ (lb) | $CH_4$ (lb) | $N_2O$ (lb) | $CO_2e$ (lb) | $CO_2e$ (metric ton) | $CO_2e$ (metric ton)/day |
|---|---|---|---|---|---|---|---|---|
| Delivery | | | | | | | | |
| Delta to LV & RBWTP | 1,185 | 862,680 | 422,023.06 | 5.78 | 3.19 | 423,100.80 | 191.92 | 0.53 |
| RBWTP treatment | 537 | 390,936 | 191,245.89 | 2.62 | 1.45 | 191,734.29 | 86.97 | 0.24 |
| DWD RBWTP pumps | 511 | 372,008 | 181,986.31 | 2.49 | 1.38 | 182,451.06 | 82.76 | 0.23 |
| Total RBWTP | 2,233 | 1,625,624 | 795,255.26 | 10.89 | 6.01 | 797,286.15 | 361.64 | 0.99 |
| Pumping | | | | | | | | |
| Well | 1,567 | 1,140,776 | 558,067.62 | 7.64 | 4.22 | 559,492.79 | 253.78 | 0.70 |
| Differences | -666 | -484,848 | -237,187.64 | -3.25 | -1.79 | -237,793.36 | -107.86 | -0.30 |

LV = Los Vaqueros.

As indicated in Table 5-7, implementation of the proposed project would result in 0.30 metric tons/day fewer carbon dioxide equivalent emissions, compared to the no project alternative.

### Conclusion

This impact is considered beneficial.

Chapter 6
# Noise

This chapter describes the regulatory and environmental setting for noise, the noise impacts that would result from the proposed project, and the mitigation measures that would reduce these impacts.

# Regulatory Setting

## Federal

There are no federal regulations addressing noise that are related to the proposed project.

## State

The State of California General Plan Guidelines (Governor's Office of Planning and Research 2003) identify guidelines for the noise elements of local general plans, including a sound level/land use compatibility chart that categorizes by land use; outdoor Day-Night Level **(**$L_{dn}$) ranges in up to four categories (normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable).

The noise element guidelines identify the normally acceptable range for low-density residential uses as less than 60 decibels (dB), and the conditionally acceptable range as 55–70 dB. The normally acceptable range for high-density residential uses is identified as $L_{dn}$ values below 65 dB, and the conditionally acceptable range is identified as 60–70 dB. For educational and medical facilities, $L_{dn}$ values below 70 dB are considered normally acceptable, and $L_{dn}$ values of 60–70 dB are considered conditionally acceptable. For office and commercial land uses, $L_{dn}$ values below 70 dB are considered normally acceptable, and $L_{dn}$ values of 67.5–77.5 are categorized as conditionally acceptable.

## Local

Contra Costa County and the City have established policies and regulations in the form of general plan elements and ordinances that address the generation and

control of noise that could adversely affect residents. Noise may be a result of construction and or operation-related projects.

# Contra Costa County General Plan

The purpose of the *Contra Costa County General Plan's* Noise Element is to analyze and quantify current and future noise levels in the county (Contra Costa County 2005). It includes implementation measures and possible solutions to address existing and perceivable noise problems, with the goal of minimizing the exposure of community residences to excessive noise levels. The following goals and policies are applicable to the proposed project.

## Noise Goals

**11-A** To improve the overall environment in the County by reducing annoying and physically harmful levels of noise for existing and future residents and for all land uses.

**11-B** To maintain appropriate noise conditions in all areas of the County.

**11-E** To recognize citizen concerns regarding excessive noise levels, and to utilize measures through which the concerns can be identified and mitigated.

## Noise Policies

**11-7** Public projects shall be designed and constructed to minimize long-term noise impacts on existing residents.

**11-8** Construction activities shall be concentrated during the hours of the day that are not noise-sensitive for adjacent land uses and should be commissioned to occur during normal work hours of the day to provide relative quiet during the more sensitive evening and early morning periods.

# City of Oakley General Plan

The goal of the *City of Oakley 2020 General Plan's* Noise Element is to protect residents from the harmful and annoying effects of exposure to excessive noise (City of Oakley 2002). The noise element establishes land use compatibility standards for transportation noise sources (e.g., traffic on public roadways, railroad operations, aircraft in flight) and nontransportation noise sources (e.g., industrial operations, outdoor recreation facilities, HVAC units, loading docks).

The City's standards for the control of nontransportation noise sources are contained in Table 6-1. These standards apply to noise from new non-

transportation noise sources and the exposure of new developments of noise-sensitive land uses to nontransportation noise sources.

**Table 6-1.** City of Oakley General Plan Noise Element Noise Level Performance Standards for New Projects Affected by or Including Nontransportation Noise Sources

| Noise Level Descriptor | Daytime (7:00 a.m. to 10:00 p.m.) | Nighttime (10:00 p.m. to 7:00 a.m.) |
|---|---|---|
| Hourly dBA, $L_{eq}$[a] | 55 | 45 |

Noise levels assume measurements immediately within the property line or within a designated outdoor activity area.

Source: City of Oakley 2002.

Each noise level specified above will be lowered by 5 dB for simple tone noises, noises consisting primarily of speech or music, and recurring impulsive noises (e.g., humming sounds, outdoor speaker system). These standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).

The City can impose noise level standards that are more restricting than those specified above based on determination of existing low ambient noise levels.

Fixed noise sources that are typically of concern include HVAC systems, pump stations, emergency generators, steam valves, generators, air compressors, conveyor systems, pile drivers, drill rigs, welders, outdoor speakers, cooling towers/evaporative condensers, lift stations, boilers, steam turbines, fans, heavy equipment, transformers, grinders, gas or diesel motors, cutting equipment, and blowers.

The types of uses that typically may produce the noise described above include industrial facilities such as pump stations, trucking operations, tire shops, auto maintenance shops, metal fabricating shops, shopping centers, drive-up windows, car washes, loading docks, public works projects, batch plants, bottling and canning plants, recycling centers, electricity generating stations, race tracks, landfills, sand and gravel operations, and athletic fields.

## City of Oakley Noise Ordinance

The City's noise ordinance, part of the municipal code, is the primary tool for enforcement for noise generated by locally regulated noise sources such mechanical equipment and construction activity.

*Policy 4.2.010(C)* prohibits the operation of machinery; equipment; or pumps, fans, air conditioners, spa or pool equipment, power tools, lawnmowers or leaf blowers, or engines in a manner that causes excessive noise for nearby residents between 10:00 p.m. and 8:00 a.m.

*Policy 4.2.010(D)* establishes limits on the hours that construction activities may occur in the city. Noise from construction or repair work that creates noise in or adjacent to a residential land use is exempt from the ordinance if construction occurs between 7:30 a.m. and 7:00 p.m. from Monday through Friday and between 9:00 a.m. and 7:00 p.m. on Saturdays, Sundays, and holidays.

A temporary exemption to the requirements contained in the noise ordinance may be granted by the city manager if the permit applicant can demonstrate that:

- compliance with the requirements of the ordinance would be impractical or unreasonable;
- mitigation measures will be implemented to minimize the sound disturbance; and
- there is no objection from nearby residents or businesses (by written consent or their failure to object after notice is sent by the City).

# Environmental Setting

The project area is located in the city of Oakley in Contra Costa County. The following discussion provides background information on noise terminology and describes the existing environment in terms of sensitive receptors and existing noise levels.

## Noise Terminology

Background information on environmental acoustics and state and federal noise regulations is provided in. The following are brief definitions of acoustic and vibration terminology used in this chapter.

- **Sound.** A vibratory disturbance created by a vibrating object, which, when transmitted by pressure waves through a medium such as air, is capable of being detected by a receiving mechanism, such as the human ear or a microphone.
- **Noise.** Sound that is loud, unpleasant, unexpected, or otherwise undesirable.
- **Decibel (dB).** A unitless measure of sound on a logarithmic scale, which indicates the squared ratio of sound pressure amplitude to a reference sound pressure amplitude. The reference pressure is 20 micro-pascals.
- **A-Weighted Decibel (dBA).** An overall frequency-weighted sound level in decibels which approximates the frequency response of the human ear.
- **Maximum Sound Level ($L_{max}$).** The maximum sound level measured during the measurement period.
- **Minimum Sound Level ($L_{min}$).** The minimum sound level measured during the measurement period.

- **Equivalent Sound Level ($L_{eq}$).** The equivalent steady state sound level that in a stated period of time would contain the same acoustical energy.
- **Percentile-Exceeded Sound Level ($L_{xx}$).** The sound level exceeded "x" percent of a specific time period. $L_{10}$ is the sound level exceeded 10% of the time.
- **Day-Night Level ($L_{dn}$).** The energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels occurring during the period from 10:00 p.m. to 7:00 a.m.
- **Community Noise Equivalent Level (CNEL).** The energy average of the A-weighted sound levels occurring during a 24-hour period with 5 dB added to the A-weighted sound levels occurring during the period from 7:00 p.m. to 10:00 p.m. and 10 dB added to the A-weighted sound levels occurring during the period from 10:00 p.m. to 7:00 a.m.
- **Peak Particle Velocity (PPV).** The maximum velocity of a particle in vibrating medium such as soil. PPV is usually expressed in inches/sec.

$L_{dn}$ and CNEL values rarely differ by more than 1 dB. As a matter of practice, $L_{dn}$ and CNEL values are considered to be equivalent and are treated as such in this assessment. In general, human sound perception is such that a change in sound level of 3 dB is just noticeable, a change of 5 dB is clearly noticeable, and a change of 10 dB is perceived as doubling or halving the sound level.

## Ambient Noise Environment

Ambient sound levels in the project area are generally low. In the vicinity of the project area, dominant sources of noise include traffic on arterials and other roadways, railroad activity on the nearby Union Pacific Railroad line, aircraft overflights, and agricultural activities. Ambient sound levels in a rural setting such as this are typically in the range of 40 to 60 dBA.

## Noise Sensitive Land Uses

Noise-sensitive land uses are generally defined as locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. Noise-sensitive land uses typically include residences, hospitals, schools, guest lodging, libraries, and certain types of recreational uses. Noise sensitive land uses in the project area consist of hiking areas along the Marsh Creek Trail, which runs adjacent to where segments of the pipeline would be installed under Phases 2 and 3 of the proposed project. There is a residential subdivision located on the west side of the project area, north of Hill Avenue, as well as scattered rural residences throughout the project area.

# Project Impacts and Mitigation Measures

This section describes the CEQA analysis relating to noise for any new or more significant impacts as a result of the project and alternatives. It describes the methods used to determine those impacts and lists the thresholds used to conclude if an impact would be significant. Measures to mitigate (avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion.

## Methods

Impacts analyzed in this assessment are limited to construction-related impacts because operational processes are not anticipated to generate a substantial source of noise. Construction impacts were evaluated using methodology developed by the Federal Transit Administration (FTA) (Federal Transit Administration 1995).

## Thresholds of Significance

State CEQA Guidelines Appendix G states that a project would normally have a significant noise impact on the environment if it would:

- expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies;
- expose persons to or generate excessive groundborne vibration or groundborne noise levels;
- result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- be located in an airport land use plan area or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, and expose people residing or working in the project area to excessive noise levels; or
- be located in the vicinity of a private airstrip and expose people residing or working in the project area to excessive noise levels.

# Impacts and Mitigation Measures

## Alternative 1: Proposed Project

### Impact NZ-1: Generation of Construction Noise in Excess of Applicable Standards

Noise from construction activities and repair activities would include noise from grading, excavation, and other earthmoving activities. Construction noise also results from machinery and equipment used in the construction process. A detailed inventory of equipment that would be used to construct the proposed project was not available; therefore, this noise analysis is based on anticipated construction equipment that would be used during construction activities. Table 6-2 lists equipment that would be anticipated for use during construction of the proposed project and the noise generation levels associated with each equipment piece. The list was compiled by the FTA (1995) and City of Boston (Massachusetts Turnpike Authority 2000). A reasonable worst-case assumption is that the three loudest pieces of equipment associated with each project component would operate simultaneously and continuously over at least a 1-hour period for a combined-source noise level.

Based on the noise levels presented in Table 6-2, Table 6-3 calculates estimated sound levels from construction activities as a function of distance. In the unlikely scenario that a paver, water truck, and dump truck are operated as part of the proposed project, the combined-source noise level would be 93 dBA at 50 feet. The magnitude of construction noise impacts was assumed to depend on the type of construction activity, noise level generated by various pieces of construction equipment, and distance between the activity and noise-sensitive receivers. The calculations in Table 6-3 are based on an attenuation rate of 6 dB per doubling of distance. Any shielding effects that might result from local barriers (including topography) are not included, thus making the analysis conservative. Additional attenuation from ground absorption is assumed because the area is softscape.

**Table 6-2.** Anticipated Construction Equipment and Associated Noise Emission Levels for the Proposed Project

| Construction Phase and Equipment | Typical Noise Level 50 Feet from Source (dBA) |
|---|---|
| **Well Pump Station Construction** | |
| Roller | 74 |
| Grader | 85 |
| Excavator | 85 |
| Dump truck | 88 |
| Water truck | 88 |
| **Pipeline Installation** | |
| Roller | 74 |
| Excavator | 85 |
| Backhoe | 80 |
| Loader | 85 |
| Water truck | 88 |
| **Well Installation** | |
| Drill rig | 85 |
| Compressor | 80 |
| Generator | 85 |
| Loader | 85 |
| Dump truck | 88 |

Sources: Federal Transit Administration 1995;
Massachusetts Turnpike Authority 2000.

**Table 6-3.** Estimated Construction Noise in the Vicinity of an Active Construction Site

| **Entered Data** | | | |
|---|---|---|---|
| Source 1: paver—sound level at 50 feet | | 89 dBA | |
| Source 2: water truck—sound level at 50 feet | | 88 dBA | |
| Source 3: dump truck—sound level at 50 feet | | 88 dBA | |
| Average height of sources (Hs) | | 10 feet | |
| Average height of receiver (Hr) | | 5 feet | |
| Ground type (soft or hard) | | Soft | |
| **Calculated Data** | | | |
| All sources combined—sound level at 50 feet | | 93 dBA | |
| Effective height—(Hs + Hr) / 2 | | 7.5 | |
| Ground factor | | 0.62 | |
| Distance Between Source and Receiver (feet) | Geometric Attenuation (dB) | Ground Effect Attenuation (dB) | Calculated Sound Level (dBA) |
| 50 | 0 | 0 | 93 |
| 100 | -6 | -2 | 85 |
| 200 | -12 | -4 | 77 |
| 300 | -16 | -5 | 73 |
| 400 | -18 | -6 | 70 |
| 500 | -20 | -6 | 67 |
| 600 | -22 | -7 | 65 |
| 700 | -23 | -7 | 63 |
| 800 | -24 | -7 | 62 |
| 900 | -25 | -8 | 60 |
| 1,000 | -26 | -8 | 59 |
| 1,200 | -28 | -9 | 57 |
| 1,400 | -29 | -9 | 55 |
| 1,600 | -30 | -9 | 54 |
| 1,800 | -31 | -10 | 52 |
| 2,000 | -32 | -10 | 51 |
| 2,500 | -34 | -10 | 49 |
| 3,000 | -36 | -11 | 47 |

Note: Calculations based on Federal Transit Administration 1995. This calculation does not include the effects, if any, of local shielding that may reduce sound levels further.

As indicated above, a significant construction noise impact would occur if construction activities were to occur outside the hours of 7:30 a.m. to 7:00 p.m., Monday through Friday and 9:00 a.m. to 7:00 p.m. on Saturday, Sunday, and City holidays. The well drilling phase would last 3 to 4 days and would occur continuously. Consequently, this impact is considered significant.

Implementation of Mitigation Measure NZ-MM-1 would help reduce this impact, but not to a less-than-significant level.

### Mitigation Measure NZ-MM-1: Implement a Construction-Related Noise Mitigation Plan within the City of Oakley

DWD or its contractor will prepare and submit a construction-related noise mitigation plan to the City before construction activities begin. The plan will depict the location of construction equipment and how the noise from the equipment will be mitigated during construction activities. Specific measures that may be included in the plan are listed below.

- Temporary noise-attenuation features, such as enclosures, shields, fences, and barriers, will be used where feasible between noise sources and adjacent noise-sensitive land uses to reduce construction noise impacts on those land uses.
- Equipment that is quieter than standard equipment will be used.
- Vehicles and other gas- or diesel-powered equipment will be prohibited from unnecessary warming up, idling, and engine revving.
- During all project site excavation and grading on-site activities, all construction equipment, fixed or mobile, will be equipped with properly operating and maintained mufflers, consistent with manufacturers' standards. All stationary construction equipment will be placed so that emitted noise is directed away from sensitive receptors nearest the project site.
- Equipment staging areas will be located in areas that will create the greatest distance between construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction activities.
- Construction traffic haul routes where heavy trucks would exceed 100 daily trips (counting those to and from the construction site) will be specified. To the extent feasible, the plan will also denote haul routes that do not pass sensitive land uses or residential dwellings.
- A noise complaint and response tracking program will be established, and a noise disturbance coordinator who is responsible for responding to complaints associated with facility construction noise will be designated. The coordinator will determine the cause of the complaints and ensure that reasonable measures are implemented to correct the problem. A contact telephone number for the noise disturbance coordinator will be conspicuously posted on facility signage and will be sent to nearby residents.

### Conclusion

Mitigation Measure NZ-MM-1 would help reduce this impact, but there would be a significant and unavoidable impact during the construction phase.

## Impact NZ-2: Generation of Noise in Excess of Applicable Standards from Well Operation

Operation of the Phase 2 and future Phase 3 well pumps would involve noise-generating equipment intermittently day and night. The noise level performance standards established by the Noise Element of the *Oakley 2020 General Plan* require that new non-transportation noise sources not exceed 55 dBA Leq during daytime hours (7:00 a.m. to 10:00 p.m.) or 45 dBA Leq during nighttime hours (10:00 p.m. to 7:00 a.m.) at the nearest property line.

Selected design options for the District well stations include submersible pumps and motors and silent-type check valves to limit noise emissions. As a result, the only noise generated from the station will be associated with the pumping of water to waste at start-up and shut-down; typically once and sometimes twice per day. The only other significant noise generator is an air conditioning unit that is not expected to exceed the City's noise performance standards.

### Mitigation Measure NZ-MM-2: Design Well Pump Buildings to Meet Noise Standards

All buildings and equipment will be designed to comply with all applicable current design standards, including noise standards. Impacts are less than significant with compliance with applicable design standards.

### Conclusion

Mitigation Measure NZ-MM-2 would reduce this impact to less than significant.

Chapter 7
# Biological Resources

This chapter examines the potential impacts of the proposed project related to biological resources. The aspects of biological resources that are specifically analyzed vegetation and wetlands, wildlife, and fisheries.

# Regulatory Setting

## Federal

### Endangered Species Act

The federal Endangered Species Act (ESA) protects listed species from harm or *take*, which is broadly defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct." Take can also include habitat modification or degradation that results in death or injury to a listed species. A result can be defined as take even if it is unintentional or accidental. Listed plant species are provided less protection than listed wildlife species.

The U.S. Fish and Wildlife Service (USFWS) has jurisdiction over federally listed threatened and endangered species under the ESA. USFWS also maintains lists of proposed and candidate species. Species on these lists are not legally protected under the ESA but may become listed in the near future.

### Federal Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (*16 United States Code* [*USC*] *703*) enacts the provisions of treaties between the United States, Great Britain, Mexico, Japan, and the Soviet Union and authorizes the U.S. Secretary of the Interior to protect and regulate the taking of migratory birds. It establishes hunting seasons and capture limits for game species and protects migratory birds, their occupied nests, and their eggs (*16 USC 703; 50 CFR 21; 50 CFR 10*).

Executive Order (EO) 13186 (January 10, 2001) directs each federal agency taking actions that have or may have a negative impact on migratory bird populations to work with USFWS to develop a memorandum of understanding

(MOU) that will promote the conservation of migratory bird populations. Protocols developed under the MOU must include the following agency responsibilities.

- Avoid and minimize, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions.
- Restore and enhance migratory bird habitats, as practicable.
- Prevent or abate the pollution or detrimental alteration of the environment for the benefit of migratory birds, as practicable.

The EO is designed to assist federal agencies in their efforts to comply with the MBTA, and does not constitute any legal authorization to "take" migratory birds. Native bird species that occur in the project area are covered by this act.

The MBTA (*16 USC 703*) prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs. Most native bird species in the DWD project area are covered by this act. Executive Order 13186, signed January 10, 2001, directs each federal agency taking actions that will have or are likely to have a negative impact on migratory bird populations to work with the USFWS to develop a MOU to promote the conservation of migratory bird populations.

## Fisheries Management Jurisdictions

Management of anadromous fish is the responsibility of the National Marine Fisheries Service (NMFS), whereas management of nonanadromous fish and other aquatic biological resources in the project area is the responsibility of USFWS and the DFG. DFG acts as state trustee for aquatic species. These three agencies, either independently or in collaboration with other state and federal agencies, implement numerous fish management and restoration plans and initiatives. The majority of these plans and initiatives are focused on the Sacramento and San Joaquin Rivers, their primary tributaries, and the Delta, which are used by anadromous fishes.

## Section 401 of the Clean Water Act

Section 401 of the CWA requires that any person applying for a federal permit or license for activity(ies) that may result in a discharge of pollutants into waters of the United States must obtain a state water quality certification that the activity complies with all applicable water quality standards, limitations, and restrictions.

The State Water Board, through its RWQCBs, administers this certification in California. No license or permit may be issued by a federal agency until certification required by Section 401 has been granted. Further, no license or permit may be issued if certification has been denied. Section 401 Water Quality

Certifications are typically required in order to obtain a Streambed Alteration Agreement from DFG or a CWA Section 404 permit.

## Executive Order 11990—Protection of Wetlands

EO 11990 (issued in 1977) is an overall wetland policy for all agencies managing federal lands, sponsoring federal projects, or providing federal funds to state and local projects. It requires federal agencies to follow procedures for avoidance, mitigation, and preservation and allow for public input before proposing new construction in wetlands. Compliance with CWA Section 404 permit requirements may constitute compliance with the requirements of EO 11990.

## Executive Order 13112

EO 13112 (February 3, 1999) directs all federal agencies to prevent and control introductions of invasive species in a cost-effective and environmentally sound manner. It established a National Invasive Species Council (NISC) made up of federal agencies and departments and a supporting Invasive Species Advisory Committee (ISAC) composed of state, local, and private entities. The NISC and ISAC have prepared a national invasive species management plan that recommends objectives and measures to implement the order and prevent the introduction and spread of invasive species (National Invasive Species Council and Invasive Species Advisory Committee 2001).

## Regulatory Compliance and Biological Opinions for U.S. Army Corps of Engineers—Authorized Section 404 Dredge and Fill Activities

Obtaining authorization for in-water construction projects in the Delta involving dredging, fill, riprap, and construction of structures such as footings and buried piping placement can involve numerous regulatory agencies and processes. The U.S. Army Corps of Engineers (Corps) has primary authority over the operations through their purview over Section 404 CWA permits for dredge and fill activity (and Section 10 Rivers and Harbors Act for navigation concerns). In-Delta construction activity also requires review and consultation with NMFS, USFWS, and DFG for potential effects on listed species under the ESA and California Endangered Species Act (CESA) regulations. The RWQCB's authority and requirements to issue Section 401 certifications and waste discharge requirements under California's Porter-Cologne Water Quality Control Act is a permitting process that largely influences the specific in-water construction and/or dredged material disposal actions that will be allowable.

NMFS, USFWS, and DFG have established specific seasonal allowable "work windows" for dredging activity in the Delta that depend on the project location. The allowable work windows were established to protect delta smelt and listed

salmonids and require work to be completed in the late summer and early fall to avoid impacts on fish and their habitat.

The work windows for the project area in the central Delta are as follows:

- The winter-run Chinook salmon normal protection time window is September 15 through May 31 for projects using clamshell and suction dredging. This window may be reduced to December 1 through May 31 for lengthy projects using clamshell dredging only.
- The delta smelt protection time window is December 1 through July 31. The allowable period for project activity in Area A is August 1 through September 14, normally, but may be extended through November 30 for lengthy projects if only clamshell dredging is used.

# State

## California Endangered Species Act

CESA prohibits the take of endangered and threatened species; however, habitat destruction is not included in the state's definition of *take*. Under CESA, *take* is defined as an activity that would directly or indirectly kill an individual of a species, but the definition does not include harm or harass. In accordance with the CESA, DFG has jurisdiction over state-listed species (California Fish and Game Code 2070). Additionally, DFG maintains lists of species of special concern that are defined as species that appear to be vulnerable to extinction because of declining populations, limited ranges, and/or continuing threats.

## California Fish and Game Code

### California Fish and Game Code Sections 1600–1616 (Lake- or Streambed Alteration Agreement Program)

Under Sections 1600–1616 of the California Fish and Game Code, DFG regulates projects that affect the flow, channel, or banks of rivers, streams, and lakes. Section 1602 requires public agencies and private individuals to notify and enter into a stream- or lakebed alteration agreement with DFG before beginning construction of a project that will:

- divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake; or
- use materials from a streambed.

Section 1602 contains addition prohibitions against the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake.

Sections 1601–1607 may apply to any work undertaken within the 100-year floodplain of any body of water or its tributaries, including intermittent stream channels. In general, however, it is construed as applying to work within the active floodplain and/or associated riparian habitat of a wash, stream, or lake that provides benefit to fish and wildlife. Sections 1601–1607 typically do not apply to drainages that lack a defined bed and banks, such as swales, or to very small bodies of water and wetlands such as vernal pools.

### Fully Protected Species

The California Fish and Game Code provides protection from take for a variety of species referred to as fully protected species. Section 5050 lists protected amphibians and reptiles. Section 3515 prohibits take of fully protected fish species. Eggs and nests of all birds are protected under Section 3503, nesting birds (including raptors and passerines) under Sections 3503.5 and 3513, birds of prey under Section 3503.5, and fully protected birds under Section 3511. Migratory nongame birds are protected under Section 3800. Mammals are protected under Section 4700. The California Fish and Game Code defines *take* as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Except for take related to scientific research, all take of fully protected species is prohibited.

### Sections 3503 and 3503.5

Section 3503 of the California Fish and Game Code prohibits the killing of birds or the destruction of bird nests. Section 3503.5 prohibits the killing of raptor species and the destruction of raptor nests. Many bird species could potentially nest in the study area or vicinity. These nests would be protected under these sections of the California Fish and Game Code.

## California Environmental Quality Act

CEQA is the regulatory framework by which California public agencies identify and mitigate significant environmental impacts. A project normally has a significant environmental impact on biological resources if it substantially affects a rare or endangered species or the habitat of that species; substantially interferes with the movement of resident or migratory fish or wildlife; or substantially diminishes habitat for fish, wildlife, or plants. The CEQA Guidelines define *rare, threatened, or endangered species* as those listed under the ESA and CESA, as well as any other species that meet the criteria of the resource agencies or local agencies (e.g., DFG-designated species of special concern and California Native Plant Society–listed species). The guidelines state that the lead agency preparing an EIR must consult with and receive written findings from DFG concerning project impacts on species listed as endangered or threatened. The effects of a project on these resources are important in determining whether the project has significant environmental impacts under CEQA.

# Local

## Contra Costa County General Plan

The *Contra Costa County General Plan* (Contra Costa County 2005) establishes the broad goals and policies and specific implementation measures that will guide decisions on future growth, development, and conservation of Contra Costa County's resources (Element 8) through the Year 2020.

### Aquatic Resource Goals

**8-D** Protect ecologically significant lands, wetlands, plant, and wildlife habitats.

**8-E** Protect rare, threatened, and endangered species of fish, wildlife, and plants and attempt to achieve a significant net increase in wetland values and functions.

**8-F** Encourage the preservation and restoration of the natural characteristics of the San Francisco Bay/Delta estuary and adjacent lands, and recognize the role of bay vegetation and water area in maintaining favorable climate, air and water quality, and fisheries and migratory waterfowl.

### Aquatic Resource Policies

**8-16** Native and/or sport fisheries shall be preserved and reestablished in the streams within the County wherever possible.

**8-17** The ecological value of wetland areas, especially the salt marshes and tidelands of the Bay and Delta, shall be recognized. Existing wetlands in the County shall be identified and regulated. Restoration of degraded wetland areas shall be encouraged and supported whenever possible.

**8-18** The filling and dredging of lagoons, estuaries, and bays which eliminate marshes and mud flats shall be allowed only for water-oriented projects which will provide substantial public benefits and for which there are not reasonable alternatives, consistent with State and Federal laws.

**8-19** The County shall actively oppose any and all efforts to construct a peripheral canal or any other water diversion that reduces Delta water flows unless and until it can be conclusively demonstrated that such a system would, in fact, protect, preserve and enhance water quality and fisheries of the San Francisco Bay-Delta estuary system.

**8-20** Fish, shellfish, and waterfowl management shall be considered the appropriate land use for marshes and tidelands, with recreation being allowed as a secondary use in limited locations, consistent with the marshland and tideland preservation policies of the General Plan.

**8-23** Runoff of pollutants and siltation into marsh and wetland areas from outfalls serving nearby urban development shall be discouraged. Where permitted, development plans shall be designed in such a manner that no such pollutants and siltation will significantly adversely affect the value or function of wetlands. In addition, berms, gutters, or other structures should be required at the outer boundary of the buffer zones to divert runoff to sewer systems for transport out of the area.

**8-25** The County shall protect marshes, wetlands, and riparian corridors from the effects of potential industrial spills.

## Eastern Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan

The Eastern Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (ECCC HCP/NCCP) was developed to protect natural resources in eastern Contra Costa County while improving and streamlining the environmental permitting process for impacts on endangered species. The ECCC HCP/NCCP will allow Contra Costa County; the Contra Costa County Flood Control and Water Conservation District; EBRPD; and the Cities of Brentwood, Clayton, Oakley, and Pittsburg to control endangered species permitting for activities and projects in the region that they perform or approve. The ECCC HCP/NCCP will also provide for comprehensive species, wetlands, and ecosystem conservation and contribute to the recovery of endangered species in northern California. The ECCC HCP/NCCP is intended to avoid project-by-project permitting that is generally costly and time consuming for applicants and often results in uncoordinated and biologically ineffective mitigation.

## City of Oakley General Plan

The *City of Oakley 2020 General Plan* is the primary planning document guiding the city's growth through the year 2020. The general plan defines the city's goals and vision and addresses state-mandated requirements through several elements. The Open Space and Conservation Element (Element 6) expresses community goals to protect environmental resources, including biological resources. Goal 6.3 of the general plan is to encourage preservation of important ecological and biological resources.

### Biological Resource Policies

The biological resource policies applicable to aquatic ecosystems and communities include the following:

**6.3.3** Use land use planning to reduce the impact of urban development on important ecological and biological resources identified during application review and analysis.

**6.3.4** Encourage preservation and enhancement of the natural characteristics of the San Joaquin Delta and Dutch Slough in a manner that encourages public access.

**6.2.5** Encourage preservation and enhancement of Delta wetlands, significant trees, natural vegetation, and wildlife populations.

**6.3.6** Encourage preservation of portions of important wildlife habitats that would be disturbed by major development, particularly adjacent to the Delta.

**6.3.7** Preserve and expand stream corridors in Oakley, restoring natural vegetation where feasible.

## Biological Resource Programs

The biological resource programs applicable to aquatic ecosystems and communities are listed below:

**6.3.A** Prior to development in identified sensitive habitat areas, the area shall be surveyed for special-status plant and/or animal species. If any special-status plant or animal species are found in areas proposed for development, the appropriate resource agencies shall be contacted and species-specific management strategies established to ensure the protection of the particular species. Development in sensitive habitat areas should be avoided or mitigated to the maximum possible.

**6.3.E** As funding becomes available, prepare a detailed inventory of ecological resource areas, along with detailed maps showing the location of significant resources. Resources should include, but not be limited to, unique natural areas, wetland areas, and habitats of rare, threatened, endangered, and other uncommon and protected species.

**6.3.F** As funding becomes available, prepare a Wetland Protection Ordinance.

**6.3.G** Evaluate the feasibility of expanding drainage easements along waterways and modifying banks and/or levees to increase the width of stream corridors.

**6.3.H** Investigate and implement as appropriate City Zoning regulations requiring setbacks, and land dedications along waterways to allow expansion and enhancement of waterways.

# Environmental Setting

## Vegetation Communities

### Nonnative Annual Grassland

Nonnative annual grassland is an herbaceous community dominated by naturalized annual grasses with intermixed perennial and annual forbs. Annual grassland in the project area exhibits low levels of diversity and is dominated by the following species: ripgut brome (*Bromus diandrus*), yellow star-thistle (*Centaurea solstitialis*), Italian ryegrass (*Lolium multiflorum*), and wild oat (*Avena fatua*). Other representative species observed in annual grasslands in the project area were wild radish (*Raphanus sativus*), prickly lettuce (*Lactuca serriola*), hare barley (*Hordeum murinum*), California poppy (*Eschscholzia californica*), filaree (*Erodium botrys*), and turkey mullein (*Eremocarpus setigerus*). Some areas of annual grassland contain scattered live oak trees (*Quercus wislizenii*).

Grasslands support insects, amphibians, reptiles, small birds, and mammals that are preyed on by species such as red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), northern harrier (*Circus cyaneus*), American kestrel (*Falco sparverius*), great horned owl (*Bubo virginianus*), and coyotes (*Canis latrans*). Mammalian prey species include California vole (*Microtus californicus*), deer mouse (*Peromyscus maniculatus*), western harvest mouse (*Reithrodontymis megalotis*), and California ground squirrel (*Spermophilus beecheyi)*.

### Emergent Marsh

Emergent marsh occurs in Marsh Creek. This community is dominated by cattails (*Typha* spp.), tules (*Scirpus* spp.), and sedges (*Carex* spp.). Other representative species observed were tall flatsedge (*Cyperus eragrostis*), knotweed (*Polygonum* sp.), seep monkey-flower (*Mimulus guttatus*), and marsh purslane (*Ludwigia* sp.).

Emergent marshes are among the most productive wildlife habitats. They provide food, cover, and water for many species of amphibians, reptiles, birds, and mammals, including special-status species. Pacific chorus frog (*Pseudacris regilla)*, western toad (*Bufo boreas*), common garter snake (*Thamnophis* spp.), beaver (*Castor canadensis)*, raccoon (*Procyon lotor*), and muskrat (*Ondatra zibethicus*) use emergent wetlands for foraging, rearing, or cover. Mallard (*Anas platyrhynchos*), wood duck (*Aix sponsa)*, red-winged blackbird (*Agelaius phoeniceus)*, common yellowthroat (*Geothlypis trichas)*, marsh wren (*Cistothorus palustris)*, and song sparrow (*Melospiza melodia)* also use these habitats extensively.

### Developed Areas

Areas of residential and commercial development occur in isolated areas of the project area. Within developed areas are small patches of disturbed, open lands that are either unvegetated or vegetated with ruderal species. Vegetation is restricted to landscaped areas and consists primarily of horticultural trees and shrubs, with finite areas of herbaceous flowering plants and turf grass.

The developed areas of the study area provide low habitat value for wildlife species. Typical wildlife species that occur in these areas are those that have adapted to an urban landscape, including house sparrow (*Passer domesticus*), European starling (*Sturnus vulgaris*), and Brewer's blackbird (*Euphagus cyanocephalus*), as well as Virginia opossum (*Didelphis virginiana*) and raccoon.

### Agricultural Lands

Agricultural lands in the form of an orchard occur to the east of Marsh Creek. Agricultural lands were established on fertile soils that historically supported an abundance of wildlife. Many species of rodents and birds have adapted to agricultural lands but are controlled by fencing, trapping, and poisoning to prevent excessive crop losses. Wildlife species associated with agricultural land include mourning dove (*Zenaida macroura)*, American crow (*Corvus brachyrhynchos*), Brewer's blackbird (*Euphagus cyanocephalus)*, and many species of rodents. All raptor species common to the Delta, including special-status raptors (see following section) use agricultural habitats for nesting or foraging.

## Special-Status Plant Species

Table 7-1 lists the status, distribution, habitat requirements, and likelihood of occurrence in the project area for 26 special-status plant species that identified during the prefield investigation. Of these, 24 were identified as have a low to moderate potential for occurrence in the project area because potential habitat, including emergent marsh and grassland, is present.

## Special-Status Wildlife Species

Table 7-2 lists the status, distribution, habitat requirements, and likelihood of occurrence in the project area for 18 special-status wildlife species identified during the prefield investigation. Of these, the following 6 special-status wildlife species were identified as having potential to occur within the project area or in the vicinity of the project area.

**Table 7-1.** Special-Status Plants Identified during Prefield Investigation as Having Potential to Occur in the Project Area 

| Common Name and Scientific Name | Legal Status[a] Federal/ State/CNPS | Geographic Distribution/Floristic Province | Habitat Requirements | Blooming Period | Potential for Occurrence in the Project Area |
|---|---|---|---|---|---|
| Suisun marsh aster *Aster lentus* | –/–/1B | Sacramento Valley, central Coast, San Francisco Bay | Brackish and freshwater marshes and swamps; below 3 meters | May–Nov | Moderate; occurs less than 1 mile from project area (Figure 7-1) and suitable habitat present in marshes. |
| Alkali milk vetch *Astragalus tener* var. *tener* | –/–/1B | Southern Sacramento Valley, northern San Joaquin Valley, eastern San Francisco Bay | Playas, on adobe clay in valley and foothill grassland, vernal pools on alkali soils; below 60 meters | Mar–Jun | Low; no known occurrences within 5 miles but potential habitat present in grasslands. |
| Heartscale *Atriplex cordulata* | –/–/1B | Western Central Valley and valleys of adjacent foothills | Saline or alkaline soils in chenopod scrub, meadows and seeps, sandy areas in valley and foothill grassland; below 375 meters | Apr–Oct | Low; no known occurrences within 5 miles but potential habitat present in grasslands. |
| Brittlescale *Atriplex depressa* | –/–/1B | Western and eastern Central Valley and adjacent foothills on west side of Central Valley | Alkaline or clay soils in chenopod scrub, meadows and seeps, playas, valley and foothill grassland, vernal pools; below 320 meters | May–Oct | Low; no known occurrences within 5 miles but potential habitat present in grasslands. |
| San Joaquin saltscale *Atriplex joaquiniana* | –/–/1B | Western edge of the Central Valley from Glenn to Tulare Counties | Alkaline soils in chenopod scrub, meadows and seeps, playas, valley and foothill grassland; below 320 meters | Apr–Oct | Low; no known occurrences within 5 miles but potential habitat present in grasslands. |
| Bristly sedge *Carex comosa* | –/–/2 | Inner North Coast Ranges, High Cascade Range, Central Valley, northern Central Coast, San Francisco Bay, San Bernadino mountains, Modoc Plateau | Coastal prairie, marshes and swamps (lake margins), valley and foothill grassland; below 425 meters | May–Sep | Low; no known occurrences within 5 miles but potential habitat present in marshes and grasslands. |
| Pappose tarplant *Centromadia parryi* ssp. *parryi* | –/–/1B | Southern North Coast Ranges, southern Sacramento Valley, northern and central Western California | Coastal prairie, meadows and seeps, coastal salt marshes and swamps, vernally mesic valley and foothill grassland; below 420 meters | May–Nov | Low; no known occurrences within 5 miles but potential habitat present in marshes and grasslands. |

**Table 7-1.** Continued



| Common Name and Scientific Name | Legal Status[a] Federal/ State/CNPS | Geographic Distribution/Floristic Province | Habitat Requirements | Blooming Period | Potential for Occurrence in the Project Area |
|---|---|---|---|---|---|
| Soft bird's-beak *Cordylanthus mollis* ssp. *mollis* | E/–/1B | Northern Central Coast with occurrences in Contra Coasta, Marin*, Napa, Sacramento*, Solano, and Sonoma* Counties | Coastal salt marshes and swamps; below 3 meters | Jul–Nov | Low; nearest occurrence ~2 miles away (Figure 7-1) and potential habitat present in marshes. |
| Hoover's cryptantha *Cryptantha hooveri* | –/–/1A | Known historically from Alameda, Contra Costa, Madera, Merced, San Joaquin, and Stanislaus Counties | Inland dunes, sandy soils in valley and foothill grassland; 9–150 meters | Apr–May | Low; last observed in 1939 and presumed extinct in California. Potential habitat occurs in grasslands. |
| Dwarf downingia *Downingia pusilla* | –/–/2 | Inner North Coast Ranges, southern Sacramento Valley, northern and central San Joaquin Valley | Wet areas in valley and foothill grassland, vernal pools; below 445 meters | Mar–May | Low; no known occurrences with 5 miles but potential habitat present in grasslands. |
| Diamond-petaled California poppy *Eschscholzia rhombipetala* | –/–/1B | Inner North and South Coast Ranges, eastern San Francisco Bay, eastern Outer South Coast Ranges | Alkaline or clay soils in valley and foothill grassland; below 975 meters | Mar–Apr | Low; nearest occurrence approx. 5 miles west from the project area (Figure 7-1); potential habitat present in grasslands. |
| Fragrant fritillary *Fritillaria liliacea* | –/–/1B | Central Western California with occurrences in Alameda, Contra Costa, Monterey, Marin, San Benito, Santa Clara, San Francisco, San Mateo, Solano, and Sonoma Counties | Coastal prairie, coastal scrub, valley and foothill grassland, cismontane woodland, often on serpentine; 3–410 meters | Feb–Apr | Low; no known occurrences within 5 miles but potential habitat present in grasslands. |
| Rose-mallow *Hibiscus lasiocarpus* | –/–/2 | Central and southern Sacramento Valley, deltaic Central Valley, and elsewhere in the U.S. | Freshwater marsh along rivers and sloughs; below 120 meters | Jun–Sep | Low; nearest occurrence approx. 5 miles east from the project area (Figure 7-1); potential habitat present in marshes. |
| Antioch Dunes evening-primrose *Oenothera deltoides* ssp. *howellii* | E/E/1B | Known from three native occurrences in northeastern San Francisco Bay | Inland dunes; below 30 meters | Mar–Sep | None; nearest occurrence approx. 5 miles west from the project area (Figure 7-1); no suitable habitat in project area. |
| Carquinez goldbush *Isocoma arguta* | –/–/1B | Deltaic Sacramento Valley in the Suisun Slough | Alkaline valley and foothill grassland; 1–20 meters | Aug–Dec | Low; no known occurrences within 5 miles but potential habitat present in grasslands. |

**Table 7-1.** Continued



| Common Name and Scientific Name | Legal Status[a] Federal/ State/CNPS | Geographic Distribution/Floristic Province | Habitat Requirements | Blooming Period | Potential for Occurrence in the Project Area |
|---|---|---|---|---|---|
| Contra Costa goldfields *Lasthenia conjugens* | E/–/1B | North Coast, southern Sacramento Valley, San Francisco Bay, South Coast | Mesic areas in cismontane woodland, alkaline playas, valley and foothill grassland, vernal pools; below 470 meters | Mar–Jun | None; nearest occurrence approx. 5 miles west from the project area (Figure 7-1); no suitable habitat in project area. |
| Delta tule pea *Lathyrus jepsonii* var. *jepsonii* | –/–/1B | Central Valley, San Francisco Bay | Freshwater and brackish marshes and swamps; below 4 meters | May–Sep | Low; nearest occurrence approx. 5 miles north of the project area (Figure 7-1); potential habitat present in marshes. |
| Legenere *Legenere limosa* | –/–/1B | Sacramento Valley, North Coast Ranges, northern San Joaquin Valley and Santa Cruz mountains. | Deep, seasonally wet habitats such as vernal pools, ditches, marsh edges, and riverbanks; below 880 meters | May–Jun | Low; no known occurrences within 5 miles but potential habitat present in marsh edges and riverbanks. |
| Mason's lilaeopsis *Lilaeopsis masonii* | –/–/1B | Southern Sacramento Valley, northeastern San Francisco Bay | Riparian scrub, brackish or freshwater marshes and swamps; below 10 meters | Apr–Nov | Moderate; occurs approx. 2 miles north of the project area (Figure 7-1); potential habitat present in marshes. |
| Delta mudwort *Limosella subulata* | –/–/2 | Deltaic Central Valley with occurrences in Contra Costa, Sacramento, San Joaquin, and Solano Counties; Oregon | Marshes and swamps; below 3 meters | May–Aug | Moderate; occurs approx. 2 miles north of the project area (Figure 7-1); potential habitat present in marshes. |
| Bearded popcorn-flower *Plagiobothrys hystriculus* | –/–/1B | Known only from the Montezuma Hills | Mesic areas in valley and foothill grassland, vernal pools; 10–50 meters | Apr–May | Low; no known occurrences within 5 miles but potential habitat present in grasslands. |
| Eel-grass pondweed *Potamogeton zosteriformis* | –/–/2 | Southern inner North Coast Ranges, Central Valley, Modoc Plateau; Idaho, Oregon, Utah, Washington | Assorted freshwater marshes and swamps; below 1,860 meters | Jun–Jul | Low; no known occurrences within 5 miles but potential habitat present in marshes. |
| Sanford’s arrowhead *Sagittaria sanfordii* | –/–/1B | Scattered locations in Central Valley and Coast Ranges | Freshwater marshes, sloughs, canals, and other slow-moving water habitats; below 610 meters | May–Oct | Low; no known occurrences within 5 miles but potential habitat present in marshes. |

**Table 7-1.** Continued



| Common Name and Scientific Name | Legal Status[a] Federal/ State/CNPS | Geographic Distribution/Floristic Province | Habitat Requirements | Blooming Period | Potential for Occurrence in the Project Area |
|---|---|---|---|---|---|
| Marsh skullcap *Scutellaria galericulata* | –/–/2 | Northern High Sierra Nevada, Modoc Plateau; Oregon, | Lower montane coniferous forest, mesic meadows and seeps, marshes and swamps; below 2,100 meters | Jun–Sep | Low; no known occurrences within 5 miles but potential habitat present in marshes. |
| Blue skullcap *Scutellaria lateriflora* | –/–/2 | Northern San Joaquin Valley, east of Sierra Nevada; New Mexico, Oregon | Mesic meadows and seeps, marshes and swamps; below 500 meters | Jul–Sep | Low; no known occurrences within 5 miles but potential habitat present in marshes. |
| Caper-fruited tropidocarpum *Tropidocarpum capparideum* | –/–/1B | Northwestern San Joaquin Valley with occurrences in Alameda*, Contra Costa*, Fresno, Glenn*, Monterey, Santa Clara*, San Joaquin*, and San Luis Obispo Counties | Alkaline hills in valley and foothill grassland; below 455 meters | Mar–Apr | Low; no occurrences within 5 miles of the project area but potential habitat present in grasslands. |

Notes:

* = known populations believed extirpated from that County

[a] Status explanations:

**Federal**

E = listed as endangered under the federal Endangered Species Act.

T = listed as threatened under the federal Endangered Species Act.

– = no listing.

**State**

E = listed as endangered under the California Endangered Species Act.

– = no listing.

**California Native Plant Society (CNPS)**

1A = Presumed extinct in California

1B = List 1B species: rare, threatened, or endangered in California and elsewhere.

2 = List 2 species: rare, threatened, or endangered in California but more common elsewhere.

**Potential for Occurrence Categories**

High: Known occurrence of plant in region from CNDDB, or other documents in the vicinity of the project; or presence of suitable habitat conditions and suitable microhabitat conditions.

Moderate: Known occurrence of plant in region from CNDDB, or other documents in the vicinity of the project; or presence of suitable habitat conditions but suitable microhabitat conditions are not present.

Low: Plant not known to occur in the region from the CNDDB, or other documents in the vicinity of the project; or habitat conditions of poor quality.

None: Plant not known to occur in the region from the CNDDB, or other documents in the vicinity of the project; or suitable habitat not present in any condition.

**Table 7-2.** Special-Status Wildlife Species Identified during Prefield Investigation as Having Potential to Occur in the Project Area 

| Common Name and Scientific Name | Status[a] Federal/ State | Geographic Distribution | Habitat Requirements | Potential Occurrence in Study Area |
|---|---|---|---|---|
| **INVERTEBRATES** | | | | |
| Valley elderberry longhorn beetle *Desmocerus californicus dimorphus* | T/– | Stream side habitats below 3,000 feet throughout the Central Valley | Riparian and oak savanna habitats with elderberry shrubs; elderberries are the host plant | None. No known occurrences within 5 miles of project area. Elderberry shrub along Marsh Creek, though the proposed project will stay greater than 100 feet from shrub. |
| Vernal pool fairy shrimp *Branchinecta lynchi* | T/– | Central Valley, central and south Coast Ranges from Tehama County to Santa Barbara County. Isolated populations also in Riverside County | Common in vernal pools; also found in sandstone rock outcrop pools | None. No suitable habitat within project area. |
| Vernal pool tadpole shrimp *Lepidurus packardi* | E/– | Shasta County south to Merced County | Vernal pools and ephemeral stock ponds | None. No suitable habitat within project area |
| **AMPHIBIANS** | | | | |
| California red-legged frog *Rana aurora draytoni* | T/SSC | Found along the coast and coastal mountain ranges of California from Marin County to San Diego County and in the Sierra Nevada from Tehama to Fresno County | Permanent and semipermanent aquatic habitats, such as creeks and cold-water ponds, with emergent and submergent vegetation. May aestivate in rodent burrows or cracks during dry periods. | None. No CNDDB occurrences within 5 miles of project area and proposed project will not affect potential habitat in Marsh Creek. |
| California tiger salamander *Ambystoma californiense* | T/SSC | Central Valley, including Sierra Nevada foothills, up to approximately 1,000 feet, and coastal region from Butte County south to northeastern San Luis Obispo County. | Small ponds, lakes, or vernal pools in grass-lands and oak woodlands for larvae; rodent burrows, rock crevices, or fallen logs for cover for adults and for summer dormancy | None. Several CNDDB occurrences within 5 miles of project area. No suitable habitat within project area. |

**Table 7-2.** Continued



| Common Name and Scientific Name | Status[a] Federal/ State | Geographic Distribution | Habitat Requirements | Potential Occurrence in Study Area |
|---|---|---|---|---|
| **REPTILES** | | | | |
| Giant garter snake *Thamnophis couchi gigas* | T/T | Central Valley from the vicinity of Burrel in Fresno County north to near Chico in Butte County; has been extirpated from areas south of Fresno | Sloughs, canals, low gradient streams and freshwater marsh habitats where there is a prey base of small fish and amphibians; also found in irrigation ditches and rice fields; requires grassy banks and emergent vegetation for basking and areas of high ground protected from flooding during winter | None. Proposed project is outside of species' range. |
| Silvery legless lizard *Anniella pulchra pulchra* | –/SSC | Along the Coast, Transverse, and Peninsular Ranges from Contra Costa County to San Diego County with spotty occurrences in the San Joaquin Valley | Habitats with loose soil for burrowing or thick duff or leaf litter; often forages in leaf litter at plant bases; may be found on beaches, sandy washes, and in woodland, chaparral, and riparian areas | None. CNDDB occurrence within 5 miles of project area. Project area lacks suitable habitat. |
| Western pond turtle *Clemmys marmorata* | –/SSC | Occurs from the Oregon border of Del Norte and Siskiyou Counties south along the coast to San Francisco Bay, inland through the Sacramento Valley, and on the western slope of Sierra Nevada | Occupies ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms and with watercress, cattails, water lilies, or other aquatic vegetation in woodlands, grasslands, and open forests | Low. Numerous occurrences within 5 miles of project area. Proposed project will not affect potential habitat in Marsh Creek. |
| **BIRDS** | | | | |
| California black rail *Laterallus jamaicensis coturniculus* | –/T | Permanent resident in the San Francisco Bay and eastward through the Delta into Sacramento and San Joaquin Counties; small populations in Marin, Santa Cruz, San Luis Obispo, Orange, Riverside, and Imperial Counties | Tidal salt marshes associated with heavy growth of pickleweed; also occurs in brackish marshes or freshwater marshes at low elevations | None. No suitable habitat within project area. |

**Table 7-2.** Continued



| Common Name and Scientific Name | Status[a] Federal/ State | Geographic Distribution | Habitat Requirements | Potential Occurrence in Study Area |
|---|---|---|---|---|
| Cooper's hawk *Accipiter cooperii* | –/SSC | Throughout California except high altitudes in the Sierra Nevada. Winters in the Central Valley, southeastern desert regions, and plains east of the Cascade Range | Nests in a wide variety of habitat types, from riparian woodlands and digger pine-oak woodlands through mixed conifer forests | No known CNDDB nest occurrences within 5 miles of project area. Project area contains trees that provide suitable nesting habitat. |
| Double-crested cormorant *Phalacrocorax auritus* (rookery site) | –/SSC | Winters along the entire California coast and inland over the Coast Ranges into the Central Valley from Tehama to Fresno County; a permanent resident along the coast from Monterey County to San Diego County, along the Colorado River, Imperial, Riverside, Kern and King Counties, and the islands off San Francisco; breeds in Siskiyou, Modoc, Lassen, Shasta, Plumas, and Monterey Counties; also breeds in the San Francisco Bay Area and in Yolo and Sacramento Counties | Rocky coastlines, beaches, inland ponds, and lakes; needs open water for foraging and nests in riparian forests or on protected islands, usually in snags | None. No suitable nesting habitat within project area. |
| Loggerhead shrike *Lanius ludovicianus* | –/SSC | Resident and winter visitor in lowlands and foothills throughout California. Rare on coastal slope north of Mendocino County, occurring only in winter | Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches | One CNBBD nest record within 5 miles of project area. Suitable nesting habitat within project area. |
| Northern harrier *Circus cyaneus* | –/SSC | Occurs throughout lowland California. Has been recorded in fall at high elevations | Grasslands, meadows, marshes, and seasonal and agricultural wetlands | No known CNDDB nest occurrences within 5 miles of project area. Project area contains suitable nesting habitat. |
| Short-eared owl *Asio flammeus* | –/SSC | Permanent resident along the coast from Del Norte to Monterey County although very rare in summer north of San Francisco Bay, in the Sierra Nevada north of Nevada County, in the plains east of the Cascades, and in Mono County; small, isolated populations | Freshwater and salt marshes, lowland meadows, and irrigated alfalfa fields; needs dense tules or tall grass for nesting and daytime roosts | No CNDDB occurrences within 5 miles of project area. Suitable nesting habitat occurs within project area. |
| Swainson's hawk *Buteo swainsoni* | –/T | Lower Sacramento and San Joaquin Valleys, the Klamath Basin, and Butte Valley. Highest nesting densities occur near Davis and Woodland, Yolo County | Nests in oaks or cottonwoods in or near riparian habitats. Forages in grasslands, irrigated pastures, and grain fields | Two CNDDB occurrences within 2 miles of ISD Treatment Plant. Project area contains trees that provide suitable nesting habitat. |

**Table 7-2.** Continued



| Common Name and Scientific Name | Status[a] Federal/ State | Geographic Distribution | Habitat Requirements | Potential Occurrence in Study Area |
|---|---|---|---|---|
| Western burrowing owl *Athene cunicularia hypugea* | –/SSC | Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas. Rare along South Coast | Level, open, dry, heavily grazed or low stature grassland or desert vegetation with available burrows | Several CNDDB occurrences within 5 miles of project area. Project area contain suitable nesting habitat. |
| White-tailed kite *Elanus leucurus* | –/FP | Lowland areas west of Sierra Nevada from the head of the Sacramento Valley south, including coastal valleys and foothills to western San Diego County at the Mexico border | Low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands for foraging | No known CNDDB occurrences within 5 miles of project area. Project area contains trees that provide suitable nesting habitat. |
| **MAMMALS** | | | | |
| San Joaquin kit fox *Vulpes macrotis mutica* | E/T | Principally occurs in the San Joaquin Valley and adjacent open foothills to the west; recent records from 17 counties extending from Kern County north to Contra Costa County | Saltbush scrub, grassland, and oak savanna | Couple of isolated occurrences within 5 miles of alignment. Project is north of Highway 4, which is a substantial barrier to kit fox movement. Additionally, project area habitats consist mostly of developed and agricultural areas with little natural habitat. Kit foxes not expected to occur within project area |

[a] Status explanations:

**Federal**

E = listed as endangered under the federal Endangered Species Act.
T = listed as threatened under the federal Endangered Species Act.
– = no listing.

**State**

E = listed as endangered under the California Endangered Species Act.
T = listed as threatened under the California Endangered Species Act.
FP = fully protected under the California Fish and Game Code.
SSC = species of special concern in California.
– = no listing.

## Cooper's Hawk (*Accipiter cooperi*)

Cooper's hawk is designated as a California species of special concern and its nests are protected under the MBTA. Cooper's hawks generally nest in coniferous forests or in deciduous riparian forests near streams (California Department of Fish and Game 2005a). Although Cooper's hawks may use the same nest in successive years, they generally build a new nest in the same area every year. The species is tolerant to habitat fragmentation and human disturbance and will nest in suburban and urban areas (Rosenfield and Bieledeldt 1993). The breeding season extends from March through August, with the peak activity being May through July. Cooper's hawks prey on small to medium-sized birds. They also prey on small mammals, amphibians, and reptiles (California Department of Fish and Game 2005a).

CNDDB (2008) did not have any records of nesting Cooper's hawks within 5 miles of the project area (Figure 7-1). Large trees in and near the project area provide suitable nesting habitat.

## Loggerhead Shrike (*Lanius ludovicianus*)

The loggerhead shrike is designated as a California species of special concern and its nests are protected under the MBTA. Loggerhead shrike is a widespread species in North America, occurring from the southern Canadian provinces across most of the United States into Mexico (Yosef 1996). In California, loggerhead shrikes occur in open habitats with scattered shrubs, trees, posts, fences, utility lines, and other perches. Habitats include valley foothill forests, pinyon-juniper, desert riparian, and Joshua tree habitats (California Department of Fish and Game 2005). Loggerhead shrikes are adaptable to urban environments as long as preferred habitat characteristics and abundant prey supplies are present (Yosef 1996).

The loggerhead shrike is a predatory songbird. As opportunistic predators, loggerhead shrikes feed on a wide variety of prey, including insects, small mammals and birds, reptiles, amphibians, and occasionally carrion. Nesting habitat includes densely foliaged shrubs and trees near open habitats (California Department of Fish and Game 2005a).

CNDDB (2008) indicated a nest occurrence approximately 1miles east of the project area (Figure 7-1). Suitable nesting habitat occurs in the project area.

## Northern Harrier (*Circus cyaneus*)

Northern harrier is designated as a California species of special concern and its nests are protected under the MBTA. The northern harrier is a medium-sized hawk raptor of upland grasslands and fresh- and saltwater marshes. In California, northern harriers are a permanent resident of the northeastern plateau, coastal areas, and Central Valley (MacWhirter and Bildstein 1996). Northern

harriers breed in California in the Central Valley and Sierra Nevada (California Department of Fish and Game 2005a).

Northern harriers frequent meadows, grasslands, desert sinks, open rangelands, and fresh- and saltwater emergent wetlands; they are seldom found associated with wooded habitats. Harriers feed mostly on voles and other small mammals, birds, frogs, small reptiles, crustaceans, insects, and occasionally on fish (California Department of Fish and Game 2005a). Harriers mostly nest in emergent wetland or along rivers or lakes but may nest in grasslands, grain fields, or sagebrush flats several miles from water (MacWhirter and Bildstein 1996). Nests are built on the ground out of a large mound of sticks on wet areas with a smaller clump of grass (California Department of Fish and Game 2005a).

CNDDB (2008) did not indicate any northern harrier nesting occurrences within 5 miles of the project area (Figure 7-1). However, areas in the project area provide suitable nesting habitat.

## Swainson's Hawk (*Buteo swainsoni*)

Swainson's hawk is state-listed as threatened and its nests are protected under the MBTA. In California, Swainson's hawk habitat generally consists of large, flat, open, undeveloped landscapes that include suitable grassland or agricultural foraging habitat and sparsely distributed trees for nesting. Foraging habitat includes open annual grasslands, lightly grazed pastures, alfalfa fields, hay other grain fields, and certain row crops (California Department of Fish and Game 2005b). Prey species include ground squirrels, California voles, pocket gophers, deer mice, reptiles, and insects (California Department of Fish and Game 2005a).

Swainson's hawks usually nest in large native trees such as valley oak (*Q. lobata*), cottonwood (*Populus fremontia*), and willows (*Salix* spp.), although nonnative trees such as eucalyptus (*Eucalyptus* spp.) are occasionally used. Nests occur in riparian woodlands, roadside trees, trees along field borders, isolated trees and small groves, trees in windbreaks, and edges of remnant oak woodlands. In some locales, urban nest sites have been recorded. The breeding season is typically March to August. (California Department of Fish and Game 2005a.)

In California, the nesting distribution includes the Sacramento and San Joaquin Valleys, the Great Basin sage-steppe communities and associated agricultural valleys in extreme northeastern California, isolated valleys in the Sierra Nevada in Mono and Inyo Counties, and limited areas of the Mojave Desert region (California Department of Fish and Game 2005b).

CNDDB (2008) indicated two nesting Swainson's hawk occurrences within 5 miles of the project area (Figure 7-1). Large trees in and near the project area provide suitable nesting habitat. The nonnative annual grassland and agricultural areas in the project area provide suitable foraging habitat for the Swainson's hawk.

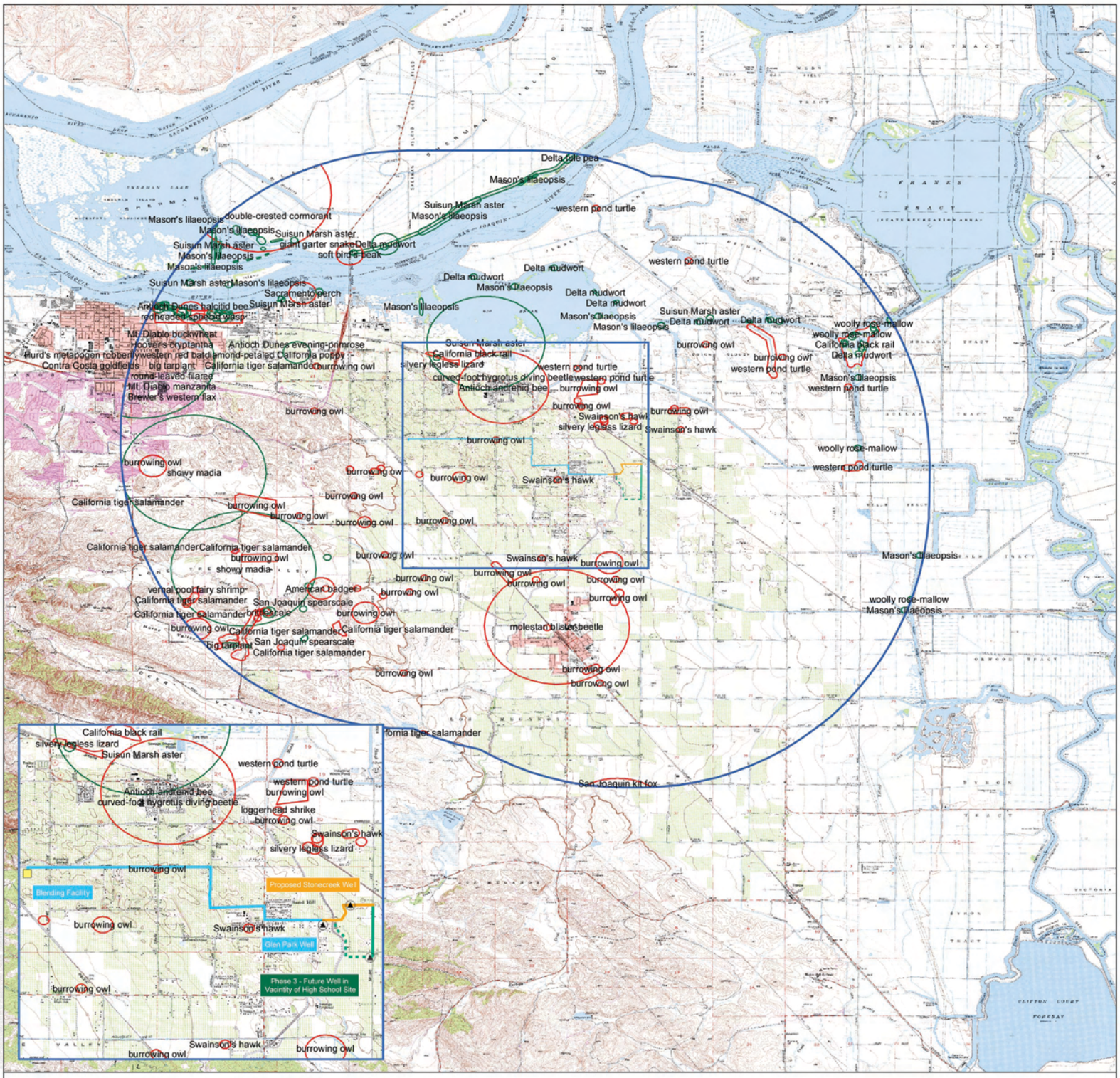



**Figure 7-1**
**CNDDB**

## Western Burrowing Owl (*Athene cunicularia*)

Western burrowing owl is designated as a California species of special concern and its nests are protected under the MBTA. Western burrowing owls were formerly a common permanent resident throughout much of California, but population declines were noticeable by the 1940s and have continued to the present. Farming has taken a major toll on western burrowing owl populations and their habitat by destroying nesting burrows and exposing breeders and their young to the toxic effects of pesticides (California Department of Fish and Game 2005a).

Western burrowing owls prefer open, dry, short grassland habitats with few trees and are often associated with burrowing mammals such as California ground squirrels. They occupy burrows, typically abandoned by ground squirrels or other burrowing mammals but may also use artificial burrows such as abandoned pipes, culverts, and debris piles. Prey includes arthropods, amphibians, small reptiles, small mammals, and birds, particularly horned larks (California Department of Fish and Game 2005a).

The breeding season usually extends from late February through August. Western burrowing owls often nest in roadside embankments, on levees, and along irrigation canals. This species is more diurnal than most owls and often can be observed during the day standing outside the entrance to its burrow (California Department of Fish and Game 2005a).

CNDDB (2008) indicated several nesting burrowing owl occurrences within 5 miles of the project area (Figure 7-1). The nonnative grassland field located on the east portion of the project contains suitable burrows for nesting.

## White-Tailed Kite (*Elanus leucurus*)

White-tailed kite is a fully protected species under California Fish and Game Code and its nests are protected under the MBTA. White-tailed kites were threatened with extinction in North America during the early twentieth century. Populations recovered throughout its range in the United States from small populations that survived in California, Texas, and Florida. However, since the 1980s, many white-tailed kite populations have been declining, apparently because of loss of habitat and increased disturbance of nests (Dunk 1995).

The breeding season generally extends from early February through early August. White-tailed kites usually nest in large native trees, although nonnative trees are used occasionally. Nest trees are generally at the edge of wooded habitat next to open fields. Large trees in areas that have been developed may also be used, although the trees need to be close to open fields for foraging. White-tailed kites feed primarily on small mammals, including voles (*Microtus* sp.), pocket mice (*Perognathus* sp.), and harvest mice (*Reithrodontomys* sp.) (Dunk 1995).

CNDDB (2008) did not have any records of nesting white-tailed kites within 5 miles of the project area (Figure 7-1). Large trees in and near the project area provide suitable nesting habitat.

# Nesting Non-Special-Status Raptors and Swallows

The following sections discuss raptors and swallows that are known to nest or have the potential to nest in the project corridor. Certain swallow species and certain raptor species are not considered special-status species, but their occupied nests and eggs are protected by federal and state laws, including the MBTA and the California Fish and Game Code (see *Regulatory Setting* above).

## Raptors

Non-special-status raptors such as red-tailed hawk, red-shouldered hawk, and great horned owl nest in riparian and woodland areas. No active raptor nests were identified within or in the vicinity of the project area during the February 2008 survey, but suitable nesting habitat is present in and in the vicinity of the proposed project.

## Swallows

Two species of swallows have the potential to nest near the project area. Cliff swallows (*Petrochelidon pyrrhonota*) and barn swallows (*Hirundo rustica*) build mud nests on the undersides of artificial structures such as bridges. Cliff swallows are colonial nesters and often nest in colonies of hundreds of birds. Both of these species winter in South America and return to California in February to breed. Nesting occurs from April to August, and southward migration occurs in September and October (California Department of Fish and Game 2005a). No swallows were observed during the February 2008 survey, though several inactive mud nests were observed under the Delta Road Bridge crossing Marsh Creek.

# Overview of Fish Communities

Evaluating potential impacts on fish species requires an understanding of their life histories and life-stage environmental requirements. This information is provided herein for fish species of primary management concern that have the potential to occur within the reaches of Marsh Creek and the Delta that could potentially be affected by the proposed project. Species of primary management concern include federal- and state-listed species of the region and those that are considered recreationally or commercially important.

The fish community of the Delta is composed of more than 125 species in at least 43 families (Wang 1986). The Delta fish community composition includes native and nonnative fish with salinity requirements ranging from freshwater to polyhaline. However, because a 6-foot-high structure on Marsh Creek blocks anadromous salmonids (fall-run Chinook and steelhead) from entering suitable spawning habitat, the beneficial uses of Marsh Creek habitat are limited to species that are not considered special status.

The lower reach of Marsh Creek, which extends approximately 11 miles from Marsh Creek Dam to its terminus in the Delta at Big Break, consists of a relatively natural meandering stream in the vicinity of Marsh Creek Dam to a stream channel that is leveed and channelized for flood control purposes downstream of the City of Brentwood. Levine and Stewart (2004) examined substrate composition, water depth and velocity, channel morphology, and overhead cover in the lower zone and concluded that the upper 1.2 miles of Marsh Creek provided "satisfactory habitat" for spawning and rearing of fall-run Chinook salmon. As noted above, access to this habitat by anadromous salmonids is currently prevented by a 6-foot-high grade control structure (i.e., a few hundred feet upstream of the Brentwood WWTP outfall). The reach downstream of the grade control structure lacks suitable substrate and habitat for spawning and rearing of anadromous salmonids (fall-run Chinook and steelhead). In addition, this reach of Marsh Creek does not contain any special-status fish species. As a result, special-status fish species are not discussed any further.

# Project Impacts and Mitigation Measures

## Methods

The key sources of data and information used in the preparation of this EIR section are listed below:

- California Natural Diversity Database (CNDDB) records search for the project area and a 5-mile radius around the project area;
- USFWS list of endangered, threatened, and proposed species for the study area (Appendix A);
- *City of Oakley 2020 General Plan* (City of Oakley 2002);
- *Contra Costa County General Plan* (Contra Costa County 2005);
- published and unpublished reports; and
- Jones & Stokes file information.

On February 29, 2008, a Jones & Stokes biologist conducted a reconnaissance-level field survey in the project area to support preparation of this EIR. The survey areas included the DWD project area and areas in the vicinity of the project area. The reconnaissance-level survey was conducted by driving along roads in the project area and stopping at regular intervals to survey and document

sensitive habitats and take photographs. In parts of the project area where property access was not granted, the biologist made observations from the roadside and interpreted aerial photographs.

# Thresholds of Significance

For this analysis, an impact pertaining to biological resources was considered significant under CEQA if it would result in any of the following environmental effects, which are based on professional practice and State CEQA Guidelines Appendix G (*14 CCR 15000* et seq.). Implementation of Phases 2 and 3 of the proposed project was considered to have a significant impact on biological resources if it would:

- have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the DFG or USFWS;
- have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the DFG and Game or USFWS;
- have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marshes, vernal pools, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means;
- interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- conflict with the provisions of an adopted HCP; NCCP; or other approved local, regional, or state HCP.

# Impacts and Mitigation Measures

## Alternative 1: Proposed Project

### Impact BIO-1: Potential Loss of Special-Status Plant Species

Construction activities associated with the proposed project could result in the loss of emergent marsh and nonnative annual grassland which constitute potential habitat for 24 of the 26 special-status plant species identified as having the potential to occur in the project area (Table 7-1; Figure 7-1). Nonnative annual grasslands occur in the project area. However, these grasslands are too disturbed

to constitute suitable habitat for the 13 special-status plant species that could exist in nonnative annual grasslands. Therefore, any potential loss of these grasslands would not result in a significant impact on any special-status plant species (Table 7-1).

Emergent marsh occurs along Marsh Creek (Figure 7-1). As described above, this habitat could be suitable for 13 special-status plant species. Some of the species may occur in multiple habitat types. Impacts on special-status plants could result in a substantial reduction in local population size, lowered reproductive success, or habitat fragmentation. However, DWD will avoid the marsh habitat occurring in Marsh Creek by boring under Marsh Creek, and thus avoiding impacts to the marsh habitat.

### Conclusion

No mitigation measures are necessary for the protection of special-status plant species as long as the marsh habitat in Marsh Creek is avoided.

## Impact BIO-2: Potential Loss or Disturbance of Active Swainson's Hawk Nests

Trenching activities associated with the proposed project could cause the failure of a Swainson's hawk nest, if a pair were nesting in the vicinity. The loss of an active Swainson's hawk nest could contribute to continuing local and statewide declines of Swainson's hawks. Because the number of Swainson's hawks that nest in the vicinity of the project area is very small, the loss of even one nest would be significant because it could have a substantial adverse effect, either directly or through habitat removal, on a species identified as threatened under CESA. The *Staff Report Regarding Mitigation for Impacts to Swainson's Hawk (*Buteo swainsoni*) in the Central Valley of California* (California Department of Fish and Game 1994) provides guidance when construction occurs during the nesting season and active Swainson's hawks may be disturbed.

Implementation of Mitigation Measures BIO-MM-1 and BIO-MM-2, which include the guidelines from DFG's staff report on Swainson's hawk, will lessen the potential for the disturbance or loss of a nest and reduce this impact to a less-than-significant level.

### Mitigation Measure BIO-MM-1: Conduct Survey for Active Swainson's Hawk Nests

If construction activities occur during the Swainson's hawk nesting season (March 1–September 15), DWD will retain a qualified biologist to conduct preconstruction surveys to locate all active Swainson's hawk nest sites within 0.5 mile of the construction area. The surveys will be conducted in accordance with DFG's 1994 *Staff Report Regarding Mitigation for Impacts to Swainson's Hawk (*Buteo swainsoni*) in the Central Valley of California*. If active nests are identified, Mitigation Measure BIO-MM-2 will be implemented.

### Mitigation Measure BIO-MM-2: Mitigate Potential Disturbance to Active Swainson's Hawk Nests

If occupied Swainson's hawk nests are found in the vicinity of construction activities, DWD, in consultation with DFG, will establish a buffer zone around them in the vicinity of the project area. The buffer zone will be marked with specific identifiable flagging or fencing. Construction activities will be restricted from the buffer around the active nests until after chicks have fledged.

When construction occurs within 0.25 mile of an active nest, a biological monitor will observe the nesting hawks for stressed/detrimental behavior that threatens nest success. If there appears to be a threat to nesting success resulting from construction activity within the 0.25-mile buffer, work will be halted until the hawk's behavior normalizes. The most obvious and dangerous detrimental behavior occurs when the hawk is disturbed enough to leave the active nest. If that occurs (even momentarily), construction will stop immediately within 0.25 mile of the nest for at least 1 hour after the hawk returns to the nest and her behavior appears to normalize. When construction resumes, if the hawk is disturbed and leaves the active nest a second time, construction will be prohibited within that 0.25-mile zone until having consulted with DFG to discuss further options. Other stressed/detrimental behaviors that the monitor will look for include the hawk being off the eggs while still on the nest (e.g., circling/walking around the nest and calling). The biological monitor will also watch for signs that the hawks are paying attention to construction instead of behaving normally (e.g., sitting calmly on the nest, watching out for or scaring away potential predators).

### Conclusion

Implementation of Mitigation Measures BIO-MM-1 and BIO-MM-2 will lessen the potential for the disturbance or loss of a Swainson's hawk nest and reduce this impact to a less-than-significant level.

## Impact BIO-3: Loss of Swainson's Hawk Foraging Habitat

A review of the CNDDB (2008) records indicated two Swainson's hawk nest occurrences within 5 miles of the project area (Figure 7-1). Swainson's hawks have the potential to nest throughout the project area. Nonnative grasslands and agricultural fields located within the project area provide suitable foraging habitat for Swainson's hawks.

Impacts as a result of the proposed project would be temporary and would not permanently impact nonnative grassland vegetation and agriculture lands that provide suitable foraging habitat for Swainson's hawks. Therefore, there will be no loss of suitable Swainson's hawk foraging habitat. No mitigation is required.

### Conclusion

There are no impacts and therefore no mitigation is required.

## Impact BIO-4: Potential Loss of or Disturbance to Active Burrowing Owl Burrows

CNDDB (2008) indicated several burrowing owl occurrences within 5 miles of the project area (Figure 7-1). Suitable nesting habitat occurs in the nonnative grasslands east of Marsh Creek. Disturbance and/or destruction of active burrowing owl burrows would be considered significant because it could cause nest failure, resulting in death to a species identified as a species of special concern by DFG. The *Staff Report on Burrowing Owl Mitigation* was developed by DFG in 1995 and provides guidance for the avoidance of active burrowing owl burrows as well as for when construction cannot avoid active burrows (California Department of Fish and Game 1995).

Implementation of Mitigation Measures BIO-MM-3 and BIO-4, which include guidelines from the 1995 report, will lessen the potential for the loss of active burrowing owl burrows and reduce this impact to a less-than-significant level.

### Mitigation Measure BIO-MM-3: Conduct Survey for Nesting Burrowing Owls

DWD will retain a qualified biologist to conduct preconstruction surveys to locate active burrowing owl burrows within the project area plus a 500-foot buffer. These surveys for active burrows will be conducted in accordance to the 1995 DFG guidelines. The preconstruction surveys will include a nesting season survey and a wintering season survey the season immediately preceding construction. If no burrowing owls are detected, no further mitigation is required.

### Mitigation Measure BIO-MM-4: Mitigate Potential Disturbance to Active Burrowing Owl Burrows

If burrowing owls are detected within 500 feet of proposed construction within the project area, the following measures will be implemented.

- Occupied burrows will not be disturbed during the nesting season (February 1–August 31), unless a qualified biologist approved by DFG verifies through noninvasive methods that either: (1) the birds have not begun egg-laying and incubation or (2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival.
- To offset the loss of foraging and burrow habitat on the project site, a minimum of 6.5 acres of foraging habitat (calculated on a 300 feet foraging radius around the burrow) per pair or unpaired resident bird, will be acquired and permanently protected. The protected lands should be adjacent to occupied burrowing owl habitat and at a location acceptable to DFG.
- When destruction of occupied burrows is unavoidable during the nonnesting season (September 1–January 31), unsuitable burrows will be enhanced (enlarged or cleared of debris).
- If owls must be moved away from the project area, passive relocation techniques (e.g., installing one-way doors at burrow entrances) will be used

instead of trapping. At least 1 week will be necessary to accomplish passive relocation and allow owls to acclimate to alternative burrows.

- If avoidance is the preferred method of dealing with potential impacts, no disturbance should occur within 160 feet of occupied burrows during the nonbreeding season (September 1–January 31) or within 250 feet during the breeding season.

### Conclusion

Implementation of Mitigation Measures BIO-MM-3 and BIO-4 will lessen the potential for the loss of active burrowing owl burrows and reduce this impact to a less-than-significant level.

## Impact BIO-5: Disturbance to Special-Status Bird and Non-Special-Status Bird Nests

A review of the CNDDB (2008) indicated occurrences of nesting special-status birds in the vicinity of the proposed project area (Figure 7-1), including loggerhead shrike. Suitable nesting habitat for special-status and non-special-status bird species, including raptors, also occurs in the project area. Disturbance to breeding special-status birds that result in loss of an active nest, eggs, and/or young is considered a significant impact because it would violate the MBTA.

Implementation of Mitigation Measures BIO-MM-5 and BIO-MM-6 will reduce this impact to a less-than-significant level.

### Mitigation Measure BIO-MM-5: Conduct Surveys for Nesting Birds

If construction activities are scheduled to occur during the breeding season for special-status and non-special-status migratory birds and raptors (generally between March 1 and August 15), a qualified wildlife biologist will be retained to conduct the following focused nesting surveys in the appropriate habitat.

- Tree and shrub-nesting surveys will be conducted in wooded habitats in the project area and up to 500 feet outside the project area to look for Cooper's hawk, white-tailed kite, and loggerhead shrike, and other nonlisted migratory birds and raptors.
- Ground-nesting surveys will be conducted in annual grasslands and seasonal and perennial wetlands within the project area and up to 500 feet outside the project area to look for northern harrier and other nonlisted migratory birds.
- Swallow nest surveys will be conducted on bridge structures if they will be impacted by construction activities.

The surveys should be conducted within 1 week before initiation of construction activities and at any time between March 1 and August 15. If no active nests are detected during surveys, no additional measures are required.

### Mitigation Measure BIO-MM-6: Protect Active Special-Status Bird Nests

If construction activities are scheduled to occur during the breeding season (generally between March 1 and August 15) and if surveys indicate that migratory bird or raptor nests are found in any areas that would be directly affected by construction activities, a no-disturbance buffer will be established around the site to avoid disturbance or destruction of the nest site until after the breeding season or after a wildlife biologist determines that the young have fledged (usually late June to mid-July). The extent of these buffers will be determined by a wildlife biologist in consultation with DFG and will depend on the level of noise or construction disturbance, line of sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. These factors should be analyzed to make an appropriate decision on buffer distances.

### Conclusion

Implementation of Mitigation Measures BIO-MM-5 and BIO-MM-6 will reduce this impact to a less-than-significant level.

## Impact BIO-6: Have a Substantial Adverse Effect on Any Riparian Habitat or Other Sensitive Natural Community Identified in Local or Regional Plans or Policies or Regulations Promulgated by the California Department of Fish and Game or U.S. Fish and Wildlife Service

The proposed project will not have a substantial adverse effect on any riparian habitat or other natural community identified in local or regional plans or policies or regulations promulgated by the DFG and USFWS. The jack and bore underneath Marsh Creek will not involve any in water construction, and the connecting construction will not be within the ECCC HCP/NCCP's right-of-way for Marsh Creek.

### Conclusion

There are no impacts and therefore no mitigation is required.

## Impact BIO-7: Have a Substantial Adverse Effect on Federally Protected Wetlands as Defined by Section 404 of the Clean Water Act (Including, but Not Limited to, Marshes, Vernal Pools, Coastal Areas) through Direct Removal, Filling, Hydrological Interruption, or Other Means

The proposed project will not have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA. The jack and bore underneath Marsh Creek will not involve any in water construction and the

connecting construction will not be within the ECCC HCP/NCCP's right-of-way for Marsh Creek.

### Conclusion
There are no impacts and therefore no mitigation is required.

## Impact BIO-8: Interfere Substantially with the Movement of Any Native Resident or Migratory Fish or Wildlife Species or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites

The proposed project will not interfere substantially with the movement of native resident migratory fish or wildlife species. In addition, the proposed project will not interfere substantially with animal corridors or impede the use of native wildlife nursery sites. The jack and bore underneath Marsh Creek will not involve any in water construction, and the connecting construction will be out of the ECCC HCP/NCCP's right-of-way for Marsh Creek.

### Conclusion
There are no impacts and therefore no mitigation is required.

## Impact BIO-9: Conflict with Any Local Policies or Ordinances Protecting Biological Resources, such as a Tree Preservation Policy or Ordinance

The proposed project will conflict with any local policies or ordinances protection biological recourses. The jack and bore underneath Marsh Creek will not involve any in water construction, and the connecting construction will be out of the ECCC HCP/NCCP's right-of-way for Marsh Creek.

### Conclusion
There are no impacts and therefore no mitigation is required.

## Impact BIO-10: Conflict with the Provisions of an Adopted Habitat Conservation Plan, Natural Community Conservation Plan, or Other Approved Local, Regional, or State Habitat Conservation Plan

The proposed project will not conflict with the provisions on an adopted HCP or NCCP. In addition, the connecting pipeline construction will be out of the ECCC HCP/NCCP's right-of-way for Marsh Creek.

### Conclusion

There are no impacts and therefore no mitigation is required.

Chapter 8
# Land Use, Agriculture, and Recreation

This chapter examines the potential impacts of the proposed project related to land use, agricultural resources, and recreational resources.

# Regulatory Setting

## Federal

There are no federal regulations addressing land use, agriculture, and recreation that are related to the proposed project.

## State

### Farmland Mapping and Monitoring Program

Maps of Important Farmlands are prepared by the California Department of Conservation (DOC) as part of its Farmland Mapping and Monitoring Program (FMMP). Important Farmland maps are prepared periodically for most of the state's agricultural areas based on information from Natural Resources Conservation Service's (NRCS's) soil survey maps, land inventory and monitoring criteria developed by the NRCS, and land use information mapped by DWR. These criteria are generally expressed as definitions that characterize the land's suitability for agricultural production, describe physical and chemical characteristics of the soil, and detail actual land use. Important Farmland maps are generally updated every 2 years. The most current version of this mapping system is found in the California Farmland Conversion Report 2000–2002 (California Department of Conservation 2004).

The Important Farmland mapping system incorporates eight mapping categories—five categories relating to farmlands and three categories associated with lands used for nonagricultural purposes. The five farmland mapping categories are summarized below.

- **Prime Farmland:** Lands with the combination of physical and chemical features best able to sustain long-term production of agricultural crops. The land must be supported by a developed irrigation water supply that is dependable and of adequate quality during the growing season. It also must

have been used for the production of irrigated crops at some time during the 4 years before mapping data were collected.

- **Farmland of Statewide Importance:** Lands with agricultural land use characteristics, irrigation water supplies, and physical characteristics similar to those of Prime Farmland but with minor shortcomings, such as steeper slopes or less ability to retain moisture.
- **Unique Farmland:** Lands with lesser quality soils used for the production of California's leading agricultural cash crops. These lands usually are irrigated but may include nonirrigated orchards or vineyards, as found in some of the state's climatic zones.
- **Farmland of Local Importance:** Lands of importance to the local agricultural economy, as determined by each county's board of supervisors and a local advisory committee.
- **Grazing Land:** Lands in which the existing vegetation is suited to the grazing of livestock.

## California Land Conservation Act (Williamson Act)

The California Land Conservation Act (Williamson Act) is one of the state's primary mechanisms for conserving farmland. The Williamson Act enables counties and cities to designate agricultural preserves (Williamson Act lands) and offer preferential taxation to private agricultural landowners based on the income-producing value of their property in agricultural use rather than the property's assessed market value. In return for the preferential tax rate, the landowner is required to sign a contract with the county or city agreeing not to develop the land for a minimum 10-year period. Contracts are automatically renewed annually unless a party to the contract files for nonrenewal or petitions for cancellation. If the landowner chooses not to renew the contract, it expires at the end of its duration. Under certain circumstances, a county or city may approve cancellation of a Williamson Act contract. Cancellation requires private landowners to pay back taxes and cancellation fees.

## Delta Protection Act

In order to protect the valuable resources of the Delta, the California Legislature enacted the Delta Protection Act of 1992 (DPA). The DPA is intended to protect and enhance the Delta's resources as provided for in the Land Use and Resource Management Plan (LMRP) of the Delta Regional Plan. To protect the various recreational resources of the Delta, the DPA includes the following sections.

- **Section 29702** indicates that the basic goals of the state for the Delta include the protection, maintenance, and, where possible, the enhancement and restoration of the overall quality of the Delta environment, including, but not limited to, agriculture, wildlife habitat, and recreational activities.

- **Section 29705** indicates that the Delta's wildlife and wildlife habitats are valuable, unique, and irreplaceable resources of critical statewide significance and should be preserved and protected for the enjoyment of current and future generations.
- **Section 29710** declares that agricultural, recreational, and other uses of the Delta can best be protected by implementing projects that protect wildlife habitat before conflicts arise.
- **Section 29712** acknowledges that the Delta's waterways and marinas offer recreational opportunities of statewide and local significance and are a source of economic benefit to the region, and because of increased demand and usage, public safety requirements will increase (*Public Resources Code* [*PRC*] *Sections 21080.22 and 29702*).
- **Section 29728.** "Primary Zone" means the delta land and water area of primary state concern and statewide significance which is situated within the boundaries of the delta, as described in Section 12220 of the Water Code, but that is not within either the urban limit line or sphere of influence line of any local government's general plan or currently existing studies, as of January 1, 1992. The precise boundary lines of the primary zone includes the land and water areas as shown on the map titled "Delta Protection Zones" on file with the State Lands Commission. Where the boundary between the primary zone and secondary zone is a river, stream, channel, or waterway, the boundary line shall be the middle of that river, stream, channel, or waterway.
- **Section 29731.** "Secondary zone" means all the delta land and water area within the boundaries of the delta not included within the primary zone, subject to the land use authority of local government, and that includes the land and water areas as shown on the map titled "Delta Protection Zones" on file with the State Lands Commission.

## Delta Protection Commission Land and Resource Management Plan

The purpose of the Delta Protection Commission (DPC) is to protect, preserve, and enhance the Delta as it exists today serving multiple functions, including, but not limited to:

- agricultural land preservation,
- habitat protection, and
- enhancing recreational opportunities.

To this end, the DPC has developed the LMRP to address project that are located in the Primary Delta. The LMRP would apply to this project only if the project was located in the Delta Primary Zone. However, according to DPC Delta Map, the proposed project is located in the secondary zone which means that the project is only subject to the land use authority of the local government and not the policies required in the LMRP.

## State Quimby Act

The Quimby Act passed in 1975 to require developers to help mitigate the impacts of property improvements. Cities and counties have been authorized since the passage of the Quimby Act (*California Government Code §66477*) to pass ordinances requiring that developers set aside land, donate conservation easements, or pay fees for park improvements. The act gives authority for passage of land dedication ordinances only to cities and counties. The formula for dedication of land is:

$$\text{minimum acreage dedication} = \frac{\text{average number of persons/unit}}{\text{1,000/park acreage standard}}$$

# Local

## Contra Costa County General Plan

### Land Use Element

The *Contra Costa County General Plan* contains applicable land uses for the unincorporated areas that would be served by the proposed project (Contra Costa County 2005). These include Agricultural Lands (AL); Agricultural Core (AC); Single Family Residential—Very Low (SV); Single Family Residential—Low (SL); Single Family Residential—Medium (SM); Commercial (CO); and Public and Semi-Public (PS) land uses. The general plan has developed broad policies that apply to all properties. The proposed project does not involve permanent changes in land use in the county; the applicable broad policies are stated below.

#### Growth Management

**3-6** Development of all urban uses shall be coordinated with provision of essential Community services or facilities including, but not limited to, roads, law enforcement and fire protection services, schools, parks, sanitary facilities, water and flood control

### Agriculture

The Contra Costa County 65/35 Land Preservation Program (Urban Limit Line) defines a limit of 35% of lands within the county for urban development and the remaining 65% preserved for agriculture, open space, wetlands, parks, and other nonurban uses.

## Recreation

The general plan goals and policies for recreation include:

### Goals

**9-36** To develop a sufficient amount of conveniently located, properly designed park and recreational facilities to serve the needs of all residents.

**9-37** To develop a system of interconnected hiking, riding and bicycling trails and paths suitable for both active recreational use and for the purpose of the transportation element.

**9-38** To promote active and passive recreational enjoyment of the County's physical amenities for the continued health, safety and welfare of the citizens of the County.

**9-39** To achieve a level of park facilities of four acres per thousand population.

### Policies

**9-40** Major park lands shall be reserved to ensure that the present and future needs of the County's residents be met to preserve areas of natural beauty or historical interests for future generations. Apply the parks and recreation performance standards in the Growth Management Element.

**9-41** A well-balanced distribution of local parks, based on character and intensity of present and planned residential development and future recreation needs, shall be preserved.

**9-42** Park design shall be appropriate to the recreational needs and access capabilities of all residents in each locality.

**9-43** Regional-scale public access to scenic areas on the waterfront shall be protected and developed, and water-related recreation, such as fishing, boating, and picnicking, shall be provided.

**9-44** As a unique resource of State-wide importance, the Delta shall be developed for recreation use in accordance with the State environmental goals and policies. The recreational value of the Delta shall be protected and enhanced.

**9-45** Public funds from agencies such as the California Department of Fish and Game shall be utilized to purchase levees and acquire easements.

**9-46** Public trail facilities shall be integrated into the design of flood control facilities and other public works whenever possible.

**9-47** Recreational development shall be allowed only in a manner which complements the natural features of the area, including the topography, waterways, and vegetation and soil characteristics.

**9-48** Recreational activities shall be distributed and management according to an area's carrying capacity with special emphasis on controlling adverse environmental impacts, such as conflict between uses and trespass. At

the same time, the regional importance of each area's recreational resources shall be recognized.

### Conservation Element

#### Infrastructure Services

**8-ad** In a manner consistent with growth management policies, allow water lines or other urban infrastructure which must be constructed across agricultural properties outside Local Agency Formation Commission (LAFCO) designated Spheres of Influence in order to serve parks, other open space uses, or existing urban development, of a size as needed to serve the open space or existing urban uses. Do not require adjacent property owners to pay for the service, and generally mitigate to an insignificant level any identified growth-inducing impacts of the project.

## City of Oakley General Plan

The project area is within the City's jurisdiction (mainland property) and Contra Costa County. At the time that the city incorporated in 1999, it automatically adopted the *Contra Costa County General Plan*, which was updated in 2004, the County's Zoning Code, and other county regulations in order to operate during the preparation of the City's own policy documents. Since then, the City prepared and adopted its own general plan, the *City of Oakley 2020 General Plan* (City of Oakley 2002), and a municipal code (2004), augmenting county plans, policies, and codes. The following City codes apply to the proposed project:

- Delta Recreation, which has substantial recreational value and offers important opportunities for public access to the Oakley waterfront, including parklands and trails offering public access;
- High-, Medium-, and Low-Density Residential, which allows both affordable small rental lots and large lot residences to retain rural character;
- Agriculture Limited, which accommodates light agriculture, including vineyards, orchards, and row crops, animal husbandry, and very low-density residential uses;
- Commercial, including retail and service facilities and limited office uses;
- Public and Semi-Public designations, which support government, civic, cultural, health, education, and infrastructure aspects of Oakley; and
- Riverfront/Urban Waterfront, which allow for recreation close to the Delta.

Public and Semi-Public and Delta Recreation and Resources, which are defined in the county general plan and summarized below.

- **Public/Semi-Public.** This land use applies to public transportation corridors, properties owned by public governmental agencies such as schools, libraries, etc, and privately owned transportation and utilities corridors. A wide variety of uses are appropriate on these lands.

- **Delta Recreation and Resources.** This land use designation encompasses the island and adjacent lowlands of the Delta and includes some lands with valuable wildlife habitat. Most of the lands designated as Delta Recreation are in a FEMA-mapped 100-year floodplain. Agriculture and wildlife habitat are the most appropriate uses in these areas.

## Land Use Element

### Goal 2.1

**2.1.8** Discourage development that results in land use incompatibility. Specifically, require buffers between uses where appropriate and discourage locating sensitive uses (residential) adjacent to existing potentially objectionable uses or locating potentially objectionable uses adjacent to sensitive uses.

## Open Space and Conservation Element

### Goal

**6.1** Allow agriculture to continue as a viable use of land that reflects the community's origins and minimizes conflicts between agricultural and urban uses

### Policies

**6.1.1** Participate in regional programs that promote the long-term viability of agricultural operations within the City.

**6.1.2** Reduce the negative impacts resulting from urban uses and neighboring agricultural uses in close proximity.

**6.1.3** Encourage the promotion and marketing of locally grown agricultural products.

**6.1.4** Incorporate parks, open space and trails between urban and agricultural uses to provide buffer and transition between uses.

## Recreation Policies

As noted above, the City incorporated in 1999 and adopted its general plan in 2002. Thus, the relevant recreation-related policies below were included in the city's general plan.

**7.4.1** Manage shoreline and regional parks along Oakley's waterfront such as the Big Break and Dutch Slough shoreline in a manner that provides for appropriate public access and enhances the natural environment.

**7.4.2** Meet Bay Conservation and Development Commission (BCDC) standards for waterfront access and shoreline development.

**7.4.5** Support and encourage boat access and marinas. Consider additional marina facilities if proposed and appropriate.

**7.4.11** Protect the visual accessibility of waterways by avoiding future development that creates visual barriers adjacent to or along the water's edge.

**7.6.4** Use fencing and gates to maintain safety and restrict access to unsafe areas such as pump stations.

**6.6.1** Encourage public access in multiple forms and improvements along the City's waterways, particularly the San Joaquin Delta, Marsh Creek and Dutch Slough.

## Eastern Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan

The ECCC HCP/NCCP was developed to protect natural resources in eastern Contra Costa County while improving and streamlining the environmental permitting process for impacts on endangered species (Jones & Stokes 2006). The ECCC HCP/NCCP will allow Contra Costa County; the Contra Costa County Flood Control and Water Conservation District; EBRPD; and the Cities of Brentwood, Clayton, Oakley, and Pittsburg to control endangered species permitting for activities and projects in the region that they perform or approve. The ECCC HCP/NCCP will also provide for comprehensive species, wetlands, and ecosystem conservation and contribute to the recovery of endangered species in northern California. The ECCC HCP/NCCP is intended to avoid project-by-project permitting that is generally costly and time consuming for applicants and often results in uncoordinated and biologically ineffective mitigation.

## East Bay Regional Park District

The East Bay Regional Park District (EBRPD) operates 65 parks, covering over 98,000 acres in its two-county jurisdiction, with more than 1,150 miles of trails. These parklands help to ensure preservation of the natural beauty that makes the Bay Area such a desirable place to live. They provide habitat for wildlife, including many rare and endangered species. They also enhance the region's quality of life, resulting in tangible economic benefits as well as aesthetic values.

The Marsh Creek Regional Trail is one of the easternmost Contra Costa County parks. The paved, multi-use trail is about 6.5 miles long and extends from Creekside Park in Brentwood to the wave-lapped Delta shores of Big Break.

# Environmental Setting

This section describes the environmental setting for land uses, agricultural resources and recreational resources, the impacts on lands uses, agricultural resources and recreational resources that would result from the proposed project, and the mitigation measures that would reduce these impacts. Information about the project area was obtained from review of the *Contra Costa County General Plan* and the City's general plan.

Land use designations in the proposed project area are consistent with the codes and regulations in the *Contra Costa County General Plan* and the City's general plan.

Contra Costa County has approximately 32,000 acres of Prime Farmland and 8,547 acres of Farmland of Statewide Importance (California Department of Conservation 2004). This includes unincorporated portions of the county and those lands designated by the *Contra Costa County General Plan* as Important Agricultural Areas.

According to the FMMP *Important Farmland in California Map* (California Department of Conservation 2002), portions of Oakley and Antioch within the project are designated as Urban and Built-up Land or Other Land.

Most of the recreation associated with the Delta is water-dependent (i.e., boating, fishing, rafting, and swimming) or water-enhanced (camping, picnicking, hiking, bicycling, hunting, and scenic/wildlife viewing). The Delta is located near several large population centers and serves the growing population in the Sacramento area, the San Francisco Bay area, and the Stockton/Modesto/Trac7 region in addition to local residents. Approximately 23 public recreation facilities are located in the Delta. Three state agencies maintain five recreation areas, and the remaining recreation areas are operated by county and city agencies. Wildlife viewing, fishing, hunting, and water-based recreation such as swimming, motor boating, house boating, waterskiing, sailing, windsurfing, and kite surfing are popular throughout the Delta. Windsurfing typically occurs in the Sacramento River between Sherman Island and the city of Rio Vista. A popular access point for boating, waterskiing, and operating personal watercraft is Windmill Cove near SR 4. Hunting occurs on private lands, in public areas, on waterways, and on various small Delta islands, including the Sherman Wildlife Area. Local hunting groups include the Jersey Island Pheasant Hunting and Fishing Program, and Pheasants Forever.

Major waterways in the region include the San Joaquin River, Sacramento River, Contra Costa Canal, and San Francisco Bay. New York Slough, Dutch Slough, the False River, Horseshoe Bend, Big Break, Marsh Creek, and numerous other sloughs, creeks, and tidally influenced waterways of the Delta are also a part of this region. The Marsh Creek Regional Trail, in easternmost Contra Costa County, winds along Marsh Creek. The paved, multiuse trail is about 6.5 miles long and extends from Creekside Park in Brentwood to the Delta shores of Big Break. Although most of the navigable waterways in the Delta are public, most

of the land is private. This lack of public land limits the use of the Delta for recreation and results in the concentration of use in a few areas where marinas and other facilities provide recreational opportunities and access to the Delta waterways.

Waterfront recreation is emphasized in the City's general plan. In the city of Oakley, recreational opportunities range from traditional active recreation, such as organized sports, to strictly passive recreation of nature observation and bird watching. Between these two extremes fall a range of activities enjoyed by many residents, including playing and picnicing in parks; walking, bicycle, and equestrian trails throughout the community; and boating and fishing activities on the Delta (City of Oakley 2002).

# Project Impacts and Mitigation Measures

## Thresholds of Significance

For this analysis, an impact pertaining to land use, agricultural resources, or recreation was considered significant under CEQA if it would result in any of the following environmental effects, which are based on professional practice and State CEQA Guidelines Appendix G (*14 CCR 15000* et seq.).

### Land Use

Implementation of the proposed project was considered to have a significant impact on land use if it would:

- physically divide an established community;
- conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the proposed project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect; or
- conflict with any applicable HCP or natural community conservation plan.

### Agricultural Resources

Implementation of the proposed project was considered to have a significant impact on agricultural resources if it would:

- convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to nonagricultural use;
- conflict with existing zoning for agricultural use or conflict with a Williamson Act contract; or

- involve other changes in the existing environment that, because of their location or nature, could result in conversion of Farmland to nonagricultural use.

## Recreation

Implementation of the proposed project was considered to have a significant impact on recreation if it would:

- increase the use of existing neighborhood and regional parks or other recreational facilities, causing or accelerating substantial physical deterioration; or
- include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment.

# Impacts and Mitigation Measures

## Alternative 1: Proposed Project

### Impact LU-2: Physically Divide an Established Community

The proposed project will not physically divide an established community with construction of both well pump stations and trenching involved in connecting the pipelines.

#### Conclusion

No impact. No mitigation required.

### Impact LU-2: Conflict with Any Applicable Land Use Plan, Policy, or Regulation of an Agency with Jurisdiction over the Project (Including, but Not Limited to, a General Plan, specific Plan, Local Coastal Program, or Zoning Ordinance) Adopted for the Purpose of Avoiding or Mitigating an Environmental Effect

The proposed project will not conflict with any applicable land use plans or policies that have jurisdiction over the project.

#### Conclusion

No impact. No mitigation required.

## Impact LU-3: Conflict with Any Applicable Habitat Conservation Plan or Natural Community Conservation Plan

The proposed project is located in the ECC HCP/NCCP jurisdiction. The proposed project will be in relatively close proximity to Marsh Creek. However, construction of the 18-inch pipeline will only involve a small amount of earth disturbance and removal of no habitat or vegetation.

### Conclusion

No impact. No mitigation required.

## Impact AG-1: Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to Nonagricultural Use

Construction of the Phase 2 well will be located in a future park within the future Stonecreek subdivision, which is consistent with the *City of Oakley General Plan.* Currently the land that the Stonecreek subdivision will be located on is not used for agricultural purposes and the current topography is not conducive to agricultural purposes. However, the Phase 3 well will be located within the future Liberty Union High School property. Currently the location of the future Liberty Union High School is on land that is being used for agricultural purposes. However, since the Phase 3 well will be located within the property of the future Liberty Union High School, impacts to the conversion of prime agricultural land will be analyzed in the EIR for the high school.

### Conclusion

No impact. No mitigation required.

## Impact AG-2: Conflict with Existing Zoning for Agricultural Use or Conflict with a Williamson Act Contract

The proposed project will not conflict with existing zoning for agricultural use or conflict with a Williamson Act contract.

### Conclusion

No impact. No mitigation required.

## Impact AG-3: Involve Other Changes in the Existing Environment that, Because of their Location or Nature, Could Result in Conversion of Farmland to Non-Agricultural Use

The proposed project will not involve changes in the existing environment that could result in conversion of farmland to nonagricultural use.

### Conclusion

No impact. No mitigation required.

## Impact REC-1: Increase the Use of Existing Neighborhood and Regional Parks or Other Recreational Facilities, Causing or Accelerating Substantial Physical Deterioration

The Phase 2 well will be located in a future park within the future Stonecreek subdivision. This phase of the proposed project will not result in any increase in use of existing park facilities or recreational facilities. In addition, the Phase 3 well will also not result in any increased use of existing recreational facilities. However, during the construction of Phase 2, DWD will encroach in the EBRPD right of way which will not allow for use of a small portion of the Marsh Creek Regional Trail. The construction schedule will occur between 7 am and 5 pm Monday through Friday. Early mornings, evenings, weekends and holidays will be open for use because still padding will cover the construction receiving pits during the period when the bore and jack across the channel is done and any open trench segments during pipeline construction making it safe during non construction hours. In addition, the project specifications will call for all open trench segments to be backfilled by the end of the work day. However, during construction hours, there would be a small amount of foot and or bicycle traffic which would need to take alternative routes around the construction zone which will be approximately 1,500 feet long (See Figure 2-1, Phase 2).

The future Phase 3 alternative alignment would involve a slightly larger construction zone; however, the same construction schedule would still apply. DWD will obtain an encroachment permit from EBRPD to construct in the right of way. In addition, because use of the park during normal working hours is significantly less than use during non working hours, the diverted foot and bike traffic is not anticipated to substantially impact existing facilities.

### Conclusion

No impact. No mitigation required.

## Impact REC-2: Include Recreational Facilities or Require the Construction or Expansion of Recreational Facilities that Might Have an Adverse Physical Effect on the Environment

In the future, year 2030 or later, DWDs groundwater supply will ultimately allow for future growth due to increased potable water supply. Planned surface water supplies will meet future needs to year 2030, when groundwater will be needed to supplement surface supply. Until that time, the wells provide supply reliability and operational benefits to existing DWD customers. This may involve increased use of existing recreational facilities. However, the Stonecreek subdivision will also involve construction of a park. In addition, the Liberty Union High School will also have sufficient recreational facilities for students.

### Conclusion

No impact. No mitigation required.

Chapter 9
# Population, Housing, and Socioeconomics

This chapter provides an overview of the regulatory setting and existing setting related to population, housing, and socioeconomics, as well as the associated potential environmental consequences of the proposed project.

# Regulatory Setting

## Federal

There are no federal regulations addressing population, housing, and socioeconomics that are related to the proposed project.

## State

California Planning and Zoning Law (*Government Code Section 65000 et seq.*) requires each city and county to adopt a general plan for the physical development of the land within its planning area. The general plan must contain land use, housing, circulation, open space, conservation, noise, and safety elements as well as any other elements that the city or county may wish to adopt.

The housing element of a local general plan must incorporate policies and programs that will allow sufficient housing to be built to meet the community's share of the region's projected housing need. This includes housing for all economic sectors, including very low-, low-, and moderate-income residents. A copy of the draft housing element must be sent to the state Housing and Community Development Department (HCD) for review and comment before it may be adopted by the city or county. HCD will advise the local jurisdiction about the element's compliance with Housing Element Law (*Government Code Section 65580 et seq.*) A housing element approved by HCD is presumed to meet the requirements of Housing Element Law.

As part of its responsibilities in the process of preparing local housing elements, HCD provides regional housing need projections to the regional councils of government around the state approximately every 5 years. In turn, the councils are responsible for preparing a regional housing needs assessment that specifically enumerates each city's and county's fair share of the regional

housing need by economic segment. Each city or county must then amend its housing element to recognize that fair share.

# Local

## City of Oakley General Plan

### Land Use Element

The Land Use Element in the *City of Oakley 2020 General Plan* describes the pattern of land development within the city of Oakley and the proposed expansion area and provides direction for the future development envisioned for the city (City of Oakley 2002). The Land Use Element clearly recognizes that in substantial future development areas, public facilities such as roads, water service, and wastewater collection must be properly sized to support development. However, specific policies addressing the provision of water supply are contained in the Growth Management Element.

### Growth Management Element

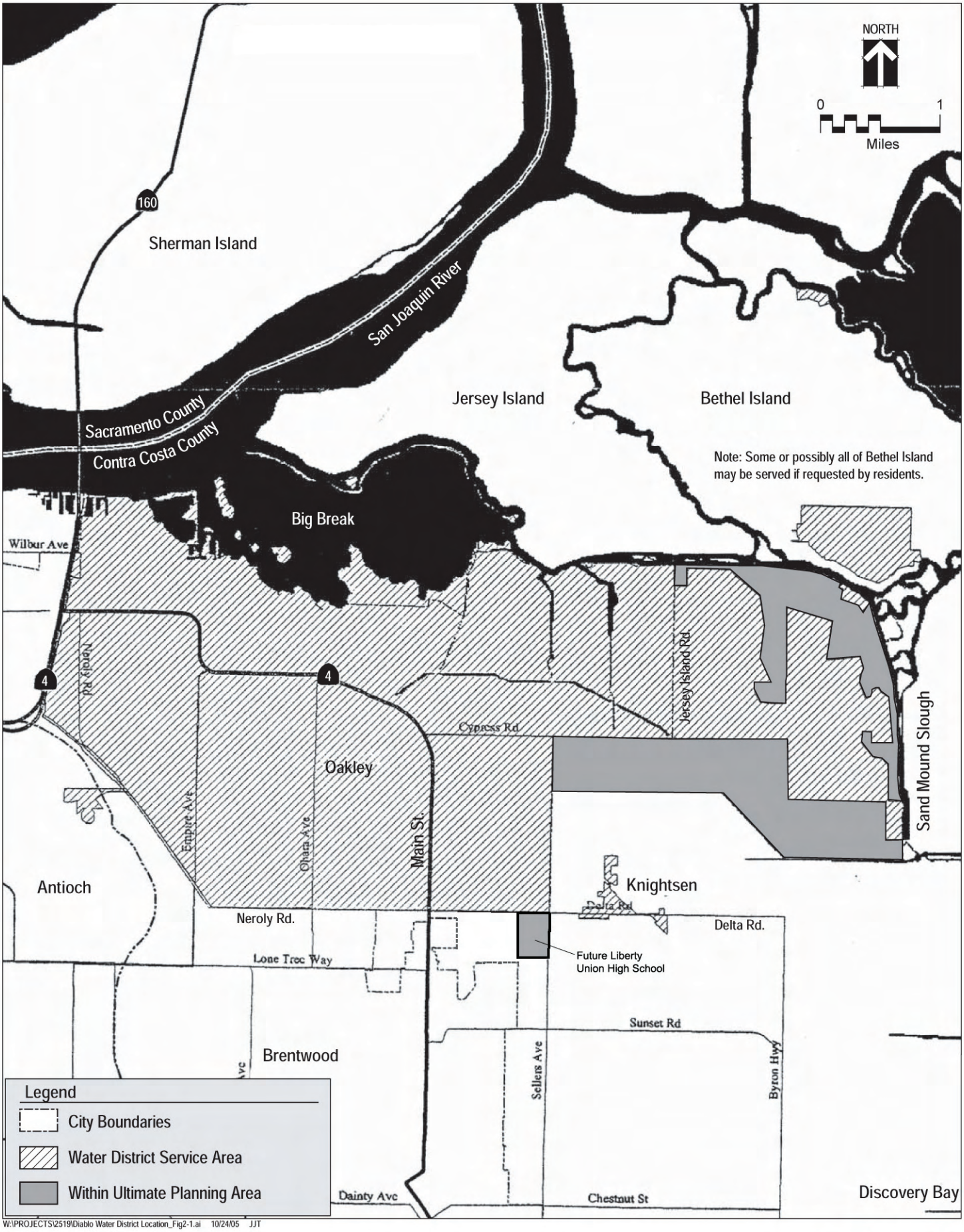
The Growth Management Element considers physical facilities that provide drainage, domestic water, and wastewater treatment services within the city. Goals, policies, and programs related to water supply are listed in Chapter 15, "Growth Inducing Impacts," of this EIR.

### Housing Element

The Housing Element addresses and describes the manner in which the City will responsibly accommodate residential growth throughout the period of the general plan. Per California Planning and Zoning Law (see discussion above), the Housing Element provides both broad and tailored discussion on demographic and socioeconomic variables, as well as a complete housing needs assessment and inventory.

# Environmental Setting

DWD's ultimate service area is approximately 19,000 acres consisting of the city of Oakley (including the East Cypress Corridor Area), the town of Knightsen, and portions of Bethel Island (if island residents wish to secure water service from the district). Currently DWD serves about half the ultimate area; the remainder is undeveloped or in the process of developing. Figure 9-1 illustrates the DWD's current and ultimate service areas. DWD's existing treated water system is located in the western portion this service area, where the original

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CDM

**Figure 9-1**
**DWD Service Area**

Oakley community began. Significant development is occurring in the eastern portion of the service area, and the treated water system is being expanded to serve the eastern area (Diablo Water District 2005).

According to the 2000 Census, the city of Oakley had a population of 25,619 persons in year 2000. Based on Association of Bay Area Governments (ABAG) projections, the city's general plan reports that Oakley will grow at a rate of 31% over the period of 2000–2020 to a population of 33,467 persons (City of Oakley 2002). This growth is anticipated to result in a total of 10,494 households by 2020, a 34% increase from the 2000 figure. Despite recent population surges in Contra Costa County and the city of Oakley, growth rates reported in the City's Housing Element are anticipated to slow over the next 20 years (City of Oakley 2002). Table 9-1 provides an overview of the population and household projections in the City's general plan.

**Table 9-1.** Population and Household Projections for City of Oakley

| | 2000 | 2005 | 2010 | 2015 | 2020 | Percent increase |
|---|---|---|---|---|---|---|
| Population | 25,619 | 28,181 | 29,759 | 31,336 | 33,467 | 31% |
| Households | 7,832 | 8,532 | 9,214 | 9,794 | 10,494 | 34% |

Source: City of Oakley 2002, Housing Element Tables 10-1 and 10-6.

However, the ABAG sphere of influence for Oakley—which formed the basis of general plan projections—does not include all the City's future expansion areas, which will be served by DWD, so is not as accurate for water supply planning.

The DWD Urban Water Management Plan (UWMP) (Diablo Water District 2005) provides population projections for its ultimate service area, calculated using planning information from the City's General Plan and *Contra Costa County General Plan* (for Knightsen and Bethel Island). The population was calculated based on buildout of residential land uses, the average allowable residential densities, and average household sizes. The buildout population was estimated at about 75,000 persons in year 2040, assuming that DWD serves the entire ultimate area (Diablo Water District 2005). Table 9-2 provides population projections for the ultimate service area from 2005 through 2040.

**Table 9-2.** Population Projections for DWD Ultimate Service Area

| Year | 2005 | 2012 | 2015 | 2020 | 2025 | 2030 | 2035 | 2040 |
|---|---|---|---|---|---|---|---|---|
| Population | 28,000 | 34,715 | 41,430 | 48,145 | 54,860 | 61,575 | 68,290 | 75,000 |

Source: Diablo Water District 2005.

## Socioeconomic Characteristics

The city of Oakley consists of a variety of diverse ethnic groups. Of the people in the city, 76% are White, 3% are Asian, and 3% are Black or African American. In addition, 25% of city residents identify as being of Hispanic or Latino descent, separate from and in addition to other questions on ethnicity (City of Oakley 2002).

Household sizes in the city of Oakley are larger than the regional standard, with an average household size of 3.26 persons in Oakley compared with only 2.72 persons in Contra Costa County. The larger household sizes in Oakley are consistent with the preponderance of children and persons in the family-forming age groups (City of Oakley 2002).

According to the 2000 Census, the majority of housing units in the city of Oakley were owner occupied (6,667 units or 85%). The renter rate in the city was less than half of that of Contra Costa County, representing 15% (1,180 units) of the total households in Oakley.

The 2000 median household income in Oakley was relatively comparable to Contra Costa County's. The majority of Oakley residents—65%—fall into the $35,000 to $100,000 range. In general, the city of Oakley comprises mostly middleclass households with moderate income (City of Oakley 2002).

# Project Impacts and Mitigation Measures

## Methods

This section describes the impact analysis relating to population, housing, and socioeconomics for the proposed project. The proposed project was evaluated for potential population and housing displacement impacts, as well as disproportionate environmental justice effects, using a literature review to establish baseline information and to perform a qualitative analysis of impact of the proposed project in the context of applicable local plans.

The EPA defines *environmental justice* as

> the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies. (U.S. Environmental Protection Agency 2005).

# Thresholds of Significance

For this analysis, an impact pertaining to population and housing was considered significant under CEQA if it would result in any of the following environmental effects, which are based on professional practice and State CEQA Guidelines Appendix G (*14 CCR 15000* et seq.). Implementation of the proposed project was considered to have a significant impact on population, housing, and socioeconomics if it would:

- displace a substantial number of existing housing units, necessitating the construction of replacement housing elsewhere;
- displace a substantial number of people, necessitating the construction of replacement housing elsewhere; or
- result in disproportionately high and adverse environmental effects that would substantially and adversely affect minority, low-income, or Native American populations.

# Impacts and Mitigation Measures

## Alternative 1: Proposed Project

### Impact PHS-1: Displace a Substantial Number of Existing Housing Units or People

The Phase 2 and 3 wells, pump stations, and pipelines for the proposed project are based on future development patterns in the city of Oakley. These facilities are planned in conjunction with future development and are therefore located in currently undeveloped and/or agricultural areas converting to urban uses. For these reasons, the proposed project would not result in the displacement or relocation of existing housing units or people.

#### Conclusion

No impact and therefore no mitigation required.

### Impact PHS-2: Have Disproportionately High and Adverse Human or Environmental Effects on Disadvantaged Communities

The Phase 2 and 3 wells, pump stations, and pipelines for the proposed project are based on future development patterns in the city of Oakley. Because these facilities would be constructed in currently undeveloped and/or agricultural areas converting to urban uses, no disadvantaged communities would be impacted by construction activities.

### Conclusion

No impact and therefore no mitigation required.

Chapter 10
# Utilities and Public Services

This chapter describes the environmental setting for utilities and public services in and near the project area, examines the potential impacts of the proposed project on utilities and public services, and proposes mitigation measures to reduce those impacts.

# Regulatory Setting

The proposed project would not affect most service providers typically affected by a development project (i.e., fire departments, utilities, schools, etc.); therefore, general plan policies are not discussed here.

# Environmental Setting

## Fire Protection Services

The city of Oakley is served by the East Contra Costa Fire Protection District (ECCFPD), which provides both fire suppression and emergency services for the communities of Bethel Island, Brentwood, Byron, Discovery Bay, Knightsen, and Oakley as well as portions of Marsh Creek Canyon and the Morgan Territory. There are nine fire stations throughout the county; Station 93 serves the city of Oakley.

## Police Services

The Contra Costa Sheriff's Department serves the project area. The department has approximately 1,148 personnel: 778 sworn personnel and 370 general employees. This includes operating three detention facilities in the county, which house an inmate population of over 1,500. In addition to police services, the sheriff's department also fulfills the role of county coroner and operates a crime lab that services the county.

The city of Oakley is served by the Oakley Police Department.

# Solid Waste Services

Oakley Disposal Service provides residential and commercial garbage recycling and green waste collection and recycling service to the city of Oakley.

# Telecommunications

Telephone service in the project area is supplied by AT&T. There are no county-owned underground telecommunication lines in the city of Oakley; however, there may be multiple AT&T-owned fiber optic lines throughout Contra Costa County.

# Water and Sewer

## Water Supply

DWD is Oakley's water purveyor. DWD receives water from CCWD. CCWD's primary source of water is the U.S. Department of the Interior, Bureau of Reclamation's Central Valley Project. CCWD receives additional supplies from Mallard Slough, Mallard Well Fields, and the East Contra Costa Irrigation District.

In addition to the surface water supply from CCWD, the proposed project will provide groundwater supply from multiple well sites (see Chapter 2, "Project Description"). The first of these wells, Glen Park Well, was put into service in 2006.

## Sewer

The Ironhouse Sanitary District (ISD) provides wastewater service to the entire city of Oakley and the unincorporated areas of Bethel Island and Sandmound. Wastewater services include the conveyance of primarily residential and some commercial and light industrial raw wastewater to a treatment facility for treatment and disposal of treated effluent onto agricultural lands on the mainland and Jersey Island.

# Gas and Electric

PG&E currently provides gas and electric services to the city of Oakley.

# Project Impacts and Mitigation Measures

## Methods

This section describes the impact analysis relating to utilities and public services for the proposed project. The proposed project was evaluated for impacts on utilities and public services using a literature review to establish baseline information and to perform a qualitative analysis of impact of the proposed project in the context of applicable local plans (none of which apply).

## Thresholds of Significance

### Utilities and Service Systems

For this analysis, an impact pertaining to utilities and service systems was considered significant under CEQA if it would result in any of the following environmental effects, which are based on professional practice and State CEQA Guidelines Appendix G (*14 CCR 15000* et seq.). Implementation of the proposed project was considered to have a significant impact on utilities and service systems if it would:

- exceed wastewater treatment requirements of the applicable RWQCB;
- require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- result in a determination by the wastewater treatment provider that serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments;
- be served by a landfill with insufficient permitted capacity to accommodate the proposed project's solid waste disposal needs;
- fail to comply with federal, state, and local statutes and regulations related to solid waste.

### Public Services

Implementation of the proposed project was considered to have a significant impact on public services if it would result in a need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts on fire protection, police protection, schools, parks, or other public facilities.

# Impacts and Mitigation Measures

## Alternative 1: Proposed Project

### Impact PUB-1: Exceed Wastewater Treatment Requirements of the Applicable Regional Water Quality Control Board

The proposed project consists of construction and operation of groundwater pumping facilities and a pipeline that will convey groundwater for blending with DWD's primary surface water supply. There is potential for development within the service area to discharge more salt to ISD from the blended supply due to the higher dissolved mineral content in the groundwater fraction.

More use of groundwater may also increase the use of regenerating-type water softeners, which may contribute to an added salt load to the wastewater system. During periods of low flow in the San Joaquin River when salinity effluent requirements are most stringent, DWD will have increased demand, and a 4 to 1 dilution of surface water to groundwater, which would significantly drop the salt loads to ISD during this time of year. However, because increased salt loads can also be a result of water softeners in new development, any incremental increase in salt loads could impact ISDs ability to meet their NPDES permit and ultimately the San Joaquin River.

#### Conclusion

The language included in Impact CUM-1 and HYD-MM-8 reduces these impacts to a less-than-significant level.

### Impact PUB-2: Require or Result in the Construction of New Water or Wastewater Treatment Facilities or Expansion of Existing Facilities, the Construction of which Could Cause Significant Environmental Effects

The proposed project would result in expanding the groundwater source water that is delivered to the DWD Blending Facility in the city of Oakley. Construction of the Phase 2 and future Phase 3 wells will not cause significant environmental effects on utilities and public services.

#### Conclusion

There are no impacts and therefore no mitigation is required.

## Impact PUB-3: Require or Result in the Construction of New Stormwater Drainage Facilities or Expansion of Existing Facilities, the Construction of which Could Cause Significant Environmental Effects

The proposed project would result in a very small increase in impervious surface from the pump buildings. The pipelines would be underground and would not require any stormwater conveyance facilities. The small increase in impervious surface can concentrate and redirect stormwater flows. However, stormwater flow associated with the pump buildings of Phase 2 and Phase 3 will not need additional stormwater drainage facilities that would impact utilities and public services.

### Conclusion

There are no impacts and therefore no mitigation is required.

## Impact PUB-4: Result in a Determination by the Wastewater Treatment Provider that Serves or May Serve the Project that it Has Inadequate Capacity to Serve the Project's Projected Demand in Addition to the Provider's Existing Commitments

The proposed project is limited to construction and operation of groundwater pumping facilities and conveyance pipeline. Future growth inducement associated with the proposed project would analyze such impacts on a case by case with ISD.

### Conclusion

There are no impacts and therefore no mitigation is required.

## Impact PUB-5: Be Served by a Landfill with Insufficient Permitted Capacity to Accommodate the Project's Solid Waste Disposal Need

Solid waste generation would be limited to construction activities and would not affect available solid waste disposal capacity in the region. No long-term solid waste generation would be associated with the proposed project.

### Conclusion

There are no impacts and therefore no mitigation is required.

## Impact PUB-6: Not Comply with Federal, State, and Local Statutes and Regulations Related to Solid Waste

The contractor would be required to comply with all pertinent regulations regarding the disposal of solid waste generated by construction activities.

### Conclusion

There are no impacts and therefore no mitigation is required.

## Impact PUB-7: Result in a Need for New or Physically Altered Governmental Facilities, the Construction of which Could Cause Significant Environmental Impacts on Fire Protection, Police Protection, Schools, Parks, or Other Public Facilities

The objective of the proposed project is to provide a supplemental water supply for the city of Oakley. The groundwater supply that would be provided by the proposed project would replace a portion of DWD's existing surface water supply. No increase in demand for public services such as police and fire protection, parks, and recreation facilities would result from the project.

### Conclusion

There are no impacts and therefore no mitigation is required.

Chapter 11
# Visual Resources

This chapter describes the environmental setting for visual resources, the potential construction- and operation-related impacts of the proposed project on these resources, and the mitigation measures that would reduce these impacts.

# Regulatory Setting

The proposed project is located in the city of Oakley. Oakley has established policies in its general plan that addresses goals that the city wishes to achieve in regard to community image and design and the protection of viewer groups. No specific federal or state regulations apply to the visual resources associated with this project.

## Local

### Contra Costa County General Plan

The *Contra Costa County General Plan* includes the following goals and policies that may apply to the visual resources analysis of the project alternatives (Contra Costa County 2005).

#### Goals

**9-10** To preserve and protect areas of identified high scenic value, where practical, and in accordance with the Land Use Element map.

**9-11** To protect major scenic ridges, to the extent practical, from structures, roadways, or other activities that would harm their scenic qualities.

**9-12** To preserve the scenic qualities of the San Francisco Bay/Delta estuary system and the Sacramento-San Joaquin River/Delta shoreline.

### Policies

**9-15** In order to conserve the scenic beauty of the County, developers shall generally be required to restore the natural contours and vegetation of the land after grading and other land disturbances. Public and private projects shall be designed to minimize damages to significant trees and other visual landmarks.

**9-21** The construction of new structures on the top of major scenic ridges or within 50 feet of the ridgeline shall be discouraged.

**9-23** Hilltops, ridges, rock outcroppings, mature stands of trees, and other natural features shall be considered for preservation at the time that any development applications are reviewed.

**9-24** Any new development shall be encouraged to generally conform with natural contours to avoid excessive grading.

**9-27** The appearance of the County shall be improved by eliminating negative features such as non-conforming signs and overhead utility lines, and by encouraging aesthetically designed facilities with adequate setbacks and landscaping.

**9-28** Maintenance of the scenic waterways of the County shall be ensured through public protection of the marshes and riparian vegetation along the shorelines and delta levees, as otherwise specified in this Plan.

**9-29** Tule islands and levee remnants within the county shall be restricted from new development.

**9-30** Physical and visual public access to established scenic routes shall be protected.

## City of Oakley General Plan

Goals and policies from the *City of Oakley 2020 General Plan* (City of Oakley 2002) that may influence the project include the following.

**2.1.4** Promote the placement of the most intensive non-residential development (Commercial, Business Park and Light Industrial) in the Northwest Oakley Planning Area.

**2.1.5** Ensure a strong physical connection to the Delta and the waterfront, including convenient public access and recreational opportunities.

**2.1.8** Discourage development that results in land use incompatibility. Specifically, require buffers between uses where appropriate and discourage locating sensitive uses (residential) adjacent to existing potentially objectionable uses or locating potentially objectionable uses adjacent to sensitive uses.

**2.2.3** Protect existing residential areas from intrusion of incompatible land uses and disruptive traffic to the extent reasonably possible.

**2.2.4** Promote, in areas where different land uses abut one another, land use compatibility by utilizing buffering techniques such as landscaping, setbacks, screening and, where necessary, construction of sound walls.

**2.4.1** Incorporate design buffers between potentially incompatible land uses and avoid, to the extent feasible, new land uses that compromise existing businesses and operations.

**6.7.1** Encourage preservation and enhancement of views of the Delta and Mount Diablo to the extent possible.

**6.7.2** New development and redevelopment along the Delta, adjacent to Marsh Creek and throughout the City should take advantage of view opportunities and visual impacts to the waterway and Mount Diablo, respectively.

# Environmental Setting

The project area is located in eastern Contra Costa County in the city of Oakley. Oakley is a formerly predominantly rural area devoted to agricultural, recreational, and open space land uses but has seen recent significant urban development including commercial and residential areas. The region is characterized largely by flat developed or agricultural lands, gently rolling hills, and open water. Specifically, the project area is characterized by a mix of industrial, commercial, residential, agricultural, and public open space uses. Natural features that can be viewed from the project area include Mt. Diablo, the surrounding ridgelines of the Coast Ranges, and if close enough, the San Joaquin River. In addition to providing residents with visual enjoyment, these views contribute to a feeling of community identity.

The region's public open space areas include Black Diamond Mines, Contra Loma regional parks, Antioch Dunes National Wildlife Refuge, Lower Sherman Island Wildlife Area, Sherman Island County Park, and the Marsh Creek Regional Trail. The pump stations associated with the proposed project would be constructed within the future Stonecreek Park and or the future Liberty Union High School #4. Trees and shrubs would be planted around the pump stations for aesthetics.

# Project Impacts and Mitigation Measures

## Methods

This section describes the impact analysis relating to visual resources for the proposed project. The proposed project was evaluated for potential visual impacts using a literature review to establish baseline information and a qualitative analysis of impacts of the proposed project in the context of applicable local plans.

# Thresholds of Significance

For this analysis, an impact pertaining to visual resources was considered significant under CEQA if it would result in any of the following environmental effects, which are based on professional practice and State CEQA Guidelines Appendix G (*14 CCR 15000* et seq.). Implementation of the proposed project was considered to have a significant impact on aesthetics and visual resources if it would:

- have a substantial adverse effect on a scenic vista or aesthetically pleasing view;
- substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings along a scenic highway;
- substantially degrade the existing visual character or quality of the site and its surroundings; or
- create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area.

# Impacts and Mitigation Measures

## Alternative 1: Proposed Project

### Impact VIS-1: Adversely Affect a Scenic Vista

#### Construction and Operation

The project area is not located within a designated scenic vista. Most views are limited to the foreground by the built environment; utility lines, road infrastructure, and farming equipment are a part of the typical view in and near the project area. In addition, the proposed project would not significantly obstruct the view of Mt. Diablo or the Coast Ranges. Therefore, the proposed project would not affect scenic vistas.

#### Conclusion

There are no impacts and therefore no mitigation is required.

### Impact VIS-2: Substantially Damage Scenic Resources, Including, but Not Limited to, Trees, Rock Outcroppings, and Historic Buildings along a Scenic Highway

#### Construction and Operation

The proposed project would not substantially impact scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings along a scenic highway.

### Conclusion
There are no impacts and therefore no mitigation is required.

## Impact VIS-3: Substantially Degrade the Existing Visual Character or Quality of the Site and Its Surroundings

### Construction
Construction of the proposed project would create temporary changes in views of and from the project area. Construction activities (excavation, grading, machinery and vehicle storage) would have a temporary, adverse effect on the visual quality along the pipeline route during construction. Pipeline construction also would result in temporary visual impacts (e.g., soil stockpiling and open trenches). Effects to recreationists on Marsh Creek Trail would be less than significant because of the short intervals of time that they are in visual contact with the project site.

The construction activity will adhere to city ordinances and will not take place outside of normal construction hours. Construction will occur between 8:00 a.m. and 5:00 p.m., unless prior approval is granted. There will be no nighttime lighting, unless prior approval is granted. Due to the limited duration of construction activities, potential visual impacts due to construction activities are considered less than significant.

### Conclusion
There are no impacts and therefore no mitigation is required.

## Impact VIS-4: Create a New Source of Substantial Light or Glare that Would Adversely Affect Daytime or Nighttime Views in the Area

The proposed project would install a low-impact, motion sensor light at the pump station for nighttime use during project operation. Lighting would be selected based on the site characteristics and considerations such as glare and direction of casting to avoid impacts to neighboring residents or facilities. This lighting would be a permanent feature that would be used in the event that maintenance workers need to access the pump station or the blending facility during nighttime hours. This light would be directed away from sensitive uses such as residential areas (see Mitigation Measure VIS-MM-1). Therefore, the project would not create a new source of light or glare that would adversely affect day or nighttime views in the area.

In the event nighttime construction activities are required, application of Mitigation Measure VIS-MM-1would reduce potential impacts from construction-related light and glare to a less-than-significant level.

### Mitigation Measure VIS-MM-1: Direct Construction-Related and Operational Night Lighting away from Sensitive Uses

DWD will focus and direct both construction-related and operational night lighting away from sensitive uses such as residential areas.

### Conclusion

Implementation of Mitigation Measure VIS-MM-1 would reduce potential impacts from construction- and pump station operation-related light and glare to less-than-significant levels.

Chapter 12

# Public Health and Environmental Hazards

This section describes the regulatory and environmental setting as it relates to public health and environmental hazards. Potential impacts resulting from the construction and operation of the proposed project on public health, and mitigation measures to reduce those impacts are discussed herein.

# Regulatory Setting

A *hazardous material* is defined by the California Department of Toxic Substances Control (DTSC) as a material that poses a significant present or potential hazard to human health and safety or the environment if released because of its quantity, concentration, or physical or chemical characteristics (*26 CCR 25501*). Applicable hazardous-material regulations and policies are summarized below.

## Federal

Nationally, the EPA is the principal federal regulatory agency responsible for the safe use and handling of hazardous materials. Two key federal regulations pertaining to hazardous wastes are described below. Other applicable federal regulations are contained primarily in titles 29, 40, and 49 of the *CFR*. California regulations generally are regarded as equal to or more stringent than federal regulations. EPA has granted the state primary oversight responsibility to administer and enforce hazardous waste management programs.

### Resources Conservation and Recovery Act 1976

The Resource Conservation and Recovery Act (RCRA) enables EPA to administer a regulatory program that extends from the manufacture of hazardous materials to their disposal, thereby regulating the generation, transport, treatment, storage, and disposal of hazardous waste at all facilities and sites in the nation.

### Comprehensive Environmental Response 1980, Compensation, and Liability Act and Superfund Amendment and Reauthorization Act Title III 1986

The Comprehensive Environmental Response, Compensation, and Liability Act, also known as Superfund, was passed to facilitate the cleanup of the nation's toxic waste sites. In 1986, Superfund was amended by the Superfund Amendment and Reauthorization Act Title III, also called the Emergency Planning and Community Right-to-Know Act, which states that past and present owners of land contaminated with hazardous substances can be held liable for the entire cost of the cleanup even if the material was dumped illegally when the property was under different ownership.

## State

DTSC primarily regulates the following programs. State regulations require planning and management to ensure that *hazardous wastes,* defined by the EPA as any waste with "properties that make it dangerous or potentially harmful to human health or the environment," are handled, stored, and disposed of properly to reduce risks to human health and the environment. Several hazardous waste regulations are discussed below.

### Hazardous Materials Release Response Plans and Inventory Act of 1985

The Hazardous Materials Release Response Plans and Inventory Act, also known as the Business Plan Act, requires businesses using hazardous materials to prepare a hazardous materials business plan that describes their facilities, inventories, emergency response plans, and training programs. Hazardous materials are defined as raw or unused materials that are part of a process or manufacturing step. They are not considered hazardous waste. Health concerns pertaining to the release of hazardous materials, however, are similar to those relating to hazardous waste.

### Hazardous Waste Control Act 1990

The Hazardous Waste Control Act created the state hazardous waste management program, which is similar to, but more stringent than, the federal RCRA program. The act, which is implemented by regulations contained in *26 CCR* and enforced by the DTSC, describes the following required aspects for the proper management of hazardous waste: identification and classification; generation and transport; design and permitting of recycling, treatment, storage, and disposal facilities; treatment standards; operation of facilities and staff training; and closure of facilities and liability requirements.

These regulations list more than 800 materials that may be hazardous and establish criteria for identifying, packaging, and disposing of them. Under this act and *26 CCR,* a generator of hazardous waste must complete a manifest that accompanies the waste from the generator to the transporter to the ultimate disposal location. Copies of the manifest must be filed with the DTSC.

## Emergency Services Act 1970

Under the Emergency Services Act, the state developed an emergency response plan to coordinate emergency services provided by federal, state, and local agencies. Rapid response to incidents involving hazardous materials or hazardous waste is an important part of the plan, which is administered by the California Office of Emergency Services. The office coordinates the responses of other agencies, including EPA, California Highway Patrol, RWQCBs, air quality management districts, and county disaster response offices.

## California Occupational Safety and Health Administration Standards

Worker exposure to contaminated soils, vapors that could be inhaled, or groundwater containing hazardous constituents would be subject to monitoring and personal safety equipment requirements established in Title 8 of the California Occupational Safety and Health Administration (Cal-OSHA) regulations. The primary intent of the Title 8 requirements is to protect workers, but compliance with some of these regulations would also reduce potential hazards to nonconstruction workers and project area occupants because required controls related to site monitoring, reporting, and other activities would be in place.

# Local

## Contra Costa County General Plan

The *Contra Costa County General Plan's* Safety Element (Contra Costa County 2005) describes objectives and policies that are aimed at reducing public health risks and the hazardous materials and associated risks applicable to the proposed project.

### Safety Element, Hazardous Materials Policies

**10-61** Hazardous waste releases from both private companies and public agencies shall be identified and eliminated.

**10-62** Storage of hazardous materials and wastes shall be strictly regulated.

**10-64** Industrial facilities shall be constructed and operated in accordance with up-to-date safety and environmental protection standards.

**10-68** When an emergency occurs in the transportation of hazardous materials, the County Office of Emergency Services shall be notified as soon as possible.

**10-ae** Request that State and federal agencies with responsibilities for regulating the transportation of hazardous materials review regulations and procedures, in cooperation with the County, to determine means of mitigating the public safety hazard in urban areas.

## City of Oakley General Plan

Policies of the *City of Oakley 2020 General Plan* (City of Oakley 2002) that are aimed at reducing public health risks and the hazardous materials' health risk to people and are applicable to the proposed project are described below.

### Health and Safety Element

#### Hazardous Materials Policies

**8.3.1** Hazardous waste releases from both private companies and public agencies shall be identified and eliminated.

**8.3.2** Storage of hazardous materials and wastes shall be strictly regulated.

**8.3.3** Secondary contaminant and periodic examination shall be required for all storage of toxic materials.

**8.3.4** Industrial facilities shall be constructed and operated in accordance with up-to-date safety and environmental protection standards.

**8.3.5** Industries which store and process hazardous materials shall provide a buffer zone between the installation and the property boundaries sufficient to protect public safety. The adequacy of the buffer zone shall be determined by the Community Development Department.

#### Public Protection and Disaster Planning Policies

**8.4.1** The Office of Emergency Services, in cooperation with the City and public protection agencies, shall delineate evacuation routes and, where possible, alternate routes around points of congestion or where road failure could occur.

# Environmental Setting

The project area has a history of being used for agricultural purposes. As a result, there has likely been historical use of pesticides within the project area. Certain organochlorine pesticides, dichloro-diphenyl-trichloroethane (DDT), for

example, are persistent in the environment and residual pesticides in surface soils are consequently a possible contaminant on former agricultural sites. Organophosphate pesticides such as diazinon and chlorpyrifos are also of concern in the area.

# Project Impacts and Mitigation Measures

## Methods

This section describes the impact analysis relating to public health and environmental hazards for the proposed project. The proposed project was evaluated for public health and environmental hazard impacts using a literature review to establish baseline information and to perform a qualitative analysis of impact of the proposed project in the context of applicable local plans.

## Thresholds of Significance

For this analysis, an impact pertaining to public health and environmental hazards was considered significant under CEQA if it would result in any of the following environmental effects, which are based on professional practice and State CEQA Guidelines Appendix G (*14 CCR 15000* et seq.). Implementation of the proposed project was considered to have a significant impact on public health relating to hazards and hazardous materials if it would:

- create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
- be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment;
- be located within an airport land use plan area or, where such a plan has not been adopted, be within 2 miles of a public airport or public use airport, and result in a safety hazard for people residing or working in the project area;
- be located within the vicinity of a private airstrip and result in a safety hazard for people residing or working in the project area;
- impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or

- expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

# Impacts and Mitigation Measures

Potential impacts related to hazards or hazardous materials that may result from the construction and/or operation of the proposed project are considered at a project level, and specific mitigation measures to avoid, minimize, or compensate for potentially significant impacts are described immediately following each impact discussion, as necessary.

## Alternative 1: Proposed Project

### Impact HAZ-1: Create a Significant Hazard to the Public or the Environment through the Routine Transport, Use, or Disposal of Hazardous Materials

Sodium hypochlorite will be stored in a chemical room at the proposed Phase 2 and future Phase 3 well pumping stations. Sodium hypochlorite, essentially a solution of dissolved chlorine gas in sodium hydroxide, is typically used as a disinfectant in water treatment. Use of sodium hypochlorite in the operation of the pumping stations could result in the release of chlorine gas at the facilities. However, because sodium hypochlorite would be directly metered (injected) into the piping at the proposed well pumping stations, and stored and handled according to federal and state requirements, the potential for chlorine gas release is minimal. As part of federal and state requirements, numerous safeguards would be adopted to prevent the accidental release of chlorine and other materials at the pump station facilities.

Aqua Mag®, a manganese sequestering agent, may be stored in the chemical room at the proposed Phase 2 and future Phase 3 well pumping station in the event that the production well exhibits a high concentration of manganese. Aqua Mag® is a water soluble blended phosphate liquid that is non-flammable and non-volatile. Storage and handling of Aqua Mag® will be in full and strict compliance with all federal, state, and local regulations pertaining to phosphates.

DWD and its contractors will prepare a SPCCP as discussed in Chapter 2. The SPCCP will include procedures, protective equipment requirements, training, and a checklist. If a spill is reportable, the appropriate actions will be taken as outlined in the SPCCP.

#### Conclusion

There are no impacts and therefore no mitigation is required.

## Impact HAZ-2: Create a Significant Hazard to the Public or the Environment through Reasonably Foreseeable Upset and Accident Conditions Involving the Release of Hazardous Materials into the Environment

### Construction

Construction activities would involve the use of certain potentially hazardous materials such as fuels, oils, and solvents. These materials generally would be used for excavation equipment, drilling rigs, generators, and other construction equipment, and would be contained within vessels engineered for safe storage. Spills during on-site fueling of equipment or an upset condition (e.g., puncture of a fuel tank through operator error) could result in a release of fuel or oils into the environment. Storage of large quantities of these materials in the construction area is not anticipated; however, the uncontrolled release of these materials would be a potentially significant impact. As stated in Chapter 2, a SPCCP will be prepared for the proposed project. The SPCCP will require proper handling and storage of all materials to be in compliance with Cal-OSHA standards. The SPCCP would require safe collection, transportation and storage of all chemicals.

### Conclusion

There are no impacts and therefore no mitigation is required.

## Impact HAZ-3: Emit Hazardous Emissions or Involve Handling Hazardous or Acutely Hazardous Materials, Substances, or Waste within One-Quarter Mile of an Existing or Proposed School

There are no schools within one-quarter mile of the proposed Phase 2 project area. The proposed future Phase 3 water supply well, pump station and pipeline alignment would be near the future Liberty Union High School, which could be adjacent to or within one-quarter mile of the Phase 3 project area.

As stated above, there is a potential for a chlorine gas release at the well pump station, where chemical storage is proposed. However, as discussed under Impact HAZ-1 above, the likelihood of such an occurrence is low because of the numerous safeguards in place. Any hazardous materials would be stored according to federal and state requirements. Chlorine fume clouds, which could adversely affect public health, are not likely to occur.

### Conclusion

There are no impacts and therefore no mitigation is required.

## Impact HAZ-4: Create a Significant Hazard to the Public or the Environment as a Result of Being Located on a Site that is Included on a List of Hazardous Materials Sites Compiled Pursuant to Government Code Section 65962.5

The project area has not been identified on a list of hazardous materials sites (also known as the Cortese List) compiled pursuant to Government Code Section 65962.5. However, as stated in Chapter 2, DWD or its contractor will prepare a SPCCP which will protect against spills and allow for proper handling procedures. However, if a spill was to occur and surface water and groundwater were contaminated, there could be an impact to the environment.

### Conclusion

If contamination is encountered in the project area, implementation of Mitigation Measure HYD-MM-2 would reduce potential impacts to less-than-significant levels.

## Impact HAZ-5: Create a Safety Hazard for People Residing or Working in the Project Area as a Result of Being Located Within an Airport Land Use Plan Area or, where Such a Plan has Not Been Adopted, be Within 2 Miles of a Public Airport or Public Use Airport

There are no airports located within 5 miles of the project area.

### Conclusion

There are no impacts and therefore no mitigation is required.

## Impact HAZ-6: Create a Safety Hazard for People Residing or Working in the Project Area as a Result of Being Located Within the Vicinity of a Private Airstrip

The project area is not located within the vicinity of a private airport.

### Conclusion

There are no impacts and therefore no mitigation is required.

## Impact HAZ-7: Impair Implementation of or Physically Interfere with an Adopted Emergency Response Plan or Emergency Evacuation Plan

Routine operation of the proposed Phase 2 and future Phase 3 pump stations and pipeline would not be expected to interfere with an emergency response plan or

emergency evacuation plan. Please also refer to the Chapter 4, "Transportation," for a discussion of emergency access during construction.

### Conclusion

There are no impacts and therefore no mitigation is required.

## Impact HAZ-8: Expose People or Structures to a Significant Risk of Loss, Injury, or Death Involving Wildland Fires, Including Where Wildlands are adjacent to Urbanized Areas or where Residences Are Intermixed with Wildlands

The project area does not qualify as "wildlands" where wildland fires are a risk to structures.

## Conclusion

There are no impacts and therefore no mitigation is required.

Chapter 13
# Cultural Resources

This section examines the potential impacts of the proposed project related to cultural resources. The aspects of cultural resources that are specifically analyzed are archeological and historical resources.

# Regulatory Setting

## Federal

There are no federal regulations addressing cultural resources that are related to the proposed project.

## State

### California Environmental Quality Act

Since 1994, the State CEQA Guidelines have elaborated on the definitions of what constitutes a significant cultural resource and a significant impact on cultural resources. CEQA requires that public agencies (in this case, ISD) that finance or approve public or private projects must assess the effects of the project on cultural resources. Cultural resources are defined as buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, or scientific importance. CEQA requires that alternative plans or mitigation measures be considered if a project would result in significant effects on important cultural resources. However, only impacts on significant cultural resources need to be addressed. Therefore, prior to the development of mitigation measures, the importance of cultural resources must be determined.

The steps that normally are taken in a cultural resources investigation for CEQA compliance are as follows:

- identify cultural resources;
- evaluate the significance of resources;
- evaluate the effects of a project on all resources; and

- develop and implement measures to mitigate the effects of the project only on significant resources, namely historical resources and unique archaeological resources.

CEQA guidelines define three ways that a cultural resource may qualify as a historical resource for the purposes of CEQA review:

- if the resource is listed in or determined eligible for listing in the California Register of Historical Resources (CRHR);
- if the resource is included in a local register of historical resources, as defined in *PRC 5020.1(k)*, or is identified as significant in a historical resource survey meeting the requirements of *PRC 5024.1(g*) unless the preponderance of evidence demonstrates that it is not historically or culturally significant; or
- the lead agency determines the resource to be significant as supported by substantial evidence in light of the whole record (*14 CCR 15064.5[a]*).

A cultural resource may be eligible for inclusion in the CRHR if it:

- is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- is associated with the lives of persons important in our past;
- embodies the distinctive characteristics of a type, period, region, or method of construction, represents the work of an important creative individual, or possesses high artistic values; or
- has yielded, or may be likely to yield, information important in prehistory or history.

In addition, CEQA distinguishes between two classes of archaeological resources: archaeological resources that meet the definition of a historical resource as above and unique archaeological resources. An archaeological resource is considered unique if it:

- is associated with an event or person of recognized significance in California or American history or of recognized scientific importance in prehistory;
- can provide information that is of demonstrable public interest and is useful in addressing scientifically consequential and reasonable research questions; or
- has a special or particular quality such as oldest, best example, largest, or last surviving example of its kind (*PRC 21083.2*).

# Local

## Contra Costa County General Plan

The *Contra Costa County General Plan* identifies Historic and Cultural Resource Goal 9-31 as a mandate to "identify and preserve important archaeological and historic resources within the County" (Contra Costa County 2005:9-11). In addition, the general plan identifies policies 9-32, 9-33, and 9-j, which state that areas containing identifiable and important archaeological and historic resources should be preserved and that inclusion of a procedure for the treatment of inadvertent cultural resource discoveries is a condition for approval of discretionary permits (Contra Costa County 2005:9-11, 9-12).

## City of Oakley General Plan

The *City of Oakley 2020 General Plan* Goals 6.4 and 6.5 (and related policies 6.4.1 and 6.5.1) call for the preservation of significant and identifiable cultural resources. Furthermore, for approval of development proposals, Programs 6.4.A and 6.5.C require an assessment of potential impacts on cultural resources pursuant to 14 CCR 15064.5 (City of Oakley 2002.)

# Environmental Setting

The project site is primarily agricultural land with residences and associated out-structures. The California Office of Historic Preservation (OHP), "Instructions for Recording Historical Resources," dated March 1995, states that any physical evidence of human activities over 45 years old may be recorded for purposes of inclusion in the OHP's filing system. Documentation of resources less than 45 years old may also be filed if those resources have been formally evaluated, regardless of the outcome of the evaluation. The 45-year criteria recognizes that a five year lag commonly exists between resource identification and the date that planning decisions are made.

A search of the Contra Costa County Mapping Information Center (Contra Costa County 2008) for the proposed project site, APN 033-140-017 and 018-310-011 indicates that two residences are currently located in APN 033-140-017. The Mapping Information Center also indicates that the residences were constructed after 1972. Therefore, the residences do not meet the 45-year-old criteria discussed above.

However, the Office of Historic Preservation has additional criteria that must be met in order for a structure to be listed as a California Historical Landmark and/or Historical Point of Interest. The criteria, as based on Public Resources Code Section 5031(a), are as follows:

- The property is the first, last, only, or most significant historical property of its type in the region. The regions are Southern California, Central California, and Northern California. If a property has lost its historic appearance (integrity) it may be listed as a site.
- The property is associated with an individual or group having a profound influence on the history of California. The primary emphasis should be the place or places of achievement of an individual. Birthplace, death place, or place of internment shall not be a consideration unless something of historical importance is connected with his or her birth or death. If a property has lost its historic appearance (integrity) it may be listed as a site.
- The property is a prototype of, or an outstanding example of, a period, style, architectural movement, or construction of the more notable works, or the best surviving work in a region of a pioneer architect, designer, or master builder. An architectural landmark must have excellent physical integrity, including integrity of location. An architectural landmark generally will be considered on its original site, particularly if its significance is basically derived from its design relationship to the site. (Note: Only preeminent examples will be listed for architectural importance. Good representative examples of a style, period or method of construction are more appropriately nominated to other registration programs).

The current residences do not meet the above criteria for historic or cultural resources. In addition, due to the fact that the current project sites are used for either agricultural or grazing land use, it is unlikely that there are any surface related archeological or paleontological resources.

# Project Impacts and Mitigation Measures

## Methods

Impacts were based on any applicable technical reports prepared for the proposed project and professional judgment based on the CEQA guidelines. In addition, a records search of all pertinent survey and site data was conducted with the North Central Information Center at Sonoma State University to determine if the proposed project could impact any cultural resources.

## Thresholds of Significance

For the purposes of this analysis, an impact pertaining to cultural resources was considered significant if it would result in any of the following, which are based on professional practice and Appendix G of the CEQA Guidelines (*14 CCR 15000* et seq.):

- Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5;

- Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to §15064.5;
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or
- Disturb any human remains, including those interred outside of formal cemeteries.

# Impacts and Mitigation Measures

## Alternative 1: Proposed Project

### Impact CUL-1: Cause a Substantial Adverse Change in the Significance of a Historical Resource as Defined in §15064.5 of the CEQA Guidelines

There are no recorded historic structures in the project area or along the proposed alignment. Given that most construction would occur underground in established ROWs, no direct or indirect impacts are expected to occur to built structures that may be eligible as historic resources.

#### Conclusion
Less-than-significant impact and therefore no mitigation required.

### Impact CUL-2: Cause a Substantial Adverse Change in the Significance of a Unique Archaeological Resource Pursuant to §15064.5 of the CEQA Guidelines or Disturb Any Human Remains in Areas Outside of a Cemetery

No historic or archaeological resources have been identified within the footprint of the alignment or pump station. Soil excavation will occur with the proposed project. As a result, undiscovered cultural resources could be encountered at the project site during construction. To mitigate potentially significant cultural resources impacts to less-than-significant levels, Mitigation Measure CUL-MM-1 will be implemented.

#### Mitigation Measure CUL-MM-1: Suspend Work and Perform Necessary Investigations to Determine Significance If Any Undiscovered Cultural Resources Are Encountered
If any as yet undiscovered cultural resources such as structural features or unusual amounts of bone or shell, artifacts, human remains, or architectural remains are encountered during any construction activities, the contractor will suspend work and contact DWD staff. A qualified cultural resource specialist will be retained and perform any necessary investigations to determine the significance of the find. DWD will then implement any mitigation deemed necessary for the recordation and/or protection of the cultural resources. In

addition, pursuant to Sections 5097.97 and 5097.98 of the *PRC* and Section 7050.5 of the State Health and Safety Code, all work must be halted and the County Coroner will be immediately notified in the event of the discovery of human remains. If the remains are determined to be Native American, guidelines of the Native American Heritage Commission will be adhered to in the treatment and disposition of the remains

### Conclusion
Less-than-significant impact and therefore no further mitigation required.

## Impact CUL-3: Directly or Indirectly Destroy a Unique Paleontological Resource or Site or Unique Geologic Feature

The project area contains recent alluvium of stream channel, stream overflow, and alluvial fan deposits. The sediments are Pliocene and Quaternary marine and nonmarine sedimentary rock sources. Given the relatively young geomorphic characteristics of this area, the probability of encountering paleontological resources is substantially reduced.

This notwithstanding, significant fossil discoveries can be made even in areas designated as having low potential for paleontological resources and may result from the excavation activities related to the proposed project. This impact would be reduced to a less-than-significant level with the incorporation of Mitigation Measure CUL-MM-2.

### Mitigation Measure CUL-MM-2: Notify a Qualified Paleontologist of Any Unanticipated Paleontological Resources
DWD will notify a qualified paleontologist of unanticipated discoveries made by either a qualified cultural resources specialist consulted under Mitigation Measure CUL-MM-1 or construction personnel and subsequently document the discovery as needed. In the event of an unanticipated discovery of any paleontological resource during construction, excavations within 50 feet of the find will be temporarily halted or diverted until the discovery is examined by a qualified paleontologist. The paleontologist will notify the appropriate agencies to determine procedures that would be followed before construction is allowed to resume at the location of the find.

### Conclusion
Less-than-significant impact and therefore no mitigation required.

Chapter 14
# Geology and Soils

This section examines the potential impacts of the proposed project related to geology and soils.

# Regulatory Setting

## Federal

### Clean Water Act, Section 402/National Pollutant Discharge Elimination System

The CWA is discussed in detail in Chapter 3, "Hydrology, Hydrogeology, Water Quality and Water Supply." However, because CWA Section 402 is directly relevant to excavation, additional information is provided below. Amendments in 1987 to the CWA added Section 402(p), which establishes a framework for regulating municipal and industrial stormwater discharges under the NPDES program. EPA has delegated the authority for the NPDES program in California to the State Water Board, which is implemented by the state's nine regional water quality control boards. Under the NPDES Phase II Rule, construction activity disturbing 1 acre or more must obtain coverage under the state's General Construction Permit. General Construction Permit applicants are required to prepare a Notice of Intent and a SWPPP and implement and maintain BMPs to avoid adverse effects on receiving water quality as a result of construction activities, including earthwork.

## State

### Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) (*PRC Sec. 2621* et seq.), originally enacted in 1972 as the Alquist-Priolo Special Studies Zones Act and renamed in 1994, is intended to reduce the risk to life and property from surface fault rupture during earthquakes. The Alquist-Priolo Act prohibits the location of most types of structures intended for human occupancy across the traces of active faults and strictly regulates construction in the

corridors along active faults (Earthquake Fault Zones). It also defines criteria for identifying active faults, giving legal weight to terms such as *active* and establishes a process for reviewing building proposals in and adjacent to Earthquake Fault Zones. Under the Alquist-Priolo Act, faults are zoned and construction along or across them is strictly regulated if they are "sufficiently active" and "well-defined." A fault is considered *sufficiently active* if one or more of its segments or strands shows evidence of surface displacement during Holocene time (defined for purposes of the act as within the last 11,000 years). A fault is considered well defined if its trace can be clearly identified by a trained geologist at the ground surface or in the shallow subsurface, using standard professional techniques, criteria, and judgment (Hart and Bryant 1997).

## Seismic Hazards Mapping Act

Like the Alquist-Priolo Act, the Seismic Hazards Mapping Act of 1990 (*PRC §2690–2699.6*) is intended to reduce damage resulting from earthquakes. While the Alquist-Priolo Act addresses surface fault rupture, the Seismic Hazards Mapping Act addresses other earthquake-related hazards, including strong ground shaking, liquefaction, and seismically induced landslides. Its provisions are similar in concept to those of the Alquist-Priolo Act: the state is charged with identifying and mapping areas at risk of strong ground shaking, liquefaction, landslides, and other corollary hazards, and cities and counties are required to regulate development within mapped Seismic Hazard Zones.

Under the Seismic Hazards Mapping Act, permit review is the primary mechanism for local regulation of development. Specifically, cities and counties are prohibited from issuing development permits for sites in Seismic Hazard Zones until appropriate site-specific geologic or geotechnical investigations have been carried out and measures to reduce potential damage have been incorporated into the development plans.

## California Building Standards Code

The State of California's minimum standards for structural design and construction are given in the California Buildings Standards Code (CBSC) (*24 CCR*). The CBSC is based on the Uniform Building Code (UBC) (International Code Council 1997), which is used widely throughout United States (generally adopted on a state-by-state or district by district basis) and has been modified for California conditions with numerous, more detailed or more stringent regulations. The CBSC requires that "classification of the soil at each building site will be determined when required by the building official" and that "the classification will be based on observation and any necessary test of the materials disclosed by borings or excavations." In addition, the CBSC states that "the soil classification and design-bearing capacity will be shown on the (building) plans, unless the foundation conforms to specified requirements." The CBSC provides standards for various aspects of construction, including (i.e., not limited to) excavation, grading, and earthwork construction; fills and

embankments; expansive soils; foundation investigations; and liquefaction potential and soil strength loss. In accordance with California law, certain aspects of the proposed project would be required to comply with all provisions of the CBSC.

# Local

## Contra Costa County General Plan

Goals, policies, and implementation measures of the *Contra Costa County General Plan* (Contra Costa County 2005) that are aimed at reducing the seismic risk to people and property and applicable to the proposed project are described below. Any substantial conflict between the proposed project and these goals, policies, and measures would constitute a significant impact.

### Seismic Hazard Goals

**10-A** To protect human life and reduce the potential for serious injuries from earthquakes; and to reduce the risks of property losses from seismic disturbances which could have severe economic and social consequences for the County as a whole.

**10-B** To reduce to a practical minimum injuries and health risks resulting from the effects of earthquake ground shaking on structures, facilities and utilities.

**10-C** To protect persons and properly from the life-threatening, structurally and financially disastrous effects of ground rupture and fault creep on active faults, and to reduce structural distress caused by soil and rock weakness due to geologic faults.

**10-D** To reduce to a practical minimum the potential for life, loss, injury, and economic loss due to liquefaction-induced ground failure, levee failure, large lateral land movements toward bodies of water, and consequent flooding; and to mitigate the lesser consequences of liquefaction.

### Seismic Hazard Policies

**10-4** In areas prone to severe levels of damage from ground shaking (i.e., Zone IV on Map 104 of the *Contra Costa County General Plan*), where the risks to life and investments are sufficiently high, geologic-seismic and soils studies shall be required as a precondition for authorizing public or private construction.

**10-6** Structures for human occupancy, and structures and facilities, whose loss would substantially affect the public safety or the provision of needed

services, shall not be erected in areas where there is a high risk of severe damage in the event of an earthquake.

## Ground Shaking Polices

**10-8** Ground conditions shall he a primary consideration in the selection of land use and in the design of development projects.

**10-9** In areas susceptible to high damage from ground shaking (i.e., Zone IV on Map 104 of the *Contra Costa County General Plan*), geologic-seismic and soils studies shall be required prior to the authorization of major land developments and significant structures (public or private).

**10-10** Policies regarding liquefaction shall apply to other ground failures which might result from ground shaking but which are not subject to such well-defined field and laboratory analysis.

## Faults and Fault Displacement Policies

**10-12** Prohibit construction of structures for human occupancy, and structures whose loss would affect the public safety or the provision of needed services, over the trace of an active fault.

**10-13** In areas where active or inactive earthquake cults have been identified, the location and/or design of any proposed buildings, facilities, or other development shall be modified to mitigate possible danger from fault rupture or creep.

**10-14** Preparation of a geologic report shall be required as a prerequisite before authorization of public capital expenditures or private development projects in areas of known or suspected faulting.

**10-15** To the extent practicable, the construction of structures requiring a high degree of safety and other critical structures shall not be allowed in an active or potentially active fault zone.

**10-16** When such a critical structure must be located in a fault zone, the structure shall be carefully sited, designed and constructed to withstand the anticipated earthquake stresses.

## Liquefaction Policies

**10-19** To the extent practicable, the construction of critical facilities, structures involving high occupancies, and public facilities shall not be sited in areas identified as having a high liquefaction potential, or in areas underlain by deposits classified as having a high liquefaction potential.

**10-20** Any structures permitted in areas of high liquefaction danger shall be sited, designed and constructed to minimize the dangers from damage due to earthquake-induced liquefaction.

**10-21** Approvals to allow the construction of public and private development projects in areas of high liquefaction potential shall be contingent on geologic and engineering studies which define and delineate potentially hazardous geologic and/or soils conditions, recommend means of mitigating these adverse conditions; and on proper implementation of the mitigation measures.

### Seismic Hazard Implementation Measures

**10-c** Require comprehensive geologic and engineering studies for any critical structure, whether or not it is located within a Special Studies Zone.

**10-d** Throughout the environmental review process, require geologic, seismic, and/or soils studies as necessary to evaluate proposed development in areas subject to ground shaking, fault displacement, or liquefaction.

## City of Oakley General Plan

Goals, policies, and implementation programs of the *City of Oakley 2020 General Plan* (City of Oakley 2002) that are aimed at reducing the seismic risk to people and property and are applicable to the proposed project are described below. Any substantial conflict between the project and these goals, policies, and measures would constitute a significant impact.

### Geology and Seismic Hazards Goal

**8.1** Protect human life, reduce the potential for serious injuries, and minimize the risk of property losses from the effects of earthquakes, including fault rupture, ground shaking, and liquefaction-induced ground failure.

### Seismic Hazard Policies

**8.1.3** Require the design of structures for human occupancy for satisfactory performance under earthquake conditions.

**8.1.4** Prohibit the erection of critical structures and facilities whose loss would substantially affect the public safety or the provision of needed services, in areas where there is a high risk of severe damage in the event of an earthquake unless appropriate engineering and construction practices are applied to ensure structural stability.

## Ground Shaking Policies Goal

**8.1.5** In areas susceptible to high damage from ground shaking (Modern sediment Zone identified on Figure 8-1, "Faults and Seismic Stability," of the *City of Oakley 2020 General Plan*), geologic, seismic, and soils studies shall be required prior to authorizing public or private construction.

## Faults and Fault Displacement Policies

**8.1.6** Prohibit construction of structures for human occupancy, and structures whose loss would affect the public safety or the provision of needed services, within 50 feet of known active faults as referenced in the Alquist-Priolo Act.

**8.1.7** In areas where active or inactive earthquake faults have been identified, the location and/or design of any proposed buildings, facilities, or other development shall be modified to mitigate possible danger from fault rupture or creep.

## Liquefaction Policies

**8.1.8** To the extent practicable, the construction of critical facilities, structures involving high occupancies, and public facilities should not be sited in areas identified as, or underlain by deposits classified as, having a high liquefaction potential (Figure 8-2 of the *City of Oakley 2020 General Plan*), unless appropriate engineering and construction practices are applied to ensure structural stability.

**8.1.9** Any structures permitted in areas of high liquefaction potential (Figure 8-2 of the *City of Oakley 2020 General Plan*) shall be sited, designed and constructed to minimize the dangers from damage due to earthquake-induced liquefaction. Approval of public and private development projects shall be contingent on geologic and engineering studies which: 1) define and delineate potentially hazardous geologic and/or soils conditions, 2) recommend means of mitigating these adverse conditions; and 3) provide implementation of the mitigation measures.

## Programs

**8.1.B** Utilize the land in the setback zones along active and potentially active faults (now called early Quaternary faults) for open forms of land use that could experience displacement without endangering large numbers of people or creating secondary hazards. Examples are yards, greenbelts, parking lots, and noncritical storage areas.

**8.1.C** Through the environmental review process, require comprehensive geologic, seismic, and/or soils and engineering studies for any critical structure proposed for construction in areas subject to ground shaking, fault displacement, ground failure, or liquefaction.

# Environmental Setting

## Regional Geology and Topography (Great Valley Geomorphic Province and Coast Ranges Geomorphic Province)

Contra Costa County occupies the westernmost edge of the Great Valley geomorphic province and the easternmost edge of the Coast Ranges geomorphic province. The Great Valley of California, also called the Central Valley of California, is a nearly flat alluvial plain extending from the Tehachapi Mountains in the south to the Klamath Mountains in the north and from the Sierra Nevada on the east to the Coast Ranges on the west. The valley is about 450 miles long and has an average width of about 50 miles. Elevations of the alluvial plain are generally just a few hundred feet above mean sea level (msl), with extremes ranging from a few feet below msl to about 1,000 feet above msl (Hackel 1966).

The Coast Ranges geomorphic province includes many separate ranges; coalescing mountain masses; and several major structural valleys of sedimentary, igneous, and metamorphic origin. The northern Coast Range extends from the California/Oregon border south to the San Francisco Bay Area (Bay Area). On average, it extends from the coastline to 50–75 miles inland. The southern Coast Range extends from the Bay Area south to the northern edge of the Transverse Ranges geomorphic province. On average, it extends from the coastline to 50–75 miles inland as well. Both the northern and southern Coast Ranges parallel the Great Valley geomorphic province throughout their length, except for extremely northern California where the northern Coast Range is adjacent to the Klamath Mountains geomorphic province.

Geologically, the Great Valley geomorphic province is a large elongate northwest-trending asymmetric structural trough that has been filled with a tremendously thick sequence of sediments ranging in age from Jurassic to Recent. This asymmetric geosyncline has a long stable eastern shelf supported by the subsurface continuation of the granitic Sierran slope and a short western flank expressed by the upturned edges of the basin sediments (Hackel 1966).

The Coast Ranges geomorphic province includes many separate ranges, coalescing mountain masses, and several major structural valleys. Typical tectonic, sedimentary, and igneous processes of the Circum-Pacific orogenic belt have influenced the evolution of the Coast Ranges. The Coast Ranges geomorphic province is characterized by the presence of two entirely different core complexes, one being a Jurassic-Cretaceous eugeosynclinal assemblage (the

Franciscan rocks) and the other consisting of early Cretaceous granitic intrusive and older metamorphic rocks. The two unrelated, incompatible core complexes lie side by side, separated from each other by faults. A large sequence of Cretaceous and Cenozoic clastic deposits covers large parts of the province. The rocks in the province are characterized by many folds, thrust faults, reverse faults, and strike-slip faults that have developed as a consequence of Cenozoic deformation (Page 1966).

# Project Impacts and Mitigation Measures

## Methods

This section describes the impact analysis relating to geology and soils for the proposed project. The proposed project was evaluated for geologic and soil impacts using a literature review to establish baseline information and to perform a qualitative analysis of impact of the proposed project in the context of applicable local plans.

## Thresholds of Significance

For the purposes of this analysis, an impact pertaining to hydrology and water quality was considered significant if it would result in any of the following, which are based on professional practice and Appendix G of the CEQA Guidelines (*14 CCR 15000* et seq.).

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving:
  - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault. Refer to Division of Mines and Geology Special Publication 42.
  - Strong seismic ground shaking
  - Seismic-related ground failure, including liquefaction
  - Landslides.
- Result in substantial soil erosion or loss of topsoil.
- Be located on geologic unit soil that is unstable, or that would become unstable as a result of the proposed project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, or liquefaction, or collapse.
- Be located on expansive soil, as defined in Table 18-1-B of the UBC (International Code Council 1997), creating substantial risks of life or property.

- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for disposal of wastewater.

# Impacts and Mitigation Measures

## Alternative 1: Proposed Project

### Impact GEO-1: Expose People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death Involving Rupture of a Known Earthquake Fault

Surface fault rupture potential is considered highest on faults that have exhibited displacement within the last 11,000 years. These faults are considered active by the California Geological Survey and in accordance with the Alquist-Priolo Act. These active faults are assigned Fault Rupture Hazard Zones (FRHZs) at set distances from the active fault trace. The intent of these zones is to prohibit the location of most structures for human occupancy across active fault traces. However, the designated FRHZs do not necessarily indicate the furthest lateral extent of the potential fault rupture. The project area is located approximately 15.6 miles west of the FRHZ for the active Greenville fault (California Division of Mines and Geology 1997). Because the proposed project is not within, or immediately adjacent to, an active fault trace designated under the Alquist-Priolo Act, the potential for surface fault rupture to occur at the site is relatively low.

#### Conclusion
Less-than-significant impact and therefore no mitigation required.

### Impact GEO-2: Expose People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death Involving Strong Seismic Ground Shaking

The project area is located in a seismically active region of California and thus it likely would be subjected to considerable ground motion during an earthquake from the aforementioned faults or other major faults in the Bay Area. These ground motions could cause the proposed pipeline to break or disconnect from the pump stations, which could result in temporary disruption of service. Implementation of Mitigation Measures GEO-MM-1 and GEO-MM-2 would reduce potential seismic impacts to less-than-significant levels.

#### Mitigation Measure GEO-MM-1: Prepare Geotechnical Evaluations
As part of the proposed project, DWD would perform design-level geotechnical evaluations, which would include subsurface exploration and review of the seismic design criteria. A liquefaction evaluation would be conducted as part of the geotechnical investigation. All recommendations of the geotechnical

investigation will be incorporated into the project design. The proposed facilities would be designed in accordance with the UBC.

**Mitigation Measure GEO-MM-2: Investigate Expansive Soils**
An investigation of expansive soils would be performed as part of the geotechnical investigation. Recommendations of the geotechnical report would be incorporated into the design and construction of the proposed facilities.

**Conclusion**
Implementation of Mitigation Measures GEO-MM-1 and GEO-MM-2 would reduce potential impacts to less-than-significant levels.

## Impact GEO-3: Expose People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death Involving Seismic-Related Ground Shaking, Including Liquefaction

In addition to ground shaking, the project area could be susceptible to earthquake-related seismic hazards, including liquefaction due to the presence of unconsolidated alluvial material and high groundwater levels. Extreme earth movements or settlements due to ground or slope failure could affect the integrity of the pump station and pipeline facilities, causing rupture or system failure.

**Conclusion**
Implementation of Mitigation Measure GEO-MM-1 would reduce potential liquefaction impacts to less-than-significant levels.

## Impact GEO-4: Expose People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death Involving Landslides

The susceptibility of land (slope) failure is dependent on slope and geology as well as the amount of rainfall, excavation, or seismic activities. A *landslide* is a mass of rock, soil, and debris displaced down-slope by sliding, flowing, or falling. Steep slopes and down-slope creep of surface materials characterize areas most susceptible to landslides. The project site and surrounding areas are relatively flat, and construction activities would not change topography and would have little risk of causing landslides.

**Conclusion**
Less-than-significant impact and therefore no mitigation required.

## Impact GEO-5: Result in Substantial Soil Erosion including Topsoil

Construction activities involving soil disturbance, such as excavation and stockpiling, could result in increased erosion and sedimentation to Marsh Creek. Implementation of standard engineering erosion-control BMPs (see Mitigation Measure HYD-MM-1 in Chapter 3) would reduce potential impacts on water quality to less-than-significant levels.

### Conclusion

Less-than-significant impact and therefore no mitigation required.

## Impact GEO-6: Be Located on Geologic Unit Soil that Is Unstable, or that Would Become Unstable as a Result of the Project, and Potentially Result in On- or Off-Site Landslides, Lateral Spreading, Subsidence, Liquefaction, or Collapse

According to the Soil Survey of Contra Costa County (performed by the U.S. Department of Agriculture [USDA], Soil Conservation Service [now the Natural Resources Conservation Service]), soils in the project area are mainly sands and silty clay loams (USDA Soil Conservation Service 1977). The sands have low corrosivity and shrink/swell characteristics[1]; however, the silty clay loams are described as having a high corrosivity potential with moderate shrink/swell characteristics. Underlying the topsoil are undifferentiated quaternary deposits which generally have low shrink/swell characteristics. Please refer to Impact GEO-3 for a discussion of liquefaction and Impact GEO-4 for landslides.

As discussed above, a geotechnical investigation would be conducted for the proposed project. An evaluation of expansive soils would be included in the geotechnical investigation. Implementation of Mitigation Measures GEO-MM-1 and GEO-MM-2 requires that recommendations of the geotechnical report, including any recommendations needed to address expansive soils, be incorporated into the project design. Implementation of seismic and design measures (see Mitigation Measures GEO-MM-1 and GEO-MM-2) would reduce potential soil instability hazards to less-than-significant levels. However, land subsidence is a possibility that could occur during excessive pumping of groundwater. This impact is considered to be potentially significant.

### Mitigation Measure GEO-MM-3: Monitor Land Subsidence

DWD will monitor land subsidence at all existing wells, including the surrounding areas, to ensure that land subsidence does not occur. If there is any change in ground level, ground water pumping will halt, and land subsidence will continue to be monitored to ensure that the groundwater levels are replenished so that subsidence does not continue. In addition, DWD or its contractor will

[1] Expansive soils possess a "shrink/swell" characteristic that is the result of cyclic changes in volume (expansion and contraction) that occurs in fine-grained clay sediments from the process of wetting and drying.

conduct a detailed analysis to determine if the subsidence was a result of groundwater pumping and not other factors, such as microbial oxidation of peat soils, which has been found to be the cause of subsidence in some Delta islands (Blodgett et al. 1990).

### Conclusion

Implementation of Mitigation Measure GEO-MM-3 would reduce potential impacts to less than significant levels.

## Impact GEO-7: Be Located on Expansive Soil, as Defined in Table 18-1-B of the Uniform Building Code (1997), Creating Substantial Risks to Life or Property

As part of Mitigation Measure GEO-MM-2, expansive soils will be investigated to ensure that the proposed project does not create a substantial risk to life or property.

### Conclusion

Less-than-significant impact and therefore no mitigation required.

## Impact GEO-8: Have Soils Incapable of Adequately Supporting the Use of Septic Tanks or Alternative Wastewater Disposal Systems where Sewers Are Not Available for Disposal of Wastewater

The proposed project does not involve installation of any septic tanks or wastewater disposal facilities.

### Conclusion

Less-than-significant impact and therefore no mitigation required.

Chapter 15
# Growth-Inducing Impacts

This chapter provides an overview of the regulatory setting and existing environmental setting related to growth inducement, as well as the associated potential environmental impacts of the proposed project.

# Regulatory Setting

## Federal

There are no federal regulations addressing growth inducement related to the proposed project.

## State

Section 21100 of the *PRC* requires an EIR to include a detailed statement of a project's anticipated growth-inducing impacts. More specific guidance is provided by Section 15126.2(d) of the state's CEQA Guidelines, which require that the analysis of growth-inducing impacts discuss the ways in which a project could foster economic or population growth or the construction of additional housing in the project area. The analysis must also address project-related actions that, either individually or cumulatively, would remove existing obstacles to population growth.

## Local

### City of Oakley General Plan

#### Land Use Element

The *City of Oakley 2020 General Plan* Land Use Element describes the pattern of land development within the city of Oakley and the proposed expansion area and provides direction for the future development envisioned for the city (City of Oakley 2002). The Land Use Element clearly recognizes that public facilities such as roads, water service, and wastewater collection in substantial future

development areas must be properly sized to support development. However, specific policies addressing the provision of water supply are contained in the Growth Management Element described below.

## Growth Management Element

The Growth Management Element considers physical facilities that provide drainage, domestic water, and wastewater treatment services within the city. Goals, policies, and programs related to water supply are listed below.

### Goals

**4.8** Assure the provision of potable water availability in quantities sufficient to serve existing and future residents.

### Policies

**4.8.1** Coordinate future development with all water agencies to ensure facilities are available for proper water supply.

**4.8.2** Encourage the development of locally controlled supplies to meet the growth needs of the City.

**4.8.3** Encourage the conservation of water resources throughout the City.

**4.8.4** Ensure that new development pays the costs related to the need for increased water system capacity.

**4.8.5** Ensure that water service systems be required to meet regulatory standards for water delivery, water storage, and emergency water supplies.

**4.8.6** Encourage water service agencies to establish service boundaries and to develop supplies and facilities to meet future water needs based on the growth policies contained in the General Plan.

**4.8.7** Encourage urban development within the existing water district Spheres of Influence adopted by the Local Agency Formation Commission; expansion into new areas within the Urban Limit Line beyond the Spheres should be restricted to those areas where urban development can meet all growth management standards included in this General Plan.

**4.8.8** Discourage the development of rural residences or other uses that will be served by well water or an underground domestic water supply, if a high nitrate concentration is found following County Health Services Department testing.

**4.8.9** Encourage rural residences currently served by well water or an underground domestic water supply, to connect to municipal water service when it becomes available. Upon connection to municipal water service, any water well(s) may be maintained for irrigation purposes only.

**4.8.10** Identify and develop opportunities, in cooperation with water service agencies, for use of non-potable water, including ground water,

reclaimed water, and untreated surface water, for other than domestic use.

**4.8.11** Identify, monitor, and regulate land uses and activities that could result in contamination of groundwater supplies to minimize the risk of such contamination.

**4.8.12** Reduce the need for water system improvements by encouraging new development to incorporate water conservation measures to decrease peak water use.

**4.8.13** Encourage the use of reclaimed water as a supplement to existing water supplies.

**4.8.14** All proposals for development, including requests for building permits, within 1,000 feet of the Contra Costa Canal property line shall be referred to Contra Costa Water District for comment to ascertain the District's standards for the proposed development project.

### Programs

**4.8.A** At the project approval stage, the City shall require new development to demonstrate that adequate water quantity and quality can be provided. The City shall determine whether 1) capacity exists within the water system if a development project is built within a set period of time, or 2) capacity will be provided by a funded program or other mechanism. This finding will be based on information furnished or made available to the City from consultations with the appropriate water agency, the applicant, or other sources.

**4.8.B** Encourage water service agencies to meet all regulatory standards for water quality prior to approval of any new connections to that agency.

**4.8.C** Cooperate with other regulatory agencies to control point and non-point water pollution sources to protect adopted beneficial uses of water.

**4.8.D** Encourage water serving agencies to prepare written drought contingency plans and hold public hearings on these plans. These plans should identify the size of needed drought capacity reserves. In requests for capacity verification for new development, the City shall require that the serving agency exclude these reserves from its operating capacities for the purpose of the verification.

# Environmental Setting

As described in Chapter 9, "Population, Housing, and Socioeconomics," the city of Oakley had a population of 25,619 in year 2000. Considering projections in *City of Oakley 2020 General Plan* and *Contra Costa County General Plan* (for Knightsen and Bethel Island), DWD's 2005 Urban Water Management Plan estimates a buildout population in its ultimate service area at about 75,000 persons in year 2040 (Diablo Water District 2005). Table 15-1 provides projected buildout population for the ultimate service area from 2005 through 2040.

**Table 15-1.** Population Projections for DWD Ultimate Service Area

| Year | 2005 | 2012 | 2015 | 2020 | 2025 | 2030 | 2035 | 2040 |
|---|---|---|---|---|---|---|---|---|
| Population | 28,000 | 34,715 | 41,430 | 48,145 | 54,860 | 61,575 | 68,290 | 75,000 |

Source: Diablo Water District 2005.

The DWD's 2005 UWMP provides water use projections in terms of million gallons per year (mg/y). Buildout water usage was calculated using the district's buildout population projections, based on the *City of Oakley 2020 General Plan* and the *Contra Costa County General Plan.* At buildout, the plan estimates that 6,350 mg/y of water supply would be used (Diablo Water District 2005). Table 15-2 provides projected water use for the ultimate service area from 2005 through 2040.

**Table 15-2.** Water Use Projections for DWD Ultimate Service Area

| Year | 2005 | 2012 | 2015 | 2020 | 2025 | 2030 | 2035 | 2040 |
|---|---|---|---|---|---|---|---|---|
| Demand (mg/y) | 1,685 | 2,324 | 2,964 | 3,603 | 4,242 | 4,881 | 5,521 | 6,350 |

Source: Diablo Water District 2005.

# Project Impacts and Mitigation Measures

## Methods

This section describes the impact analysis relating to growth inducement for the proposed project. The proposed project was evaluated for potential impacts related to growth inducement using a literature review to establish baseline information and to perform a qualitative analysis of impact of the proposed project in the context of applicable local plans.

## Thresholds of Significance

For this analysis, an impact pertaining to growth inducement was considered significant under CEQA if it would result in any of the following environmental effects, which are based on professional practice and State CEQA Guidelines Appendix G (*14 CCR 15000* et seq.). Implementation of the proposed project was considered to have a significant impact on growth inducement if it would:

- induce substantial population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure).

# Impacts and Mitigation Measures

## Alternative 1: Proposed Project

### Impact GRW-1: Substantial Inducement of Population Growth in the City of Oakley

The proposed project would remove infrastructural obstacles to growth in the City of Oakley through the treatment and distribution of potable water. In the *City of Oakley 2020 General Plan Draft Environmental Impact Report* (City of Oakley 2002), the City concludes that new development would not be permitted unless it is consistent with identified performance standards. As such, these standards would reduce any potential growth-inducing impacts to less than significant. No mitigation is required.

#### Direct Impacts

As discussed above, the proposed project would include a Phase 2 well and pump station (along with transmission pipeline connecting to Phase 1) within the proposed Stonecreek subdivision, as well as a Phase 3 well and pump station (along with transmission pipeline connecting to Phase 2) within the future Liberty Union High School site. Implementation of Phases 2 and 3 would facilitate delivery of potable water to new development within the district's ultimate service area. Although, groundwater is not the primary source of water and planned surface water supplies could meet demand until approximately 2030, DWD has begun implementation of supplemental groundwater supply in conjunction with its primary surface water supplies to increase its overall supply reliability and operational flexibility. Without additional water supply, the City would be both pragmatically and legally unable to complete development plans laid out for their 2020 General Plan.[1] By implementing Phase 2 and 3 improvements to facilitate delivery of water in accordance with its 2005 UWMP, the proposed project would remove this existing obstacle to growth, at least in part.

However, the proposed project would not induce unplanned growth or growth at rates in excess of those supported by existing planning and land use policies. All new development would be consistent with the performance standards established in the City's general plan and EIR. The proposed project's direct impacts related to growth inducement are considered less than significant.

#### Indirect Impacts

Population growth in the DWD service area resulting from the proposed project is expected to lead to a number of indirect impacts on the natural and built environment, as summarized below.

[1] Consistent with Senate Bills 221 and 610 of 2001, California law prohibits approval of moderate-sized and large development projects without documentation that adequate water supply would be available to support the resulting new demand.

- **Agricultural Resources**—Urbanization of the City's sphere of influence would convert lands currently in agricultural use to urban development.
- **Air Quality**—Local air quality would degrade as a result of growth, primarily due to elevated levels of vehicle emissions and increases in dust generated by intermittent construction activities.
- **Biological Resources**—Conversion of undeveloped land to homes, roads, businesses, and other built uses would reduce the area of wildlife habitat remaining in the region.
- **Land Use**—Land use changes would likely include urban infill and densification and "absorption" of undeveloped lands in less urbanized regions as housing and businesses are built to serve the area's expanding population.
- **Public Services, Utilities, and Recreation**—As the population grows, the demand for police and fire protections and for services such as schools, hospitals, and parks would undergo a corresponding increase. Additional utilities would also be needed, such as increased wastewater treatment capacity and extensions of utility infrastructure.
- **Traffic—**Area and local traffic would increase as a result of new development and increased numbers of through commuters traveling to employment hubs.

By enabling growth, the proposed project would indirectly foster, in varying degrees, all of the growth-related impacts identified above. Growth enabled by the proposed project would not exceed that modeled in the City's General Plan and the *Contra Costa County General Plan*, however. Development projects subject to the City's discretionary action are required to complete project-level CEQA environmental review to identify and mitigate project-specific impacts. The City is also responsible for effectively implementing general plan policies and performance standards intended to mitigate the potential adverse impacts of future growth. No further analysis is required, and no additional mitigation beyond that identified in the General Plan EIR and this draft EIR is proposed.

### Conclusion

Less-than-significant impact and therefore no mitigation required.

Chapter 16
# Alternatives Analysis

According to Section 15126.6 of the CEQA Guidelines:

> An EIR shall describe a reasonable range of alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project.

This chapter provides a description of alternatives and a comparative evaluation of the potential environmental effects of the proposed project to the alternatives. The alternatives analyzed in this draft EIR are the following.

- Alternative 1: Proposed Project
- Alternative 2: Knightsen Well as the Phase 2 well location; same future Phase 3 as the proposed project.
- No-Project Alternative.

This chapter describes the screening process for alternatives used in this planning effort and the differences in the construction-related and operation-related environmental effects expected under each alternative. Finally, the environmentally superior alternative is identified.

## Alternatives Development Process

An EIR must describe a reasonable range of alternatives to the project or to the project location that would feasibly attain the basic project objectives while avoiding or substantially lessening one or more of the significant environmental effects of the project. Alternatives may be eliminated from detailed consideration in the EIR if they fail to meet the basic project objectives, are determined to be infeasible, or cannot be demonstrated to avoid or lessen significant environmental impacts.

# Alternatives Screening Process for the Phase II and future Phase III Well Utilization Project

Prior to preparation of the EIR, CDM and LSCE worked with DWD to develop several alternatives to determine the most feasible water source that is consistent with DWD's policies. These alternatives, in part, provide the basis for development of EIR alternatives, and a summary of the process for the development of the alternatives is therefore given.

# Alternatives Analyzed in the Draft Environmental Impact Report

The following alternatives have been evaluated for their feasibility and their ability to achieve all of the project objectives while avoiding, reducing, or minimizing significant impacts in the DWD service area. These alternatives (with the exception of the No-Project Alternative) were determined to be feasible or potentially feasible and would meet DWD objectives.

All resource areas are analyzed below as required by CEQA, though at a more general level than in Chapters 3 through 15.

# Alternatives Considered but Dismissed from Further Analysis in this Environmental Impact Report

All of the following alternatives were dismissed from more detailed impact analysis in this EIR because they are either considered infeasible, would not meet project objectives, would not avoid or substantially lower the significant impacts identified for the proposed project, or are substantially similar to the two project alternatives considered above.

The following alternatives for the proposed project were considered but dismissed from further consideration for the reasons stated below.

- **Surface water alternative.** A surface water alternative was dismissed from the alternatives list because it is assumed that if the No-Project Alternative is implemented, then increased surface water deliveries would be needed to supplement future growth. As a result, the No-Project Alternative is essentially the surface water alternative.
- **Cox Property west of Sellers Avenue for future well site.** This alternative is a potential future school site, so is similar to the Phase III portion of the proposed project. However, there are more uncertainties because the site is not owned by the School District. In addition, this site is also closer to the existing Glen Park well and Phase II of the proposed project, which may result in less well capacity due to mutual pumping interference.

- **Private parcel in the vicinity of the northwest corner of Delta and Sellers Avenues for future well site.** Due to the need to acquire private property, this was the lowest ranked alternative. However, if a suitable site were to be put on the market, this could be considered as a future well site.

# Alternatives

## Alternative 1: Proposed Project

The proposed project involves two wells, a Phase II and a future Phase III well. For more information about the proposed project, refer to Chapter 2, "Project Description."

## Alternative 2: Knightsen Well

The Knightsen Well alternative uses an existing district-owned well site that was analyzed as a possible location for the Phase 2 well of the proposed project (Figure 2-1). The future Phase 3 well would still be included in this alternative. The existing well pump has a capacity of only 0.4 mgd and would need to be replaced with a larger well to be comparable to Phase 2 of the proposed project. This alternative would involve a longer pipeline alignment of approximately 9,000 feet. This location currently does not have storm drain outlets or a sewer system that could handle future pump station discharges.

## No-Project Alternative

Under the No-Project Alternative, the proposed project would not be constructed. In the absence of groundwater sources, the No-Project Alternative would result in the need for DWD to use more surface water deliveries from CCWD to accommodate future growth and expand the RBWTP earlier than otherwise needed.

# Impact Analysis of Alternatives

The following sections describe the potential environmental impacts associated with the project alternatives.

## Hydrology, Hydrogeology, Water Quality and Water Supply

Construction of Alternative 2 would result in similar construction-related erosion and sedimentation impacts as the proposed project. Alternative 2 would involve replacement of an existing well to the capacity desired in Phase II of the proposed project, and would also include the future Phase III well. However, Alternative 2 would require a longer pipeline, which would cause more surface disturbance. The No-Project Alternative would result in construction of no new surface features in the near-term; however, would ultimately result in the need for a larger expansion of the RBWTP.

Potential drainage and flooding impacts would be similar to Alternative 1. As such, Alternative 2 would result in potentially significant construction impacts related to hydrology, although the same mitigation measures used for Alternative 1 would reduce these impacts to less-than-significant levels. Seiche, tsunami, and mudflow hazards would all be less than significant under both of the alternatives.

The No-Project Alternative would result in the need for more surface water in the future. According to Chapter 5, surface water deliveries would take more energy consumption than groundwater deliveries. In addition, increased surface water deliveries from the South Delta area would affect the already impacted surface water consumption in the area. Increased surface water deliveries would also involve expansion of the RBWTP which would have construction related hydrology and water quality impacts.

## Transportation

Construction of Alternative 2 would result in similar transportation impacts as construction of Alternative 1. However, because Alternative 2 is located slightly farther than Alternative 1, construction traffic may be on the road in longer durations for construction of both the well retrofit and pipeline involved with Alternative 2. The No-Project Alternative would not result in any new construction traffic, although the timeframe for expansion of the treatment plant would occur sooner.

Foreseeable impacts on emergency access, parking demands, and transit services would be less than significant. The No-Project Alternative would result in the need for more surface water deliveries. Infrastructure for surface water deliveries might need to be expanded which could impact transportation. In addition, the RBWTP would need to be expanded to treat more surface water. However, expansion of the RBWTP would have similar traffic impacts as the proposed project.

## Air Quality

Construction of the Alternative 2 replacement well in Phase 2 would result in similar construction-related emissions as either the Phase 2 well in Alternative 1 (the proposed project) or the Phase 3 well in either Alternatives 1 or 2. However, Alternative 2 has a significantly longer pipeline. Construction of pipelines for Alternative 2 would result in potentially significant air quality impacts. The quantity of construction-related emissions would be based on construction timing, machinery used, level of activity, and other variables.

Operation of the Alternative 2 well pump station in Phase 2 would be similar in operation of either the Alternative 1 Phase 2 pump station or the Phase 3 pump station (in both Alternatives 1 and 2) for electricity usage that ultimately impacts global warming, depending on the source of energy. The No-Project Alternative would result in the need to deliver more surface water and require energy to treat the surface water at the RBWTP Operational emissions for the No-Project Alternative would likely be more due to the need for more energy usage from delivery and treatment of surface water from CCWD.

## Noise

Construction of Alternative 2 would result in similar noise impacts as the Alternative 1. Construction of Alternative 2 would result in significant and unavoidable noise impacts due to the need to drill wells around the clock to keep the integrity of the well solid. The No-Project Alternative would not result in any new construction or operational noise until the need to expand the RBWTP facilities for increased surface water deliveries to meet demand.

Construction of pipelines for Alternative 2 would result in adverse (significant and unavoidable) noise and vibration impacts during construction of the well; these impacts would also occur with Alternative 1. The No-Project Alternative would result in noise impacts from the need to expand the RBWTP facilities for increased surface water deliveries to meet demand.

## Biological Resources

Similar to the proposed project, Alternative 2 would result in construction that could potentially impact biological resources. Like Alternative 1, Alternative 2 would maintain disturbance areas within proper ROWs. The No-Project Alternative would not result in any new construction activities.

Disturbance of sensitive species and their habitats, riparian areas, and/or waters of the United States (including wetlands) would be potentially significant under Alternative 2 due to construction and operation of the well and pipelines. However, mitigation would be similar to Alternative 1 and would reduce impacts

to a less-than-significant level. The No-Project Alternative would result in no impact.

## Land Use, Agricultural and Recreational Resources

Land use, agricultural, and recreational impacts under Alternative 2 would be similar to Alternative 1. Construction and operation involved with construction of Alternative 2 would not disrupt a community or conflict with existing plans and policies. With Alternative 2, the pipeline extension from the existing Glen Park Well to the new well would be installed south from Glen Park in one of two potential alignments: 1) either in the CCCFCD right-of-way on the east side of Marsh Creek channel which would have the same impacts to the EBRPD regional trail as the proposed project; or 2) in rural Doyle Road which would have more impacts to adjacent private property owners. The No-Project Alternative would involve expanding the RBWTP to accommodate increased surface water deliveries and would have similar construction impacts as Alternative 2.

Similar to the proposed project, Alternative 2 would have less-than-significant impacts related to agriculturally zoned land or Williamson Act contracts. In addition, similar to the proposed project, there would be no operational impacts on recreational facilities or place any strain on existing recreational facilities with construction of Alternative 2. The No-Project Alternative would also result in no operation related impacts.

## Population, Housing, and Socioeconomics

Like the Alternative 1, construction and operation of Alternative 2 or the No-Project Alternative would not result in the displacement of existing housing or residents.

Alternative 2 and the No-Project Alternative, as with Alternative 1, would remove infrastructure-related obstacles to growth in DWDs distribution of potable water.

## Utilities and Public Services

The No-Project Alternative would result in less than significant impacts because the energy used to pump groundwater associated with Alternatives 1 and 2 is less than the energy required to deliver and treat surface water from CCWD.

Because both project alternatives call for construction of new facilities and associated pipelines, they would all result in the production of construction waste. However, because landfill capacity is adequate, Alternatives 1 and 2 would result in less-than-significant solid waste impacts. Alternatives 1 and 2

would have potentially significant impacts due to accidental disruption of existing utility lines if proper BMPs are not implemented during construction. Foreseeable impacts on other public service utilities for Alternative 2 would be the same as the Alternative 1. The No-Project Alternative would result in expanding the RBWTP facilities to allow for increased surface water deliveries from CCWD. This expansion would have similar construction and operational related impacts as the proposed project in terms of utilities and public services however it would result in greater solids handling and disposal requirements from the RBWTP sludge lagoons.

## Visual Resources

Alternatives 1 and 2 would both include new surface features such as a well pump house that could permanently alter the visual character of the area. However, both alternatives would be located in an area that would provide aesthetically pleasing features, such as trees, that will surround surface features. The No-Project Alternative would result in construction of no new surface features but would mean a larger expansion of the treatment plant.

Temporary visual disturbances for Alternative 2 would be comparable to Alternative 1 due to similar construction activities. The No-Project Alternative would result in no additional impact.

## Public Health and Hazardous Materials

Construction under Alternative 2 would be similar to that of construction under Alternative 1. The No-Project Alternative would result in no additional hazards.

Both Alternative 1 and 2 may result in potentially significant public health and hazards impacts; however, operation of both alternatives would be done under state and federal criteria. The No-Project Alternative would result in no additional impact other than operation of a larger treatment plant.

## Cultural Resources

Alternatives 1 and 2 have a similar potential for impacts on cultural resources. Alternative 2 could likely have more impacts on cultural resources than Alternative 1 because the pipeline would be substantially longer. The No-Project Alternative would not result in construction activities that could disturb cultural resources, since the treatment plant is located at a developed site.

Disturbance of archeological and paleontological resources could result in potentially significant impacts under Alternatives 1 and 2, due to construction and operation of wells and trenching from the pipeline. The No-Project Alternative would result in no impact.

## Geology and Soils

Potential for damage or loss of water supply infrastructure due to seismically induced fault rupture, groundshaking, liquefaction, or other geologic hazard would be comparable in both Alternatives 1 and 2. Potential geologic impacts would be reduced under the No-Project Alternative, since the treatment plant expansion would take place at the existing plant site. Any possibility of subsidence occurring would likely be similar for any of the alternatives.

All the alternatives would have similar potentially significant impacts related to potential for damage or loss of water supply infrastructure due to groundshaking, liquefaction, or expansive soils.

## Growth Inducing

All the alternatives would ultimately provide the same amount of supply, for buildout of the DWD service area that is consistent with the City's general plan. The City's general plan and impacts associated with the general plan have already been analyzed under CEQA, so there would be no growth inducing impacts.

Chapter 17
# Cumulative Impacts

## Introduction

A cumulative impact is one that results from the combined effects of numerous past, present, and future projects or activities. Where a significant cumulative impact exists, the key question is whether the project would make a cumulatively considerable contribution to that impact. A project may make a cumulatively considerable contribution even if the project's individual impact is less than significant. However, a project's impact may be rendered less than cumulatively considerable when the project is required to implement or fund its fair share of a mitigation measure or take part in a program that is designed to alleviate the impact (*State CEQA Guidelines Section 15130*).

## Approach and Methodology

The CEQA Guidelines require that cumulative impacts be addressed in an EIR when the cumulative impacts are expected to be significant and when the project's incremental effect is cumulatively considerable (*State CEQA Guidelines Section 15130[a]*). Cumulative impacts are impacts on the environment that result from the incremental impacts of a proposed project when added to other past, present, and reasonably foreseeable future actions (*State CEQA Guidelines Section 15355[b]*). Such impacts can result from individually minor but collectively significant actions taking place over time. *State CEQA Guidelines Section 15130* states that the discussion of cumulative impacts need not provide as much detail as the discussion of effects attributable to the project alone. The level of detail should be guided by what is practical and reasonable. An adequate discussion of significant cumulative impacts should contain the following.

- An analysis of related future projects or planned development that would affect resources in the project area similar to those affected by the proposed project.
- A summary of the expected environmental effects to be produced by those projects with specific reference to additional information stating where that information is available.
- A reasonable analysis of the cumulative impacts of the relevant projects. An EIR will examine reasonable, feasible options for mitigating or avoiding the project's contribution to any significant cumulative effects.

To identify the related projects, the *State CEQA Guidelines Section 15130(b)* recommends either a "list" or "projection" approach. The projection approach uses a summary of projections contained in an adopted general plan or related planning document to assess cumulative impacts of a project. This EIR uses a projection approach as the basis for the cumulative analysis.

# Assessment of Cumulative Impacts

There are no direct or indirect cumulative impacts relative to transportation, noise, air quality, biological, land use, agricultural, recreational, population, housing, socioeconomics, utilities, public services, visual resources, public health or public hazards, cultural resources, and geology or soils; therefore, this analysis does not include a discussion of these resource topics. The cumulative impacts of the proposed project and related development in the project area on the remaining resources described below.

## Hydrology, Hydrogeology, Water Quality and Water Supply

### Impact CUM-1: Have a Cumulative Significant Impact on the San Joaquin River's Water Quality from Increased Salt Loads from Future Development and Affect Ironhouse Sanitary District's Ability to Meet Conditions of Their NPDES Permit

The proposed project will aid in future growth by allowing DWD to have more flexibility in water supply. DWD would serve all planned future growth either by additional surface water supply or by supplemental groundwater supply. Future development, regardless of the source of supply, has the potential to install self-regenerating water softeners (similar to the existing new homes in the Cypress Grove area), which would increase the salt load to the San Joaquin River via the ISD facilities. However, the use of groundwater increases the total salt in the wastewater system, since the groundwater has higher TDS than surface water. ISD has obtained an NPDES permit for discharge of treated effluent into the San Joaquin River. As part of this permit, ISD must meet stringent effluent and receiving water standards for salts, which can either be measured as EC or TDS.

ISD has been measuring TDS and EC at several locations throughout its collection system to determine source water salinity. The result indicated that new homes, particularly the homes attached to the Cypress Grove Pump Station, have higher TDS and EC levels in the raw wastewater than areas in the older sections of the city of Oakley. ISD has concluded that the higher wastewater salt content is a result of water softeners. In addition, the increased use of groundwater may also result in increased salt loads to ISD because groundwater typically contains more salt than surface water. These higher salt loads may

impact ISD's ability to meet the conditions of their NPDES permit and also impact the water quality of the San Joaquin River.

ISD's NPDES permit from the CVRWQCB adopted April 25th, 2008 contains effluent requirements for salinity. Section IV(k) of the tentative NPDES permit states that ISD EC shall not exceed 1,505 µmhos/cm as a monthly average from August 16 to Marsh 31. In addition, ISD must meet more stringent standards between April 1 and August 15. The following tentative NPDES effluent requirements apply to ISD during this time.

- If the 14-day running average EC of the San Joaquin River at Jersey Point is less than or equal to the concentrations in Table 17-1 below, the effluent EC shall not exceed 1,505 µmhos/cm, as a monthly average.
- If the 14-day running average EC of the San Joaquin River at Jersey Point is greater than the concentrations identified in Table 17-1 below, the effluent EC shall not exceed the concentrations in Table 17-2 below.

**Table 17-1.** Electrical Conductivity Concentrations Demonstrating Assimilative Capacity Basin Plan Water Quality Objectives—San Joaquin River at Jersey Point, Based on Water Year Type

| | Water Year Type | | | | |
|---|---|---|---|---|---|
| Date | Wet | Above Normal | Below Normal | Dry | Critical |
| April 1–May 31 | 436 | 436 | 436 | 436 | NA* |
| June 1–June 14 | 446 | 446 | 446 | 1346 | NA* |
| June 15–June 19 | 446 | 446 | 446 | 1346 | NA* |
| June 20–August 15 | 446 | 446 | 736 | 1346 | NA* |

* Not Applicable—During a critical water year, the effluent EC shall not exceed 1505 µmhos/cm, regardless of the receiving water EC concentration.

**Table 17-2.** Electrical Conductivity Effluent Limitations Based on Water Year Type as a Monthly Average

| | Water Year Type | | | | |
|---|---|---|---|---|---|
| Date | Wet | Above Normal | Below Normal | Dry | Critical |
| April 1–May 31 | 440 | 440 | 440 | 440 | 1505 |
| June 1–June 14 | 450 | 450 | 450 | 1350 | 1505 |
| June 15–June 19 | 450 | 450 | 450 | 1350 | 1505 |
| June 20–August 15 | 450 | 450 | 740 | 1350 | 1505 |

[1] The Water Year Type is based on the State Water Board's Sacramento Valley 40-30-30 Index.

According to data provided by ISD, the 2003 average total effluent EC was 1,233 µmhos/cm; the 2004 average EC was 1,172 µmhos/cm; the 2005 average EC was 1,205 µmhos/cm; the 2006 average EC was 1,263 µmhos/cm; and the 2007 average EC was 1,304 µmhos/cm. In addition, none of the EC data exceeded the monthly average requirement of 1,505 µmhos/cm required in the NPDES permit. At this time there is insufficient data supplied by ISD to determine what the 14-day running average EC concentrations were for these years. However, if by chance the 14-day running average EC concentrations in the San Joaquin River are greater than the concentrations in Table 17-1 above, ISD's effluent discharge would need to comply with the concentrations in Table 17-2.

ISD's ability to meet the effluent requirements in Table 17-2 would not be affected by any development that installs water softeners due to the current historical data discussed above being much higher than the values in Table 17-2. However, any cumulative incremental increase in salt loads to the San Joaquin River during critical dry years is a significant cumulative impact to water quality. In addition, DWDs use of groundwater during peak demand months will be supplemented with more surface water that will be equivalent to a 4 to 1 surface to groundwater ratio. Because the peak demand months are during periods of lower flow in the San Joaquin River, DWDs contribution to salt loading will be less during this time.

However, in order to avoid future incremental impacts from salt loading, ISD and DWD will work with the City to ensure that future development installs comparable alternatives to water softeners that do not increase the salt loads to the San Joaquin River and impact ISD's ability to meet their stringent NPDES permit requirements thereby offsetting the incremental salt loading added by the proposed project. This could be achieved by ISD and DWD working with the City to pass specific requirements, such as for use of water softeners, that protect the water quality of the San Joaquin River.

## Impact CUM-2: Have a Cumulative Significant Impact on the Aquifer due to Groundwater Overdraft

Long-term pumping from DWD, the City of Brentwood, Delta Mutual Water Company, and future housing developments (including existing private and future wells in the area) could result in a cumulatively significant overdraft impact to the aquifer. DWD plans to continue monitoring groundwater levels as part of their AB 3030 Groundwater Management Plan and will comply with measures in the plan that aim to avoid overdraft. However, if the results of the monitoring conclude that the deep levels of the aquifer are dropping from too much pumping, DWD will work conjunctively with the City of Brentwood, Delta Mutual Water Company, and others to ensure that municipal groundwater pumping does not contribute to overdraft.

# Growth-Inducing Impacts

Pursuant to Section 15126.2 of the CEQA Guidelines, a project is to be considered growth inducing when it would remove an obstacle to growth or when it fosters residential or economic growth. A project may be growth inducing even when development has been previously planned for the area because CEQA requires the project to be considered in the context of the "baseline" reflected by the current environment. Accordingly, if a project would foster growth or remove obstacles to growth beyond the existing level, it would be growth inducing. A key question in growth-inducing impact analysis is, "If the project were not built, could growth still occur?"

Potential growth and development facilitated by the proposed project would be in accordance with the performance standards identified in City's general plan and the *Contra Costa County General Plan.* As such, the proposed project's potential contribution to cumulative impacts would be less than significant.

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Chapter 19
# Report Preparation

Following is a list of persons who contributed to preparation of this EIR. This list is consistent with the requirements set forth in CEQA (*Section 15129 of the State CEQA Guidelines*).

## ICF Jones & Stokes

| Name | Title/Contribution |
|---|---|
| Steve Seville, P.E. | Project Director—Hydrology, Hydrogeology, Water Quality, and Water Supply |
| Nate Martin, MPA | Project Manager—Hydrology, Hydrogeology, Water Quality, and Water Supply; Land Use, Agriculture, and Recreation; Geology and Soils; Alternative Analysis; Cumulative Impacts |
| Lesa Erecius, M.S. | Environmental Analyst—Transportation; Visual Resources; Utilities and Public Services; Public Health and Environmental Hazards |
| Darle Tilly | Technical Writer and Editor |
| Shawn Vreeland | Technical Writer and Editor |
| Carol-Anne Hicks | Publications Specialist |
| Shannon Hatcher | Air Quality and Noise Specialist—Air Quality; Noise |
| Lindsay Christensen | Air Quality and Noise Specialist—Air Quality; Noise |
| Rosalyn Stewart, AICP | Environmental Planner—Population, Housing, and Socioeconomics; Growth-Inducing Impacts |
| Mark Bowen, M.A., CCPH Registered Historian | Architectural Historian—Cultural Resources |
| William Kohn | Wildlife Biologist—Biological Resources |
| Michael Vondergeest | Regulatory Compliance Specialist |

Appendix A

# U.S. Fish and Wildlife Service List of Endangered, Threatened, and Proposed Species for the Study Area

# Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Counties and/or U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 080424021749

Database Last Updated: January 31, 2008

## Quad Lists

### Listed Species

#### Invertebrates

*Apodemia mormo langei*

Lange's metalmark butterfly (E)

*Branchinecta lynchi*

vernal pool fairy shrimp (T)

*Desmocerus californicus dimorphus*

valley elderberry longhorn beetle (T)

*Elaphrus viridis*

delta green ground beetle (T)

*Lepidurus packardi*

vernal pool tadpole shrimp (E)

#### Fish

*Acipenser medirostris*

green sturgeon (T) (NMFS)

*Hypomesus transpacificus*

Critical habitat, delta smelt (X)

delta smelt (T)

*Oncorhynchus mykiss*

Central Valley steelhead (T) (NMFS)

Critical habitat, Central Valley steelhead (X) (NMFS)

*Oncorhynchus tshawytscha*

Central Valley spring-run chinook salmon (T) (NMFS)

Critical Habitat, Central Valley spring-run chinook (X) (NMFS)

Critical habitat, winter-run chinook salmon (X) (NMFS)

winter-run chinook salmon, Sacramento River (E) (NMFS)

#### Amphibians

*Ambystoma californiense*

California tiger salamander, central population (T)

*Rana aurora draytonii*

California red-legged frog (T)

#### Reptiles

*Thamnophis gigas*

giant garter snake (T)

#### Birds

*Rallus longirostris obsoletus*
California clapper rail (E)

Mammals

*Reithrodontomys raviventris*
salt marsh harvest mouse (E)

*Vulpes macrotis mutica*
San Joaquin kit fox (E)

Plants

*Cordylanthus mollis ssp. mollis*
soft bird's-beak (E)

*Erysimum capitatum ssp. angustatum*
Contra Costa wallflower (E)
Critical Habitat, Contra Costa wallflower (X)

*Lasthenia conjugens*
Contra Costa goldfields (E)

*Neostapfia colusana*
Colusa grass (T)

*Oenothera deltoides ssp. howellii*
Antioch Dunes evening-primrose (E)
Critical habitat, Antioch Dunes evening-primrose (X)

Quads Containing Listed, Proposed or Candidate Species:

ANTIOCH NORTH (481D)

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## County Lists

No county species lists requested.

## Key:

(E) *Endangered* - Listed as being in danger of extinction.

(T) *Threatened* - Listed as likely to become endangered within the foreseeable future.

(P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.

(NMFS) Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service. Consult with them directly about these species.

*Critical Habitat* - Area essential to the conservation of a species.

(PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.

(C) *Candidate* - Candidate to become a proposed species.

(V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.

(X) *Critical Habitat* designated for this species

## Important Information About Your Species List

### How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about size of San Francisco.

The animals on your species list are ones that occur within, **or may be affected by** proje within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

## Plants

Any plants on your list are ones that have actually been observed in the area covered by t list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online Inventory of Rare and Endangered Plants.

## Surveying

Some of the species on your list may not be affected by your project. A trained biologist o botanist, familiar with the habitat requirements of the species on your list, should determi whether they or habitats suitable for them may be affected by your project. We recommer that your surveys include any proposed and candidate species on your list.

For plant surveys, we recommend using the Guidelines for Conducting and Reporting Botanical Inventories. The results of your surveys should be published in any environment documents prepared for your project.

## Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

> Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

## Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that n result in take, then that agency must engage in a formal consultation with the Service.

  During formal consultation, the Federal agency, the applicant and the Service work together t avoid or minimize the impact on listed species and their habitat. Such consultation would resu in a biological opinion by the Service addressing the anticipated effect of the project on listed proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

  Should your survey determine that federally listed or proposed species occur in the area and a likely to be affected by the project, we recommend that you work with this office and the

California Department of Fish and Game to develop a plan that minimizes the project's direct a indirect impacts to listed species and compensates for project-related loss of habitat. You shou include the plan in any environmental documents you file.

## Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essenti to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our critical habitat page for maps.

## Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose th for listing as threatened or endangered. By considering these species early in your plannir process you may be able to avoid the problems that could develop if one of these candida was listed before the end of your project.

## Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts More info

## Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defir by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, yo will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6580.

## Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be July 2 2008.