6.0 Air Quality

6.1 Introduction

This chapter first describes the existing meteorology and air quality of the Delta Region, including attainment of State and federal air quality standards. The rules, regulations, and standards that apply to the project are then described. Impacts are analyzed by comparing these regulatory constraints to the air quality changes due to construction and long-term operation of the project and its alternatives. The impacts analysis includes consideration of the issues identified within the Environmental Checklist Form, contained as Appendix I in the CEQA Guidelines, which lists the following potential concerns relating to air quality: "Will the proposal result in: a) substantial air emissions or deterioration of ambient air quality; b) the creation of objectionable odors; or c) alteration of air movement, moisture, or temperature, or any change in climate, either locally or regionally?"

6.2 Environmental Setting/Affected Environment

6.2.1 Introduction

The Interim South Delta Program is located in the southern portion of the Sacramento-San Joaquin Delta, within the boundaries of San Joaquin County, Contra Costa County, and Alameda County. There are two affected air basins; the San Joaquin Valley Air Basin (SJVAB), and the Bay Area Air Basin (BAAB). The primary factors that determine air quality are the locations of air pollutant sources, the amount of pollutants emitted, and meteorological and topographical conditions affecting their dispersion. Atmospheric conditions including wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants. The following paragraphs briefly describe the existing environment as it relates to climate, meteorological conditions, and ambient air quality conditions of these two air basins.

The Delta is transitional between the coastal and inland climatic extremes. The topography of the Delta is characterized as two distinct geographic components: the lowlands and the uplands. The lowlands consist of generally flat lands ranging in elevation from below sea level to about 10 feet above mean sea level; and the uplands, a gently sloping alluvial plain rising from about 10 to 100 feet above mean sea level. Some lands in the central and western Delta are more than 15 feet below sea level. The effects of the local topography and the continuous interaction of maritime and continental air masses provides a varied climate.

The prevailing winds in the Bay Area during summer are from the west and northwest, reinforced by an inland movement of air caused by the solar heating of the air masses in the Central Valley. This heating effect is greatest during the day and causes a marked diurnal, as well as a seasonal, pattern in wind speed. These prevailing winds are strongest at Carquinez Strait. In the Delta, such winds often blow continuously day and night, and are generally from the west-southwest. Winds reach peak speeds of 10-15 miles per hour in the early evening. The

summer air flow at Stockton is also strongest in the afternoon, and throughout the day generally blows from the west-northwest.

The topography and climate have great effects on the area's air quality. Relatively light winds, surrounding higher terrain, and frequent warm temperatures are conducive to the creation of ozone. In winter months, high atmospheric stability, calm winds, and cold temperatures combine to create ideal conditions for the buildup of pollutants such as carbon monoxide (CO) and fine particulate matter (PM_{10}).

6.2.2 Ambient Air Quality

The determination of general air quality is based on compliance with federal and State emission standards that have been established for specific benchmark pollutants. At the federal level, the National Ambient Air Quality Standards (NAAQS) set emission limits for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, and suspended particulate matter. California has also set emission standards for the pollutants identified by the NAAQS, with the adoption of the California Ambient Air Quality Standards (CAAQS). In addition to the pollutants identified in the NAAQS, the CAAQS sets emission limits for sulfates, hydrogen sulfide, and visibility. Table 6-1 shows the emission limits for the NAAQS and the CAAQS.

If pollutant concentration exceeds any of these standards in the basin or subregions of the basin, then that area is designated "non-attainment" for that pollutant. The NAAQS generally can be exceeded no more than once per year for short-term standards and not at all for annual standards, and the CAAQS are not to be equaled or exceeded for either short-term or annual standards. Both the federal and state Clean Air Acts require basins that do not meet these standards to prepare a plan for bringing the area into compliance.

Most of the San Joaquin Valley Air Basin, including San Joaquin County, has been designated non-attainment for federal ozone (O_3), CO, and PM_{10} standards. San Joaquin County is also non-attainment for state ozone and PM_{10} standards. In June 1995, the Bay Area Air Basin was redesignated by U.S.EPA as an attainment area for federal ozone standards. However, San Francisco Bay Area, including Contra Costa and Alameda counties, continues to be a non-attainment area for state PM_{10} and ozone standards. Table 6-2 summarizes the attainment/non-attainment status of criteria pollutants in San Joaquin County, Contra Costa County, and Alameda County.

6.2.3 Sensitive Receptors

Sensitive populations (sensitive receptors) are more susceptible to the effects of air pollution than are the population at large. The San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) Rule 4103 defines sensitive receptors as: "schools, day care facilities, hospitals, health care facilities, convalescent homes, senior residence facilities or otherwise specified by the APCD." Sensitive receptors who are in proximity to localized sources of toxics and CO are of particular concern. Based on site reconnaissance and available information, there are no sensitive receptors as defined by SJVUAPCD Rule 4103 within one mile of the ISDP project components.

Table 6-1. Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	California Standard [2]	Federal Standards 3 Primary [4]	Federal Standards 3 Secondary [5]
Ozone	1-hour	0.09 ppm (180 ug/m³)	0.12 ppm 235 ug/m³)	0.12 ppm (235 ug/m³)
Carbon Monoxide	1-hour	20.00 ppm (23 mg/m³)	35.00 ppm (40 mg/m³)	35.00 ppm (40 mg/m³)
	8-hour	9.00 ppm (10 mg/m³)	9.00 ppm (10 mg/m³)	9.00 ppm (10 mg/m³)
Nitrogen Dioxide	1-hour	0.25 ppm (470 mg/m³)	– –	– –
	Annual Average	– –	0.053 ppm (100 ug/m³)	0.053 ppm (100 mg/m³)
Sulfur Dioxide	1-hour	0.25 ppm (655 mg/m³)	– –	– –
	3-hour	– –	– –	1300 ug/m³ (0.5 ppm)
	24-hour	0.05 ppm[6] (131 ug/m³)	365 ug/m³ (0.14 ppm)	– –
	Annual Average	– –	80 ug/m³ (0.03 ppm)	– –
Suspended Particulate Matter (PM_{10})	24-hour	50 ug/m³	150 ug/m³	150 ug/m³
	Annual Geometric Mean	30 ug/m³	–	–
	Annual Arithmetic Mean	–	50 ug/m³	50 ug/m³
Sulfates	24-hour	25 ug/m³	–	–
Lead	30 Day Average Calendar Quarter	1.5 ug/m³ –	– 1.5 ug/m³	– 1.5 ug/m³
Hydrogen Sulfide	1-hour	0.03 ppm (42 ug/m³) –	– –	– –
Vinyl Chloride	24-hour	0.010 ppm (26 ug/m³)	– –	– –
Visibility Reducing Particles	1 Observation	Visibility < 10 miles	–	–

SOURCE: California Air Resources Board, 1989.

NOTES:

1. Concentration expressed first in units in which it was promulgated. Equivalent units given in parenthesis are based upon a reference temperature of 25°C and a reference pressure of 760mm of mercury. All measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760mm of mercury (1,013.2 millibar); ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

2. California standards for ozone, carbon monoxide, sulfur dioxide (1 hr), nitrogen dioxide and particulate matter-PM_{10} are values that are not to be exceeded. The sulfates, lead, hydrogen sulfide, vinyl chloride and visibility-reducing particulates standards are not to be equaled or exceeded.

3. National standards, other than ozone and those based on annual averages or annual arithmetic means, are not to be exceeded more than once a year. The ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentration above the standard is equal to or less than one.

4. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than three years after that state's implementation plan is approved by the Environmental Protection Agency.

5. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. Each state must attain the secondary standards within a "reasonable time" after the implementation plan is approved by the EPA.

6. At locations where the state standards for ozone and/or suspended particulate matter are violated. National standards apply elsewhere.

7. Prevailing visibility is defined as the greatest visibility which is attained or surpassed around at least half of the horizon circle, but not necessarily in continuous sectors.

Table 6-2. Summary of Attainment/Non-attainment Status for Criteria Pollutants Standards

	San Joaquin County		Alameda County		Contra Costa County	
Pollutant	**Federal**	**State**	**Federal**	**State**	**Federal**	**State**
Ozone	non-attainment	non-attainment	attainment	non-attainment	attainment	non-attainment
PM_{10}	non-attainment	non-attainment	attainment	non-attainment	attainment	non-attainment
CO	non-attainment	attainment	A (remaining area) N (urbanized)	attainment	attainment	attainment
NO_2	attainment	attainment	attainment	attainment	attainment	attainment
SO_2	unclassified	attainment	attainment	attainment	attainment	attainment
Pb	no designation	attainment	attainment	attainment	attainment	attainment

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For the purposes of impact assessment, the definition of sensitive receptors is typically expanded to include residences, playgrounds, rehabilitation centers, and athletic facilities. There are several residential areas near the location of project activities; these are particularly concentrated north of Clifton Court Forebay. On Victoria Island, one of the sediment storage areas is located approximately 500 feet north of a farm residence.

6.3 Applicable Comprehensive Plans And Regulations

County and regional plans and regulations apply to air emissions associated with ISDP project components. These include air quality attainment plans, air quality regulations, and county general plans. Each of these is described in the following.

The SJVUAPCD prepared an Air Quality Attainment Plan in 1991. The Bay Area Air Quality Management District also produced a Clean Air Plan in 1991. Both include strategies for reducing ozone by reducing ozone precursors such as reactive organic compounds (ROC), and oxides of nitrogen. The SJVUAPCD 1991 Air Quality Attainment Plan has not been replaced yet. However, several other air quality plans have been prepared for the area over last few years, including the followings: 1992 Federal Attainment Plan for Carbon Monoxide, 1994 Serious Area PM_{10} Plan, The Ozone Attainment Demonstration Plan, CO Redesignation to Attainment, and Post 1996 Rate of Progress Plan revised(EPA proposed approval in March of this year). These documents are prepared primarily in response to the requirement of the Federal Clean Air Act and provide assessment of attainment status and identify needs for further control if required. Similarly BAAQMD has prepared 1993 Ozone Maintenance Plan and 1994 Carbon Monoxide Plan pursuant to the requirements of the Federal Clean Air Act and the 1994 Bay Area Clean Air Plan, in response to the California requirements.

Implementation of the ISDP would require compliance with several rules of SJVUAPCD. These include the following: 1) Rule 8020: Fugitive dust requirements for control of fine particulate matter (PM_{10}) from construction, demolition, excavation, and extraction activities; 2) Rule 8030: Fugitive dust requirements for control of fine particulate matter (PM_{10}) from handling and storage of bulk material; and 3) Rule 8070: Fugitive dust requirements for control of fine particulate matter (PM_{10}) from vehicle and/or equipment parking, shipping, receiving, transfer, fueling, and service areas.

The Contra Costa County General Plan requires activities to be conducted in such a way to meet the following goals: 1) to meet federal air quality standards for all air pollutants; 2) to continue to support federal, State, and regional efforts to reduce air pollution in order to protect human and environmental health; and 3) to restore air quality in the area to a more healthful level and in accordance with the policy to reduce vehicular emissions throughout the County.

San Joaquin County General Plan contains implementation strategies for reducing air emissions related to area sources such as: 1) implementing dust control practices for construction sites; 2) requiring projects to mitigate potential high levels of air pollutants; and 3) protecting residential areas and other sensitive receptors from air pollution sources.

In addition to the above-mentioned applicable plans and regulations, the general conformity requirements of the 1990 Federal Clean Air Act would be applicable to the ISDP project. The conformity provisions of the Act are essentially designed to ensure that federal agencies contribute to, instead of jeopardizing, efforts to achieve the NAAQS. In November of 1993, EPA issued two regulations implementing these provisions. The transportation conformity regulation deals with transportation projects. The general conformity regulation addresses actions of federal agencies other than the Federal Highway Administration and the Federal Transit Administration.

General conformity applies to a wide range of actions or approvals by federal agencies. Essentially, projects are subject to general conformity if they generate more emissions than minimum thresholds set in the conformity rule (currently 100 tons per year of ROG, NO_X, or CO in the Bay Area, and 100 tons per year of CO, 70 tons per year of PM_{10}, and 50 tons per year of ROG and/or NO_X in San Joaquin County, and that are not specifically exempted by the regulations.

6.4 Environmental Impacts/Consequences

6.4.1 Introduction

The operational nature of the ISDP facilities, which would use electric pumps, indicates that no significant local long-term air quality impacts are anticipated. In addition, due to the limited number of personnel required in association with the facilities, the ISDP project components would not entail a long-term increase in the number of vehicles. Therefore, the long-term regional air quality would not be significantly impacted by the project. ISDP and its alternatives would cause construction-related air emissions and would have short-term, localized impacts on nearby sensitive receptors. Construction occurs either wholly within San Joaquin County, or along its border with Contra Costa County. For this reason, the rules and regulations of the SJVUAPCD are used in evaluating consequences. The following discusses the potential air quality consequences associated with construction activities.

6.4.2 Significance Criteria

Emissions of air pollutants that would result from implementation of the ISDP are judged to be significant if they would lead to exceedances of any state or federal ambient air quality standards, or if they would lead to an increase in the severity or number of exceedances of ambient air quality standards. Pursuant to Appendix G of the CEQA Guidelines, an action would have a significant effect if it would "violate any ambient air quality standard, contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations." The SJVUAPCD has a current policy of using a threshold of 10 tons of emissions per year per pollutant type for ROG, NO_X, and PM_{10} emissions for the determination of potentially significant air quality impacts of different project types under CEQA and NEPA proposed within the District: However, for determination of significance upon CO, the SJVUAPCD uses the potential impacts of the project for creation of CO hot spots(that is, exceedance of CO ambient standards at local scale). In addition, an impact would be considered significant if it would "create objectionable odors" (CEQA Guidelines, Appendix I).

6.4.3 Facility Construction

Construction activities associated with the proposed ISDP facilities would affect air quality in the site vicinity, and could expose nearby residents to elevated amounts of pollutants. Increased emissions would result from construction-related truck trips, construction workers commute, operation of support vessels (barges and work-boats) and the operation of heavy-duty construction equipment. The exhaust fumes of these construction sources are a direct source of CO, PM_{10}, NO_X, and ROC emissions. The criteria pollutant emissions associated with above-identified sources are presented below.

The construction equipment exhaust emissions were calculated based on the following: 1) emission factors developed by EPA for each piece of equipment; 2) type and number of equipment involved; and 3) number of operation hours per average day. Table 6-3 presents the emission factors and daily exhaust emissions associated with construction equipment.

Based on the data presented in Chapter 16.0, Navigation and Transportation, a daily total of 344 workers commute trips and 64 truck trips would be generated by the ISDP construction activities, under a worst case construction traffic day. The California Air Resources Board's URBEMIS5 air quality model was used to quantify these emissions and the results are presented in Table 6-4.

The four work-boats and one other support vessel used during dredging and other construction activities are potential sources of short-term emission increases. The primary sources of emissions are fossil-fueled engines used to propel these vessels. These engines can emit NO_X during cruising, maneuvering, and idling. Due to the long operational hours, simultaneous operation of these five vessels can result in substantial amount of NO_X and other criteria pollutants emissions, as shown in Table 6-5. Information provided by the South Coast Air Quality Management District and mobile source emission inventory preparation guidelines model the associated emissions.

This analysis presents the worst-case scenario emissions calculations, which assumes simultaneous operation of all identified sources throughout a construction day. This scenario is unlikely due to the nature of the project and size of the work crew, but provides a conservative estimate of construction-related impacts.

Total project daily construction emissions in pounds per day are presented in Table 6-6. According to data presented in this table, construction emissions associated with the workers commute trips and construction trucks make a proportional contribution of less than 1 percent for SOx to 16 percent for CO. At the other end of spectrum, emissions associated with the operation of vessels contribute between 61 percent to 96 percent of the total daily construction emissions and as such, any mitigation measure targeting these sources would have the greatest impact upon reducing the air quality impacts of the project construction.

Table 6-3 Construction Equipment Emission Factors and Exhaust Emissions

Equipment Type	CO		ROC		NO_x		SO_x		PM_{10}	
	Emission Factor (lbs/hr)	Exhaust Emission (lbs/day)	Emission Factor (lbs/hr)	Exhaust Emission (lbs/day)	Emission Factor (lbs/hr)	Exhaust Emission (lbs/day)	Emission Factor (lbs/hr)	Exhaust Emission (lbs/day)	Emission Factor (lbs/hr)	Exhaust Emission (lbs/day)
Compactors										
Static	0.304	2.43	0.067	0.536	0.862	6.90	0.067	0.536	0.050	0.40
Vibratory	(0.304)	2.43	(0.067)	0.536	(0.862)	6.90	(0.067)	0.536	(0.050)	0.40
Tractors										
Wheeled	3.58	28.64	0.188	1.50	1.269	10.15	0.090	0.720	0.136	1.09
Crawlers	(3.58)	28.64	(0.188)	1.50	(1.269)	10.15	(0.090)	0.720	(0.136)	1.09
Loaders										
Wheeled	0.572	4.58	0.25	2.00	1.89	15.12	0.182	1.456	0.172	1.376
Crawlers	0.201	1.61	0.098	0.78	0.827	6.62	0.076	0.608	0.256	2.048
Motor Graders	0.151	1.21	0.039	0.31	0.713	5.70	0.086	0.688	0.061	0.488
Scrapers	1.257	10.06	0.282	2.26	3.84	30.72	0.463	3.704	0.406	3.248
Trenchers	0.675	5.40	0.152	1.22	1.691	13.53	0.143	1.144	0.139	1.112
Hydraulic Excavators	0.675	5.40	0.152	1.22	1.691	13.53	0.143	1.144	0.139	1.112
Mechanical Backhoe	(0.675)	5.40	(0.152)	1.22	(1.691)	13.53	(0.143)	1.144	(0.139)	1.112
Mechanical Clamshell	(0.675)	5.40	(0.152)	1.22	(1.691)	13.53	(0.143)	1.144	(0.139)	1.112
Mechanical Dragline	(0.675)	5.40	(0.152)	1.22	(1.691)	13.53	(0.143)	1.144	(0.139)	1.112
Total		**106.6**		**15.5**		**159.9**		**14.7**		**15.7**

Note:

1. ( ) Assuming emission factors are the same as above since no data are available.
2. Exhaust emissions of construction equipment are calculated as follows:
   $E = (F \times G) \times H$
   where:
   F = number of equipment
   G = daily hours of operation
   H = emission factors in lbs/hr from (EPA sp-42)
3. The following assumptions were made when calculating the emissions:
   F = 1 for each type of equipment
   G = 8 hrs
4. All construction equipment are diesel-powered.

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Table 6-4 Vehicular Air Emissions Associated with Construction-Related Trips

	(Lbs/Day)			(Lbs/Day)				
	Workers Commute Emissions			**Construction Truck Emissions**			**Total Vehicular Emissions**	
	summer	winter	annual day	summer	winter	annual day		
Pollutant Type							(Lbs/Day)	(Lbs/Year)
CO	46.61	98.94	64.05	11.35	11.35	11.35	75.40	19,604.87
HC	6.40	11.02	7.94	2.97	2.97	2.97	10.91	2,836.60
NOx	7.91	9.28	8.37	17.49	17.49	17.49	25.86	6,722.73
SOx	0.66	0.66	0.66	0.94	0.94	0.94	1.60	416.00
PM10	1.02	1.02	1.02	2.93	2.93	2.93	3.95	1,027.00

Notes:

1) Number of workers commute and truck trips are based on the Navigation and Transportation section of EIR. For worst construction activity level, a total of 64 daily truck trips and 344 workers commut trips are used.

2) Average trip lengthes for commute and truck trips were estimated using trip origin-destination and percentage distribution data, as presented in the Navigation and Transportation section.

3) Mobile source mass emission was undetrtaken using California Air Resources Board's URBEMIS5 model, 1995.

4) Annual day emissions are estimated using summer and winter time results and applying a multiplication factor of 2/3 and 1/3 to summer and winter time values, respectively. This is the recommended methodology prescribed by the California Air Resources Board.

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Table 6-5

WORKBOATS AND OTHER SUPPORT VESSELS EMISSIONS DURING PROJECT CONSTRUCTION

Source Location & Characteristics	
Dredging of Old River	
No. Workboats&Supprt Vessel	5
Hours of Operation/Vessel/Day	8
Fuel Consumption/Vessel/Hour	128
Total Fuel Consumption:(Gal/Day)	5120
Days of Source Activity/Year	75

Emission Factors (Pounds/1000 gallons)				
CO	HC	NOx	SOx	PM
55	19.2	342	81	34

Emissions (Pounds)				
CO	HC	NOx	SOx	PM
TOTAL PER DAY 281.6	98.304	1751.04	414.72	174.08
TOTAL PER YEAR 21,120.00	7,372.80	131,328.00	31,104.00	13,056.00

Notes:

1) Data regarding number of vessels operating at each location is based on information presented in the Navigation and Transportation section.

2) It is assumed that each vessel will operate for a period of 8 hours daily. A 260 construction work days per year has been assumed, except for dredging of Old River, where activities only can happen during July to mid-October.

3) Emission Factors for vessels engaged in this type of activities were obtaind from Mr. Ed Eckerle of SCAQMD.

4) Hourly fuel consumption rate is based on EPA's Procedures for Emission Inventory Preparation, Vol. IV, 1981.

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Table 6-6 **Total Construction-Related Daily Air Emissions**

Source Category	Pollutant Types				
	CO	HC	NOx	SOx	PM 10
Construction Equipment Exhaust	106.6	15.5	159.9	14.7	15.7
Construction Vehicular Trips:	75.4	10.91	25.86	1.6	3.95
Construction Vessels Operation	281.6	98.304	1751.04	414.72	174.08
Total Emissions	463.6	124.714	1936.8	431.02	193.73

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Table 6-7 **Total Construction-Related Annual Air Emissions**

Source Category	Pollutant Types				
	CO	HC	NOx	SOx	PM 10
Construction Equipment Exhaust	27,716	4,030	41,574	3,822	4,082
Construction Vehicular Trips:	19,605	2,837	6,723	416	1,027
Construction Vessels Operation	21,120	7,373	131,328	31,104	13,056
Total Emissions (Pounds)	68,441	14,239	179,625	35,342	18,165
Total Emissions (Tons)	34	7	90	18	9

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Total construction annual emissions are presented in Table 6-7. Since SJVUAPCD provides significance thresholds on an annual basis, the annual emissions are presented and discussed as follows: CO (34 tons per year); ROC (7 tons per year); NO_x (90 tons per year); SO_x (18 tons per year); and PM_{10} (9 tons per year). Each of these emissions is evaluated in the following paragraphs.

CO Increases. The project-related construction traffic would not create CO hot spots because: 1) the vehicle trips are well distributed; 2) vehicular traffic generates only a small fraction of CO emissions; and 3) the project would add few daily and hourly trips to the area traffic. The project would have a less-than-significant adverse impact in considering CO emissions.

PM_{10} Increases. The expected increase of 9 tons per year is above the significance threshold of 10 tons per year, and as such construction equipment exhaust emissions would result in potentially significant PM_{10} emissions. In addition, grading, handling, and storage of soils can lead to disturbance of soil and thereby increase in PM_{10} levels. SJVUAPCD does not require quantification of such PM_{10} emission, but SJVUAPCD Rules 8020, 8030, and 8070 have specific requirements to control PM_{10} emissions from the construction activities proposed for ISDP. The compliance with these rules is considered to reduce the potential PM_{10} construction impacts to a less-than-significant level.

Ozone Precursors. The increase in NO_x (90 tons per year) would exceed the ozone precursor significance threshold set by the SJVUAPCD, and would substantially contribute to existing violations of State and federal air quality standards. This is a significant adverse impact. However, ROC annual emissions of 7 tons per year would be well below the significant threshold of 10 tons per year.

Odors. The handling and storage of dredged material in settling ponds on Victoria Island or Byron Tract could generate nuisance odors, particularly if the sediments were initially anoxic. The prevailing wind direction is from the west-southwest, and no sensitive receptors are located within one mile downwind. There is a single residence approximately 500 feet south of the northern spoil pond on Victoria Island, but under the prevailing wind conditions it would not be adversely impacted. The dilution provided by the local winds would also reduce potential odors to levels lower than those detectable by most receptors. This is a less-than-significant adverse impact.

In addition, the proposed project NO_x annual emissions also exceed the general conformity De Minims thresholds for San Joaquin County area and as such, offsetting of emissions would be required before any federal agency can make a conformity determination and issue the applicable permits within their jurisdiction.

6.5 Mitigation Measures

The relatively small and localized impacts of construction of permanent barriers and dredging one stretch of the Old River is such that no significant adverse changes in air movement, moisture, temperature, or climate are expected either locally or regionally. Similarly, the imposed increases of water export are of small scale and do not impact the climate of the Delta

region. Disposal of dredge spoils on Victoria Island and Byron Tract could lead to nuisance odors, but no sensitive receptors are located within one mile downwind of the spoil ponds. The project, however, could potentially create short-term increases in NO_X emissions, and generate fugitive dust (PM_{10}) as a result of construction activities.

PM_{10}. SJVUAPCD rules govern fugitive dust in this size range, and the following mitigation is recommended: 1) control traffic speeds on all unpaved roads to 15 mph or less; 2) thoroughly broom sweep tracked out materials near construction site access points; 3) use water trucks or other dust palliatives during construction periods to control the generation of fugitive dust due to wind or other forms of physical disturbance; and 4) all trucks hauling dirt, sand, soil, or other loose materials should be covered or should maintain at least two feet of freeboard (i.e., minimum vertical distance between top of the load and the trailer).

Ozone Precursors. The increased NO_X emissions, an ozone precursor, due to exhaust emissions from construction equipment is expected to impact local residential receptors during construction of the various ISDP structures. The following mitigation should reduce or eliminate the adverse impacts anticipated as a result of the intake construction activities. Exhaust emissions can be significantly reduced through attention to equipment condition, including the following: equipment tune-ups; catalytic converters on gasoline powered equipment; engine timing retard; and activity management techniques that prevent trucks and construction vessels from idling for excessive times.

6.6 Comparative Evaluation Of Alternatives

6.6.1 Enlargement Of Clifton Court Forebay, Construction Of Two Intake Structures, Increased Export Capability, And Construction Of Permanent Barriers

This alternative, the original South Delta Water Management Program preferred alternative, would entail construction and operation of the barriers proposed as a part of ISDP. Accordingly, this alternative would have the same barrier-related effects on air quality. In addition, this alternative would substantially enlarge Clifton Court Forebay from its current size of 2,100 surface acres to more than 5,000 surface acres using the northern portion of Victoria Island and the remaining area of Clifton Court Tract. Two new northern intake structures would be built, one at the confluence of North Victoria Canal and Middle River and the second at the confluence of North Victoria Canal and Old River. The southeast portion of Byron Tract would hydraulically connect the existing forebay to the new area, and the realignment of Highway 4 would be necessary, requiring construction of a new roadway parallel to the existing roadway alignment. The additional grading and construction associated with these components is much greater than that quantified for ISDP, and would substantially increase the amount of pollutants expected in the air basin compared to ISDP.

This alternative would result in all of the air quality effects of ISDP. In addition, elements of this alternative involve larger-scale construction efforts, resulting in greater emissions of ozone precursors, particulate matter, and CO. Accordingly, this alternative would not be selected as environmentally preferable to the ISDP.

6.6.2 Reduction Of CVP/SWP Exports And Management Or Reduction Of Demand For SWP Water

This alternative would incorporate reductions in the amount of water exported to SWP water users, along with implementation of measures in the service areas to either better manage the available water or to reduce the demand for water. The project facilities proposed for ISDP would not be constructed or operated. Consequently, implementation of this alternative would not result in any negative effects upon south Delta air quality.

This alternative would be environmentally preferable to ISDP in considering the potential for effects upon air quality. Implementation of this alternative would avoid the ISDP's significant adverse effects on project area pollutant levels.

6.6.3 Modification Of CVP/SWP Exports, Consolidation Of Agricultural Diversions, Extension Of Agricultural Diversions, And Increased Pumping At Harvey O. Banks Up To 10,300 cfs.

This alternative would include the ISDP actions involving the dredging of 4.9 miles of Old River and the construction and operation of a new intake facility at Clifton Court Forebay. However, under this alternative, the construction and operation of the ISDP flow and fish barriers would not occur. Instead, the alternative would include the consolidation of agricultural diversions and additional dredging of Paradise Cut, Middle River, and Old River could be expected. The following is a discussion of impacts expected to occur with the construction and operation of the consolidated agricultural diversions.

Implementation of this alternative would include the adverse air quality impacts associated with the ISDP. The emissions related to the construction of the barriers would be eliminated, but additional emissions would be created in connection with the consolidation of the agricultural diversions. Consequently, this alternative would not be selected as environmentally preferable over the ISDP.

6.6.4 ISDP Project With An Additional Clifton Court Forebay Intake At Italian Slough

This alternative would provide all of the proposed components of the ISDP project, plus a new intake at Italian Slough. Thus, the alternative would include two intakes, one at Italian Slough and one at the northeastern corner of Clifton Court Forebay. Implementation of this alternative would result in all of the effects associated with the ISDP, including increased emissions of non-attainment pollutants. Construction-related pollutant levels would be slightly greater under this alternative due to the additional construction of the Italian Slough intake.

This alternative would result in all of the air quality effects of the ISDP, plus additional emissions associated with the Italian Slough intake construction. Therefore, this alternative would not be selected as environmentally preferable over the ISDP.

6.6.5 ISDP Without The Northern Intake, And With An Expanded Existing Intake

This alternative would implement all of the proposed components of the ISDP project, except construction of a new intake at the northeastern corner of Clifton Court Forebay. Instead, the existing Clifton Court Forebay intake and West Canal would be expanded to accommodate the additional flow. Implementation of this alternative would result in all of the effects associated with the ISDP, including construction-related impacts on air quality. Emissions levels are expected to be comparable to those anticipated under the ISDP.

This alternative would result in all of the air quality effects of ISDP. Accordingly, this alternative would not be selected as environmentally preferable over the ISDP.

6.6.6 No Action (Maintain Existing Conditions)

This alternative would involve the maintenance of environmental conditions as they presently exist in the south Delta. The ISDP would not be approved or constructed. The potential adverse air quality effects of the ISDP project would not occur, nor would the potential environmental benefits occur. As no additional facilities would be constructed or operated, this alternative would not cause increased emissions of non-attainment pollutants in the south Delta.

This alternative would avoid all of the effects of ISDP upon south Delta air quality. Significant adverse effects associated with non-attainment pollutant emissions would be avoided through implementation of this no action alternative.

6.6.7 No Action (Maintain Conditions As They Would Exist In The Future)

This alternative primarily involves water management procedures in the SWP service areas, such as water conservation measures in urban areas, agriculture efficient water management practices, land retirement and water transfers. Implementation of this alternative would result in the maintenance of environmental conditions as they will exist in the future, without construction or operation of ISDP. None of the proposed actions would affect pollutant emissions in the south Delta. Accordingly, the air quality conditions in the project area would either stay the same or change, without the influence of construction and operation of ISDP.

This alternative would avoid all of the air quality effects of ISDP. The significant adverse effects upon south Delta air quality caused by facility construction would be avoided through implementing this no action alternative.

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