

## **APPENDIX I**

### **AIR QUALITY MODELING RESULTS**

# Emissions Summary Tables

Sources	Tons per year									
	PM10	PM2.5	NOx	ROG	CO	SO2	CO2	CH4	N2O	CO2e
On and Off Road Equipment and Vehicles <sup>1</sup>	47.4	9.9	1.6	0.1	0.6	0.0	279.5	0.0	0.0	254.6
Boats <sup>2</sup>	0.2	0.2	3.5	0.4	2.8	0.0	423.2	0.0	0.0	424.6
Total	47.5	10.0	5.1	0.5	3.5	0.0	702.7	0.0	0.0	679.2
De Minimus Threshold <sup>3</sup>	N/A	100.0	100.0	100.0	N/A	N/A	N/A	N/A	N/A	N/A
Exceed Threshold (Yes or No?)	N/A	No	No	No	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

1. Emissions were estimated using SMAQMD's Road Construction Emissions Model, Version 8.1.0
2. Boat emissions were estimated using SMAQMD's Harborcraft, Dredge and Barge Emissions Factor Calculator.
3. United States Environmental Protection Agency. De Minimis Tables. Accessed at: <https://www.epa.gov/general-conformity/de-minimis-tables>

Sources	Average Daily Pounds per Day									
	PM10*	PM2.5*	NOx	ROG	CO	SO2	CO2	CH4	N2O	CO2e
On and Off Road Equipment and Vehicles <sup>1</sup>	0.4	0.4	15.5	1.2	6.2	0.0	2,740.2	0.1	0.0	2,495.7
Boats <sup>2</sup>	1.6	1.5	34.0	4.0	27.7	0.0	4,148.6	0.2	0.0	4,162.9
Total	2.1	1.9	49.6	5.2	33.9	0.1	6,888.9	0.3	0.1	6,658.6
BAAQMD Significance Thresholds <sup>3</sup>	82*	54*	54.0	54.0	N/A	N/A	N/A	N/A	N/A	N/A
Exceed Threshold (Yes or No?)	No	No	No	No	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

1. Emissions were estimated using SMAQMD's Road Construction Emissions Model, Version 8.1.0
  2. Boat emissions were estimated using SMAQMD's Harborcraft, Dredge and Barge Emissions Factor Calculator.
- \* Applies to construction exhaust emissions only.
3. Bay Area Air Quality Management District (BAQMD). CEQA Air Quality Guidelines. Accessed at: [http://www.baaqmd.gov/~media/files/planning-and-research/ceqa/ceqa\\_guidelines\\_may2017-pdf.pdf?la=en](http://www.baaqmd.gov/~media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en)

# Phasing Schedule Assumptions

DWR Phase Name	Apx. Start Date	Apx. End Date	Number of Week Days	Project Area
Haul Road Improvement	10/28/2020	10/29/2020	2	Length 2950 ft, area 35,400 sq ft
Staging Site Improvement	10/30/2020	11/3/2020	3	Offsite
Bale Acquisition/Bale Loading and Placement	11/5/2020	11/10/2020	4	At Staging Area
Pipe Preparation for Barge	44,147.0	44,147.0	1.0	Offsite
Transferee Tugs and Boosters to Site	44,148.0	44,151.0	2.0	Offsite
Pumping Operation	44,152.0	44,166.0	11.0	23 acres
Pipe Teardown and Loading to Barge	44,167.0	44,167.0	1.0	Max Pipe Length 28,000 ft
Transfer Tugs and Boosters Away from Site	44,168.0	44,169.0	2.0	Offsite
Setup and Submittals	3/31/2021	4/5/2021	4	~35 acres
SWPPP	4/6/2021	4/14/2021	7	~35 acres
Eradicate Exotics	4/15/2021	5/21/2021	27	~35 acres
Soil Prep and Grass Seeding	5/22/2021	6/17/2021	19	~35 acres
Install Irrigation	6/18/2021	7/7/2021	14	~35 acres
Install Woody Plants	7/8/2021	8/30/2021	38	~35 acres
Mowing & Spraying: Round 1	7/3/2021	7/27/2021	17	~35 acres
Mowing & Spraying: Round 2	44,425.0	44,447.0	17.0	~35 acres
Mowing & Spraying: Round 3	44,485.0	44,509.0	17.0	~35 acres
As-built, Records & Reports: Round 1	44,300.0	44,301.0	2.0	~35 acres
As-built, Records & Reports: Round 2	44,390.0	44,391.0	2.0	~35 acres
As-built, Records & Reports: Round 3	44,468.0	44,469.0	2.0	~35 acres
Aquatic Planting: Staging/Setup	7/16/2021	7/19/2021	2	~35 acres
Aquatic Planting: Plant Install	7/20/2021	8/2/2021	10	~35 acres

Source: Data provided by Thomas Borrowman with the U.S. Army Corps of Engineers on March 26, 2018.

# On-Road Equipment Assumptions

## Heavy Truck

Phase	Total Operating Hours <sup>1</sup>	Miles Round Trip (miles) <sup>2</sup>	Total Trips <sup>3</sup>	Round Trips Per day
Haul Road Improvement	96	30	176	88
Staging Site Improvement	104	30	191	64
Bale Acquisition/Bale Loading and Placement	68	30	125	31
Pipe Preparation for Barge	None	None	None	None
Transferee Tugs and Boosters to Site	None	None	None	None
Pumping Operation	None	None	None	None
Pipe Teardown and Loading to Barge	None	None	None	None
Transfer Tugs and Boosters Away from Site	None	None	None	None
Setup and Submittals	None	None	None	None
SWPPP	None	None	None	None
Eradicate Exotics	None	None	None	None
Soil Prep and Grass Seeding	None	None	None	None
Install Irrigation	None	None	None	None
Install Woody Plants	None	None	None	None
Mowing & Spraying: Round 1	None	None	None	None
Mowing & Spraying: Round 2	None	None	None	None
Mowing & Spraying: Round 3	None	None	None	None
As-built, Records & Reports: Round 1	None	None	None	None
As-built, Records & Reports: Round 2	None	None	None	None
As-built, Records & Reports: Round 3	None	None	None	None
Aquatic Planting: Staging/Setup	None	None	None	None
Aquatic Planting: Plant Install	None	None	None	None

### Notes:

1. Data provided by Thomas Borrowman with the U.S. Army Corps of Engineers on March 26, 2018.
2. Assumed a haul truck trip distance of 30 miles.
3. Trips were calculated assuming haul trucks would be traveling 55 mph.

## Auto Trips

Phase	Miles One-Way (miles) <sup>1</sup>	Number of Worker Vehicles <sup>1</sup>	Round Trips Per day
Haul Road Improvement	30	6	12
Staging Site Improvement	30	4	8
Bale Acquisition/Bale Loading and Placement	30	3	6
Pipe Preparation for Barge	30	5	10
Transferee Tugs and Boosters to Site	30	5	10
Pumping Operation	30	2	4
Pipe Teardown and Loading to Barge	30	5	10
Transfer Tugs and Boosters Away from Site	30	5	10
Setup and Submittals	30	2	4
SWPPP	30	2	4
Eradicate Exotics	30	25	50
Soil Prep and Grass Seeding	30	13	26
Install Irrigation	30	6	12
Install Woody Plants	30	5	10
Mowing & Spraying: Round 1	30	4	8
Mowing & Spraying: Round 2	30	4	8
Mowing & Spraying: Round 3	30	4	8
As-built, Records & Reports: Round 1	30	3	6
As-built, Records & Reports: Round 2	30	3	6
As-built, Records & Reports: Round 3	30	3	6
Aquatic Planting: Staging/Setup	30	6	12
Aquatic Planting: Plant Install	30	7	14

### Notes:

1. Data provided by Thomas Borrowman with the U.S. Army Corps of Engineers on March 26, 2018.

## Off-Road Equipment Assumptions

Phase <sup>1</sup>	Equipment Type <sup>1</sup>	Number <sup>1</sup>	Total Operational Hours <sup>1</sup>	Number of Work Days <sup>1</sup>	Hours per day/Equipment
Haul Road Improvement	Loader	1	10	2	5
	Blade	1	10		5
	Roller	1	10		5
Staging Site Improvement	Loader	1	20	3	7
	Roller	1	20		7
	Blade	1.0	20.0		6.7
Bale Acquisition/Bale Loading and Placement	Crane	1.0	44.0	4.0	11.0
Pipe Preparation for Barge	None	None	None	1.0	None
Transferee Tugs and Boosters to Site	None	None	None	2.0	None
Pumping Operation	Pumps	3.0	660.0	11.0	20.0
Pipe Teardown and Loading to Barge	None	None	None	1	None
Transfer Tugs and Boosters Away from Site	None	None	None	2	None
Setup and Submittals	None	None	None	4	None
SWPPP	None	None	None	7	None
Eradicate Exotics	Tractor(17 days)	1	136	27	8
	Hedgers (9 days)	8	576		8
Soil Prep and Grass Seeding	Tractor (26 days)	1	208	19	8
Install Irrigation	None	None	None	14.0	None
Install Woody Plants	None	None	None	38.0	None
Mowing & Spraying: Round 1	Tractor (17 days)	1.0	136.0	17.0	8.0
Mowing & Spraying: Round 2	Tractor (17 days)	1.0	136.0	17.0	8.0
Mowing & Spraying: Round 3	Tractor (17 days)	1.0	136.0	17.0	8.0
As-built, Records & Reports: Round 1	None	None	None	2	None
As-built, Records & Reports: Round 2	None	None	None	2	None
As-built, Records & Reports: Round 3	None	None	None	2	None
Aquatic Planting: Staging/Setup	None	None	None	2	None
Aquatic Planting: Plant Install	None	None	None	10	None

Notes:

1. Data provided by Thomas Borrowman with the U.S. Army Corps of Engineers on March 26, 2018.

## Boat Operation during Construction Assumptions

Phase	Type of Boat <sup>3</sup>	Vessel Name (ID #)	Total Hours of Operation <sup>3</sup>	Main Engines				Auxiliary Engines		
				No. of Engines <sup>1</sup>	Engine Model Year <sup>2</sup>	HP <sup>3</sup>	Home Port	No. of Engines <sup>1</sup>	Engine Model Year <sup>2</sup>	HP <sup>4</sup>
Haul Road Improvement	None		None	None	None	None	None	None	None	None
Staging Site Improvement	None		None	None	None	None	None	None	None	None
Bale Acquisition/Bale Loading and Placement	Pushboat	1	20	1	2015	300	Unknown	1	2015	25
	Pushboat	2	20	1	2015	300	Unknown	1	2015	25
Pipe Preparation for Barge	None		None	None	None	None	None	None	None	None
Transfere Tugs and Boosters to Site	Tug	3	24.0	2.0	2,015.0	4,000.0	Unknown	1.0	2,015.0	350.0
	Tug	4	24.0	2.0	2,015.0	4,000.0	Unknown	1.0	2,015.0	350.0
	Tug	5	24.0	2.0	2,015.0	4,000.0	Unknown	1.0	2,015.0	350.0
Pumping Operation	Tender Tug	6	120.0	1.0	2,015.0	150.0	Unknown	1.0	2,015.0	25.0
Pipe Teardown and Loading to Barge	None		None	None	None	None	None	None	None	None
Transfer Tugs and Boosters Away from Site	Tug	7	24	2	2015	4,000	Unknown	1	2015	350
	Tug	8	24	2	2015	4,000	Unknown	1	2015	350
	Tug	9	24	2	2015	4,000	Unknown	1	2015	350
Setup and Submittals	Workboat	10	20	1	2015	75	Unknown	1	2015	350
SWPPP	Workboat	11	32	1	2015	75	Unknown	1	2015	25
Eradicate Exotics	Workboat	12	107	1	2015	150	Unknown	1	2015	25
Soil Prep and Grass Seeding	Workboat	13	108.0	1.0	2,015.0	50.0	Unknown	1.0	2,015.0	25.0
	Workboat	14	12.0	1.0	2,015.0	150.0	Unknown	1.0	2,015.0	25.0
Install Irrigation	Workboat	15	107.0	1.0	2,015.0	75.0	Unknown	1.0	2,015.0	25.0
Install Woody Plants	Workboat	16	155.0	1.0	2,015.0	75.0	Unknown	1.0	2,015.0	25.0
Mowing & Spraying: Round 1	Barge	17	12.0	1.0	2,015.0	150.0	Unknown	1.0	2,015.0	25.0
Mowing & Spraying: Round 2	Barge	18	12	1	2015	150	Unknown	1	2015	25
Mowing & Spraying: Round 3	Barge	19	12	1	2015	150	Unknown	1	2015	25
As-built, Records & Reports: Round 1	Workboat	20	6	1	2015	50	Unknown	1	2015	25
As-built, Records & Reports: Round 2	Workboat	21	6	1	2015	50	Unknown	1	2015	25
As-built, Records & Reports: Round 3	Workboat	22	6	1	2015	50	Unknown	1	2015	25
Aquatic Planting: Staging/Setup	Johnboat	23	16	1	2015	75	Unknown	1	2015	25
Aquatic Planting: Plant Install	Workboat	24	96	1	2015	75	Unknown	1	2015	25
	Safetyboat	25	96	1	2015	50	Unknown	1	2015	25

Notes:

1. Assumed 2 engines for the boats with a engine horse power greater than 500.
2. Per CARB guidance, assumed all boats would be 5 years old (worst case)
3. Data provided by Thomas Borrowman with the U.S. Army Corps of Engineers n March 26, 2018.
4. Assumed boats with a main engine greater than 1000 HP would have a 350 HP auxiliary engine and all others would have a 25 HP auxiliary engine.