



MEMORANDUM

To: Paul Scheidegger
Scheidegger & Associates

Date: May 20, 2015

From: Ray Kapahi
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Project: Santa Clara/San Jose WWTP

Subject: Assumptions/Emissions Scenario for Construction Related Air Quality Impacts Analysis

Based on various communications with team members, we have identified a peak construction activities related to the Digester upgrade project to be between Oct 2016 to March 2017. Within this period, I estimate that maximum activities will occur during Feb-March 2017. During this period, there will be multiple overlapping construction activities. See attached portion of the construction schedule.

The air emission will be calculated from:

- Mobile Sources (trucks and cars/light duty trucks)
- Construction Equipment

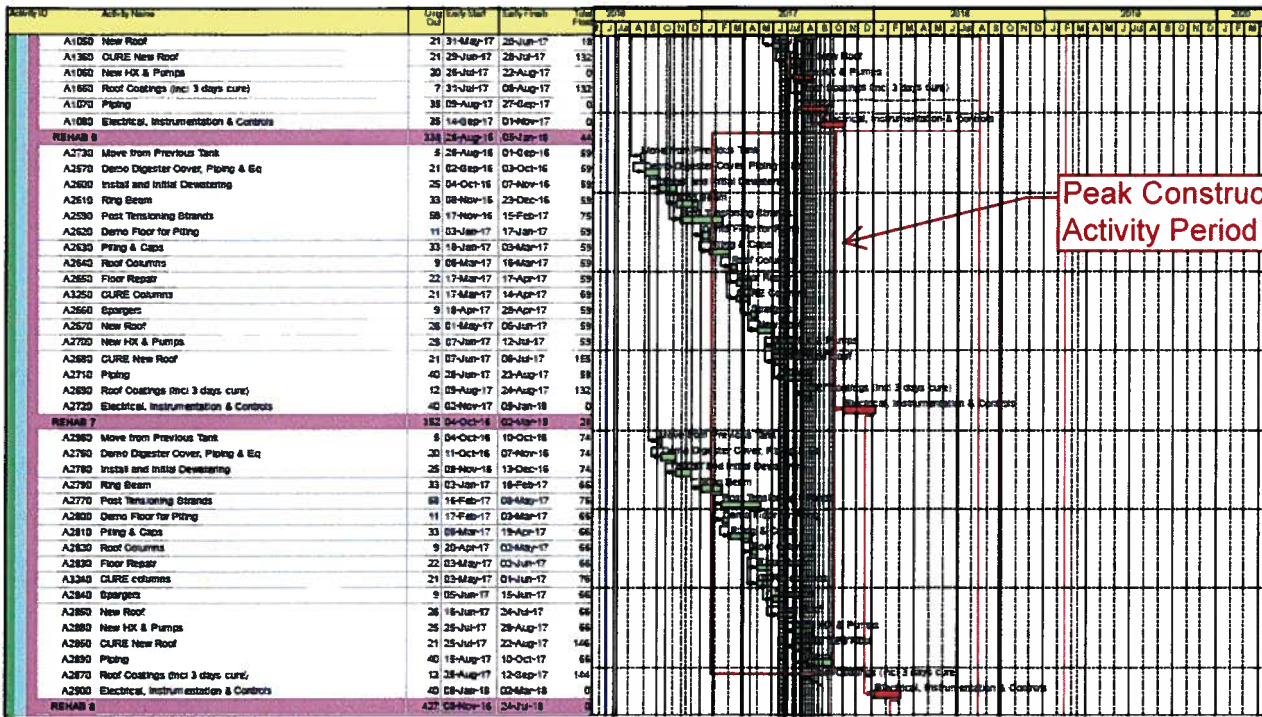
For mobile sources, I am informed that the Digester Upgrade Project, at its maximum peak, will generate 52 vehicle trips during the morning and evening hours (50 cars/light duty trucks, 2 heavy duty truck)

The following construction equipment would be used during the February-March 2017 period. The exact number of each piece of equipment is not know, therefore, I have assumed the following number of pieces of each.

- Concrete Saw (4)
- Jack Hammers (4)
- Air Compressors (4)
- De-watering pumps (4)
- Crane (2)
- Concrete Pump Truck (2)

If we assume the equipment will operate 8 hrs/day, 5 days/week, the daily emissions would be as follows:

Pollutant	Construction Emissions (lbs/day)	BAAQMD Threshold of Significance for Construction Emissions (lbs/day)
ROG	3.78	54
NOx	33.4	54
PM-10	1.75	82
PM-2.5	1.75	54



Peak Construction Activity Period

Brown AND Caldwell



**S.J.S.C RWWF DIGESTER THICKENER UPGRADES
60% DESIGN CONSTRUCTION SCHEDULE**

- Remaining Level of Effort
- Actual Work
- Remaining Work
- Critical Remaining Work
- Milestones

Start Date: 15-Jun-16
 Finish Date: 15-Jul-19
 Data Date: 15-Jun-16
 Run Date: 06-Apr-15 12:20
 Filename: 14513-041-4
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MEMORANDUM

Date: May 21, 2015
To: Paul Scheidegger, Scheidegger & Associates
From: Kevin Chen, Fehr & Peers
Subject: **The Digester and Thickener Facilities Upgrade Project in the City of San Jose, California**

SJ15-1580

This memorandum presents the tables (**Tables A1 – B4**) summarizing the construction related traffic generated by the Digester and Thickener Facilities Upgrade Project and all other concurrent Regional Wastewater Facility Capital Improvement Projects (CIP).

In addition, levels of service results of the following study intersections under the Existing, Background, and Background plus Project Conditions are presented in **Table C1**:

- Zanker Road / SR 237 Westbound Ramps
- Zanker Road / SR 237 Eastbound Ramps



**TABLE A1: DIGESTER AND THICKENER FACILITIES UPGRADE PROJECT
 TRIP GENERATION ESTIMATES^{1,2}**

Vehicle Trip Origin	Morning Peak Hour			Evening Peak Hour		
	Inbound	Outbound	Total	Inbound	Outbound	Total
Peak Hour Small Vehicle Trips in a Typical Work Day ³	24	0	24	0	24	24
Peak Hour Truck Trips in a Typical Work Day ⁴	1	1	2	1	1	2
Maximum Additional Peak Hour Small Vehicle Trips ⁵	26	0	26	0	26	26
Maximum Additional Peak Hour Truck Trips ⁶	0	0	0	0	0	0
Total	51	1	52	1	51	52

Notes:

1. Represents the highest peak hour construction traffic flow for the Digester and Thickener Facilities upgrade project based on RWF construction schedule for all CIP projects from Years 2015 to 2020.
2. Refer to Tables B1-B4 for detailed analyses and assumptions made for each vehicle trip category.
3. Peak Hour Small Vehicle Trips in a Typical Work Day represents all construction workers entering the site during the morning peak hour and departing the site during the evening peak hour in single occupancy vehicles.
4. Peak Hour Truck Trips in a Typical Work Day represents 10% of daily truck traffic on a typical day with a passenger car equivalent (PCE) of 2.0.
5. Maximum Additional Small Vehicle Peak Hour Trips represents additional construction workers entering the site during the morning peak hour and departing the site during the evening peak hour in single occupancy vehicles as a result of short-term, high-intensity construction activities. Only one project is allowed to have this type of activity per day. The Digester and Thickener Facility upgrade project generates the highest trip.
6. It is assumed that truck trips as a result of short-term, high-intensity construction activities will not be allowed during typical vehicle commute periods adjacent to the RWF site. As a result, the Maximum Additional Peak Hour Truck Trips will not occur during the morning and evening peak hours.

Source: Fehr & Peers, May 2015



TABLE A2: OTHER CONCURRENT RWF PROJECTS
TRIP GENERATION ESTIMATES^{1,2}

Vehicle Trip Origin	Morning Peak Hour			Evening Peak Hour		
	Inbound	Outbound	Total	Inbound	Outbound	Total
Peak Hour Small Vehicle Trips in a Typical Work Day ³	57	0	57	0	57	57
Peak Hour Truck Trips in a Typical Work Day ⁴	2	2	4	2	2	4
Maximum Additional Peak Hour Small Vehicle Trips ⁵	0	0	0	0	0	0
Maximum Additional Peak Hour Truck Trips ⁶	0	0	0	0	0	0
Total	59	2	61	2	59	61

Notes:

1. Represents the highest peak hour construction traffic flow based on RWF construction schedule for all active CIP projects during the construction of the Digester and thickener facilities upgrade project (July 2016 – April 2019), which falls in-between August - September 2016.
2. Refer to Tables B1-B4 for detailed analyses and assumptions made for each vehicle trip category.
3. Peak Hour Small Vehicle Trips in a Typical Work Day represents all construction workers entering the site during the morning peak hour and departing the site during the evening peak hour in single occupancy vehicles.
4. Peak Hour Truck Trips in a Typical Work Day represents 10% of daily truck traffic on a typical day with a passenger car equivalent (PCE) of 2.0.
5. Maximum Additional Small Vehicle Peak Hour Trips represents additional construction workers entering the site during the morning peak hour and departing the site during the evening peak hour in single occupancy vehicles as a result of short-term, high-intensity construction activities. Only one project is allowed to have this type of activity per day. The Digester and Thickener Facility upgrade project generates the highest trip.
6. It is assumed that truck trips as a result of short-term, high-intensity construction activities will not be allowed during typical vehicle commute periods adjacent to the RWF site. As a result, the Maximum Additional Peak Hour Truck Trips will not occur during the morning and evening peak hours.

Source: Fehr & Peers, May 2015



TABLE B1: SMALL VEHICLE TRIPS IN A TYPICAL WORK DAY PER YEARLY QUARTER^{1,2}

CIP Project	2016				2017				2018				2019			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Digester and Thickener Facilities Upgrade			24	24	24	24	24	24	24	24	24	24	24	24		
Advanced Fac Ctrl Pkge & Meter Replacement									4	4	4	4	4	4		
Emergency Diesel Generator			9													
Cogeneration			15	15	15	15	15	15	15	15	15	15	15			
Digester Gas Compressor Upgrade			7													
Facility Wide Water Systems												5	5	5	5	
Plant Instrument Air System			7	7	7	7	7	7								
Filter Repair and Rehabilitation Package																9
Near-Term Headworks Improv. Package														13	13	
Headwork Critical Improvements			6	6	6	6										
Iron Salt Facilities			7	7												
Nitrification Clarifier Rehab and Repair												12	12	12	12	
Construction Enabling			6	6												
Quarterly Total			81	65	52	52	46	46	43	55	60	60	73	67		

Notes: **BOLD** = highest total (= small vehicle + Truck) trips generated by concurrent projects.

1. Values shown in this table represent one-way vehicle trips in a typical work day. Trip values = # People / day (Column K) from "Traffic Flow Estimates and Construction Employee Count" dated May 7, 2015 provided by RWF staff.
2. Small vehicle trips represent construction workers; all trips will be inbound to the site during the morning peak hour and outbound from the site during the evening peak hour.

Source: Fehr & Peers, May 2015



TABLE B2: TRUCK TRIPS IN A TYPICAL WORK DAY PER YEARLY QUARTER^{1,2}

CIP Project	2016				2017				2018				2019			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Digester and Thickener Facilities Upgrade			6	6	6	6	6	6	6	6	6	6	6	6	6	6
Advanced Fac Ctrl Pkge & Meter Replacement									2	2	2	2	2	2	2	2
Emergency Diesel Generator			2													
Cogeneration			6	6	6	6	6	6	6	6	6	6	6	6	6	6
Digester Gas Compressor Upgrade			2													
Facility Wide Water Systems													2	2	2	2
Plant Instrument Air System			2	2	2	2	2	2								
Filter Repair and Rehabilitation Package																8
Near-Term Headworks Improv. Package																8
Headwork Critical Improvements			2	2	2	2	2									
Iron Salt Facilities			4	4												
Nitrification Clarifier Rehab and Repair													4	4	4	4
Construction Enabling			4	4												
Quarterly Total			28	24	16	16	14	14	14	14	18	20	20	28	30	

Notes: **BOLD** = highest total (= small vehicle + Truck) trips generated by concurrent projects.

1. Values shown in this table represent one-way truck trips in a typical work day with a Passenger Car Equivalent (PCE) of 2.0 applied. Trip values = 2.0 x [Truck Traffic / Day (Column L)] from "Traffic Flow Estimates and Construction Employee Count" dated May 7, 2015 provided by RWF staff.
2. Truck trips would be distributed evenly throughout a 10-hour work day; any given hour would have 10% inbound and 10% outbound of the total truck trips (with PCE).

Source: Fehr & Peers, May 2015



TABLE B3: MAXIMUM ADDITIONAL PEAK HOUR SMALL VEHICLE TRIPS PER YEARLY QUARTER^{1,2,3}

CIP Project	2016				2017				2018				2019			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Digester and Thickener Facilities Upgrade			26	26	26	26	26	26	26	26	26	26	26	26	26	26
Advanced Fac Ctrl Pkge & Meter Replacement									6	6	6	6	6	6	6	6
Emergency Diesel Generator			11													
Cogeneration			20	20	20	20	20	20	20	20	20	20	20	20	20	20
Digester Gas Compressor Upgrade			8													
Facility Wide Water Systems											1	1	1	1	1	1
Plant Instrument Air System			3	3	3	3	3	3	3	3						
Filter Repair and Rehabilitation Package														21		
Near-Term Headworks Improv. Package													17	17		
Headwork Critical Improvements			2	2	2	2	2									
Iron Salt Facilities			3	3												
Nitrification Clarifier Rehab and Repair											13	13	13	13	13	13
Construction Enabling			2	2												

Notes: **BOLD** = highest additional small vehicle trips generated by a single project.

1. Trip values shown in this table represent additional small vehicle traffic needed to complete a short-term, high-intensity construction activity. Trip values = Max Vehicles (Column N) - #People/Day (Column K) in "Traffic Flow Estimates and Construction Employee Count" dated May 7, 2015 provided by RWF staff.
2. Only one project will perform short-term, high-intensity construction activity on the project site on a single day.
3. Small vehicle trips represent construction workers; all trips will be inbound to the site during the morning peak hour and outbound from the site during the evening peak hour.

Source: Fehr & Peers, May 2015



TABLE B4: MAXIMUM ADDITIONAL PEAK HOUR TRUCK TRIPS PER YEARLY QUARTER^{1,2,3}

CIP Project	2016				2017				2018				2019			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Digester and Thickener Facilities Upgrade			24	24	24	24	24	24	24	24	24	24	24	24		
Advanced Fac Ctrl Pkge & Meter Replacement									4	4	4	4	4	4		
Emergency Diesel Generator			14													
Cogeneration			6	6	6	6	6	6	6	6	6	6	6			
Digester Gas Compressor Upgrade			10													
Facility Wide Water Systems										8	8	8	8	8		
Plant Instrument Air System			6	6	6	6	6	6								
Filter Repair and Rehabilitation Package														4		
Near-Term Headworks Improv. Package													4	4		
Headwork Critical Improvements			2	2	2	2	2									
Iron Salt Facilities			16	16												
Nitrification Clarifier Rehab and Repair										10	10	10	10	10		
Construction Enabling			4	4												

Notes: **BOLD** = highest additional truck trips (PCE) generated by a single project.

1. Trip values shown in this table represent additional truck traffic needed to complete a short-term, high-intensity construction activity with a Passenger Car Equivalent (PCE) of 2.0 applied. Trip values = 2.0 x [Max Truck (Column O) - Truck Traffic/Day (Column L)] in "Traffic Flow Estimates and Construction Employee Count" dated May 7, 2015 provided by RWF staff.
2. Only one project will perform short-term, high-intensity construction activity on the project site on a single day.
3. Additional truck traffic from short-term, high-intensity construction activity will be prohibited from traveling to or from the RWF site during the morning and evening peak hours.

Source: Fehr & Peers, May 2015



TABLE C1: EXISTING AND BACKGROUND INTERSECTION LEVELS OF SERVICE

Intersection	Peak Hour	Existing		Background		Background Plus Project			
		Delay ¹	LOS ²	Delay ¹	LOS ²	Delay ¹	LOS ²	Δ Crit. V/C ³	Δ Crit. Delay ⁴
1. Zanker Rd/SR 237 WB Ramps*	AM	10.2	B+	12.9	B	13.1	B	0.028	0.1
	PM	10.2	B+	15.7	B	15.7	B	0.006	0.1
2. Zanker Rd/SR 237 EB Ramps*	AM	14.5	B	15.6	B	15.6	B	0.001	0.0
	PM	11.0	B+	14.8	B	14.9	B	0.005	0.1

Notes: * CMP intersection

1. Whole intersection weighted average stopped delay expressed in seconds per vehicle for both signalized intersections using the 2000 Highway Capacity Manual (HCM) methodology via the TRAFFIX 8.0 software, with adjusted VTA parameters to reflect Santa Clara County Conditions.
2. LOS = level of service.
3. Change in the critical volume-to-capacity ratio (V/C) between Background and Background plus Project Conditions.
4. Change in critical movement delay between Background and Background plus Project Conditions.

Source: Fehr & Peers, May 2015.