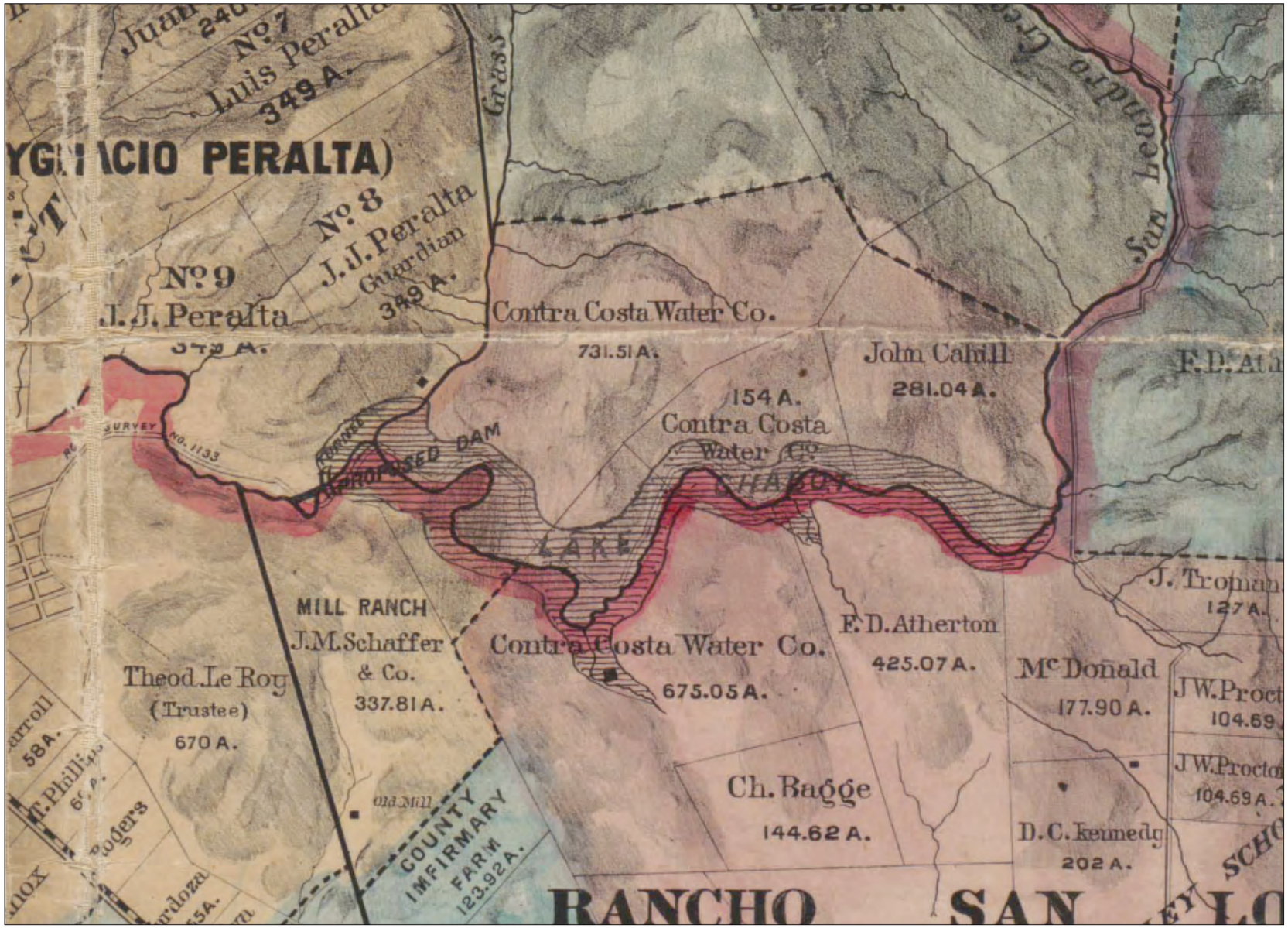
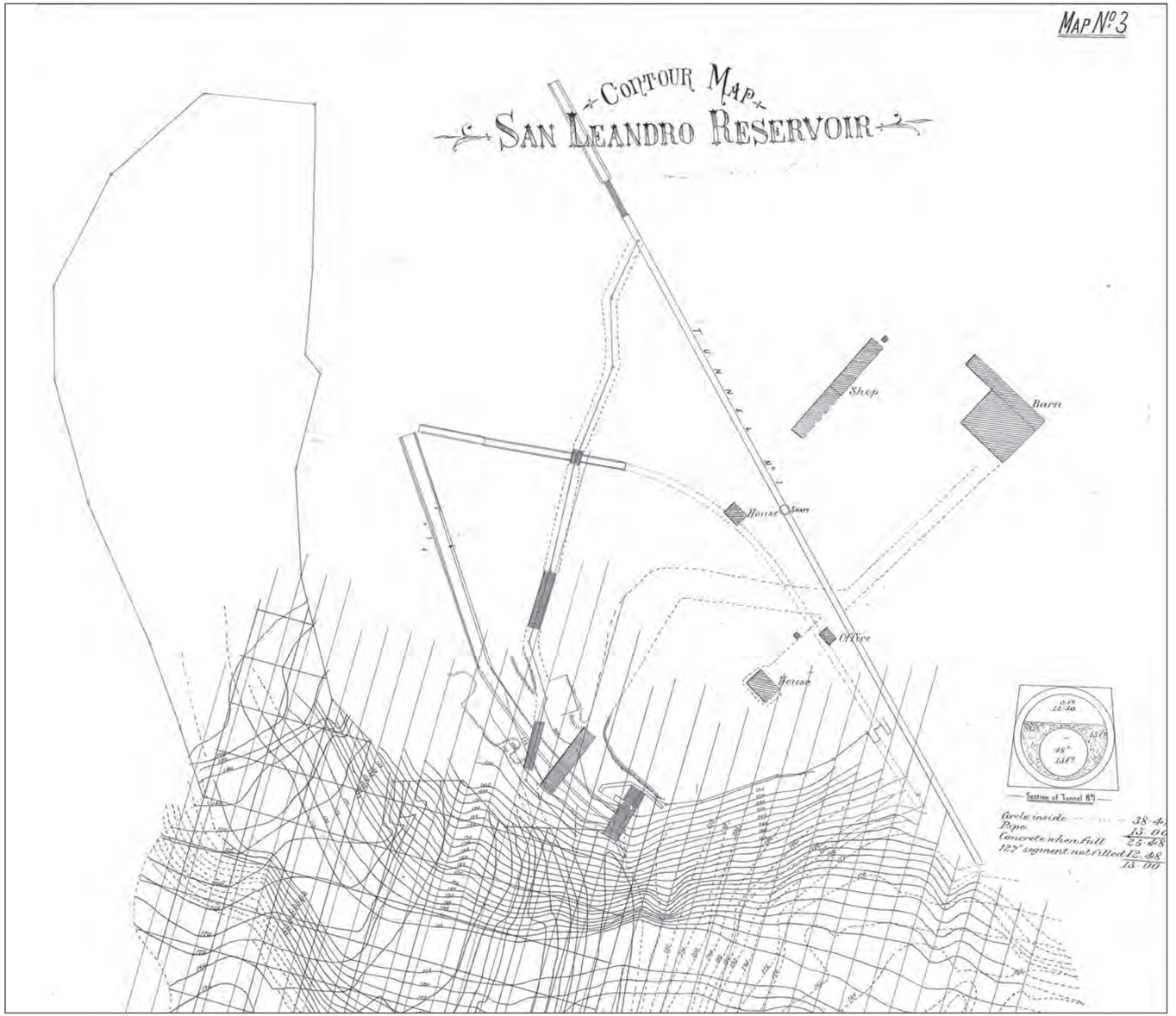
Appendix D
Historic Drawings

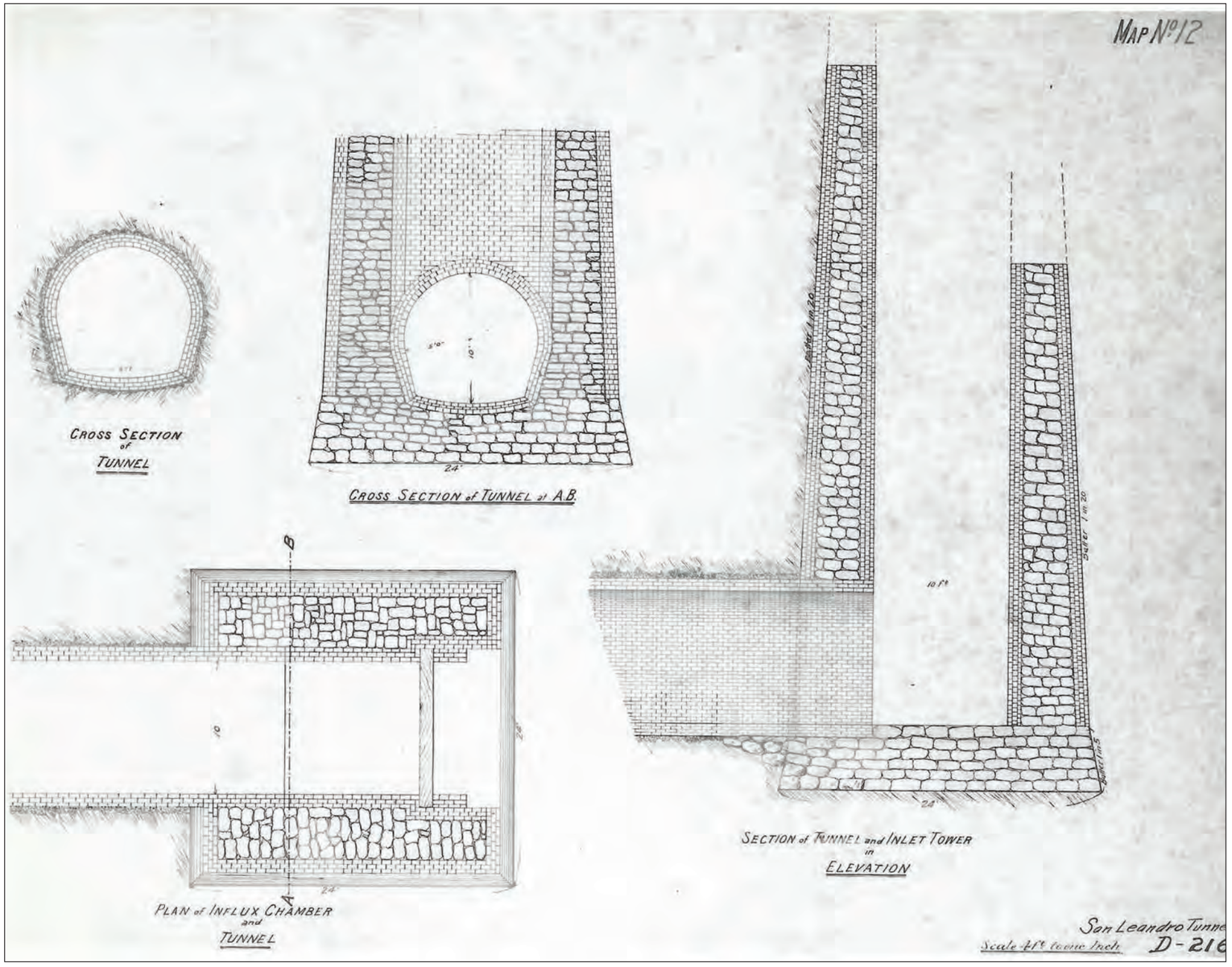


Map of Alameda County showing proposed Chabot Dam and Reservoir, 1874
(Source: EBMUD)

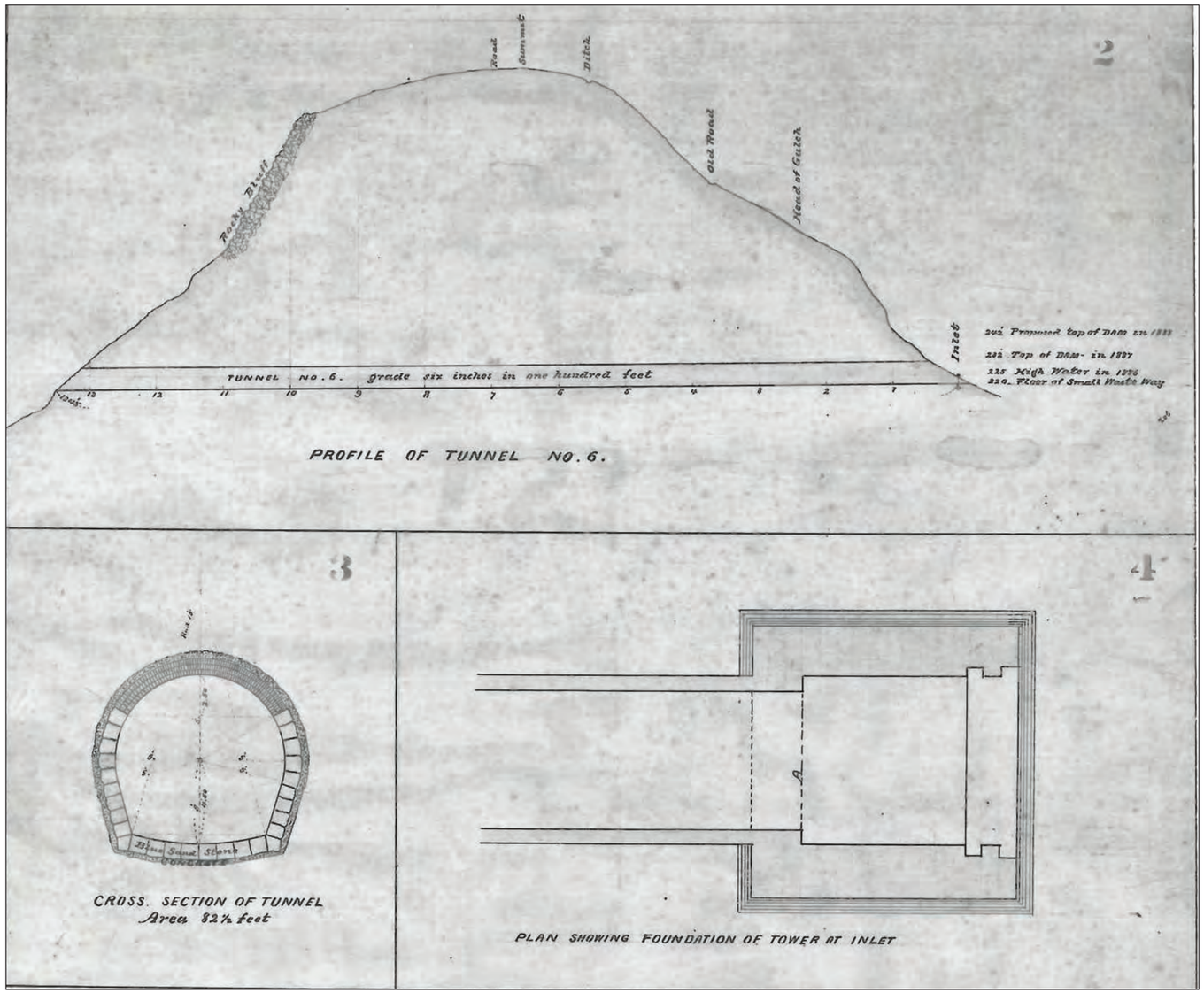
Site plan of Chabot Dam and associated features by William Boardman, 1888
(Source: EBMUD)



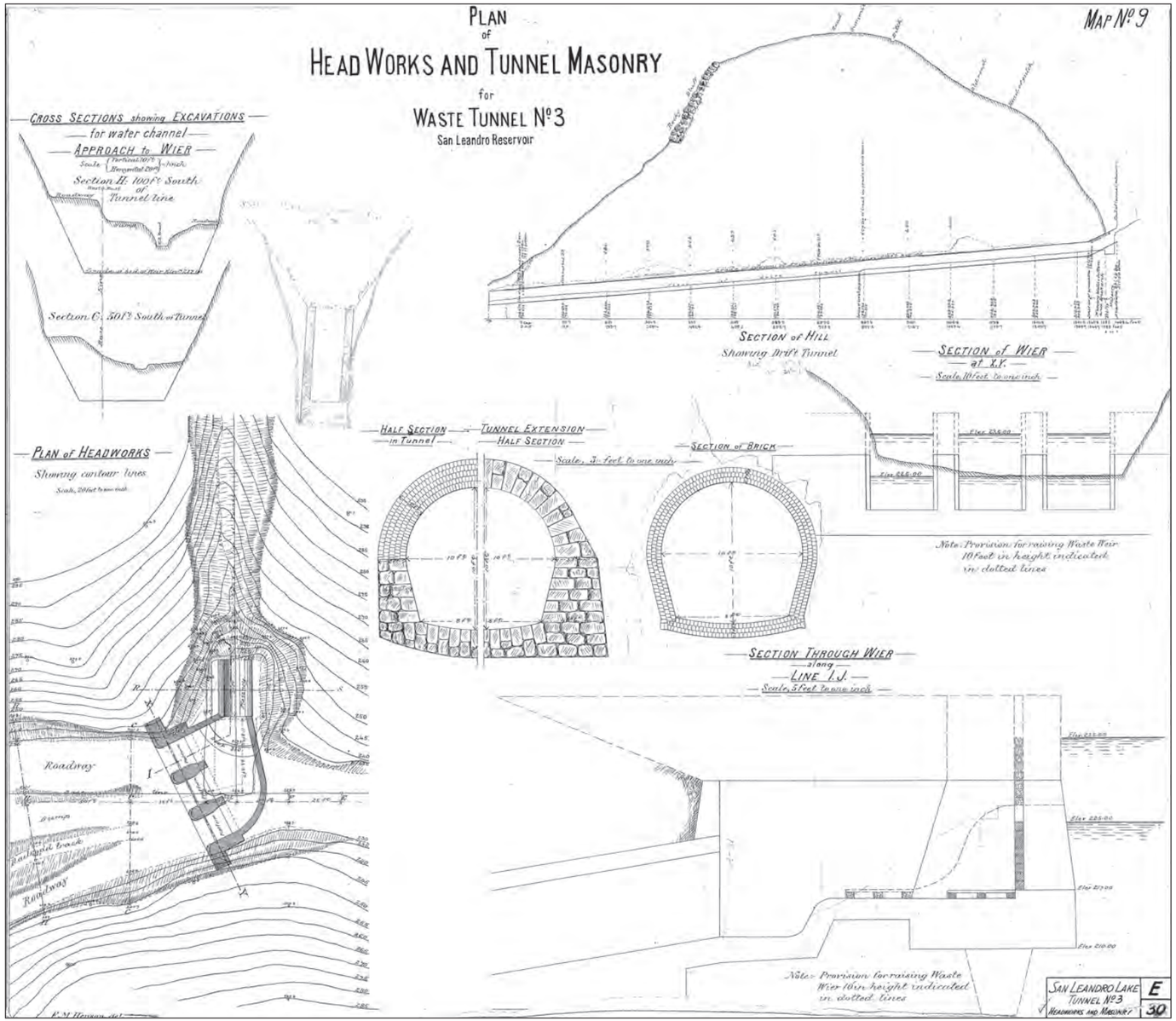
Site plan of Chabot Dam and associated features showing buildings on the knoll to the north of Chabot Dam,1888
(Source: EBMUD)



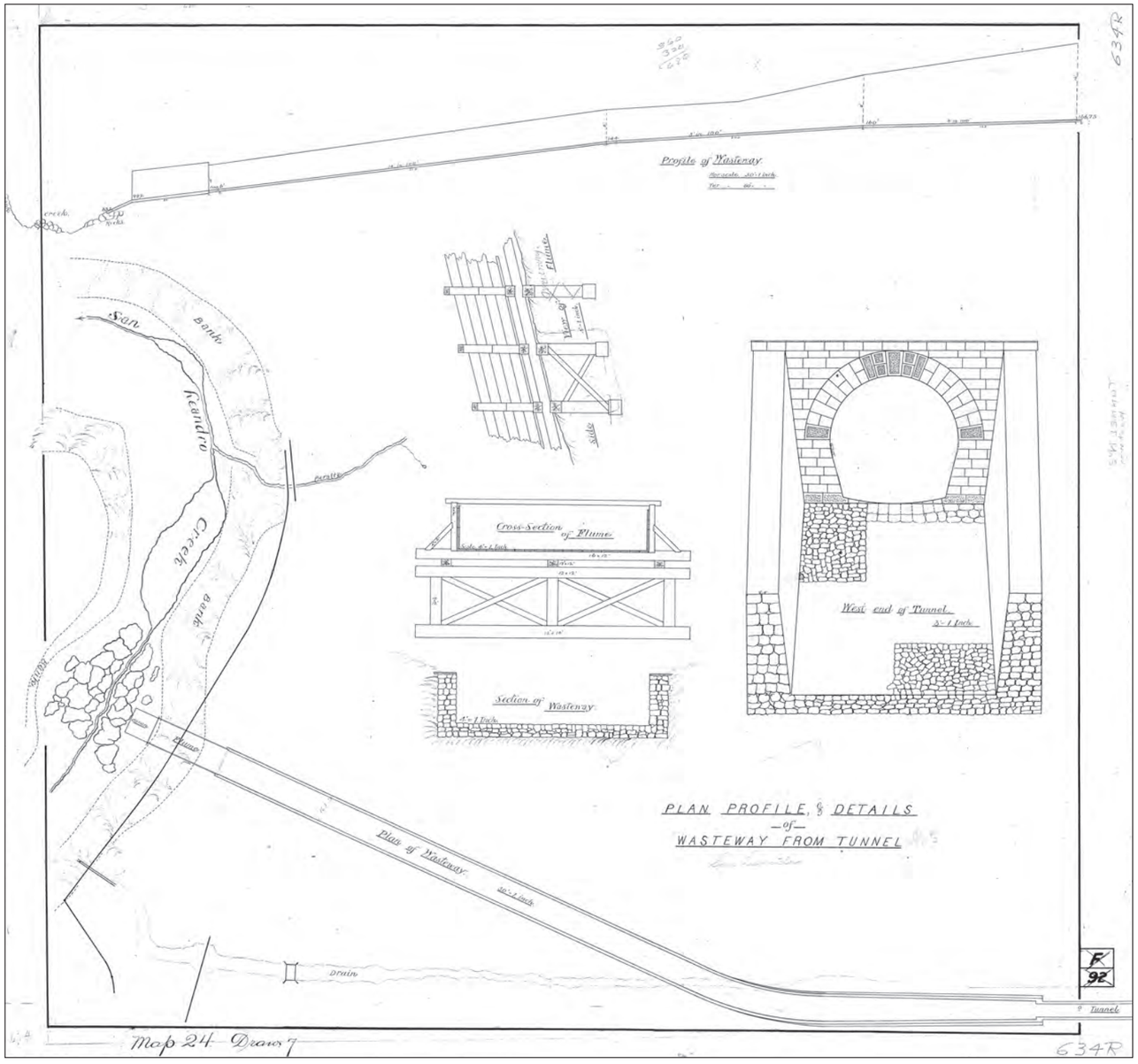
Details and sections of Tunnel No. 1 inlet and tower, 1888
(Source: EBMUD)



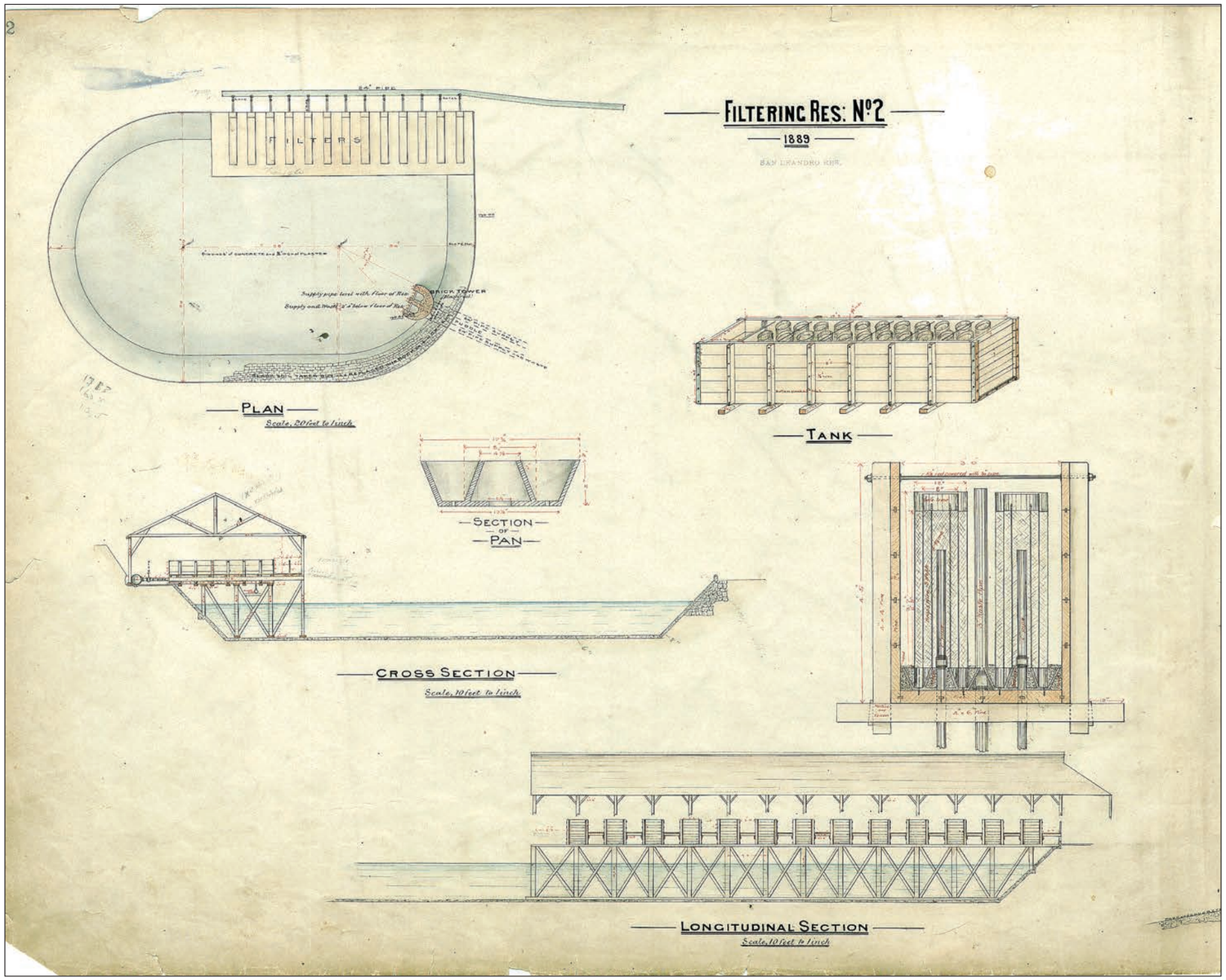
Profiles and sections of Tunnel No. 3, 1888
(Source: EBMUD)



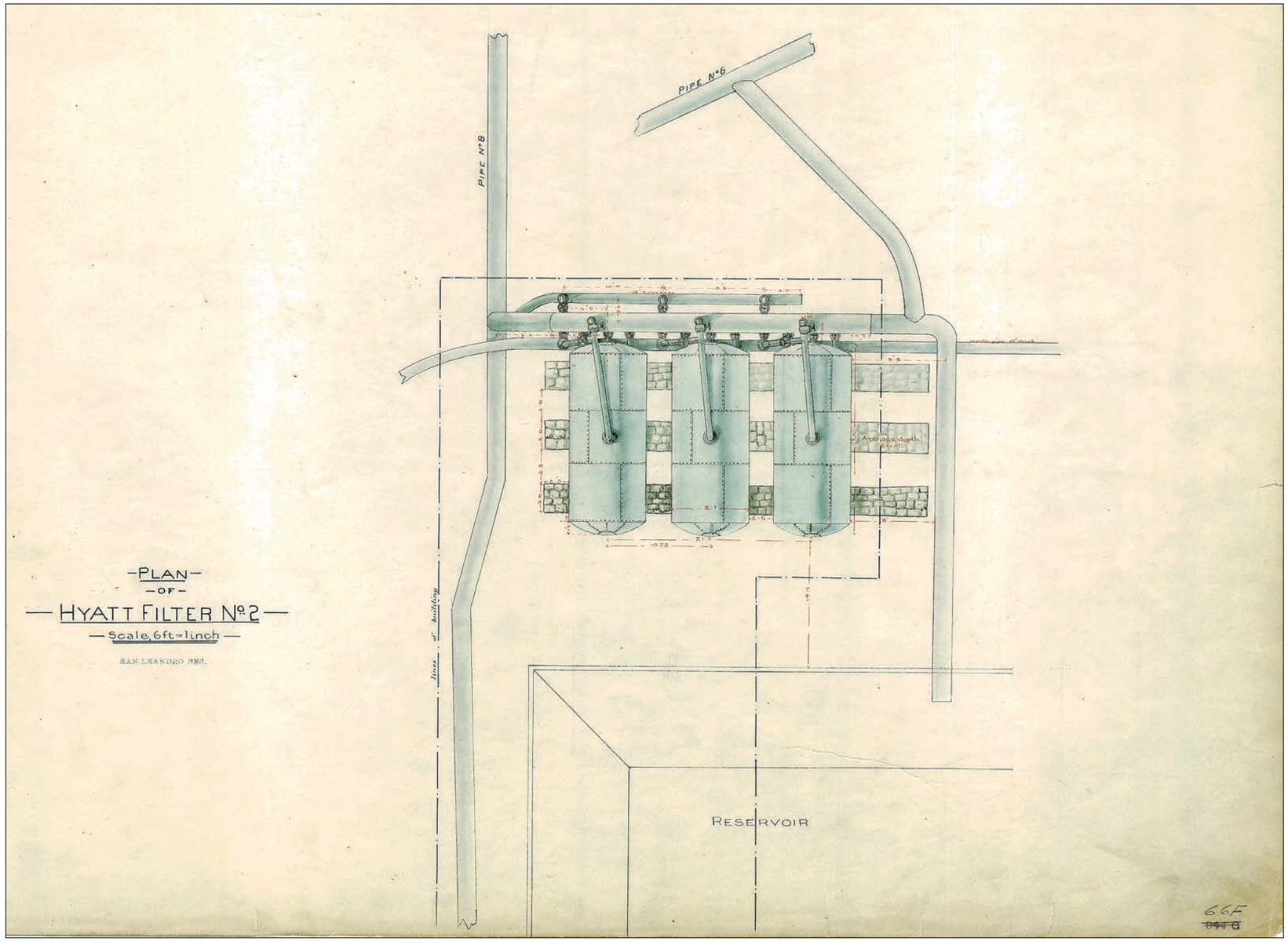
Plans, sections, and profiles of Tunnel No. 3 Spillway and Tunnel No. 3, date unknown but likely 1880s
(Source:EBMUD)



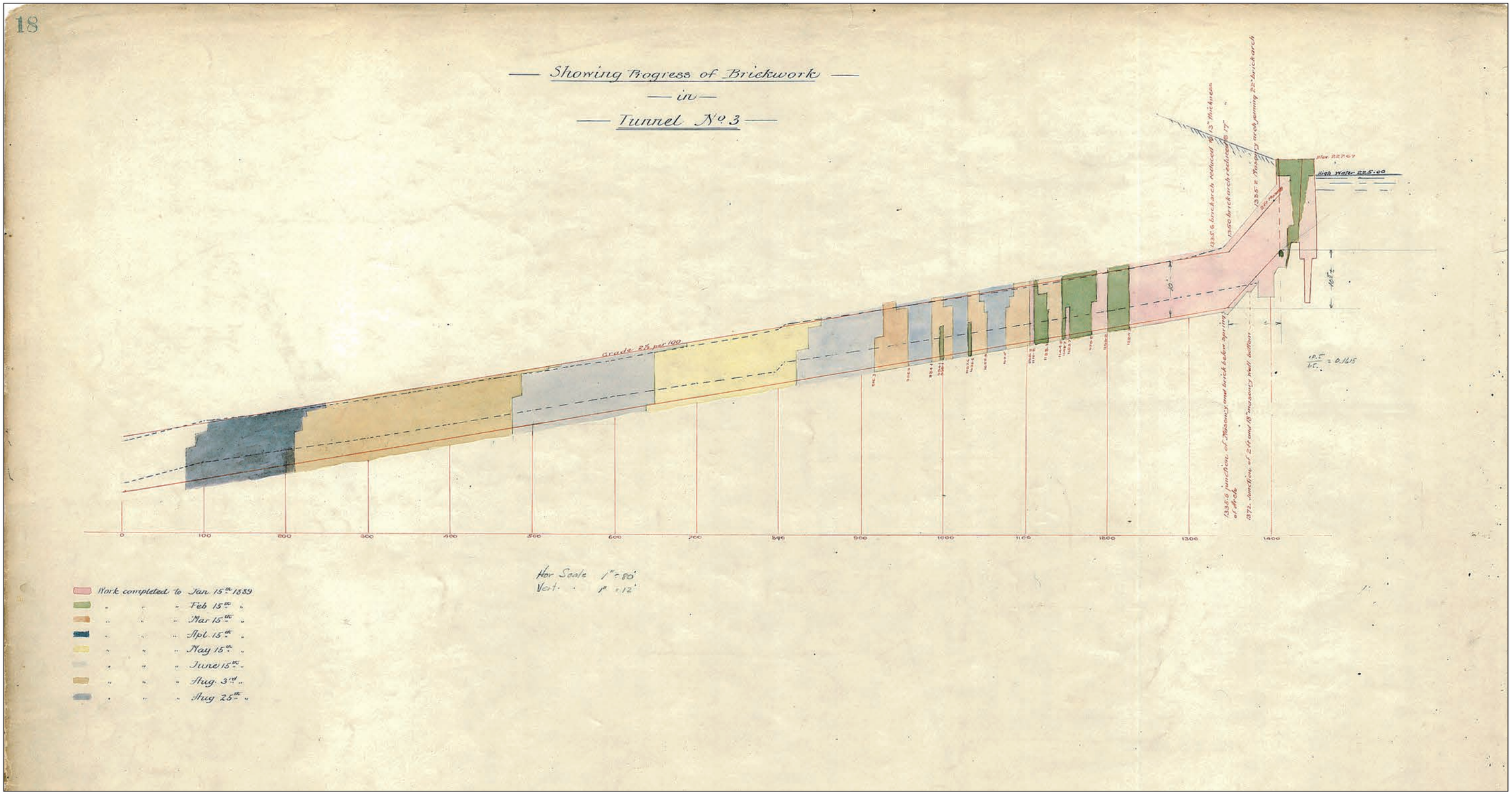
Plans, profiles, and details of Tunnel No. 3 Spillway and Tunnel No. 3, date unknown but likely 1880s
(Source:EBMUD)



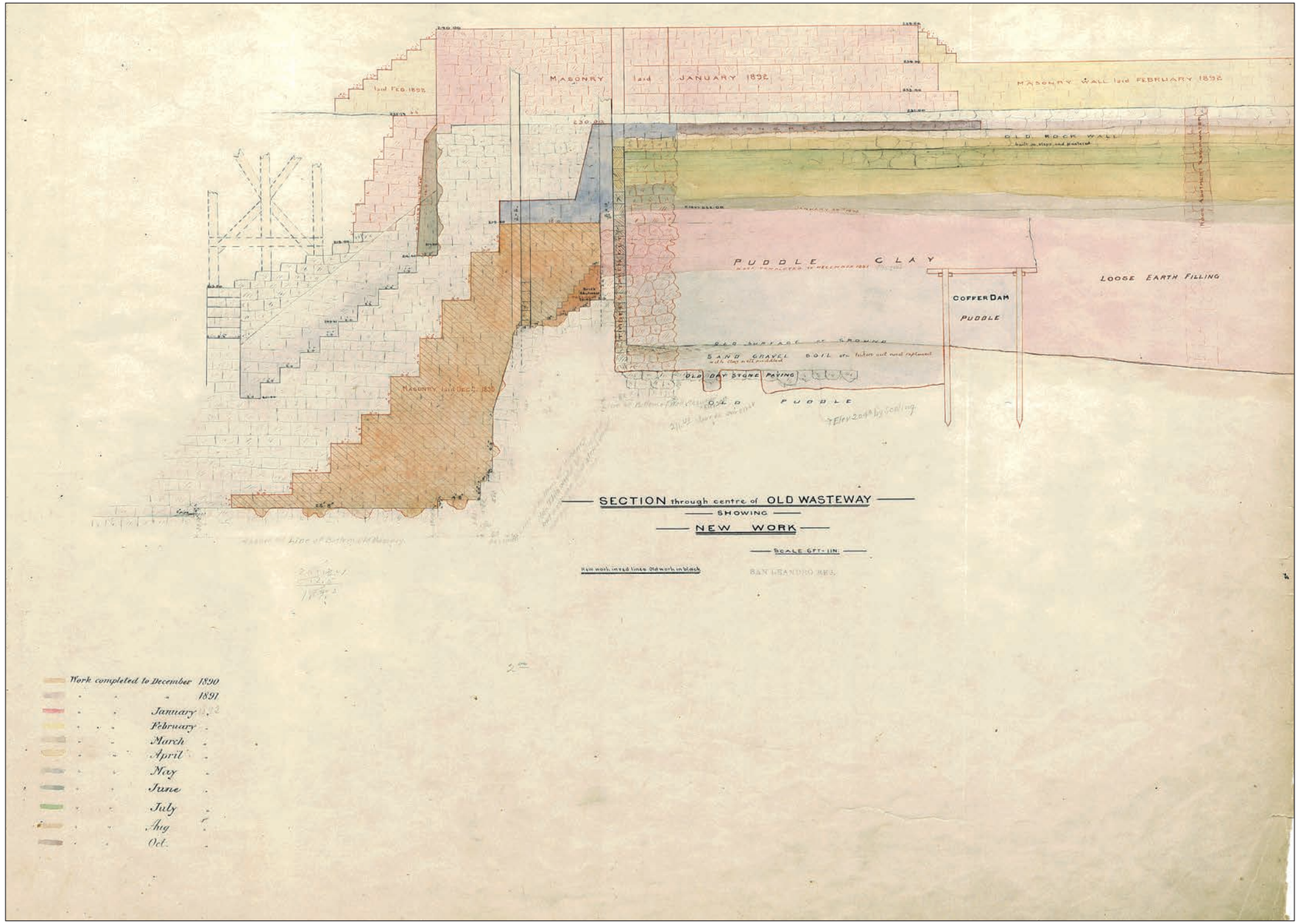
Plans, sections, and details of a filtration basin, 1889
(Source: EBMUD)



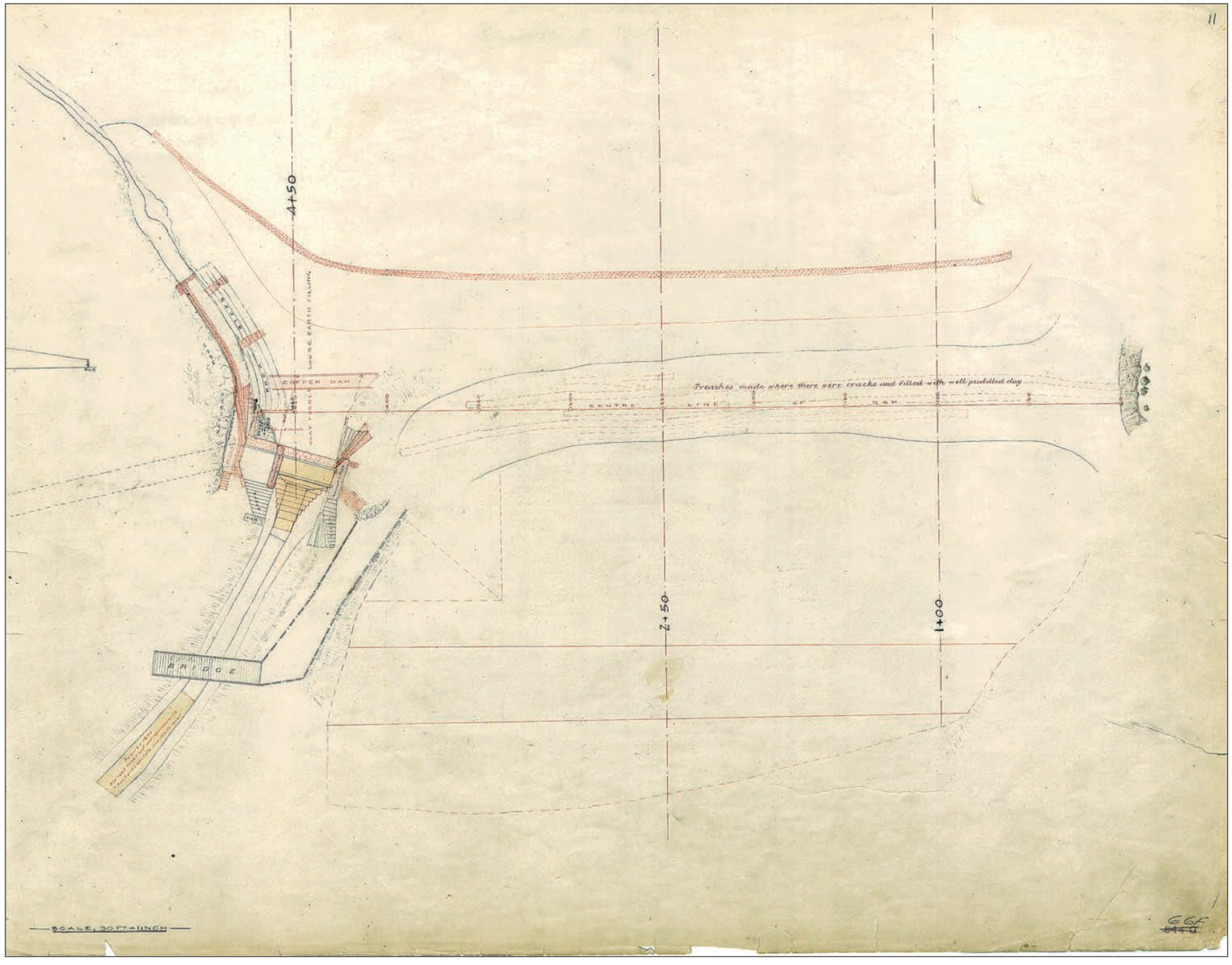
Plan for Hyatt filters at the filtration basin, circa 1890s
(Source: EBMUD)



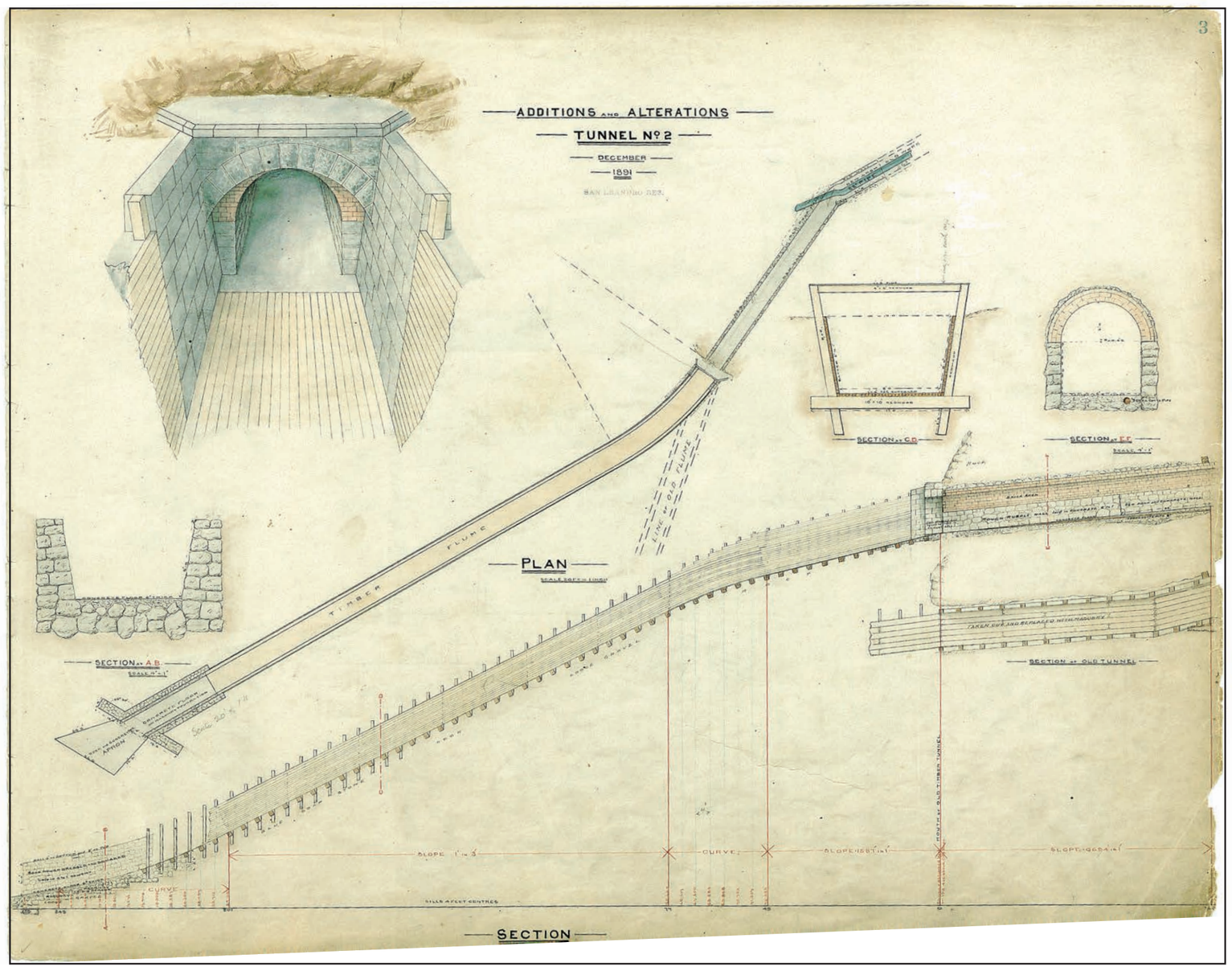
Elevation showing progress of brick work at Tunnel No. 3, 1889
(Source: EBMUD)



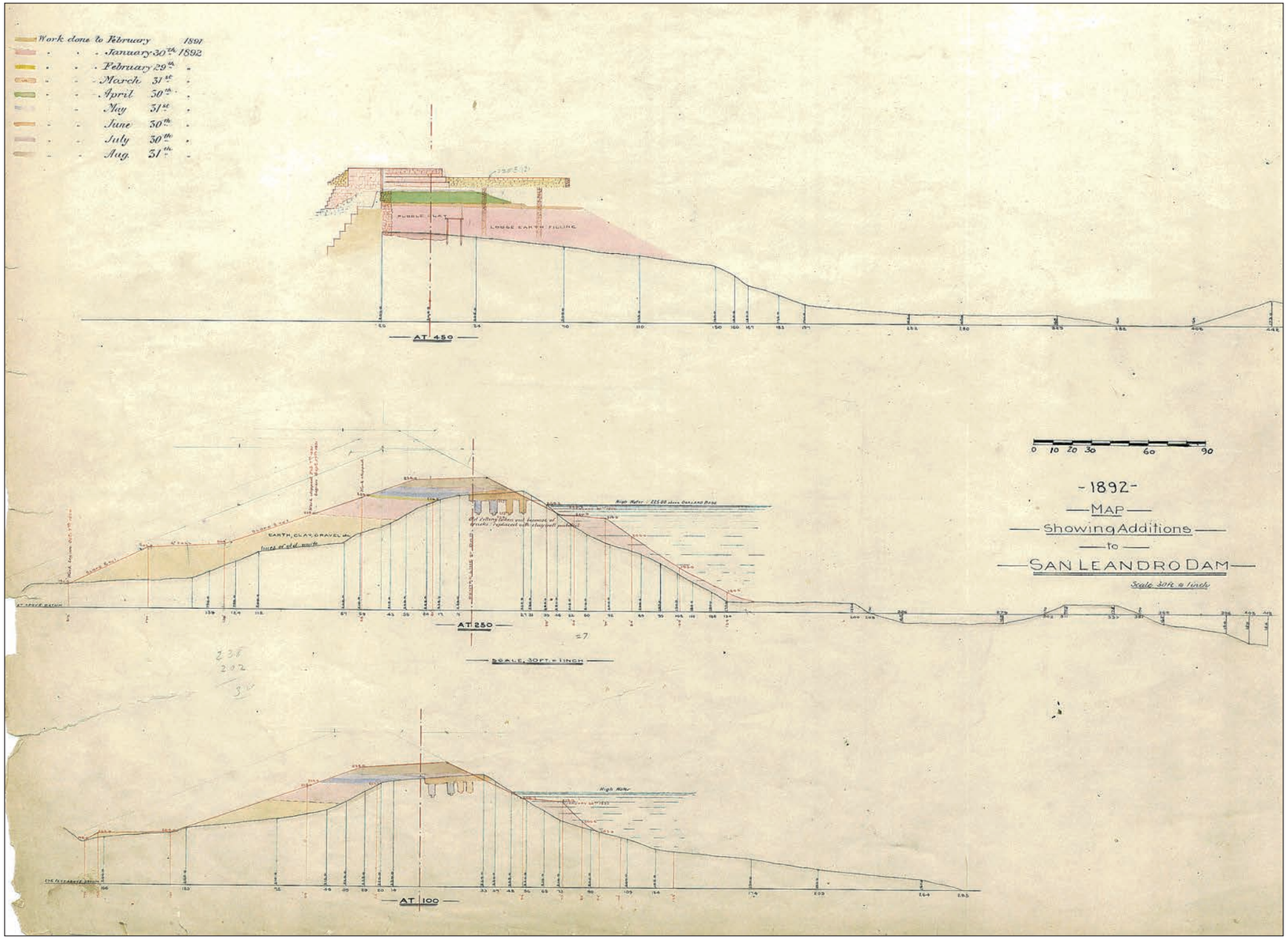
Section through center of Spillway No. 1, 1891
(Source: EBMUD)



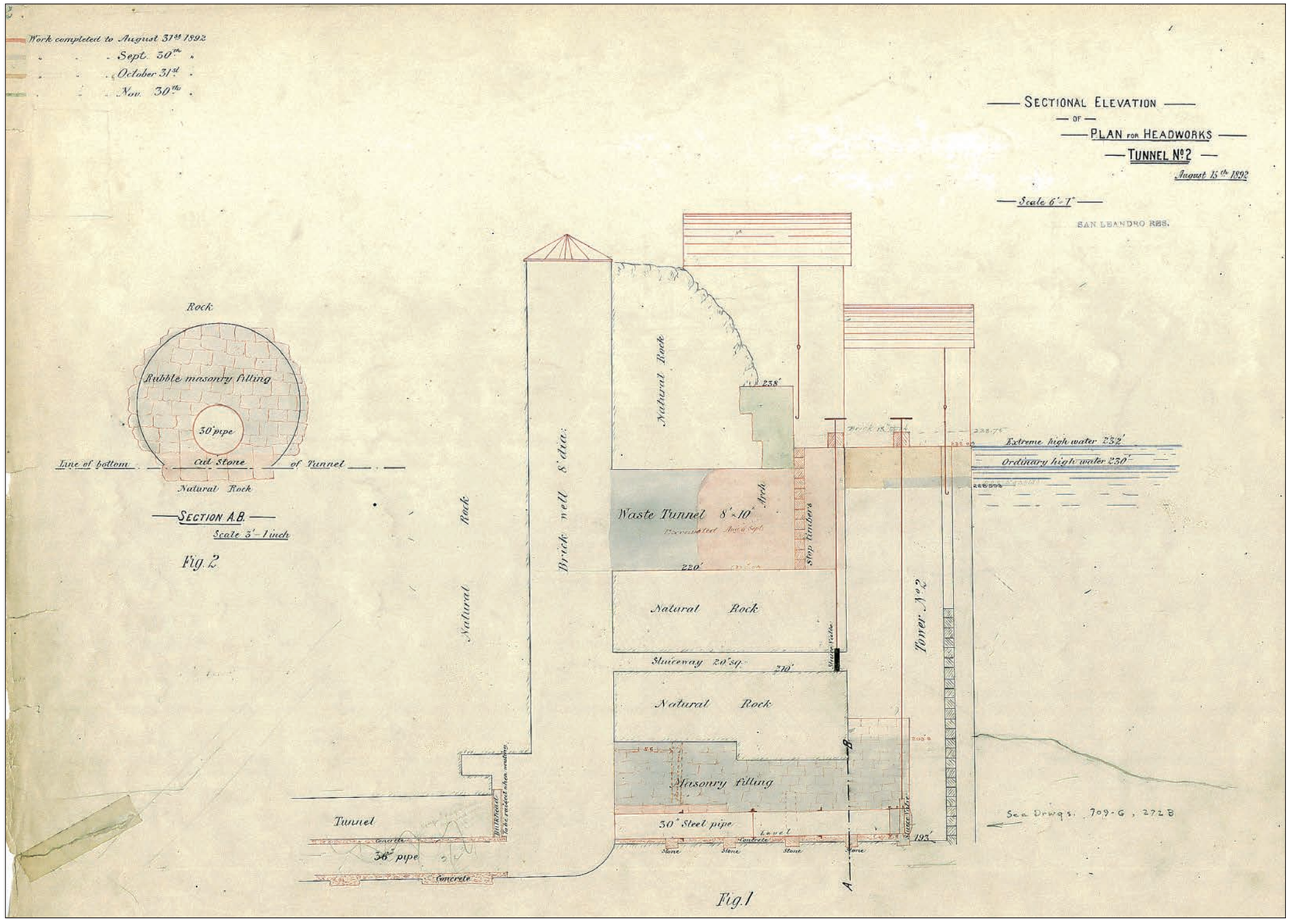
Plan of Spillway No. 1 and Chabot Dam wall, circa 1880s-1890s
(Source: EBMUD)



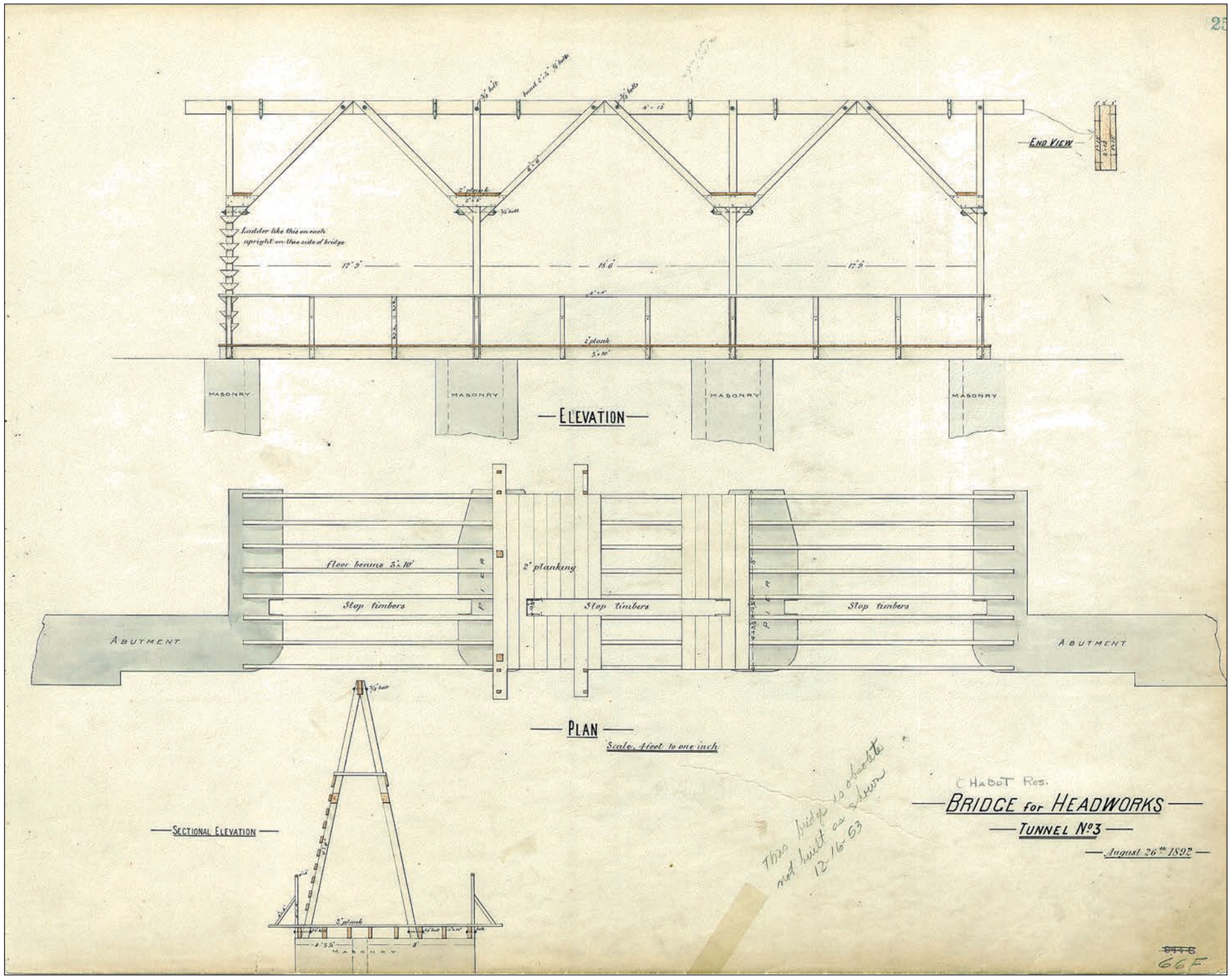
Plans, sections, and details of Tunnel No. 2, 1889
(Source: EBMUD)



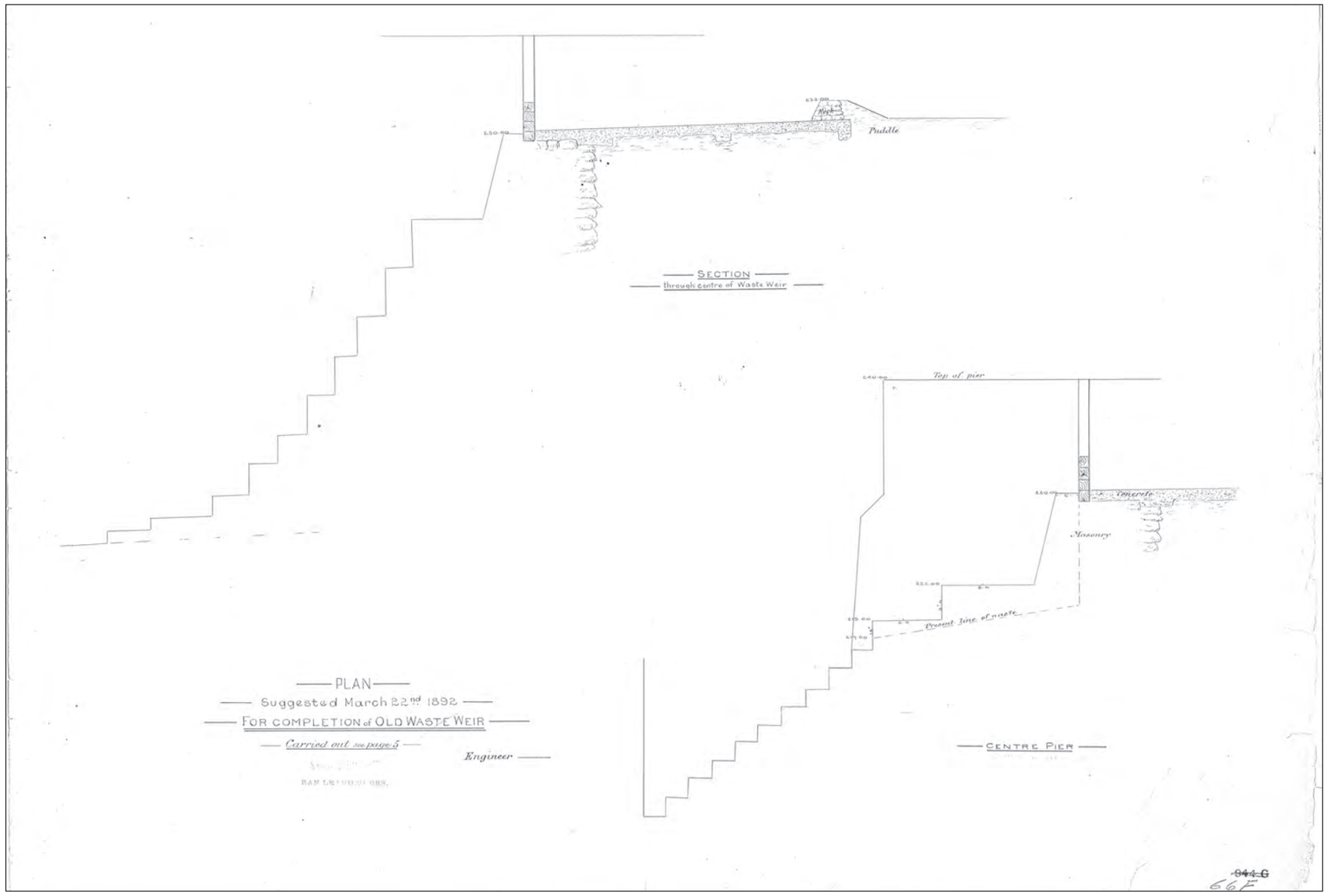
Sections showing additions to the Chabot Dam wall, 1892
(Source: EBMUD)



Section and detail of Tunnel No. 2 and Tunnel No. 2 Intake Tower, 1892
(Source: EBMUD)

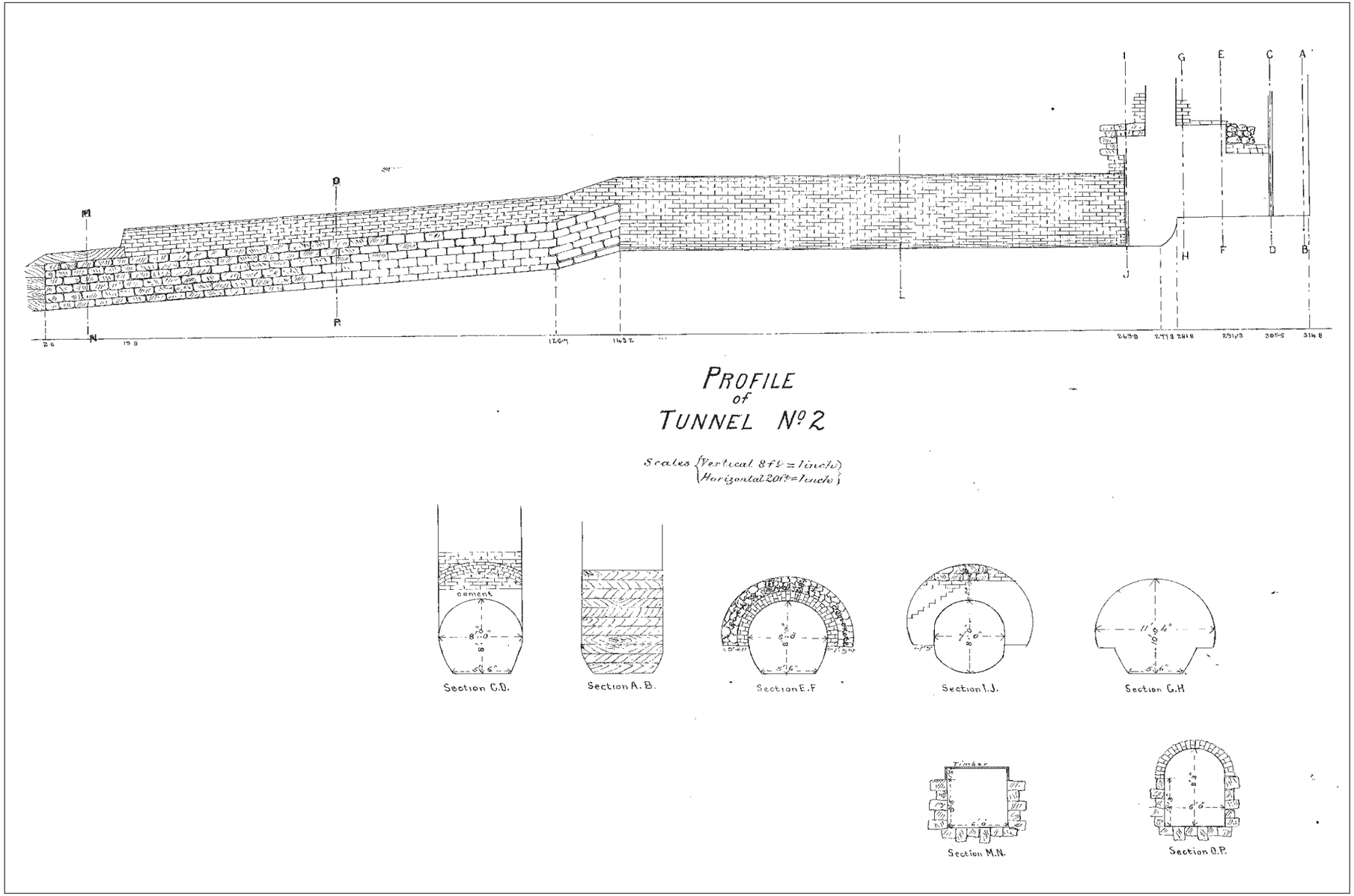


Sections, plans, and details of Spillway No. 3 Bridge and Weir, 1892
(Source: EBMUD)

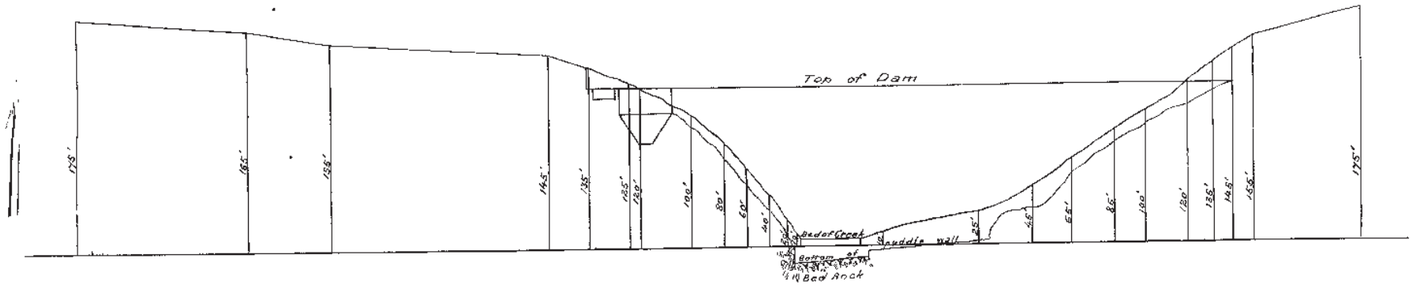


Sections of Spillway No. 1, 1892
(Source: EBMUD)

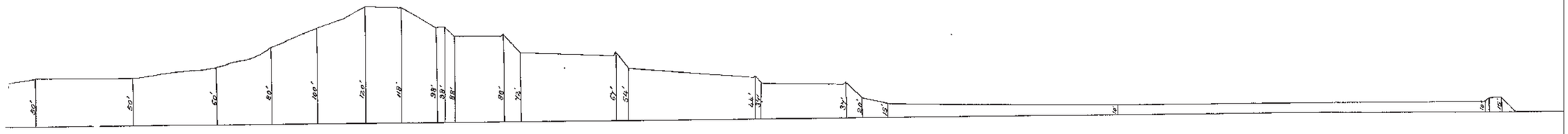
Site plan of Chabot Dam and associated features, date unknown but likely 1890s-1800s
(Source: EBMUD)



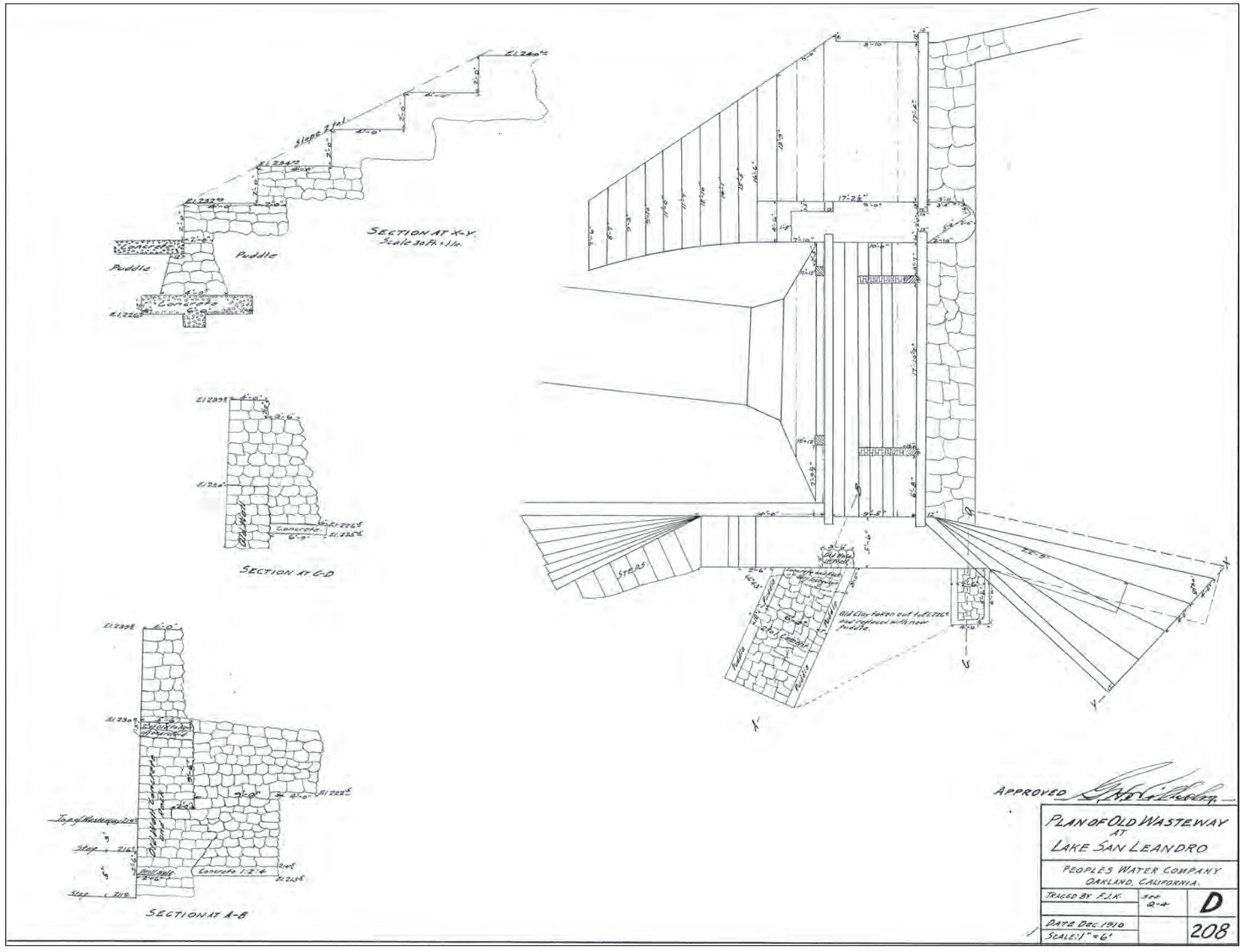
Tunnel No. 2 elevation and sections, date unknown but likely 1890s-1800s
(Source: EBMUD)



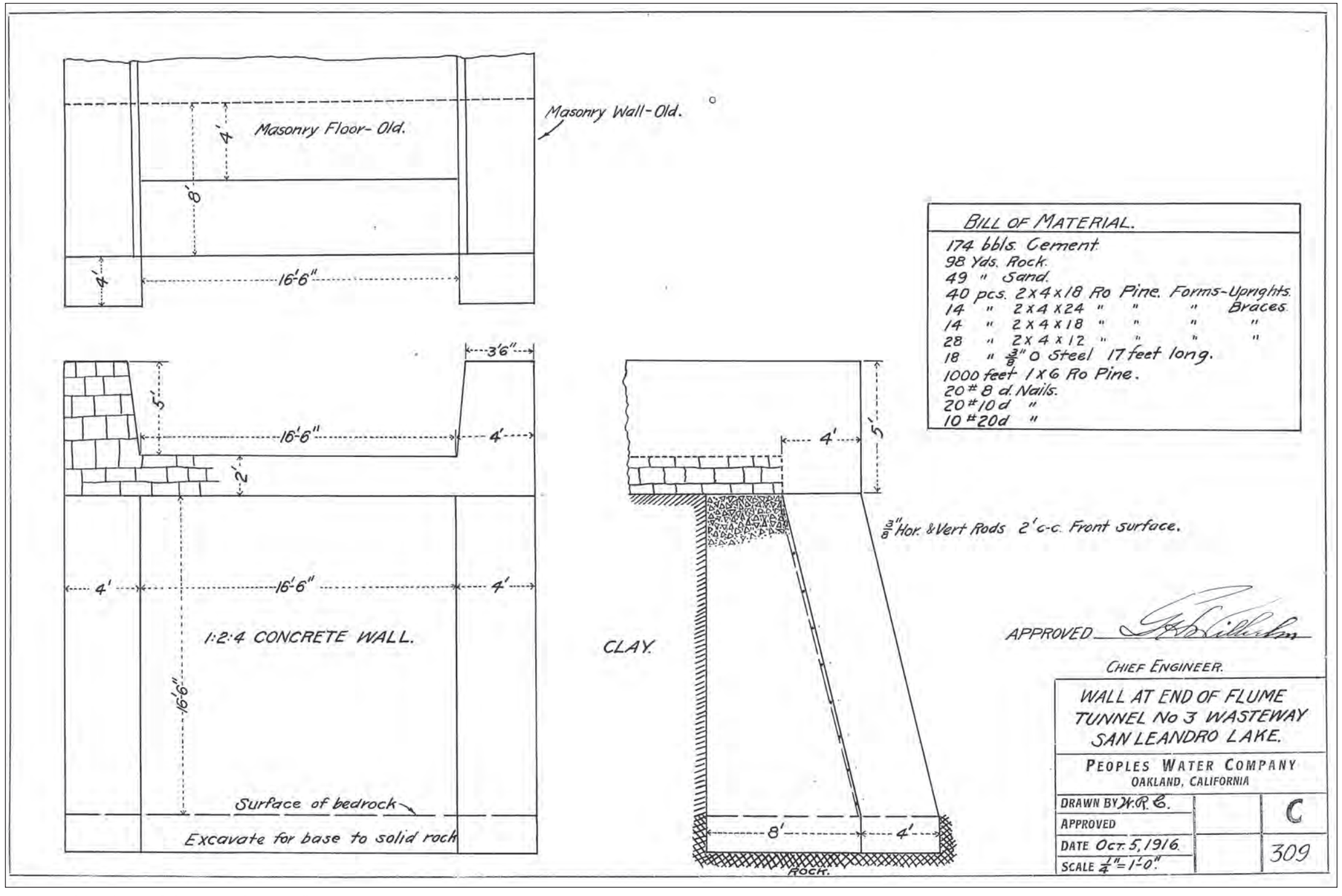
Section of Dam



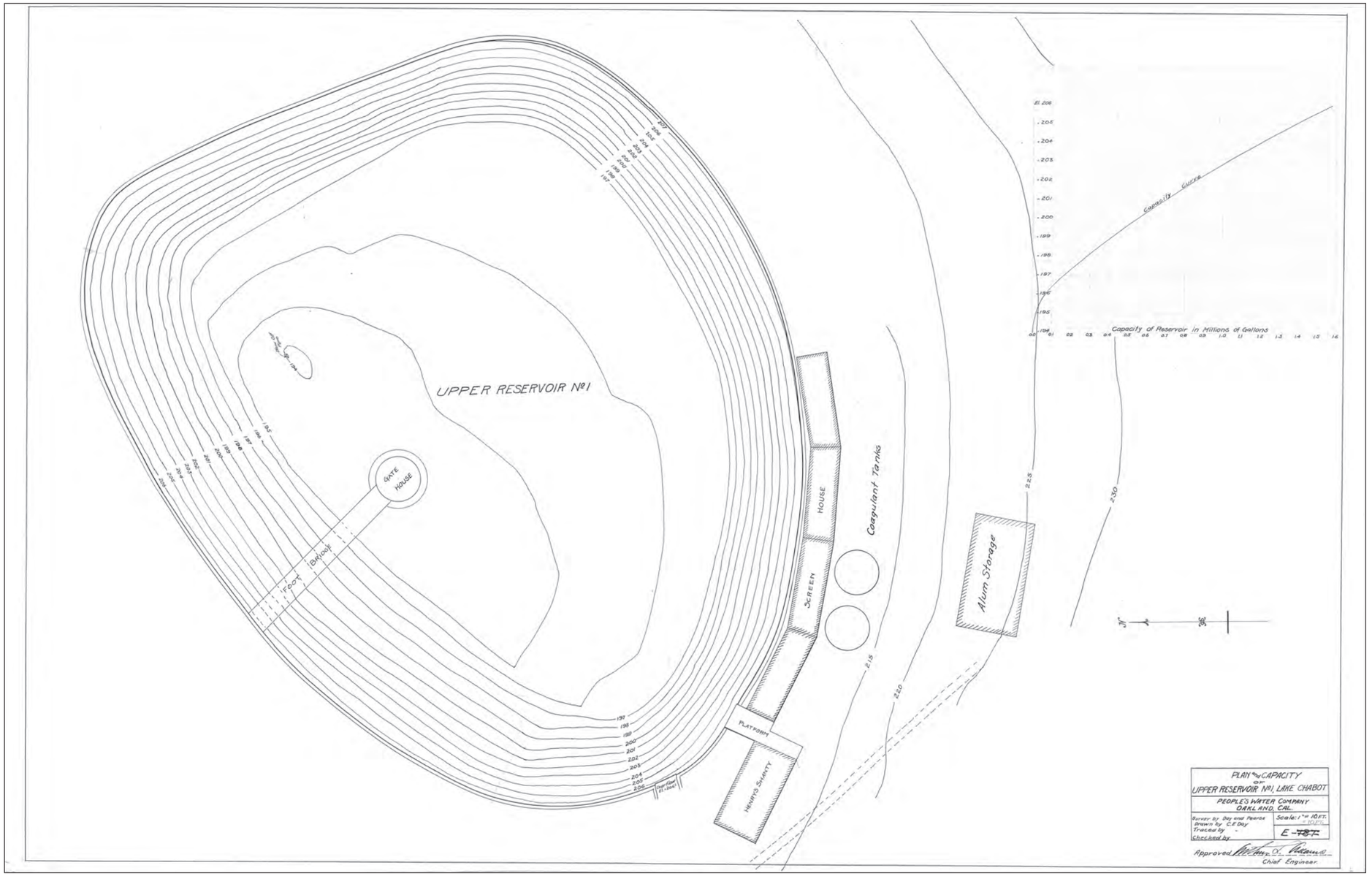
Sections of the Chabot Dam, date unknown but likely 1890s-1800s
(Source: EBMUD)



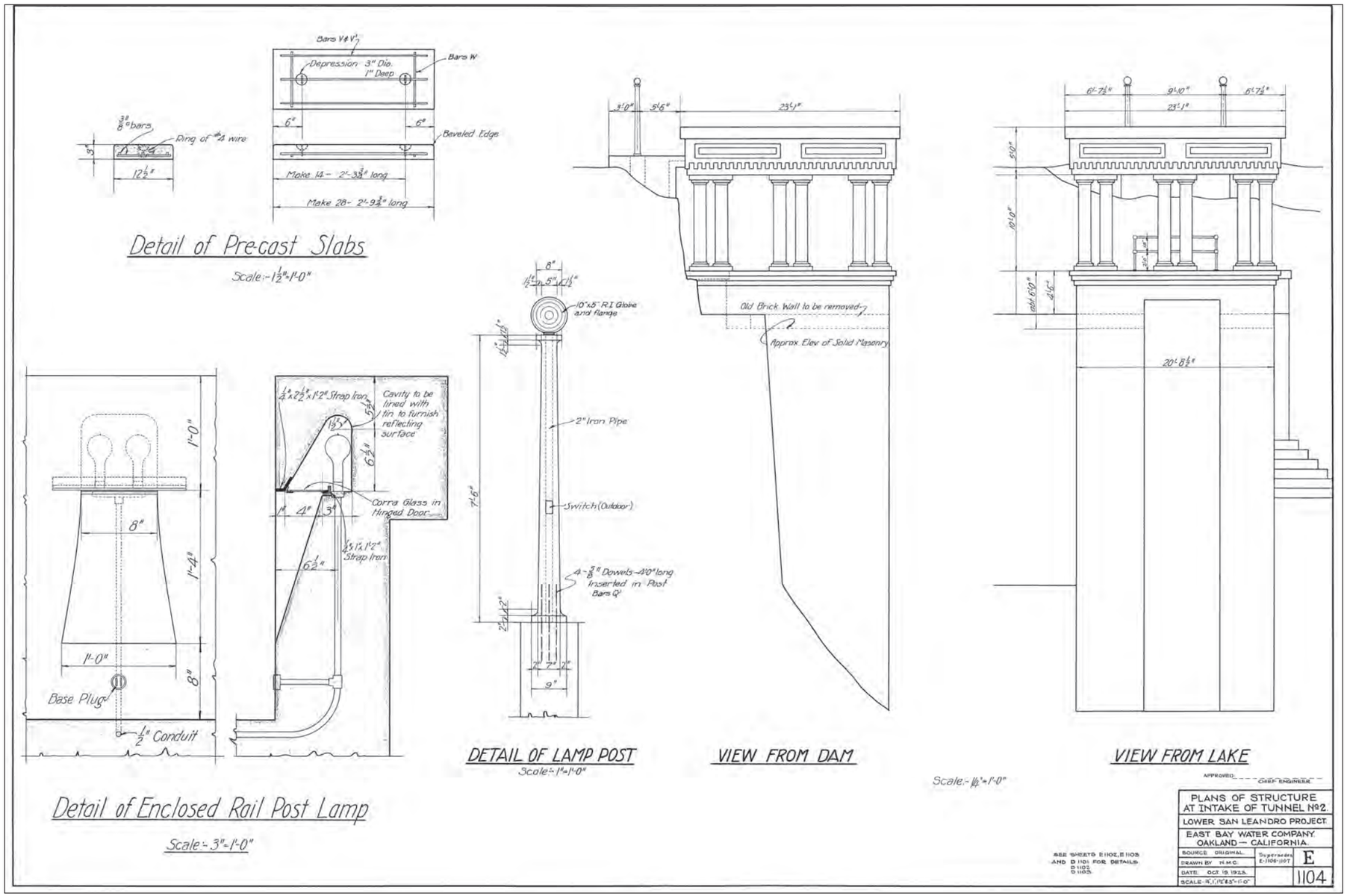
Plans and sections of Spillway No. 1, 1910
(Source: EBMUD)



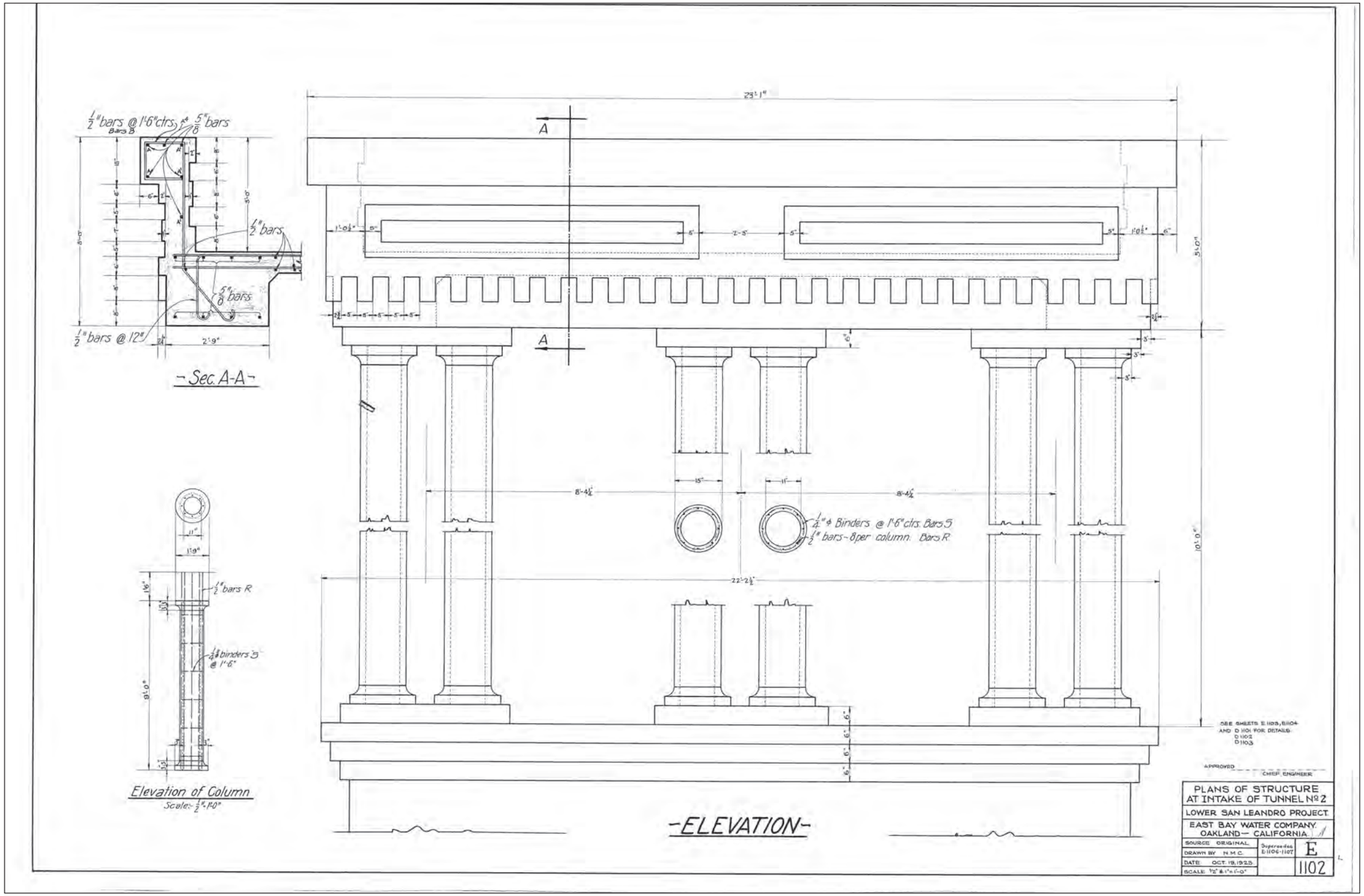
Plans and sections of the Tunnel No. 3 flume, 1916
(Source: EBMUD)



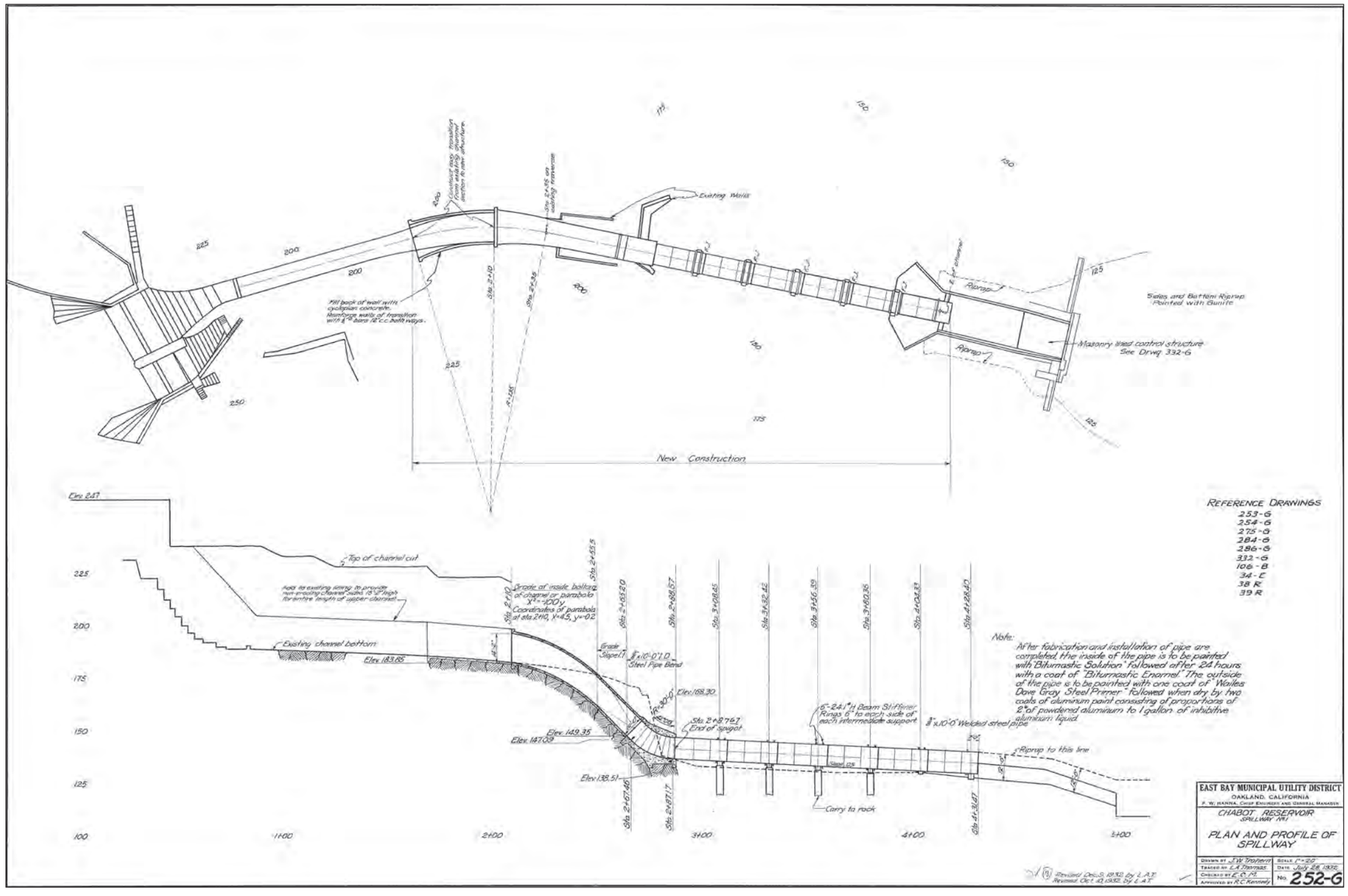
Plan of the upper filtering basin, circa 1910s
(Source: EBMUD)



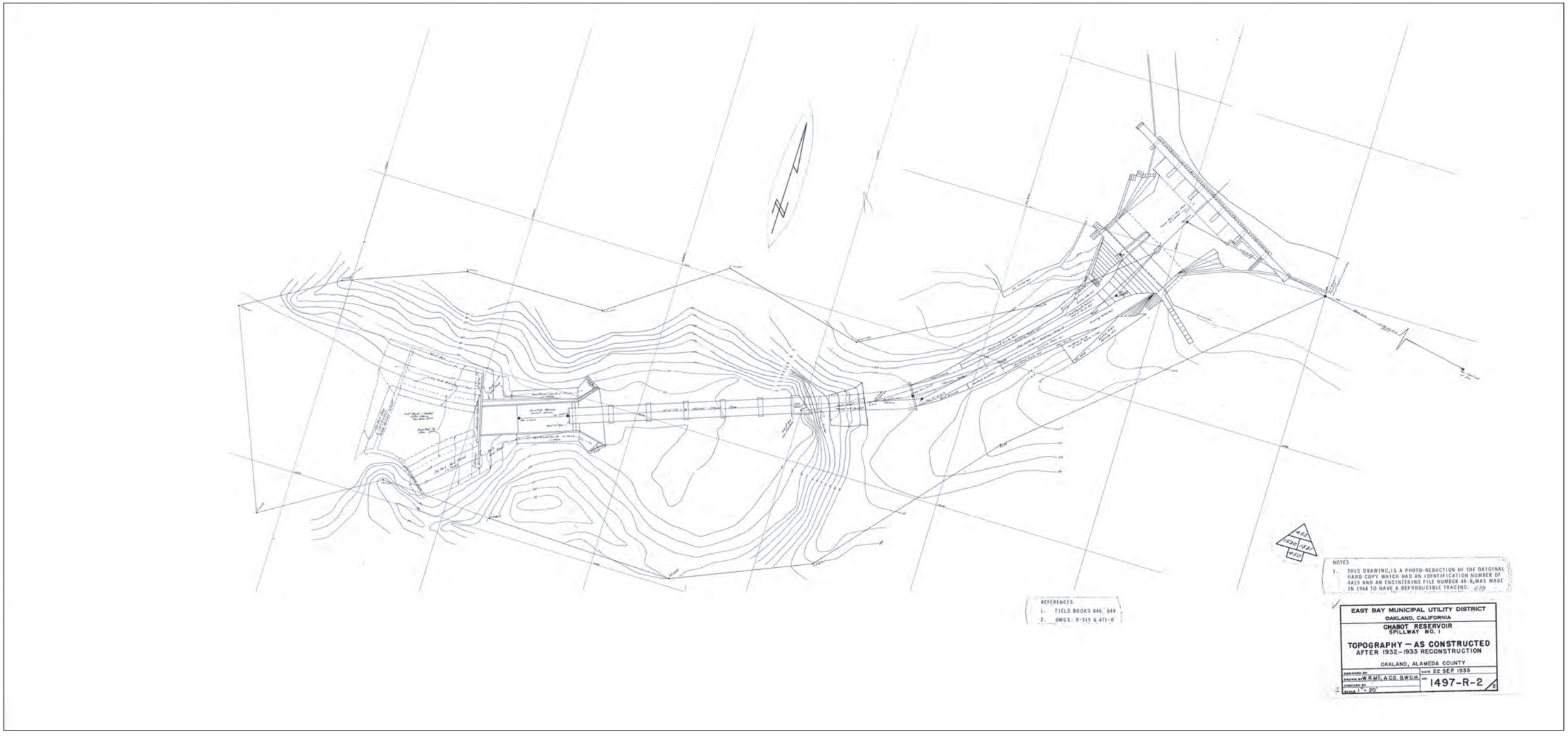
Sections and details of Tunnel No. 2 Intake Tower, 1923
(Source: EBMUD)



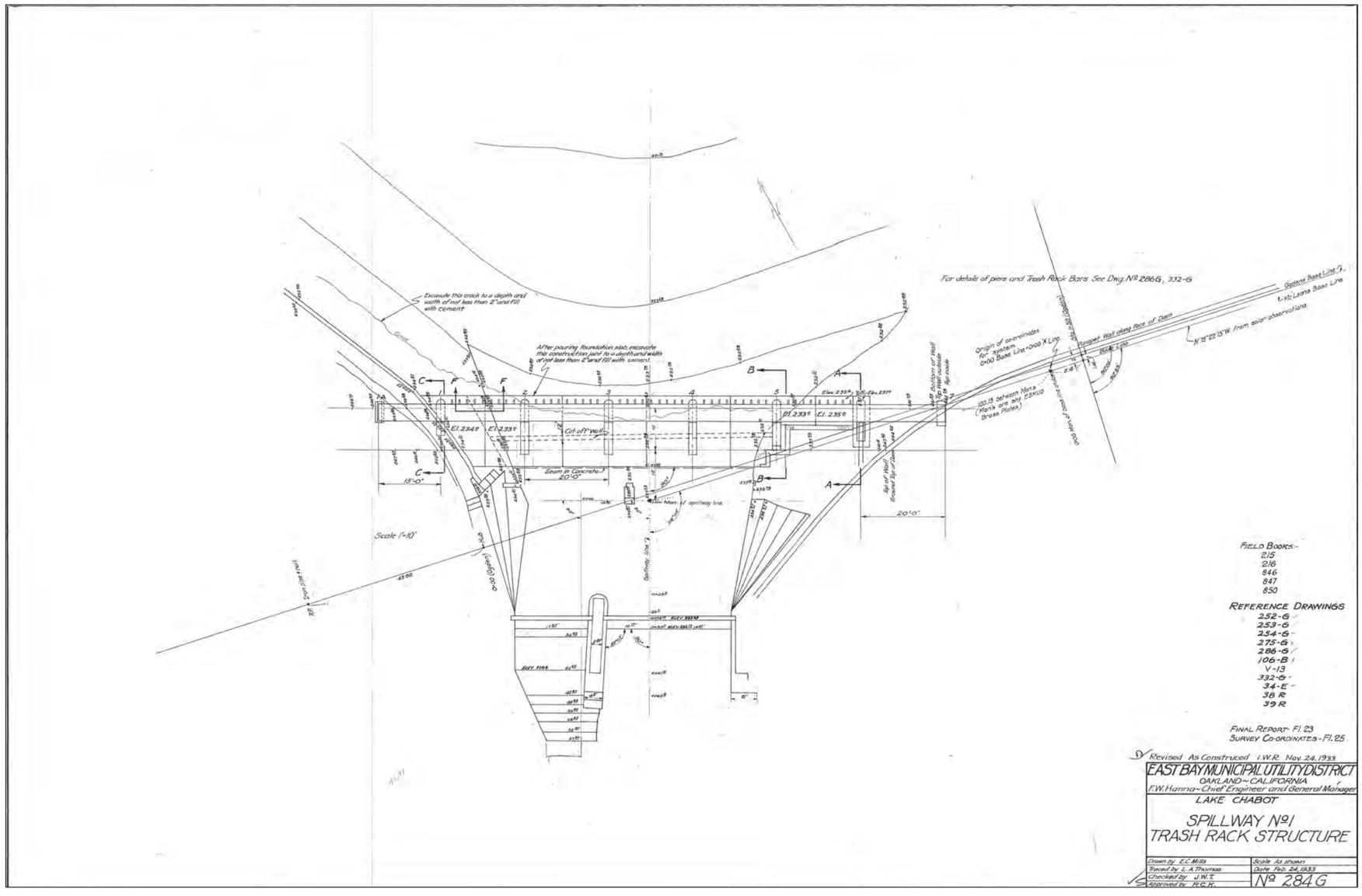
Elevation and details of Tunnel No. 2 Intake Tower, 1923
(Source: EBMUD)



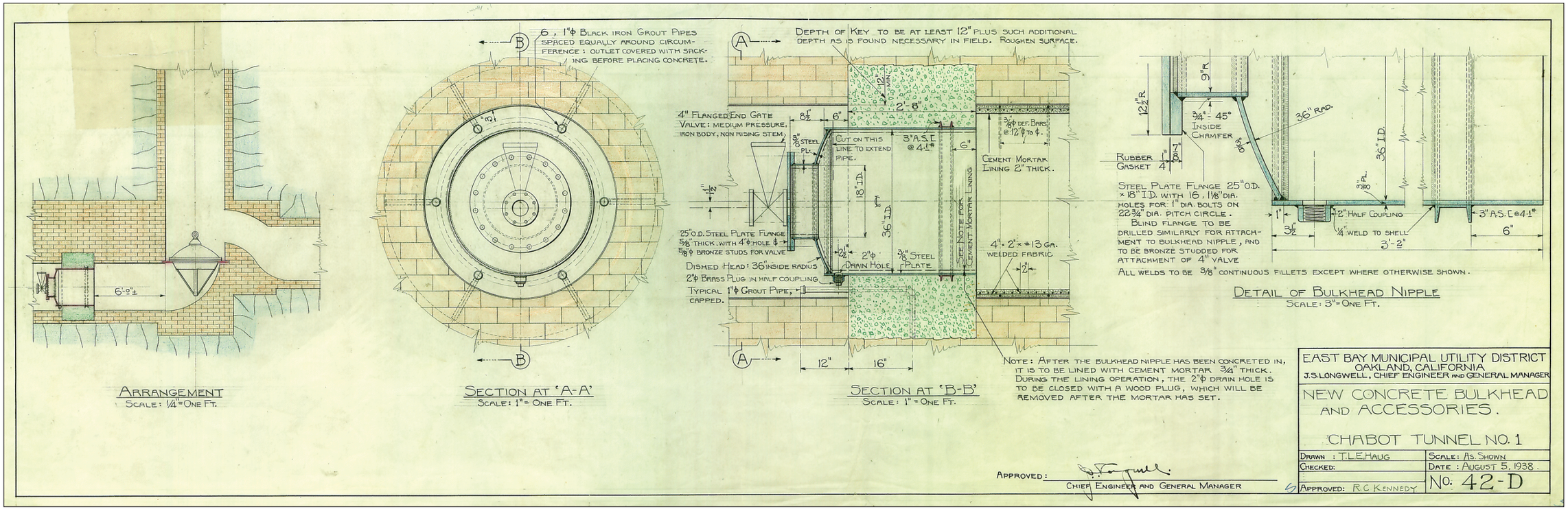
Plan and profile of Spillway No. 1, 1932
(Source: EBMUD)



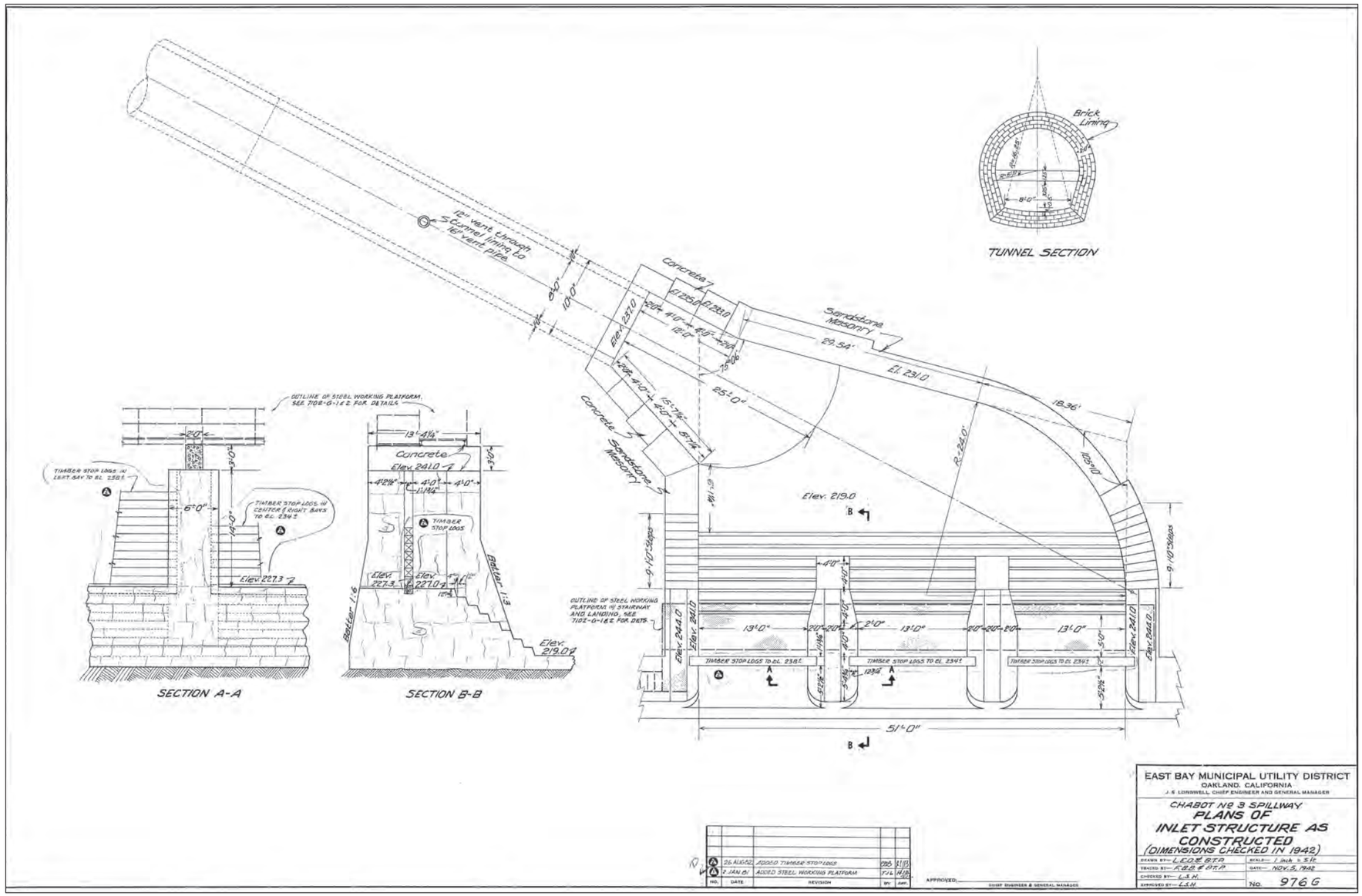
Plan of Spillway No. 1 and surrounding topography, 1933
(Source: EBMUD)



Plan of Spillway No. 1 trashrack structure, 1933
(Source: EBMUD)



Sections and details of concrete bulkhead at Tunnel No. 1, 1938
(Source: EBMUD)



Plan and sections of Spillway No. 3, 1942
(Source: EBMUD)

Appendix E
Project Area Photographs

Aerial photograph of Chabot Dam and Reservoir, looking west
(Source: EBMUD)

Aerial photograph of Chabot Dam and Reservoir, looking west
(Source: EBMUD)

Upstream face of the Chabot Dam at center, with the Spillway No. 1 at right, looking south
(Source: AECOM 2013)

Downstream face of Chabot Dam, looking north
(Source: AECOM 2013)

Chabot Reservoir, looking south
(Source: AECOM 2013)

Chabot Spillway No. 1 at center left and Tunnel No. 2 Intake Tower at right, looking west
(Source: AECOM 2013)

Tunnel No. 2 Intake Tower, looking northwest
(Source: AECOM 2013)

Tunnel No. 2 Intake Tower, looking southeast
(Source: AECOM 2013)

Tunnel No. 2 Intake Tower interior, looking northeast
(Source: AECOM 2013)

Tunnel No. 2 inlet, looking through floor grate in Tunnel No. 2 Intake Tower
(Source: AECOM 2013)

Tunnel No. 2 Intake Tower roof detail, looking northeast
(Source: AECOM 2013)

Tunnel No. 3 Spillway control weir, looking northeast
(Source: AECOM 2013)

Tunnel No. 3 inlet, looking northwest
(Source: AECOM 2013)

Tunnel No. 3 outlet, looking southeast
(Source: AECOM 2013)

Tunnel No. 3 wasteway chute, looking west
(Source: AECOM 2013)

Tunnel No. 3 wasteway chute spillway where it meets San Leandro Creek, looking northeast
(Source: AECOM 2013)

Tunnel No. 1 control tower base on the ridge northwest of Chabot Dam, looking north
(Source: AECOM 2013)

Spillway No. 1 at right, looking west
(Source: AECOM 2013)

Spillway No. 1 at center and Chabot Dam at right, looking northeast
(Source: AECOM 2013)

Base of downstream face of Chabot Dam, looking west toward San Leandro Creek
(Source: AECOM 2013)

San Leandro Creek, looking west
(Source: EBMUD)

Lower filtration basin, looking south
(Source: AECOM 2013)

Hyatt filters, looking northwest
(Source: AECOM 2013)

Sunken basin lined with rubble-rock walls on hill northwest of Chabot Dam
(Source: AECOM 2013)

Sunken basin lined with rubble-rock walls on hill northwest of Chabot Dam
(Source: AECOM 2013)

Brick tank on top of hillside northwest of Chabot Dam
(Source: AECOM 2013)

APPENDIX E-2

NAHC Consultation Letters

AECOM
300 California Street
Suite 400
San Francisco, CA 94104
www.aecom.com

415 796 8100 tel
415 796 8200 fax

July 30, 2013

Muwekma Ohlone Indian Tribe of the SF Bay Area
Rosemary Cambra, Chairperson
P.O. Box 360791
Milpitas, CA 95036

Subject: Chabot Dam Seismic Upgrade

Ms. Cambra:

AECOM is conducting an Environmental Impact Report for the above-referenced project. Chabot Dam is located at the end of Estudillo Avenue, and on the west end of Chabot Lake (Chabot Reservoir), California and is delineated on the enclosed map.

The proposed project includes improvement of the embankment soils on the downstream side of Chabot Dam to withstand shaking generated by the maximum credible earthquake on the Hayward Fault without significant strength loss, to limit permanent deformation or settlement at the dam crest to acceptable levels, to prevent damage to the outlet works from the design level earthquake, and to continue reservoir and outlet works operation during construction.

We are pleased to bring this activity to your attention and would appreciate any information you can provide regarding prehistoric, historic, or ethnographic Native American land use. We are also interested in any contemporary Native American values that may be present near or within the project area.

If you have any questions or comments, please contact me at (415) 955-2892 or by mail, expressing your concerns at your earliest convenience. You may also contact me at kerry.boutte@aecom.com. I look forward to hearing from you in the near future.

Respectfully yours,

Kerry L. Boutte
Senior Archaeologist

Enclosure

AECOM
300 California Street
Suite 400
San Francisco, CA 94104
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415 796 8100 tel
415 796 8200 fax

July 30, 2013

Coastanoan Rumsen Carmel Tribe
Tony Cerda, Chairperson
240 E, 1st Street
Pomona, CA 91766

Subject: Chabot Dam Seismic Upgrade

Mr. Cerda:

AECOM is conducting an Environmental Impact Report for the above-referenced project. Chabot Dam is located at the end of Estudillo Avenue, and on the west end of Chabot Lake (Chabot Reservoir), California and is delineated on the enclosed map.

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Respectfully yours,

Kerry L. Boutte
Senior Archaeologist

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San Francisco, CA 94104
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415 796 8100 tel
415 796 8200 fax

July 30, 2013

Katherine Erolinda Perez
P.O. Box 717
Linden, CA 95236

Subject: Chabot Dam Seismic Upgrade

Ms. Erolinda Perez:

AECOM is conducting an Environmental Impact Report for the above-referenced project. Chabot Dam is located at the end of Estudillo Avenue, and on the west end of Chabot Lake (Chabot Reservoir), California and is delineated on the enclosed map.

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Senior Archaeologist

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AECOM
300 California Street
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San Francisco, CA 94104
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415 796 8100 tel
415 796 8200 fax

July 30, 2013

Amah/Matsun Tribal Band
Jean-Marie Feyling
19350 Hunter Court
Redding, CA 96003

Subject: Chabot Dam Seismic Upgrade

Ms. Feyling:

AECOM is conducting an Environmental Impact Report for the above-referenced project. Chabot Dam is located at the end of Estudillo Avenue, and on the west end of Chabot Lake (Chabot Reservoir), California and is delineated on the enclosed map.

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Kerry L. Boutte
Senior Archaeologist

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San Francisco, CA 94104
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415 796 8100 tel
415 796 8200 fax

July 30, 2013

The Ohlone Indian Tribe
Andrew Galvan
P.O. Box 3152
Fremont, CA 94539

Subject: Chabot Dam Seismic Upgrade

Mr. Galvan:

AECOM is conducting an Environmental Impact Report for the above-referenced project. Chabot Dam is located at the end of Estudillo Avenue, and on the west end of Chabot Lake (Chabot Reservoir), California and is delineated on the enclosed map.

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Senior Archaeologist

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San Francisco, CA 94104
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415 796 8100 tel
415 796 8200 fax

July 30, 2013

Trina Marine Ruano Family
Ramona Garibay, Representative
30940 Watkins Street
Union City, CA 94587

Subject: Chabot Dam Seismic Upgrade

Ms. Garibay:

AECOM is conducting an Environmental Impact Report for the above-referenced project. Chabot Dam is located at the end of Estudillo Avenue, and on the west end of Chabot Lake (Chabot Reservoir), California and is delineated on the enclosed map.

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Respectfully yours,

Kerry L. Boutte
Senior Archaeologist

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San Francisco, CA 94104
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415 796 8100 tel
415 796 8200 fax

July 30, 2013

Ms. Jakki Kehl
720 North 2nd Street
Patterson, CA 95363

Subject: Chabot Dam Seismic Upgrade

Ms. Kehl:

AECOM is conducting an Environmental Impact Report for the above-referenced project. Chabot Dam is located at the end of Estudillo Avenue, and on the west end of Chabot Lake (Chabot Reservoir), California and is delineated on the enclosed map.

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Senior Archaeologist

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415 796 8100 tel
415 796 8200 fax

July 30, 2013

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayers, Chairperson
P.O. Box 28
Hollister, CA 95024

Subject: Chabot Dam Seismic Upgrade

Ms. Sayers:

AECOM is conducting an Environmental Impact Report for the above-referenced project. Chabot Dam is located at the end of Estudillo Avenue, and on the west end of Chabot Lake (Chabot Reservoir), California and is delineated on the enclosed map.

The proposed project includes improvement of the embankment soils on the downstream side of Chabot Dam to withstand shaking generated by the maximum credible earthquake on the Hayward Fault without significant strength loss, to limit permanent deformation or settlement at the dam crest to acceptable levels, to prevent damage to the outlet works from the design level earthquake, and to continue reservoir and outlet works operation during construction.

We are pleased to bring this activity to your attention and would appreciate any information you can provide regarding prehistoric, historic, or ethnographic Native American land use. We are also interested in any contemporary Native American values that may be present near or within the project area.

If you have any questions or comments, please contact me at (415) 955-2892 or by mail, expressing your concerns at your earliest convenience. You may also contact me at kerry.boutte@aecom.com. I look forward to hearing from you in the near future.

Respectfully yours,

Kerry L. Boutte
Senior Archaeologist

Enclosure

AECOM
300 California Street
Suite 400
San Francisco, CA 94104
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415 796 8100 tel
415 796 8200 fax

July 30, 2013

Amah/Mutsun Tribal Band
Irene Zwierlein, Chairperson
789 Canada Road
Woodside, CA 94062

Subject: Chabot Dam Seismic Upgrade

Ms. Zwierlein:

AECOM is conducting an Environmental Impact Report for the above-referenced project. Chabot Dam is located at the end of Estudillo Avenue, and on the west end of Chabot Lake (Chabot Reservoir), California and is delineated on the enclosed map.

The proposed project includes improvement of the embankment soils on the downstream side of Chabot Dam to withstand shaking generated by the maximum credible earthquake on the Hayward Fault without significant strength loss, to limit permanent deformation or settlement at the dam crest to acceptable levels, to prevent damage to the outlet works from the design level earthquake, and to continue reservoir and outlet works operation during construction.

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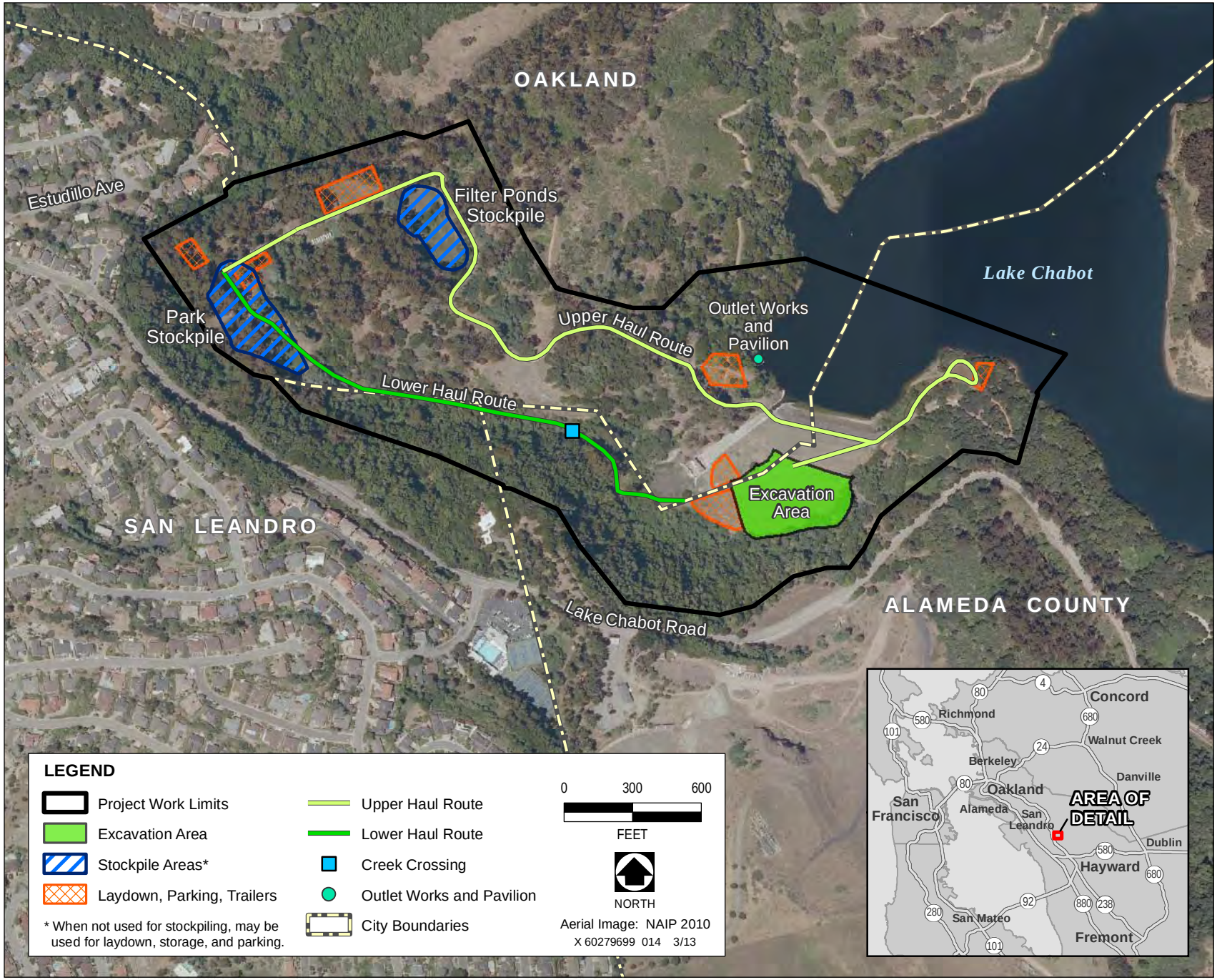


Source: AECOM 2013, Terra Engineers 2013, EBMUD 2013

General Site Plan

DRAFT - Not for Public Review

APPENDIX F-1

Trip Generation

Table 1 - Construction Vehicle Trip Details by Phase

OUTLET WORK

Phase	Activity	From	To	Duration (Week)	Eqipment Delivery # of Veh	IB	OB	Assumption	Material Delivery # of Veh	IB	OB	Assumption	Hauling # of Veh	IB	OB	Assumption	Worker # of Veh	IB	OB	Assumption	Vehicle Trips IB	OB	1-Way	RT
1	Mobilization	week 1	week 2	2	9	9	0	1 work skiff; 2 specialized cranes; 1 loader; 1 dozer; 3 trucks onsite; 1 barge; (IB@Start)	20	20	20	Table 2-8 in PD	0	0	0	N/A	23	23	23	18 equipment drivers + 5 staff	52	43	95	48
2	Demolition	week 3	week 4	2	4	2	2	2 specialized cranes (OB@End); 2 cranes (IB@End)	0	0	0	None	4	2	2	2 dump trucks (IB@Start/OB@End)	27	27	27	22 equipment drivers + 5 staff	31	31	62	31
3	Construct Outlet Works Upgrade	week 5	week 13	9	12	8	12	2 air compressor ; 1 generator; 1 winch; 2 welding set; 2 dumptruck (IB@Start/OB@End) 1 work skiff; 1 truck 1 loader; 1 dozer; (OB@End)	10	10	10	Table 2-8 in PD	0	0	0	N/A	27	27	27	22 equipment drivers + 5 staff	45	49	94	47
4	Demobilization	week 14	week 15	2	5	0	5	2 cranes; 2 trucks onsite; 1 barge (OB@End)	20	20	20	Table 2-8 in PD	0	0	0	N/A	15	15	15	10 equipment drivers + 5 staff	35	40	75	38
	Total			15		19	19			50	50			2	2									

PD=Project Description; IB=Inbound Trips; OB=Outbound Trips

DEWATERING FOR CONVENTIONAL EARTHWORK

Phase	Activity			Duration (Week)	Eqipment Delivery # of Veh	IB	OB	Assumption	Material Delivery # of Veh	IB	OB	Assumption	Hauling # of Veh	IB	OB	Assumption	Worker # of Veh	IB	OB	Assumption	Vehicle Trips IB	OB	1-Way	RT
1	Mobilization	week 1	week 2	2	4	4	0	1 bulldozer; 1 drill rig; 2 support vehicles (IB@Start)	0	0	0	N/A	0	0	0	N/A	8	8	8	8 equipment drivers (Daily RT)	12	8	20	10
2	Installation	week 3	week 10	8	0	0	0	N/A	1	1	1	1 truck	0	0	0	N/A	8	8	8	8 equipment drivers (Daily RT)	9	9	18	9
3	Operation	week 11	week 40	30	2	2	2	2 generators (IB@Start/OB@End)	1	1	1	1 fuel tank truck (Daily RT)	0	0	0	N/A	1	2	2	3 workers/shifts (Daily RT)	5	5	10	5
4	Demobilization	week 41	week 42	2	4	0	4	1 bulldozer; 1 drill rig; 2 support vehicles (OB@End)	0	0	0	N/A	0	0	0	N/A	4	4	4	4 workers (Daily RT)	4	8	12	6
	Total			42		6	6			2	2							22	22					

IB@Start=Inbound at the start of phase; OB@End=Outbound at the end of phase; RT=round trip

CONVENTIONAL EARTHWORK

Phase	Activity		From	To	Duration (Week)	Eqipment Delivery # of Veh	IB	OB	Assumption	Material Delivery # of Veh	IB	OB	Assumption	Hauling # of Veh	IB	OB	Assumption	Worker # of Veh	IB	OB	Assumption	Vehicle Trips IB	OB	1-Way	RT
1	Mobilization		week 1	week 2	2	4	4	0	1 water truck; 3 trailers (IB@Start)	0	0	0	N/A	0	0	0	N/A	28	28	28	8 equipment drivers + 20 admin staff (Daily RT)	32	28	60	30
2	Preparation of Haul Route(s) and Stockpile Areas	Lower HR	week 3	week 6	4	8	8	8	4 tree trimming veh; 1 300-HP bulldozer; 1 compactor; 2 wood grinder/chipper (IB@Start/OB@End)	2	2	2	2 stone delivery trucks (Daily RT)	0	0	0	N/A	36	36	36	16 equipment drivers + 20 admin staff (Daily RT)	46	46	92	46
		Upper HR								1	1	1	1 stone delivery trucks (Daily RT)									45	45	90	45
3	Excavation	Lower HR	week 7	week 22	16	5	5	5	2 300-HP bulldozer; 2 5CY hydraulic excavator; 3 5CY rubber tire loaders (IB@Start/OB@End)	2	2	2	2 fuel tank truck (Daily RT)	5	11	11	Number of trucks used (IB@Start/OB@End)	41	41	41	10 equipment drivers + 11 truck drivers + 20 admin staff (Daily RT)	59	59	118	59
		Upper HR				7	5	3	2 300-HP bulldozer; (IB@Start) 2 5CY hydraulic excavator; 1 5CY rubber tire loaders (IB@Start/OB@End)					11	29	29	Number of trucks used (IB@Start/OB@End)	63	63	63	14 equipment drivers + 29 truck drivers + 20 admin staff (Daily RT)	99	97	196	98
4	Site Preparation for Filling		week 23	week 24	2	3	3	0	3 compactor; (IB@Start)	20	20	20	20 filter drain (Daily RT)	0	0	0	N/A	20	20	20	20 admin staff (Daily RT)	43	40	83	42
5	Placement and Compaction of Fill	Lower HR	week 25	week 34	10	5	0	4	2 300-HR bulldozer; 2 compactor; (OB@End)	22	22	22	2 fuel tank truck; 20 filter drain (Daily RT)	7	7	7	Number of trucks used (IB@Start/OB@End)	37	37	37	10 equipment drivers + 7 truck drivers + 20 admin staff (Daily RT)	66	70	136	68
		Upper HR								37	37	37	2 fuel tank truck; 35 filter drain (Daily RT)	18	18	18	Number of trucks used (IB@Start/OB@End)	48	48	48	10 equipment drivers + 18 truck drivers + 20 admin staff (Daily RT)	103	107	210	105
6	Site Finishing and Restoration of Haul Roads and Stockpiles		week 35	week 38	4	5	4	5	1 5CY loader; 3 10CY trucks; (IB@Start/OB@End) 1 compactor	25	25	25	25 10CY trucks (Daily RT)	0	0	0	N/A	30	30	30	10 equipment drivers + 20 admin staff (Daily RT)	59	60	119	60
7	Demobilization		week 39	week 40	2	4	0	4	1 water truck; 3 trailers (OB@End)	0	0	0	N/A	0	0	0	N	28	28	28	8 equipment drivers + 20 admin staff (Daily RT)	28	32	60	30
	Total				40		29	29			109	109			65	65			331	331					

HP=Horse Power; HR=Haul Route

CDSM (DAY & NIGHT SHIFTS)

Phase	Activity		From	To	Duration (Week)	Eqipment Delivery # of Veh	IB	OB	Assumption	Material Delivery # of Veh	IB	OB	Assumption	Hauling # of Veh	IB	OB	Assumption	Worker # of Veh	IB	OB	Assumption	Vehicle Trips IB	OB	1-Way	RT
1	Mobilization		week 1	week 2	2	4	4	0	1 water truck; 3 trailers (IB@Start)	0	0	0	N/A	0	0	0	N/A	28	28	28	8 equipment drivers + 20 admin staff (Daily RT)	32	28	60	30
2	Preparation of Haul Route(s) and Stockpile Areas	Lower HR	week 3	week 4	2	8	8	8	4 tree trimming veh; 1 300-HP bulldozer; 1 compactor; 2 wood grinder/chipper (IB@Start/OB@End)	2	2	2	2 stone delivery trucks (Daily RT)	0	0	0	N/A	36	36	36	16 equipment drivers + 20 admin staff (Daily RT)	46	46	92	46
		Upper HR								1	1	1	1 stone delivery trucks (Daily RT)									45	45	90	45
3	Excavation of CDSM Working Platform	Lower HR	week 5	week 5	1	5	5	2	2 300-HP bulldozer; (IB@Start/OB@End) 3 5CY rubber tire loaders (IB@Start)	2	2	2	2 fuel tank truck (Daily RT)	3	3	3	Number of trucks used (IB@Start/OB@End)	33	33	33	10 equipment drivers + 3 truck drivers + 20 admin staff (Daily RT)	43	40	83	42
		Upper HR												8	8	8	Number of trucks used (IB@Start/OB@End)	38	38	38	10 equipment drivers + 8 truck drivers + 20 admin staff (Daily RT)	53	50	103	52
4	Setup of Two CDSM Rig	Lower HR	week 6	week 7	2	7	7	3	2 big cranes; 2 trailers (IB@Start); 1 small crane; 2 grout plants (IB@Start/OB@End)	10	10	10	10 cement delivery trucks	0	0	0	N/A	36	36	36	12 equipment drivers + 20 admin staff (Daily RT)	53	49	102	51
		Upper HR								20	20	20	20 cement delivery trucks									63	59	122	61
5	CDSM Construction using Two Rigs (a)	Lower HR	week 8	week 15	8	5	0	5	3 5CY rubber tire loader; 2 trailers (OB@End)	10	10	10	10 cement delivery trucks	0	0	0	N/A	36	36	36	12 equipment drivers + 20 admin staff (Daily RT)	46	51	97	49
		Upper HR								20	20	20	20 cement delivery trucks									56	61	117	59
6	Wait for Results of 14-day Strength Test Results		week 16	week 17	2	0	0	0	N/A	0	0	0	N/A	0	0	0	N/A	20	20	20	20 admin staff (Daily RT)	20	20	40	20
7	Tear Down of Two CDSM Rigs	Lower HR	week 18	week 18	1	4	2	4	2 big cranes (OB@End); 2 low-boys (IB@Start/OB@End)	20	20	20	15-20 filler/drain material delivery	0	0	0	N/A	28	28	28	8 equipment drivers + 20 admin staff (Daily RT)	50	52	102	51
		Upper HR								35	35	35	25-35 filler/drain material delivery									65	67	132	66
8	Placement and Compaction of Fill	Lower HR	week 19	week 22	4	5	5	5	2 300-HP bulldozer; 3 5CY rubber tire loaders (IB@Start/OB@End)	20	20	20	15-20 filler/drain material delivery	5	5	5	Number of trucks used (IB@Start/OB@End)	32	32	32	10 equipment drivers + 2 truck drivers + 20 admin staff (Daily RT)	62	62	124	62
		Upper HR								35	35	35	25-35 filler/drain material delivery	12	12	12	Number of trucks used (IB@Start/OB@End)	35	35	35	10 equipment drivers + 5 truck drivers + 20 admin staff (Daily RT)	87	87	174	87
9	Site Finishing and Restoration of Haul Roads and Stockpiles		week 23	week 24	2	5	5	5	1 5CY loader; 3 10CY trucks; 1 compactor (IB@Start/OB@End)	25	25	25	25 10CY trucks (Daily RT)	0	0	0	N/A	30	30	30	10 equipment drivers + 20 admin staff (Daily RT)	60	60	120	60
10	Demobilization		week 25	week 26	2	4	0	4	1 water truck; 3 trailers (OB@End)	0	0	0	N/A	0	0	0	N	28	28	28	8 equipment drivers + 20 admin staff (Daily RT)	28	32	60	30
	Total				26		36	36																

(a) Notes about the CDSM Construction

The number of worker vehicles shown in the table is day shift only. Daily number of worker vehicles during the CDSM Construction Activity over Day and Night Shifts would be 72 vehicles

Table 2 - Daily External Trips by Scenario

Alternative	Description/ Week	Week																																																									
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
CDSM OPTIONS																																																													
Alternatives 8A or 8C	Outlet Work	Mobilize		Demolition		Construct Outlet Works Upgrades									Demobilize																																														
	CDSM Construction on Day and Night Shifts	Mobilize		Prep HR		Excav	Setup Rigs		CDSM Construction								Verification		Tear	Placement/Compaction				Site Finishin		Demobilize																																			
	Outlet Work	Mobilize		Demolition		Construct Outlet Works Upgrades									Demobilize																																														
	CDSM Construction on Day Shift Only	Mobilize		Prep HR		Excav	Setup Rigs		CDSM Construction													Verification		Tear	Placement/Compaction				Site Finishin		Demobilize																														
	Outlet Works Prior to CDSM Construction (Day&Night Shifts	Mobilize		Demolition		Construct Outlet Works Upgrades									Demobilize		Float btw Outlet and CDSM					Mobilize		Prep HR		Excav	Setup Rigs		CDSM Construction								Verification		Tear	nt/Compaction				Site Finishing		Demobilize															
	Outlet Works Prior to CDSM Construction (Day Shift Only	Mobilize		Demolition		Construct Outlet Works Upgrades									Demobilize		Float btw Outlet and CDS					Mobilize		Prep HR		Excav	Setup Rigs		CDSM Construction													Verification		Tear	nt/Compaction				Site Finishing		Demobilize										
CONVENTIONAL EARTHWORK OPTION																																																													
Alternatives 1A, 1B, or 1C	Dewatering									Mobilize		Operation - Dewatering																																				Demobilize												
	Outlet Works Prior to Conventional Earth Worl	Mobilize		Demolition		Construct Outlet Works Upgrades									Demobilize		Float btw Outlet and CDS					Mobilization		Prepare Haul Routes				Excavation																Site Prep		Placement and Compaction of Fill										Site Finishing				Demobilize	

Source: Project Description Tables 2-1, 2-3, and 2-6. Detailed construction schedule obtained from Constructability Review report.

Alternative	Description/ Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
CDSM OPTIONS																																																													
Alternatives 8A or 8C	Outlet Work	Mobilize		Demolition		Construct Outlet Works Upgrades									Demobilize																																														
	Trips	48	48	31	31	47	47	47	47	47	47	47	47	47	38	38																																													
	CDSM Construction on Day and Night Shifts	Mobilize		Prep HR		Excav	Setup Rigs		CDSM Construction								Verification		Tear	nt/Compaction				Site Finishing		Demobilize																																			
	Trips	30	30	46	46	52	61		95	95	95	95	95	95	95	95	20	20	66	87	87	87	87	60	60	30	30																																		
	CDSM with Outlet Work D/N Shifts	78	78	77	77	99	108	108	142	142	142	142	142	142	133	133	20	20	66	87	87	87	87	60	60	30	30																																		
	Outlet Work	Mobilize		Demolition		Construct Outlet Works Upgrades									Demobilize																																														
	Trips	48	48	31	31	47	47	47	47	47	47	47	47	47	38	38																																													
	CDSM Construction on Day Shift Only	Mobilize		Prep HR		Excav	Setup Rigs		CDSM Construction													Verification		Tear	nt/Compaction				Site Finishing		Demobilize																														
	Trips	30	30	46	46	52	61	61	59	59	59	59	59	59	59	59	59	59	59	59	59	20	20	66	87	87	87	87	60	60	30	30																													
	CDSM with Outlet Work Day Shift Only	78	78	77	77	99	108	108	106	106	106	97	97	106	97	97	59	59	59	59	59	20	20	66	87	87	87	87	60	60	30	30																													
	Outlet Works Prior to CDSM Construction (Day&Night Shifts)	Mobilize		Demolition		Construct Outlet Works Upgrades									Demobilize		Float btw Outlet and CDSM					Mobilize		Prep HR		Excav	Setup Rigs		CDSM Construction								Verification		Tear	nt/Compaction				Site Finishing		Demobilize															
	CDSM after Outlet Work D/N Shifts	48	48	31	31	47	47	47	47	47	47	47	47	47	38	38	0	0	0	0	0	30	30	46	46	52	61	61	95	95	95	95	95	95	95	95	20	20	66	87	87	87	87	60	60	30	30														
	Outlet Works Prior to CDSM Construction (Day Shift Only	Mobilize		Demolition		Construct Outlet Works Upgrades									Demobilize		Float btw Outlet and CDS					Mobilize		Prep HR		Excav	Setup Rigs		CDSM Construction													Verification		Tear	nt/Compaction				Site Finishing		Demobilize										
	CDSM after Outlet Work Day Shift Only	48	48	31	31	47	47	47	47	47	47	47	47	47	38	38	0	0	0	0	0	30	30	46	46	52	61	61	59	59	59	59	59	59	59	59	59	59	59	59	59	20	20	66	87	87	87	87	60	60	30	30									
CONVENTIONAL EARTHWORK OPTION																																																													
Alternatives 1A, 1B, or 1C	Dewatering												Mobilize		Installation								Operation - Dewatering																											Demobilize											
	Trips												10	10	9	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6	6										
	Outlet Works Prior to Conventional Earth Worl	Mobilize		Demolition		Construct Outlet Works Upgrades									Demobilize		Float btw Outlet and CDS					Mobilization		Prepare Haul Routes				Excavation																Site Prep		Placement and Compaction of Fill										Site Finishing				Demobilize	
	Trips	48	48	31	31	47	47	47	47	47	47	47	47	47	38	38	0	0	0	0	0	30	30	46	46	46	46	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	42	42	105	105	105	105	105	105	105	105	105	105	60	60	60	60	30	30
	Conventional Earthwork After Outlet Worl	48	48	31	31	47	47	47	47	57	57	56	57	57	47	47	9	9	9	9	9	35	35	51	51	51	51	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	47	47	110	110	110	111	111	105	105	105	105	105	60	60	60	60	30	30

Table 3A - Total Trips for Conventional Earthwork

Week

	Construction Activity	Duration (week)	1-Way Daily Trips	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
OUTLET WORK	1) Mobilization	2																																																															
	- Equipment (Inbound)		9	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		40	40	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		46	46	46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Demolition	2																																																														
	- Equipment (Inbound)		2	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		2	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		2	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		2	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		54	0	0	54	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2) Construct Outlet Works Upgrade	9																																																				0	0	0	0	0	0	0	0	0	0
	- Equipment (Inbound)		8	0	0	0	0	8	8	8	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		12	0	0	0	0	12	12	12	12	12	12	12	12	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		20	0	0	0	0	20	20	20	20	20	20	20	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		54	0	0	0	0	54	54	54	54	54	54	54	54	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3) Demobilization	2																																																														
	- Equipment (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		5	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		40	0	0	0	0	0	0	0	0	0	0	0	0	0	40	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		30	0	0	0	0	0	0	0	0	0	0	0	0	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DEWATERING	1) Mobilization	2																																																													
	- Equipment (Inbound)		4	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		16	0	0	0	0	0	0	0	0	16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2) Installation	15																																																													
	- Equipment (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		2	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		16	0	0	0	0	0	0	0	0	0	0	16	16	16	16	16	16	16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3) Operation	30																																																													
	- Equipment (Inbound)		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0
	4) Demobilization	2																																																													
	- Equipment (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	8	0	0	0	0	0	0	0	0	0	0
CONVENTIONAL EARTHWORK	1) Mobilization	2																																																														
	- Equipment (Inbound)		4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	56	56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2) Preparation of Haul Route(s) and Stockpile Areas	4																																																													
	- Equipment (Inbound)		8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	72	72	72	72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3) Excavation	16																																																													
	- Equipment (Inbound)		5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4) Site Preparation for Filling	2																																																													
	- Equipment (Inbound)		3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5) Placement and Compaction of Fill	10																																																													
	- Equipment (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4	4	4	4	4	4	4	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		74	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	74	74	74	74	74	74	74	74	74	74	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	18	18	18	18	18	18	18	18	18	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	18	18	18	18	18	18	18	18	18	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		96	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	96	96	96	96	96	96	96	96	96	96	0	0	0	0	0	0	0
	6) Site Finishing and Restoration of Haul Roads and Stockpiles	4																																																													
	- Equipment (Inbound)		4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4	4	0	0	0
	- Equipment (Outbound)		5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	5	5	0	0	0
	- Material Delivery (Inbound + Outbound)		50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50	50	50	50	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	60	60	60	0	0	0
	7) Demobilization	2																																																													
	- Equipment (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	0
	- Material Delivery (Inbound + Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	56	56	0
	Total																																																														
	- Equipment (Inbound)		8	9	9	2	2	8	8	8	8	12	12	8	8	8	0	0	0	0	0	2	6	6	10	10	10	10	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	5	5	2	2	2	2	2	0	0	0	0	0	4	4	4	4	0	0	0
	- Equipment (Outbound)		8	0	0	2	2	12	12	12	12	12	12	12	12	12	5	5	0	0	0	2	2	2	10	10	10	10	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	2	2	6	6	6	6	6	8	8	4	4	4	5	5	5	5	4	4	0
	- Material Delivery (Inbound + Outbound)		4	40	40	0	0	20	20	20	20	20	20	22	22	22	42	42	2	2	2	2	2	2	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	42	42	76	76	76	76	76	74	74	74	74	74	50	50	50	50	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	0	0	18	18	18	18	18	18	18	18	18	18	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	0	0	18	18	18	18	18	18	18	18	18	18	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		72	46	46	54	54	54	54	54	54	70	70	70	70	70	46	46	16	16	16	4	60	60	76	76	76	76	130	130	130	130	130	130	130	130	130	130	130	130	130	130	130	130	44	44	100	100	100	100	100	104	104	96	96	96	60	60	60	60	56	56	0
	Inbound			52	52	31	31	45	45	45	45	57	57	54	54	54	44	44	9	9	9	5	37	37	51	51	51	51	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	48	48	108	108	108	108	108	107	107	103	103	103	59	59	59	59	28	28	0
	Outbound			43	43	32	32	49	49	49	49	57	57	58	58	58	49	49	9	9	9	5	33	33	51	51	51	51	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	45	45	112	112	112	112	112	115	115	107	107	107	60	60	60	60	32	32	0
	Inbound + Outbound			95	95	63	63	94	94	94	94	114	114	112	112	112	93	93	18	18	18	10	70	70	102	102	102	102	206	206	206	206	206	206	206	206	206	206	206	206	206	206	206	206	93	93	220	220	220	220	220	222	222	210	210	210	119	119	119	119	60	60	0
	Number of Daily Round Trips (External Only)			48	48	32	32	47	47	47	47	57	57	56	56	56	47	47	9	9	9	5	35	35	51	51	51	51	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	47	47	110	110	110	110	110	111	111	105	105	105	60	60	60	60	30	30	0

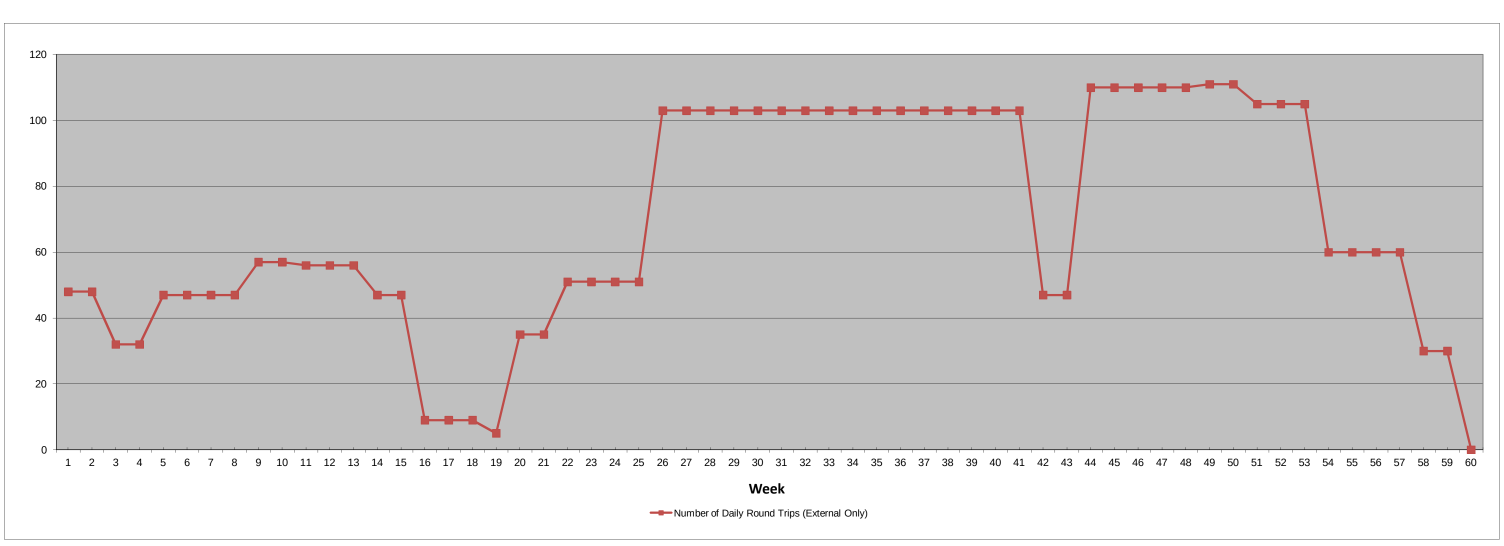
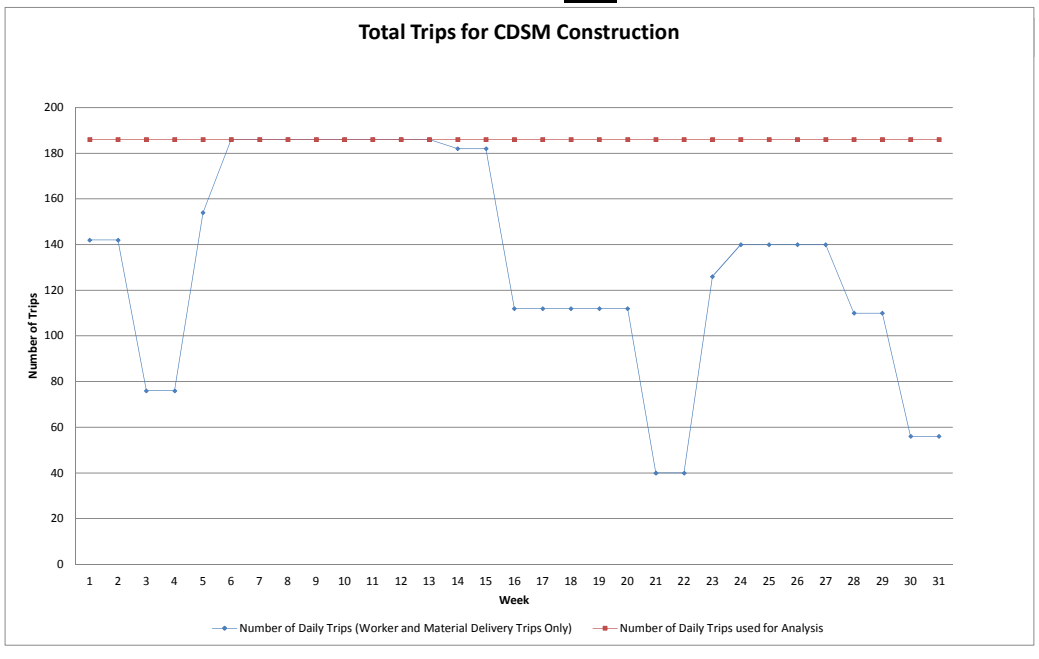


Table 3B - Total Trips for CDSM Production (Day Shift Only)

	Construction Activity	Duration (week)	1-Way Daily Trips	Week 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
OUTLET WORK	1) Mobilization	2																																
	- Equipment (Inbound)		9	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		40	40	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		46	46	46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Demolition	2																																
	- Equipment (Inbound)		2	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		2	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		2	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		2	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		54	0	0	54	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2) Construct Outlet Works Upgrade	9																																
	- Equipment (Inbound)		8	0	0	0	0	8	8	8	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		12	0	0	0	0	12	12	12	12	12	12	12	12	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		20	0	0	0	0	20	20	20	20	20	20	20	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		54	0	0	0	0	54	54	54	54	54	54	54	54	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3) Demobilization	2																																
	- Equipment (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		5	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		40	0	0	0	0	0	0	0	0	0	0	0	0	0	40	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		30	0	0	0	0	0	0	0	0	0	0	0	0	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CDSM Construction	Mobilization	2																																
	- Equipment (Inbound)		4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		56	56	56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Preparation of Haul Route(s) and Stockpile Areas	2																																
	- Equipment (Inbound)		8	0	0	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		8	0	0	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		4	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		72	0	0	72	72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Excavation of CDSM Working Platform	1																																
	- Equipment (Inbound)		5	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		4	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		8	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		8	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		76	0	0	0	0	76	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Setup of Two CDSM Rig	2																																
	- Equipment (Inbound)		7	0	0	0	0	0	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		3	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		40	0	0	0	0	0	40	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		72	0	0	0	0	0	72	72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CDSM Construction using Two Rigs (a)	13																																
	- Equipment (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		5	0	0	0	0	0	0	0	5	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		40	0	0	0	0	0	0	0	40	40	40	40	40	40	40	40	40	40	40	40	40	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		72	0	0	0	0	0	0	0	72	72	72	72	72	72	72	72	72	72	72	72	72	0	0	0	0	0	0	0	0	0	0	0
	Wait for Results of 14-day Strength Test Results	2																																
	- Equipment (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	40	0	0	0	0	0	0	0	0	0
	Tear Down of Two CDSM Rigs	1																																
	- Equipment (Inbound)		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	70	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	56	0	0	0	0	0	0	0	0
	Placement and Compaction of Fill	4																																
	- Equipment (Inbound)		5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	5	5	0	0	0	0
	- Equipment (Outbound)		5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	5	5	0	0	0	0
	- Material Delivery (Inbound + Outbound)		70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	70	70	70	70	0	0	0	0
	- Hauling Trucks (Inbound)		12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	12	12	12	0	0	0	0
	- Hauling Trucks (Outbound)		12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	12	12	12	0	0	0	0
	- Worker (Inbound + Outbound)		70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	70	70	70	70	0	0	0	0	0
	Site Finishing and Restoration of Haul Roads and Stockpiles	2																																
	- Equipment (Inbound)		5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	0	0	0
	- Equipment (Outbound)		5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	0	0	0
	- Material Delivery (Inbound + Outbound)		50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50	50	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	60	0	0	0
	Demobilization	2																																
	- Equipment (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4
	- Material Delivery (Inbound + Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	56	56
	Total																																	
	- Equipment (Inbound)			13	13	10	10	13	15	15	8	8	8	8	8	8	0	0	0	0	0	0	0	0	2	5	5	5	5	5	5			
	- Equipment (Outbound)			0	0	10	10	14	15	15	17	17	17	17	17	17	10	10	5	5	5	5	5	0	0	4	5	5	5	5	5	4	4	
	- Material Delivery (Inbound + Outbound)			40	40	4	4	24	60	60	60	60	60	60	60	60	80	80	40	40	40	40	40	0	0	70	70	70	70	70	50	50	0	0
	- Hauling Trucks (Inbound)			0	0	2	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	12	12	12	0	0	0	0	0
	- Hauling Trucks (Outbound)			0	0	2	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	12	12	12	0	0	0	0	0
	- Worker (Inbound + Outbound)			102	102	126	126	130	126	126	126	126	126	126	126	126	102	102	72	72	72	72	72	40	40	56	70	70	70	70	60	60	56	56
	Inbound			84	84	46	46	98	108	108	101	101	101	101	101	101	91	91	56	56	56	56	56	20	20	65	87	87	87	87	60	60	28	28
	Outbound			71	71	46	46	99	108	108	110	110	110	110	110	110	101	101	61	61	61	61	61	20	20	65	87	87	87	87	60	60	28	28
	Number of Daily Trips (Worker and Material Delivery Trips Only)			142	142	76	76	154	**186**	**186**	**186**	**186**	**186**	**186**	**186**	**186**	**182**	**182**	112	112	112	112	112	40	40	126	140	140	140	140	110	110	56	56
	Number of Peak Daily Trips (All Trips)			155	155	154	154	197	**216**	**216**	**211**	**211**	**211**	**211**	**211**	**211**	**192**	**192**	117	117	117	117	117	40	40	132	174	174	174	174	120	120	60	60
	Number of Daily Trips used for Analysis			-13	-13	-78	-78	-43	-30	-30	-25	-25	-25	-25	-25	-25	-10	-10	-5	-5	-5	-5	-5	0	0	-6	-34	-34	-34	-34	-10	-10	-4	-4
				186	186	186	186	186	186	186	186	186	186	186	186	186	186	186	186	186	186	186	186	186	186	186	186	186	186	186	186	186	186	186

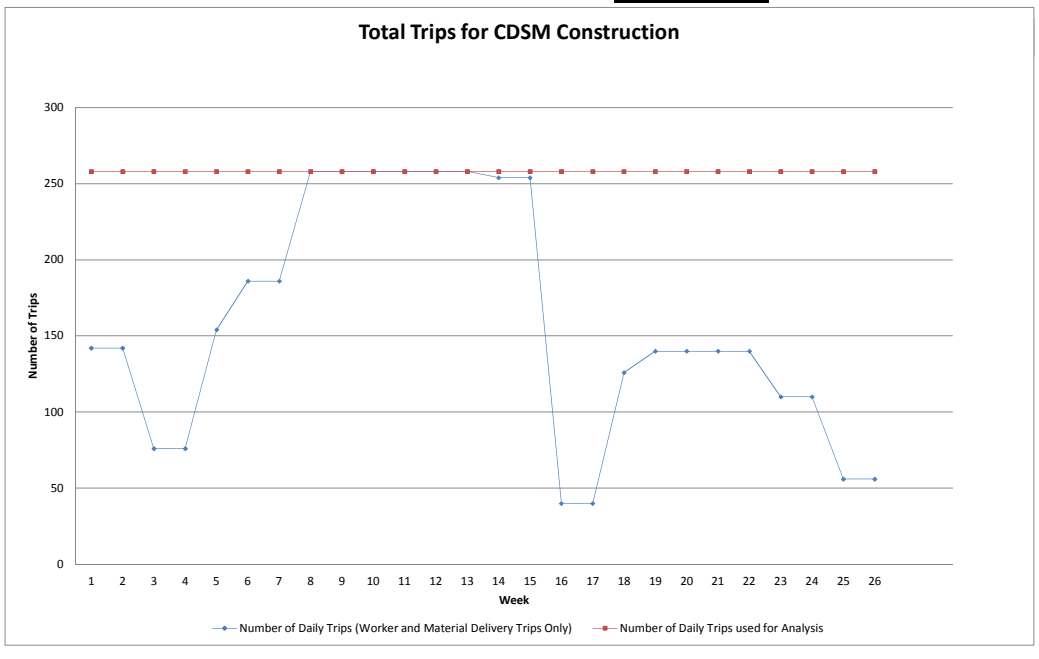


***Notes about the CDSM work**

Account for the use of 2 CDSM rigs and therefore is the conservative assumption for daily trip generation

Table 3C - Total Trips for CDSM Production (Day and Night Shifts)

	Construction Activity	Duration (week)	1-Way Daily Trips	Week 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
OUTLET WORK	1) Mobilization	2																											
	- Equipment (Inbound)		9	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		40	40	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		46	46	46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Demolition	2																											
	- Equipment (Inbound)		2	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		2	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		2	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		2	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		54	0	0	54	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2) Construct Outlet Works Upgrade	9																											
	- Equipment (Inbound)		8	0	0	0	0	8	8	8	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		12	0	0	0	0	12	12	12	12	12	12	12	12	12	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		20	0	0	0	0	20	20	20	20	20	20	20	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		54	0	0	0	0	54	54	54	54	54	54	54	54	54	0	0	0	0	0	0	0	0	0	0	0	0	0
	3) Demobilization	2																											
	- Equipment (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		5	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		40	0	0	0	0	0	0	0	0	0	0	0	0	0	40	40	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		30	0	0	0	0	0	0	0	0	0	0	0	0	0	30	30	0	0	0	0	0	0	0	0	0	0	0
CDSM Construction	Mobilization	2																											
	- Equipment (Inbound)		4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		56	56	56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Preparation of Haul Route(s) and Stockpile Areas	2																											
	- Equipment (Inbound)		8	0	0	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		8	0	0	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		4	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		72	0	0	72	72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Excavation of CDSM Working Platform	1																											
	- Equipment (Inbound)		5	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		4	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		8	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		8	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		76	0	0	0	0	76	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Setup of Two CDSM Rig	2																											
	- Equipment (Inbound)		7	0	0	0	0	0	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		3	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		40	0	0	0	0	0	40	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		72	0	0	0	0	0	72	72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CDSM Construction using Two Rigs (a)	8																											
	- Equipment (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		5	0	0	0	0	0	0	0	5	5	5	5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		40	0	0	0	0	0	0	0	40	40	40	40	40	40	40	40	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		144	0	0	0	0	0	0	0	144	144	144	144	144	144	144	144	0	0	0	0	0	0	0	0	0	0	0
	Wait for Results of 14-day Strength Test Results	2																											
	- Equipment (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	40	0	0	0	0	0	0	0	0	0
	Tear Down of Two CDSM Rigs	1																											
	- Equipment (Inbound)		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	70	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	56	0	0	0	0	0	0	0	0	0
	Placement and Compaction of Fill	4																											
	- Equipment (Inbound)		5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	5	5	0	0	0	0	0
	- Equipment (Outbound)		5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	5	5	0	0	0	0	0
	- Material Delivery (Inbound + Outbound)		70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	70	70	70	70	0	0	0	0	0
	- Hauling Trucks (Inbound)		12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	12	12	12	0	0	0	0	0
	- Hauling Trucks (Outbound)		12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	12	12	12	0	0	0	0	0
	- Worker (Inbound + Outbound)		70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	70	70	70	70	0	0	0	0	0
	Site Finishing and Restoration of Haul Roads and Stockpiles	2																											
	- Equipment (Inbound)		5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	0	0	0
	- Equipment (Outbound)		5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	0	0	0
	- Material Delivery (Inbound + Outbound)		50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50	50	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	60	0	0	0
	Demobilization	2																											
	- Equipment (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Equipment (Outbound)		4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	
	- Material Delivery (Inbound + Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Inbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Hauling Trucks (Outbound)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	- Worker (Inbound + Outbound)		56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	56	56	
	Total																												
	- Equipment (Inbound)			13	13	10	10	13	15	15	8	8	8	8	8	8	0	0	0	0	2	5	5	5	5	5	5	0	0
	- Equipment (Outbound)			0	0	10	10	14	15	15	17	17	17	17	17	17	10	10	0	0	4	5	5	5	5	5	5	4	4
	- Material Delivery (Inbound + Outbound)			40	40	4	4	24	60	60	60	60	60	60	60	60	80	80	0	0	70	70	70	70	70	50	50	0	0
	- Hauling Trucks (Inbound)			0	0	2	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	12	12	12	12	0	0	0	0
	- Hauling Trucks (Outbound)			0	0	2	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	12	12	12	12	0	0	0	0
	- Worker (Inbound + Outbound)			102	102	126	126	130	126	126	198	198	198	198	198	198	174	174	40	40	56	70	70	70	70	60	60	56	56
	Inbound			84	84	46	46	98	108	108	137	137	137	137	137	137	127	127	20	20	65	87	87	87	87	60	60	28	28
	Outbound			71	71	46	46	99	108	108	146	146	146	146	146	146	137	137	20	20	65	87	87	87	87	60	60	28	28
	Number of Daily Trips (Worker and Material Delivery Trips Only)			142	142	76	76	154	**186**	**186**	**258**	**258**	**258**	**258**	**258**	**258**	**254**	**254**	40	40	126	140	140	140	140	110	110	56	56
	Number of Peak Daily Trips (All Trips)			155	155	154	154	197	**216**	**216**	**283**	**283**	**283**	**283**	**283**	**283**	**264**	**264**	40	40	132	174	174	174	174	120	120	60	60
	Number of Daily Trips used for Analysis			-13	-13	-78	-78	-43	-30	-30	-25	-25	-25	-25	-25	-25	-10	-10	0	0	-6	-34	-34	-34	-34	-10	-10	-4	-4
				258	258	258	258	258	258	258	258	258	258	258	258	258	258	258	258	258	258	258	258	258	258	258	258	258	258



***Notes about the CDSM work**

Account for the use of 2 CDSM rigs and therefore is the conservative assumption for daily trip generation

Table 4A - External Vehicle Trip Summary (Conventional Earth Work)

Construction Trips	Daily			AM Peak-Hour		PM Peak-Hour	
	IB	OB	Total	IB	OB	IB	OB
- Equipment (a)	7	5	12	1	1	1	1
- Material Delivery (a)	3	3	6	1	1	1	1
- Hauling Trucks (a)	29	29	58	3	4	4	4
- Worker (b)	65	65	130	65	0	0	65
Total	104	102	206	70	6	6	71

(a) Equipment, material delivery and hauling truck trips are conservatively assumed to be spread out over 10-hour day (PD assumes 12-hour shift).

(b) All workers are conservatively assumed to arrive during the AM peak-hour and leave during the PM peak-hour (PD assumes 7am-7pm shift).

Table 4B- Internal Hauling Truck Trip Summary

Alternative Description							Quantities (CY)		Hauling Truck Trips during Excavation Phase				Hauling Truck Trips during Replacement Phase			
Combination	Method	Haul Route	Stockpile	Size of Trucks Used	Round-Trip Cycle Time (min)	Max Number of Round Trips per Day per Truck	Excavated Soil and Spoil	Transported Volume	Total Round Trips	Duration (days)	Daily Round Trips	Number of Trucks Required	Total Round Trips	Duration (days)	Daily Round Trips (L)	Number of Trucks Required
				(A)	(B)	(C=60*10/B)	(D)	(E)	(F=E/A)	(G)	(H=F/G)	(I=H/C)	(J=E/A)	(K)	(L=J/K)	(M=L/C)
1A	Conventional	Lower	Park/Filterpond	20 CY	22.2	27	140,000	175,000	8,750	80	109	5	8,750	50	175	7
1B	Conventional	Lower/Upper	Park/Filterpond	10 CY	24.5	25	140,000	175,000	17,500	80	219	9	17,500	50	350	15
1C	Conventional	Upper	Park/Filterpond	10 CY	29.6	20	140,000	175,000	17,500	80	219	11	17,500	50	350	18
8A	CDSM	Lower	Filterpond	20 CY	22.2	27	38,500	45,500	2,275	25	91	4	2,275	20	114	5
8C	CDSM	Upper	Filterpond	10 CY	28.2	21	38,500	45,500	4,550	25	182	9	4,550	20	228	11

(A) Assume 20 CY trucks for Lower Haul Route and 10 CY trucks for Upper Haul Route.

(B) Includes on-site travel time between excavation site and stockpile, waiting time at loading and unloading, time to load and unload, and convoy waiting time for 1-way traffic (provided by Terra Engineers).

(C) 10-hour day divided by cycle time.

(D) Project Description Tables 2-1 and 2-2 (excludig material delivery).

(E) Assume 25% bulk factor for soil and 15% bulk factor for spoil.

(F) Total amount of volume transported divided by the size of truck.

(G) Assume 6 weeks for conventional earth work and 5 weeks for CDSM option (Tables 2-3 and 2-6 in PD).

(H) Total number of round trips spread over the duration of excavation.

(I) Total number of daily truck trips divided by the maximum number of daily trips per truck.

(J) Total amount of volume transported divided by the size of truck.

(K) Assume 10 weeks for conventional earthwork and 4 weeks for CDSM option (Tables 2-3 and 2-6 in PD).

(L) Total number of round trips spread over the duration of replacement phase.

(M) Total number of daily truck trips divided by the maximum number of daily trips per truck.

Table 4C- Off-site Hauling Truck Trip Summary (Alternative 1)

Alternative Description							Quantities (CY)		Hauling Truck Trips during Excavation Phase				Hauling Truck Trips during Replacement Phase			
Combination	Method	Haul Route	Stockpile	Size of Trucks Used	Round-Trip Cycle Time (min)	Max Number of Round Trips per Day per Truck	Excavated Soil and Spoil	Transported Volume	Total Round Trips	Duration (days)	Daily Round Trips	Number of Trucks Required	Total Round Trips	Duration (days)	Daily Round Trips (L)	Number of Trucks Required
				(A)	(B)	(C=60*10/B)	(D)	(E)	(F=E/A)	(G)	(H=F/G)	(I=H/C)	(J=E/A)	(K)	(L=J/K)	(M=L/C)
		Lower	Off-Site	20 CY	40.4	14.9	140,000	175,000	8,750	36	243	17.0	8,750	60	146	10

505 297

External Vehicle Trips

	Proposed Project			Alternative 1 during Excavation			Alternative 1 during Replacement		
	Daily	AM Peak-Hour	PM Peak-Hour	Daily	AM Peak-Hour	PM Peak-Hour	Daily	AM Peak-Hour	PM Peak-Hour
Worker	198	99	99	198	99	99	198	99	99
Material Delivery	60	6	6	60	6	6	60	6	6
Hauling	0	0	0	505	51	51	297	30	30
Total	258	105	105	763	156	156	555	135	135

	Proposed Project			Alternative 1		
	Daily	AM Peak-Hour	PM Peak-Hour	Daily	AM Peak-Hour	PM Peak-Hour
Worker	198	99	99	198	99	99
Material Delivery	60	6	6	60	6	6
Hauling	0	0	0	297-505	30-51	30-51
Total	258	105	105	555-763	135 -156	135 -156

Table 5 - Daily Round-Trip Summary*

Outlet Work

					External						Internal
					Trucks				Personal Veh		
	Activity	From	To	Duration (weeks)	Equipment	Material	Hauling Truck	Truck Total	Workers	External Total	Hauling Truck
O1	Mobilization	week 1	week 2	2	5	20	0	25	23	48	0
O2	Demolition	week 2	week 4	2	2	0	4	6	27	31	0
O3	Construct Outlet Works	week 4	week 13	9	10	10	0	20	27	47	0
O4	Demobilization	week 13	week 15	2	3	20	0	23	15	38	0
				15							

Dewatering

					External						Internal
					Trucks				Personal Veh		
	Activity	From	To	Duration (weeks)	Equipment	Material	Hauling Truck	Truck Total	Workers	External Total	Hauling Truck
D1	Mobilization	week 1	week 2	2	2	0	0	2	8	10	0
D2	Installation	week 2	week 10	8	0	1	0	1	8	9	0
D3	Operation	week 10	week 40	30	2	1	0	3	2	5	0
D4	Demobilization	week 40	week 42	2	2	0	0	2	4	6	0
				42							

Conventional Earthwork

					External						Internal
					Trucks				Personal Veh		
	Activity	From	To	Duration (weeks)	Equipment	Material	Hauling Truck	Truck Total	Workers	External Total	Hauling Truck
CE1	Mobilization	week 1	week 2	2	2	0	0	2	28	30	0
CE2	Preparioatn of haul routes and stockpiles	week 2	week 6	4	8	2 - 1	0	10 - 9	36	46 - 45	0
CE3	Excavation	week 6	week 22	16	5 - 4	2	11 - 29	18 - 35	41 - 63	59 - 98	109 - 219
CE4	Site preparation for filling	week 22	week 24	2	2	20	0	22	20	42	0
CE5	Placement and compaction of fill	week 24	week 34	10	2	22 - 37	7 - 18	31 - 57	37 - 48	68 - 105	175 - 350
CE6	Site finishing and restoration of routes	week 34	week 38	4	5	25	0	30	30	60	0
CE7	Demobilization	week 38	week 40	2	2	0	0	2	28	30	0
				40							

CDSM

					External						Internal
					Trucks				Personal Veh		
	Activity	From	To	Duration (weeks)	Equipment	Material	Hauling Truck	Truck Total	Workers	External Total	Hauling Truck
CD1	Mobilization	week 1	week 2	2	2	0	0	2	28	30	0
CD2	Preparation of haul routes and stockpiles	week 2	week 4	2	8	2 - 1	0	10 - 9	36	46 - 45	0
CD3	Excavation of CDSM working platform	week 4	week 5	1	4	2	3 - 8	9 - 14	33 - 38	42 - 52	91 - 182
CD4	Setup of CDSM rigs	week 5	week 7	2	5	10 - 20	0	15 - 25	36	51 - 61	0
CD5	CDSM Construction	week 7	week 15-20	8	3	10 - 20	0	13 - 23	72	85 - 95	0
				13	3	10 - 20	0	13 - 23	36	49 - 59	0
CD6	Wait for 14-day strength test results	week 15-20	week 17-22	2	0	0	0	0	20	20	0
CD7	Tear down of CDSM rigs	week 17-22	week 18-23	1	3	20 - 35	0	23 - 38	28	51 - 66	0
CD8	Placement and compaction of fill	week 18-23	week 22-27	4	5	20 - 35	5 - 12	30 - 52	32 - 35	62 - 87	114 - 228
CD9	Site finishing and restoration of routes	week 22-27	week 24-29	2	5	25	0	30	30	60	0
CD10	Demobilization	week 24-29	week 26-31	2	2	0	0	2	28	30	0
				26 - 31							

Tables used in Section 2.7 (Project Description)

Construction Activitiy	Round Trip Vehicle Trips per Day				
	Equipment	Material	Hauling Truck	Worker	Total
Mobilization	5	20	0	23	48
Demolition	2	0	4	27	33
Construct Outlet Works	10	10	0	27	47
Demobilization	3	20	0	15	38

Tables for Section 2.7 (Project Description - rounded to nearest 5)

Construction Activitiy	Round Trip Vehicle Trips per Day				
	Equipment	Material	Hauling Truck	Worker	Total
Mobilization	2	0	0	8	10
Installation	0	1	0	8	9
Operation	2	1	0	2	5
Demobilization	2	0	0	4	6

Construction Activitiy	Round Trip Vehicle Trips per Day				
	Equipment	Material	Hauling Truck	Worker	Total
Mobilization	2	0	0	28	30
Preparioatn of haul routes and stockpiles	8	2-1	0	36	45-46
Excavation	4-5	2	11-29	41-63	59-98
Site preparation for filling	2	20	0	20	42
Placement and compaction of fill	2	22-37	7-18	37-48	68-105
Site finishing and restoration of routes	5	25	0	30	60
Demobilization	2	0	0	28	30

Construction Activitiy	Round Trip Vehicle Trips per Day				
	Equipment	Material	Hauling Truck	Worker	Total
Mobilization	2	0	0	28	30
Preparation of haul routes and stockpiles	8	2-1	0	36	46-45
Excavation of CDSM working platform	4	2	3-8	33-38	42-52
Setup of CDSM rigs	5	10-20	0	36	51-61
CDSM Construction(Day and Night Shifts)	3	10-20	0	72	85-95
CDSM Construction (Day Shift)	3	10-21	0	36	49-59
Wait for 14-day strength test results	0	0	0	20	20
Tear down of CDSM rigs	3	20-35	0	28	51-66
Placement and compaction of fill	5	20-35	5-12	32-35	62-87
Site finishing and restoration of routes	5	25	0	30	60
Demobilization	2	0	0	28	30

***Notes about a range in numbers**

Lower number in the range indicates the scenario in which lower haul route is used, and the the higher number indicates the scenario in which upper haul route is used.

***Peak Trip Generation**

Conventional Earth Work Option - The peak trip generation would occur when Dewatering operation (5 trips in D3) and Placement and Compaction of Fill (105 trips in CE5) occur simulatenously for a total of 110 trips between week 17 and week 26.

CDSM Option - The peak trip generation would occur when Outlet Work upgrades (47 trips in Phase O2) and CDSM Construction (95 trips in CD5) occur simultaneously for a total of 142 trips between week 8 and week 13

APPENDIX F-1

Trip Generation

Scenario Report

Scenario:	EX AM
Command:	EX AM
Volume:	EX AM
Geometry:	Default Geometry
Impact Fee:	Default Impact Fee
Trip Generation:	None
Trip Distribution:	None
Paths:	Default Path
Routes:	Default Route
Configuration:	Default Configuration

Turning Movement Report

None

Volume	Northbound			Southbound			Eastbound			Westbound			Total
Type	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Volume
#5													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#15 Grand/MacArthur/Off-Ramp													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#101													
Base	0	0	0	0	0	4	380	59	0	0	53	13	509
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	4	380	59	0	0	53	13	509
#102 MacArthur Blvd / Estudillo Ave													
Base	439	238	141	113	243	167	29	320	127	66	178	42	2103
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	439	238	141	113	243	167	29	320	127	66	178	42	2103
#103 Benedict Dr / Estudillo Ave													
Base	68	34	9	2	0	38	467	96	5	3	169	97	988
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	68	34	9	2	0	38	467	96	5	3	169	97	988
#104 Lake Chabot Rd / Estudillo Ave													
Base	0	0	0	3	0	29	23	102	0	0	268	5	430
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	3	0	29	23	102	0	0	268	5	430
#105 SB-Off-Grand													
Base	5	133	0	0	550	34	27	0	35	217	110	71	1182
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	5	133	0	0	550	34	27	0	35	217	110	71	1182

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
#101	A	8.6	0.289	A	8.6	0.289	+ 0.000 D/V
#102 MacArthur Blvd / Estudillo Ave	B	18.9	0.658	B	18.9	0.658	+ 0.000 D/V
#103 Benedict Dr / Estudillo Ave	F	593.1	1.454	F	593.1	1.454	+ 0.000 D/V
#104 Lake Chabot Rd / Estudillo Ave	A	10.0	0.038	A	10.0	0.038	+ 0.000 D/V
#105 SB-Off-Grand	C	17.8	0.645	C	17.8	0.645	+ 0.000 V/C

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #101

Average Delay (sec/veh): 6.2 Worst Case Level Of Service: A[8.6]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0	0 0	0	0 0	0 0	1	0 1	0 0	0	0 0	0 1	0
Volume Module: >> Count Date: 6 Nov 2012 << 7:30												
Base Vol:	0	0	0	0	0	4	380	59	0	0	53	13
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	0	0	4	380	59	0	0	53	13
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	0.50	0.50	0.50	0.86	0.86	1.00	1.00	0.83	0.83
PHF Volume:	0	0	0	0	0	8	442	69	0	0	64	16
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	0	0	8	442	69	0	0	64	16
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	72	80	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	996	1531	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	996	1531	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	0.01	0.29	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.0	1.2	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	8.6	8.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	A	A	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	1.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	A	*	*	*	*	*
ApproachDel:	xxxxxx			8.6			xxxxxx			xxxxxx		
ApproachLOS:	*			A			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #102 MacArthur Blvd / Estudillo Ave

Cycle (sec):	65	Critical Vol./Cap.(X):	0.658
Loss Time (sec):	0	Average Delay (sec/veh):	18.9
Optimal Cycle:	54	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	1 0 1	1	0	1 1 0	0	1	0 1 0	1	0	1 0 1
Volume Module: >> Count Date: 6 Nov 2012 << 7:30												
Base Vol:	439	238	141	113	243	167	29	320	127	66	178	42
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	439	238	141	113	243	167	29	320	127	66	178	42
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.88	0.88	0.88	0.80	0.80	0.80	0.87	0.87	0.87
PHF Volume:	488	264	157	128	276	190	36	400	159	76	205	48
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	488	264	157	128	276	190	36	400	159	76	205	48
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	488	264	157	128	276	190	36	400	159	76	205	48
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.86	0.90	0.77	0.86	0.80	0.80	0.76	0.76	0.76	0.22	0.90	0.77
Lanes:	1.00	1.00	1.00	1.00	1.19	0.81	0.12	1.35	0.53	1.00	1.00	1.00
Final Sat.:	1625	1710	1454	1625	1808	1243	177	1954	776	421	1710	1454
Capacity Analysis Module:												
Vol/Sat:	0.30	0.15	0.11	0.08	0.15	0.15	0.20	0.20	0.20	0.18	0.12	0.03
Crit Moves:	****				****			****				
Green/Cycle:	0.46	0.46	0.46	0.23	0.23	0.23	0.31	0.31	0.31	0.31	0.31	0.31
Volume/Cap:	0.66	0.34	0.24	0.34	0.66	0.66	0.66	0.66	0.66	0.58	0.38	0.11
Uniform Del:	13.7	11.4	10.8	20.8	22.6	22.6	19.4	19.4	19.4	18.8	17.5	15.9
IncremntDel:	2.2	0.3	0.2	0.5	2.3	2.3	1.8	1.8	1.8	6.4	0.5	0.1
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	15.9	11.6	11.0	21.3	24.9	24.9	21.2	21.2	21.2	25.2	18.0	16.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	15.9	11.6	11.0	21.3	24.9	24.9	21.2	21.2	21.2	25.2	18.0	16.1
LOS by Move:	B	B	B	C	C	C	C	C	C	C	B	B
HCM2kAvgQ:	9	4	2	2	5	5	7	7	7	2	4	1

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #103 Benedict Dr / Estudillo Ave

Average Delay (sec/veh): 86.3 Worst Case Level Of Service: F[593.1]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Channel		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	1 0	1	1 0	1 0	1	0 1
Volume Module: >> Count Date: 6 Nov 2012 << 7:30												
Base Vol:	68	34	9	2	0	38	467	96	5	3	169	97
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	68	34	9	2	0	38	467	96	5	3	169	97
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.68	0.68	0.68	0.71	0.71	0.71	0.87	0.87	0.87	0.85	0.85	0.85
PHF Volume:	100	50	13	3	0	54	537	110	6	4	199	114
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	100	50	13	3	0	54	537	110	6	4	199	114
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1476	1393	58	1360	1396	199	199	xxxx	xxxxx	116	xxxx	xxxxx
Potent Cap.:	105	143	1014	127	143	847	1386	xxxx	xxxxx	1485	xxxx	xxxxx
Move Cap.:	69	87	1014	50	87	847	1386	xxxx	xxxxx	1485	xxxx	xxxxx
Volume/Cap:	1.45	0.57	0.01	0.06	0.00	0.06	0.39	xxxx	xxxx	0.00	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1.9	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	9.2	xxxx	xxxxx	7.4	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	80	xxxxx	xxxx	470	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	14.6	xxxxx	xxxxx	0.4	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	593	xxxxx	xxxxx	13.7	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	F	*	*	B	*	*	*	*	*	*	*
ApproachDel:	593.1			13.7			xxxxxx			xxxxxx		
ApproachLOS:	F			B			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #104 Lake Chabot Rd / Estudillo Ave

Average Delay (sec/veh): 1.2 Worst Case Level Of Service: A[10.0]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	0	0 0	1	0 0	0 1	1	0 1	0 0	0	0 0	1 0
Volume Module: >> Count Date: 6 Nov 2012 << 7:30												
Base Vol:	0	0	0	3	0	29	23	102	0	0	268	5
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	3	0	29	23	102	0	0	268	5
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	3	0	29	23	102	0	0	268	5
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	3	0	29	23	102	0	0	268	5
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	419	xxxx	271	273	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	595	xxxx	773	1302	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	587	xxxx	773	1302	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.01	xxxx	0.04	0.02	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	0.1	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	11.2	xxxx	9.8	7.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	B	*	A	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			10.0			xxxxxx			xxxxxx		
ApproachLOS:	*			A			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #105 SB-Off-Grand

Cycle (sec): 100 Critical Vol./Cap.(X): 0.645
Loss Time (sec): 0 Average Delay (sec/veh): 17.8
Optimal Cycle: 0 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	1	0 0	0	0 1	1 0	1	0 0	0 1	1	0 0	1 0
Volume Module: >> Count Date: 28 Feb 2013 << 7:45-8:45												
Base Vol:	5	133	0	0	550	34	27	0	35	217	110	71
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	5	133	0	0	550	34	27	0	35	217	110	71
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.62	0.62	0.62	0.86	0.86	0.86	0.60	0.60	0.60	0.78	0.78	0.78
PHF Volume:	8	215	0	0	640	40	45	0	58	278	141	91
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	8	215	0	0	640	40	45	0	58	278	141	91
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	8	215	0	0	640	40	45	0	58	278	141	91
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.07	1.93	0.00	0.00	1.88	0.12	1.00	0.00	1.00	1.00	0.61	0.39
Final Sat.:	33	893	0	0	991	62	408	0	472	466	313	202
Capacity Analysis Module:												
Vol/Sat:	0.24	0.24	xxxx	xxxx	0.65	0.64	0.11	xxxx	0.12	0.60	0.45	0.45
Crit Moves:	****				****				****	****		
Delay/Veh:	12.4	12.4	0.0	0.0	20.5	20.2	12.0	0.0	10.8	20.4	14.7	14.7
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	12.4	12.4	0.0	0.0	20.5	20.2	12.0	0.0	10.8	20.4	14.7	14.7
LOS by Move:	B	B	*	*	C	C	B	*	B	C	B	B
ApproachDel:	12.4			20.5			11.3			17.8		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	12.4			20.5			11.3			17.8		
LOS by Appr:	B			C			B			C		
AllWayAvgQ:	0.3	0.3	0.0	0.0	1.6	1.6	0.1	0.0	0.1	1.3	0.7	0.7

Note: Queue reported is the number of cars per lane.

Scenario Report

Scenario:	EX PM
Command:	EX PM
Volume:	EX PM
Geometry:	Default Geometry
Impact Fee:	Default Impact Fee
Trip Generation:	None
Trip Distribution:	None
Paths:	Default Path
Routes:	Default Route
Configuration:	Default Configuration

Turning Movement Report

None

Volume	Northbound			Southbound			Eastbound			Westbound			Total
Type	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Volume
#5													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#15 Grand/MacArthur/Off-Ramp													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#101													
Base	0	0	0	0	0	4	360	102	0	0	35	8	509
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	4	360	102	0	0	35	8	509
#102 MacArthur Blvd / Estudillo Ave													
Base	204	190	200	127	212	173	43	522	259	39	86	23	2078
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	204	190	200	127	212	173	43	522	259	39	86	23	2078
#103 Benedict Dr / Estudillo Ave													
Base	28	17	8	6	2	15	584	198	66	6	106	51	1087
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	17	8	6	2	15	584	198	66	6	106	51	1087
#104 Lake Chabot Rd / Estudillo Ave													
Base	0	0	0	4	0	39	41	185	0	0	114	5	388
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	4	0	39	41	185	0	0	114	5	388
#105 SB-Off-Grand													
Base	3	68	0	0	595	38	54	0	79	253	118	73	1281
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	3	68	0	0	595	38	54	0	79	253	118	73	1281

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Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
#101	A	8.5	0.274	A	8.5	0.274	+ 0.000 D/V
#102 MacArthur Blvd / Estudillo Ave	B	16.6	0.566	B	16.6	0.566	+ 0.000 D/V
#103 Benedict Dr / Estudillo Ave	F	221.1	0.670	F	221.1	0.670	+ 0.000 D/V
#104 Lake Chabot Rd / Estudillo Ave	A	9.4	0.052	A	9.4	0.052	+ 0.000 D/V
#105 SB-Off-Grand	C	17.9	0.666	C	17.9	0.666	+ 0.000 V/C

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #101

Average Delay (sec/veh): 5.8 Worst Case Level Of Service: A[8.5]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0	0 0	0	0 0 0	0 0	1	0 1	0 0	0	0 0	0 1	0
Volume Module: >> Count Date: 6 Nov 2012 << 4:45												
Base Vol:	0	0	0	0	0	4	360	102	0	0	35	8
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	0	0	4	360	102	0	0	35	8
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	0.50	0.50	0.50	0.84	0.84	0.84	0.77	0.77	0.77
PHF Volume:	0	0	0	0	0	8	429	121	0	0	45	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	0	0	8	429	121	0	0	45	10
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	51	56	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	1023	1562	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	1023	1562	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	0.01	0.27	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.0	1.1	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	8.5	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	A	A	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	1.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	A	*	*	*	*	*
ApproachDel:	xxxxxx			8.5			xxxxxx			xxxxxx		
ApproachLOS:	*			A			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #102 MacArthur Blvd / Estudillo Ave

Cycle (sec):	65	Critical Vol./Cap.(X):	0.566
Loss Time (sec):	0	Average Delay (sec/veh):	16.6
Optimal Cycle:	43	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0 1	0 1	1	0 1	1 0	0	1 0	1 0	1	0 1	0 1
Volume Module: >> Count Date: 6 Nov 2012 << 4:45												
Base Vol:	204	190	200	127	212	173	43	522	259	39	86	23
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	204	190	200	127	212	173	43	522	259	39	86	23
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.94	0.94	0.94	0.95	0.95	0.95	0.90	0.90	0.90
PHF Volume:	215	200	211	135	226	184	45	549	273	43	96	26
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	215	200	211	135	226	184	45	549	273	43	96	26
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	215	200	211	135	226	184	45	549	273	43	96	26
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.86	0.90	0.77	0.86	0.80	0.80	0.76	0.76	0.76	0.22	0.90	0.77
Lanes:	1.00	1.00	1.00	1.00	1.10	0.90	0.10	1.27	0.63	1.00	1.00	1.00
Final Sat.:	1625	1710	1454	1625	1669	1362	152	1840	913	412	1710	1454
Capacity Analysis Module:												
Vol/Sat:	0.13	0.12	0.14	0.08	0.14	0.14	0.30	0.30	0.30	0.11	0.06	0.02
Crit Moves:	****				****			****				
Green/Cycle:	0.23	0.30	0.30	0.17	0.24	0.24	0.53	0.53	0.53	0.53	0.53	0.53
Volume/Cap:	0.57	0.39	0.48	0.48	0.57	0.57	0.57	0.57	0.57	0.20	0.11	0.03
Uniform Del:	22.0	18.0	18.6	24.3	21.8	21.8	10.3	10.3	10.3	8.1	7.7	7.4
IncremntDel:	2.0	0.5	0.8	1.3	1.1	1.1	0.5	0.5	0.5	0.5	0.1	0.0
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	24.0	18.5	19.5	25.6	22.8	22.8	10.8	10.8	10.8	8.6	7.7	7.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	24.0	18.5	19.5	25.6	22.8	22.8	10.8	10.8	10.8	8.6	7.7	7.4
LOS by Move:	C	B	B	C	C	C	B	B	B	A	A	A
HCM2kAvgQ:	5	3	4	2	4	4	7	7	7	1	1	0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #103 Benedict Dr / Estudillo Ave

Average Delay (sec/veh): 18.5 Worst Case Level Of Service: F[221.1]

Approach:	North Bound						South Bound						East Bound						West Bound					
Movement:	L	-	T	-	R		L	-	T	-	R		L	-	T	-	R		L	-	T	-	R	
Control:	Stop Sign						Stop Sign						Uncontrolled						Uncontrolled					
Rights:	Include						Include						Include						Channel					
Lanes:	0	0	1!	0	0		0	0	1!	0	0		1	0	1	1	0		1	0	1	0	1	
Volume Module: >> Count Date: 6 Nov 2012 << 4:45																								
Base Vol:	28		17		8		6		2		15		584		198		66		6		106		51	
Growth Adj:	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Initial Bse:	28		17		8		6		2		15		584		198		66		6		106		51	
User Adj:	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Adj:	0.78		0.78		0.78		0.82		0.82		0.82		0.97		0.97		0.97		0.83		0.83		0.83	
PHF Volume:	36		22		10		7		2		18		602		204		68		7		128		61	
Reduct Vol:	0		0		0		0		0		0		0		0		0		0		0		0	
FinalVolume:	36		22		10		7		2		18		602		204		68		7		128		61	
Critical Gap Module:																								
Critical Gp:	7.1		6.5		6.2		7.1		6.5		6.2		4.1	xxxx	xxxxx				4.1	xxxx	xxxxx			
FollowUpTim:	3.5		4.0		3.3		3.5		4.0		3.3		2.2	xxxx	xxxxx				2.2	xxxx	xxxxx			
Capacity Module:																								
Cnflict Vol:	1626		1584		136		1459		1618		128		128	xxxx	xxxxx		272	xxxx	xxxxx					
Potent Cap.:	83		109		918		108		104		928		1471	xxxx	xxxxx		1303	xxxx	xxxxx					
Move Cap.:	54		64		918		55		61		928		1471	xxxx	xxxxx		1303	xxxx	xxxxx					
Volume/Cap:	0.67		0.34		0.01		0.13		0.04		0.02		0.41	xxxx	xxxx		0.01	xxxx	xxxx					
Level Of Service Module:																								
2Way95thQ:	xxxx		xxxx		xxxxx		xxxx		xxxx		xxxxx		2.0	xxxx	xxxxx		0.0	xxxx	xxxxx					
Control Del:	xxxxx		xxxx		xxxxx		xxxxx		xxxx		xxxxx		9.1	xxxx	xxxxx		7.8	xxxx	xxxxx					
LOS by Move:	*		*		*		*		*		*		A		*		*		A		*		*	
Movement:	LT	-	LTR	-	RT		LT	-	LTR	-	RT		LT	-	LTR	-	RT		LT	-	LTR	-	RT	
Shared Cap.:	xxxx		67	xxxxx		xxxx		145	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx			
SharedQueue:	xxxxx		5.1	xxxxx		xxxxx		0.7	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx			
Shrd ConDel:	xxxxx		221	xxxxx		xxxxx		35.6	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx			
Shared LOS:	*		F	*		*		E	*		*	*	*		*	*	*		*	*	*			
ApproachDel:	221.1						35.6						xxxxxx						xxxxxx					
ApproachLOS:	F						E						*						*					

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #104 Lake Chabot Rd / Estudillo Ave

Average Delay (sec/veh): 1.8 Worst Case Level Of Service: A[9.4]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	0	0 0	1	0 0	0 1	1	0 1	0 0	0	0 0	1 0
Volume Module: >> Count Date: 6 Nov 2012 << 4:30												
Base Vol:	0	0	0	4	0	39	41	185	0	0	114	5
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	4	0	39	41	185	0	0	114	5
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	0.83	0.83	0.83	0.90	0.90	0.90	0.80	0.80	0.80
PHF Volume:	0	0	0	5	0	47	46	206	0	0	143	6
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	5	0	47	46	206	0	0	143	6
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	442	xxxx	146	149	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	576	xxxx	907	1445	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	563	xxxx	907	1445	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.01	xxxx	0.05	0.03	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	0.2	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	11.5	xxxx	9.2	7.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	B	*	A	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			9.4			xxxxxx			xxxxxx		
ApproachLOS:	*			A			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #105 SB-Off-Grand

Cycle (sec): 100 Critical Vol./Cap.(X): 0.666
Loss Time (sec): 0 Average Delay (sec/veh): 17.9
Optimal Cycle: 0 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	1	0 0	0	0 1	1 0	1	0 0	0 1	1	0 0	1 0
Volume Module: >> Count Date: 28 Feb 2013 << 4:45-5:45												
Base Vol:	3	68	0	0	595	38	54	0	79	253	118	73
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	3	68	0	0	595	38	54	0	79	253	118	73
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.81	0.81	0.81	0.87	0.87	0.87	0.88	0.88	0.88	0.92	0.92	0.92
PHF Volume:	4	84	0	0	684	44	61	0	90	275	128	79
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	4	84	0	0	684	44	61	0	90	275	128	79
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	4	84	0	0	684	44	61	0	90	275	128	79
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.08	1.92	0.00	0.00	1.88	0.12	1.00	0.00	1.00	1.00	0.62	0.38
Final Sat.:	38	866	0	0	1026	66	432	0	506	476	326	202
Capacity Analysis Module:												
Vol/Sat:	0.10	0.10	xxxx	xxxx	0.67	0.66	0.14	xxxx	0.18	0.58	0.39	0.39
Crit Moves:	****				****				****	****		
Delay/Veh:	11.0	11.0	0.0	0.0	20.8	20.5	11.9	0.0	10.8	19.3	13.4	13.4
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	11.0	11.0	0.0	0.0	20.8	20.5	11.9	0.0	10.8	19.3	13.4	13.4
LOS by Move:	B	B	*	*	C	C	B	*	B	C	B	B
ApproachDel:	11.0			20.8			11.3			16.8		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	11.0			20.8			11.3			16.8		
LOS by Appr:	B			C			B			C		
AllWayAvgQ:	0.1	0.1	0.0	0.0	1.8	1.7	0.1	0.0	0.2	1.2	0.6	0.6

Note: Queue reported is the number of cars per lane.

Scenario Report

Scenario:	EX + Project AM
Command:	EX + Project AM
Volume:	EX AM
Geometry:	Default Geometry
Impact Fee:	Default Impact Fee
Trip Generation:	AM TG
Trip Distribution:	TD
Paths:	Default Path
Routes:	Default Route
Configuration:	Default Configuration

Trip Generation Report

Forecast for AM TG

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
1	Worker	1.00	Worker	63.00	0.00	63	0	63	91.3
	Zone 1 Subtotal					63	0	63	91.3
2	Truck	1.00	Material Truck	3.00	3.00	3	3	6	8.7
	Zone 2 Subtotal					3	3	6	8.7
TOTAL						66	3	69	100.0

Trip Distribution Report

Percent Of Trips TD

Zone	To Gates 1	6
1	50.0	50.0
2	0.0	100.0

Turning Movement Report
AM TG

Volume	Northbound			Southbound			Eastbound			Westbound			Total
Type	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Volume
#5													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#15 Grand/MacArthur/Off-Ramp													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	32	0	0	3	0	0	0	0	0	0	35	70
Total	0	32	0	0	3	0	0	0	0	0	0	35	70
#101													
Base	0	0	0	0	0	4	380	59	0	0	53	13	509
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	4	380	59	0	0	53	13	509
#102 MacArthur Blvd / Estudillo Ave													
Base	439	238	141	113	243	167	29	320	127	66	178	42	2103
Added	0	0	66	0	0	0	0	0	0	3	0	0	69
Total	439	238	207	113	243	167	29	320	127	69	178	42	2172
#103 Benedict Dr / Estudillo Ave													
Base	68	34	9	2	0	38	467	96	5	3	169	97	988
Added	0	0	0	0	0	0	0	66	0	0	3	0	69
Total	68	34	9	2	0	38	467	162	5	3	172	97	1057
#104 Lake Chabot Rd / Estudillo Ave													
Base	0	0	0	3	0	29	23	102	0	0	268	5	430
Added	0	0	0	0	0	3	66	0	0	0	0	0	69
Total	0	0	0	3	0	32	89	102	0	0	268	5	499
#105 SB-Off-Grand													
Base	5	133	0	0	550	34	27	0	35	217	110	71	1182
Added	0	0	0	0	3	0	0	0	0	0	0	32	35
Total	5	133	0	0	553	34	27	0	35	217	110	103	1217

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
#101	A	8.6	0.289	A	8.6	0.289	+ 0.000 D/V
#102 MacArthur Blvd / Estudillo Ave	B	18.9	0.658	B	18.8	0.658	-0.117 D/V
#103 Benedict Dr / Estudillo Ave	F	593.1	1.454	F	723.1	1.653	+130.056 D/V
#104 Lake Chabot Rd / Estudillo Ave	A	10.0	0.038	B	10.1	0.068	+ 0.135 D/V
#105 SB-Off-Grand	C	17.8	0.645	C	18.4	0.657	+ 0.012 V/C

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #101

Average Delay (sec/veh): 6.2 Worst Case Level Of Service: A[8.6]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0	0 0	0	0 0	0 0	1	0	1 0	0	0	0 1	0
Volume Module: >> Count Date: 6 Nov 2012 << 7:30												
Base Vol:	0	0	0	0	0	4	380	59	0	0	53	13
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	0	0	4	380	59	0	0	53	13
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	0	0	4	380	59	0	0	53	13
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	0.50	0.50	0.50	0.86	0.86	1.00	1.00	0.83	0.83
PHF Volume:	0	0	0	0	0	8	442	69	0	0	64	16
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	0	0	8	442	69	0	0	64	16
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	72	80	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	996	1531	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	996	1531	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	0.01	0.29	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.0	1.2	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	8.6	8.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	A	A	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	1.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	A	*	*	*	*	*
ApproachDel:	xxxxxx			8.6			xxxxxx			xxxxxx		
ApproachLOS:	*			A			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #102 MacArthur Blvd / Estudillo Ave

Cycle (sec):	65	Critical Vol./Cap.(X):	0.658
Loss Time (sec):	0	Average Delay (sec/veh):	18.8
Optimal Cycle:	54	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0 1	0 1	1	0 1	1 0	0	1 0	1 0	1	0 1	0 1
Volume Module: >> Count Date: 6 Nov 2012 << 7:30												
Base Vol:	439	238	141	113	243	167	29	320	127	66	178	42
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	439	238	141	113	243	167	29	320	127	66	178	42
Added Vol:	0	0	66	0	0	0	0	0	0	3	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	439	238	207	113	243	167	29	320	127	69	178	42
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.88	0.88	0.88	0.80	0.80	0.80	0.87	0.87	0.87
PHF Volume:	488	264	230	128	276	190	36	400	159	79	205	48
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	488	264	230	128	276	190	36	400	159	79	205	48
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	488	264	230	128	276	190	36	400	159	79	205	48
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.86	0.90	0.77	0.86	0.80	0.80	0.76	0.76	0.76	0.22	0.90	0.77
Lanes:	1.00	1.00	1.00	1.00	1.19	0.81	0.12	1.35	0.53	1.00	1.00	1.00
Final Sat.:	1625	1710	1454	1625	1808	1243	177	1954	776	421	1710	1454
Capacity Analysis Module:												
Vol/Sat:	0.30	0.15	0.16	0.08	0.15	0.15	0.20	0.20	0.20	0.19	0.12	0.03
Crit Moves:	****				****			****				
Green/Cycle:	0.46	0.46	0.46	0.23	0.23	0.23	0.31	0.31	0.31	0.31	0.31	0.31
Volume/Cap:	0.66	0.34	0.34	0.34	0.66	0.66	0.66	0.66	0.66	0.61	0.38	0.11
Uniform Del:	13.7	11.2	11.3	21.0	22.6	22.6	19.4	19.4	19.4	19.0	17.5	15.9
IncremntDel:	2.2	0.3	0.3	0.6	2.3	2.3	1.8	1.8	1.8	7.9	0.5	0.1
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	15.9	11.5	11.6	21.5	24.9	24.9	21.2	21.2	21.2	26.9	18.0	16.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	15.9	11.5	11.6	21.5	24.9	24.9	21.2	21.2	21.2	26.9	18.0	16.1
LOS by Move:	B	B	B	C	C	C	C	C	C	C	B	B
HCM2kAvgQ:	9	4	3	2	5	5	7	7	7	2	4	1

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #103 Benedict Dr / Estudillo Ave

Average Delay (sec/veh): 97.7 Worst Case Level Of Service: F[723.1]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Channel		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	1 0	1	0	1 0	1	0 1
Volume Module: >> Count Date: 6 Nov 2012 << 7:30												
Base Vol:	68	34	9	2	0	38	467	96	5	3	169	97
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	68	34	9	2	0	38	467	96	5	3	169	97
Added Vol:	0	0	0	0	0	0	0	66	0	0	3	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	68	34	9	2	0	38	467	162	5	3	172	97
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.68	0.68	0.68	0.71	0.71	0.71	0.87	0.87	0.87	0.85	0.85	0.85
PHF Volume:	100	50	13	3	0	54	537	186	6	4	202	114
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	100	50	13	3	0	54	537	186	6	4	202	114
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1556	1472	96	1401	1475	202	202	xxxx	xxxxx	192	xxxx	xxxxx
Potent Cap.:	93	128	966	119	128	844	1382	xxxx	xxxxx	1394	xxxx	xxxxx
Move Cap.:	60	78	966	42	78	844	1382	xxxx	xxxxx	1394	xxxx	xxxxx
Volume/Cap:	1.65	0.64	0.01	0.07	0.00	0.06	0.39	xxxx	xxxx	0.00	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1.9	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	9.3	xxxx	xxxxx	7.6	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	71	xxxxx	xxxx	430	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	15.5	xxxxx	xxxxx	0.4	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	723	xxxxx	xxxxx	14.6	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	F	*	*	B	*	*	*	*	*	*	*
ApproachDel:	723.1			14.6			xxxxxx			xxxxxx		
ApproachLOS:	F			B			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #104 Lake Chabot Rd / Estudillo Ave

Average Delay (sec/veh): 2.1 Worst Case Level Of Service: B[10.1]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	1	0 0	0 0	0	1 0
Volume Module: >> Count Date: 6 Nov 2012 << 7:30												
Base Vol:	0	0	0	3	0	29	23	102	0	0	268	5
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	3	0	29	23	102	0	0	268	5
Added Vol:	0	0	0	0	0	3	66	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	3	0	32	89	102	0	0	268	5
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	3	0	32	89	102	0	0	268	5
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	3	0	32	89	102	0	0	268	5
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	6.4	xxxx	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	3.5	xxxx	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	551	xxxx	271	273	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	499	xxxx	773	1302	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	473	xxxx	773	1302	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.01	xxxx	0.04	0.07	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	0.1	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	12.7	xxxx	9.9	8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	B	*	A	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			10.1			xxxxxx			xxxxxx		
ApproachLOS:	*			B			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #105 SB-Off-Grand

Cycle (sec): 100 Critical Vol./Cap.(X): 0.657
Loss Time (sec): 0 Average Delay (sec/veh): 18.4
Optimal Cycle: 0 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	1	0 0	0 0	1	1 0	1 0	0	0 1	1 0	0	1 0
Volume Module: >> Count Date: 28 Feb 2013 << 7:45-8:45												
Base Vol:	5	133	0	0	550	34	27	0	35	217	110	71
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	5	133	0	0	550	34	27	0	35	217	110	71
Added Vol:	0	0	0	0	3	0	0	0	0	0	0	32
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	5	133	0	0	553	34	27	0	35	217	110	103
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.62	0.62	0.62	0.86	0.86	0.86	0.60	0.60	0.60	0.78	0.78	0.78
PHF Volume:	8	215	0	0	643	40	45	0	58	278	141	132
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	8	215	0	0	643	40	45	0	58	278	141	132
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	8	215	0	0	643	40	45	0	58	278	141	132
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.07	1.93	0.00	0.00	1.88	0.12	1.00	0.00	1.00	1.00	0.52	0.48
Final Sat.:	33	880	0	0	979	61	404	0	467	464	268	251
Capacity Analysis Module:												
Vol/Sat:	0.24	0.24	xxxx	xxxx	0.66	0.65	0.11	xxxx	0.12	0.60	0.53	0.53
Crit Moves:	****				****				****	****		
Delay/Veh:	12.6	12.5	0.0	0.0	21.3	21.0	12.1	0.0	10.9	20.6	16.4	16.4
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	12.6	12.5	0.0	0.0	21.3	21.0	12.1	0.0	10.9	20.6	16.4	16.4
LOS by Move:	B	B	*	*	C	C	B	*	B	C	C	C
ApproachDel:	12.5			21.2			11.4			18.5		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	12.5			21.2			11.4			18.5		
LOS by Appr:	B			C			B			C		
AllWayAvgQ:	0.3	0.3	0.0	0.0	1.7	1.7	0.1	0.0	0.1	1.3	1.0	1.0

Note: Queue reported is the number of cars per lane.

Scenario Report

Scenario:	EX + Project PM
Command:	EX + Project PM
Volume:	EX PM
Geometry:	Default Geometry
Impact Fee:	Default Impact Fee
Trip Generation:	PM TG
Trip Distribution:	TD
Paths:	Default Path
Routes:	Default Route
Configuration:	Default Configuration

Trip Generation Report

Forecast for PM TG

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
1	Worker	1.00	Worker	0.00	63.00	0	63	63	91.3
	Zone 1 Subtotal					0	63	63	91.3
2	Truck	1.00	Material Truck	3.00	3.00	3	3	6	8.7
	Zone 2 Subtotal					3	3	6	8.7
TOTAL						3	66	69	100.0

Trip Distribution Report

Percent Of Trips TD

Zone	To Gates 1	6
1	50.0	50.0
2	0.0	100.0

Turning Movement Report
PM TG

Volume Type	Northbound Left	Thru	Right	Southbound Left	Thru	Right	Eastbound Left	Thru	Right	Westbound Left	Thru	Right	Total Volume
#5													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
#15 Grand/MacArthur/Off-Ramp													
Base	0	0	0	0	0	0	0	0	0	0	0	0	0
Added	0	0	0	0	35	0	0	0	0	0	0	3	38
Total	0	0	0	0	35	0	0	0	0	0	0	3	38
#101													
Base	0	0	0	0	0	4	360	102	0	0	35	8	509
Added	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	4	360	102	0	0	35	8	509
#102 MacArthur Blvd / Estudillo Ave													
Base	204	190	200	127	212	173	43	522	259	39	86	23	2078
Added	0	0	3	0	0	0	0	0	0	35	0	0	38
Total	204	190	203	127	212	173	43	522	259	74	86	23	2116
#103 Benedict Dr / Estudillo Ave													
Base	28	17	8	6	2	15	584	198	66	6	106	51	1087
Added	0	0	0	0	0	0	0	3	0	0	35	32	70
Total	28	17	8	6	2	15	584	201	66	6	141	83	1157
#104 Lake Chabot Rd / Estudillo Ave													
Base	0	0	0	4	0	39	41	185	0	0	114	5	388
Added	0	0	0	0	0	66	3	0	0	0	0	0	69
Total	0	0	0	4	0	105	44	185	0	0	114	5	457
#105 SB-Off-Grand													
Base	3	68	0	0	595	38	54	0	79	253	118	73	1281
Added	0	0	0	0	35	0	0	0	0	0	0	0	35
Total	3	68	0	0	630	38	54	0	79	253	118	73	1316

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
#101	A	8.5	0.274	A	8.5	0.274	+ 0.000 D/V
#102 MacArthur Blvd / Estudillo Ave	B	16.6	0.566	B	16.5	0.566	-0.079 D/V
#103 Benedict Dr / Estudillo Ave	F	221.1	0.670	F	276.2	0.759	+55.089 D/V
#104 Lake Chabot Rd / Estudillo Ave	A	9.4	0.052	A	9.7	0.140	+ 0.285 D/V
#105 SB-Off-Grand	C	17.9	0.666	C	19.1	0.704	+ 0.038 V/C

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #101

Average Delay (sec/veh): 5.8 Worst Case Level Of Service: A[8.5]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0	0 0	0	0 0 0	0 1		0 1	0 0	0	0 0	1	0
Volume Module: >> Count Date: 6 Nov 2012 << 4:45												
Base Vol:	0	0	0	0	0	4	360	102	0	0	35	8
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	0	0	4	360	102	0	0	35	8
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	0	0	4	360	102	0	0	35	8
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	0.50	0.50	0.50	0.84	0.84	0.84	0.77	0.77	0.77
PHF Volume:	0	0	0	0	0	8	429	121	0	0	45	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	0	0	8	429	121	0	0	45	10
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	3.3	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	51	56	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	1023	1562	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	1023	1562	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	0.01	0.27	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.0	1.1	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	8.5	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	A	A	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	1.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	A	*	*	*	*	*
ApproachDel:	xxxxxx			8.5			xxxxxx			xxxxxx		
ApproachLOS:	*			A			*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #102 MacArthur Blvd / Estudillo Ave

Cycle (sec):	65	Critical Vol./Cap.(X):	0.566
Loss Time (sec):	0	Average Delay (sec/veh):	16.5
Optimal Cycle:	43	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0 1	0 1	1	0 1	1 0	0	1 0	1 0	1	0 1	0 1
Volume Module: >> Count Date: 6 Nov 2012 << 4:45												
Base Vol:	204	190	200	127	212	173	43	522	259	39	86	23
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	204	190	200	127	212	173	43	522	259	39	86	23
Added Vol:	0	0	3	0	0	0	0	0	0	35	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	204	190	203	127	212	173	43	522	259	74	86	23
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.94	0.94	0.94	0.95	0.95	0.95	0.90	0.90	0.90
PHF Volume:	215	200	214	135	226	184	45	549	273	82	96	26
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	215	200	214	135	226	184	45	549	273	82	96	26
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	215	200	214	135	226	184	45	549	273	82	96	26
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.86	0.90	0.77	0.86	0.80	0.80	0.76	0.76	0.76	0.22	0.90	0.77
Lanes:	1.00	1.00	1.00	1.00	1.10	0.90	0.10	1.27	0.63	1.00	1.00	1.00
Final Sat.:	1625	1710	1454	1625	1669	1362	152	1840	913	412	1710	1454
Capacity Analysis Module:												
Vol/Sat:	0.13	0.12	0.15	0.08	0.14	0.14	0.30	0.30	0.30	0.20	0.06	0.02
Crit Moves:	****				****			****				
Green/Cycle:	0.23	0.30	0.30	0.17	0.24	0.24	0.53	0.53	0.53	0.53	0.53	0.53
Volume/Cap:	0.57	0.39	0.49	0.49	0.57	0.57	0.57	0.57	0.57	0.38	0.11	0.03
Uniform Del:	22.0	17.9	18.6	24.4	21.8	21.8	10.3	10.3	10.3	9.1	7.7	7.4
IncremntDel:	2.0	0.5	0.9	1.4	1.1	1.1	0.5	0.5	0.5	1.1	0.1	0.0
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	24.0	18.4	19.4	25.7	22.8	22.8	10.8	10.8	10.8	10.2	7.7	7.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	24.0	18.4	19.4	25.7	22.8	22.8	10.8	10.8	10.8	10.2	7.7	7.4
LOS by Move:	C	B	B	C	C	C	B	B	B	B	A	A
HCM2kAvgQ:	5	3	4	2	4	4	7	7	7	1	1	0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #103 Benedict Dr / Estudillo Ave

Average Delay (sec/veh): 20.5 Worst Case Level Of Service: F[276.2]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Channel		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	1 0	1	0	1 0	1	0 1
Volume Module: >> Count Date: 6 Nov 2012 << 4:45												
Base Vol:	28	17	8	6	2	15	584	198	66	6	106	51
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	28	17	8	6	2	15	584	198	66	6	106	51
Added Vol:	0	0	0	0	0	0	0	3	0	0	35	32
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	28	17	8	6	2	15	584	201	66	6	141	83
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.78	0.78	0.78	0.82	0.82	0.82	0.97	0.97	0.97	0.83	0.83	0.83
PHF Volume:	36	22	10	7	2	18	602	207	68	7	170	100
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	36	22	10	7	2	18	602	207	68	7	170	100
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1690	1630	138	1503	1664	170	170	xxxx	xxxxx	275	xxxx	xxxxx
Potent Cap.:	75	103	916	101	98	879	1420	xxxx	xxxxx	1299	xxxx	xxxxx
Move Cap.:	47	59	916	49	56	879	1420	xxxx	xxxxx	1299	xxxx	xxxxx
Volume/Cap:	0.76	0.37	0.01	0.15	0.04	0.02	0.42	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	9.4	xxxx	xxxxx	7.8	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	A	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	60	xxxxx	xxxx	131	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	5.6	xxxxx	xxxxx	0.8	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	276	xxxxx	xxxxx	39.9	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	F	*	*	E	*	*	*	*	*	*	*
ApproachDel:		276.2			39.9		xxxxxx			xxxxxx		
ApproachLOS:		F			E		*			*		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #104 Lake Chabot Rd / Estudillo Ave

Average Delay (sec/veh): 3.1 Worst Case Level Of Service: A[9.7]

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Stop Sign				Stop Sign				Uncontrolled				Uncontrolled			
Rights:	Include				Include				Include				Include			
Lanes:	0	0	0	0 0	1	0	0	0 1	1	0	1	0 0	0	0	0	1 0
Volume Module: >> Count Date: 6 Nov 2012 << 4:30																
Base Vol:	0	0	0		4	0	39		41	185	0		0	114	5	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	0	0	0		4	0	39		41	185	0		0	114	5	
Added Vol:	0	0	0		0	0	66		3	0	0		0	0	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	0	0	0		4	0	105		44	185	0		0	114	5	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	1.00	1.00	1.00		0.83	0.83	0.83		0.90	0.90	0.90		0.80	0.80	0.80	
PHF Volume:	0	0	0		5	0	127		49	206	0		0	143	6	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
FinalVolume:	0	0	0		5	0	127		49	206	0		0	143	6	
Critical Gap Module:																
Critical Gp:	xxxxx	xxxx	xxxxx		6.4	xxxx	6.2		4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx		
FollowUpTim:	xxxxx	xxxx	xxxxx		3.5	xxxx	3.3		2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx		
Capacity Module:																
Cnflict Vol:	xxxx	xxxx	xxxxx		449	xxxx	146		149	xxxx	xxxxx	xxxx	xxxx	xxxxx		
Potent Cap.:	xxxx	xxxx	xxxxx		571	xxxx	907		1445	xxxx	xxxxx	xxxx	xxxx	xxxxx		
Move Cap.:	xxxx	xxxx	xxxxx		557	xxxx	907		1445	xxxx	xxxxx	xxxx	xxxx	xxxxx		
Volume/Cap:	xxxx	xxxx	xxxx		0.01	xxxx	0.14		0.03	xxxx	xxxx	xxxx	xxxx	xxxx		
Level Of Service Module:																
2Way95thQ:	xxxx	xxxx	xxxxx		0.0	xxxx	0.5		0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx		
Control Del:	xxxxx	xxxx	xxxxx		11.5	xxxx	9.6		7.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx		
LOS by Move:	*	*	*		B	*	A		A	*	*	*	*	*		
Movement:	LT -	LTR -	RT		LT -	LTR -	RT		LT -	LTR -	RT		LT -	LTR -	RT	
Shared Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx	
SharedQueue:	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx	
Shrd ConDel:	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx	
Shared LOS:	*	*	*		*	*	*		*	*	*		*	*	*	
ApproachDel:	xxxxxx				9.7				xxxxxx				xxxxxx			
ApproachLOS:	*				A				*				*			

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #105 SB-Off-Grand

Cycle (sec): 100 Critical Vol./Cap.(X): 0.704
Loss Time (sec): 0 Average Delay (sec/veh): 19.1
Optimal Cycle: 0 Level Of Service: C

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Min. Green:	0	0	0		0	0	0		0	0	0		0	0	0	
Lanes:	0	1	1	0 0	0	0	1	1 0	1	0	0	0 1	1	0	0	1 0
Volume Module: >> Count Date: 28 Feb 2013 << 4:45-5:45																
Base Vol:	3	68	0		0	595	38		54	0	79		253	118	73	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	3	68	0		0	595	38		54	0	79		253	118	73	
Added Vol:	0	0	0		0	35	0		0	0	0		0	0	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	3	68	0		0	630	38		54	0	79		253	118	73	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.81	0.81	0.81		0.87	0.87	0.87		0.88	0.88	0.88		0.92	0.92	0.92	
PHF Volume:	4	84	0		0	724	44		61	0	90		275	128	79	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	4	84	0		0	724	44		61	0	90		275	128	79	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
FinalVolume:	4	84	0		0	724	44		61	0	90		275	128	79	
Saturation Flow Module:																
Adjustment:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Lanes:	0.08	1.92	0.00		0.00	1.89	0.11		1.00	0.00	1.00		1.00	0.62	0.38	
Final Sat.:	38	859	0		0	1028	62		428	0	500		471	322	199	
Capacity Analysis Module:																
Vol/Sat:	0.10	0.10	xxxx		xxxx	0.70	0.70		0.14	xxxx	0.18		0.58	0.40	0.40	
Crit Moves:	****					****					****		****			
Delay/Veh:	11.1	11.1	0.0		0.0	22.8	22.5		12.0	0.0	10.9		19.7	13.6	13.6	
Delay Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	11.1	11.1	0.0		0.0	22.8	22.5		12.0	0.0	10.9		19.7	13.6	13.6	
LOS by Move:	B	B	*		*	C	C		B	*	B		C	B	B	
ApproachDel:	11.1					22.8				11.4				17.1		
Delay Adj:	1.00					1.00				1.00				1.00		
ApprAdjDel:	11.1					22.8				11.4				17.1		
LOS by Appr:	B					C				B				C		
AllWayAvgQ:	0.1	0.1	0.0		0.0	2.1	2.0		0.2	0.0	0.2		1.2	0.6	0.6	

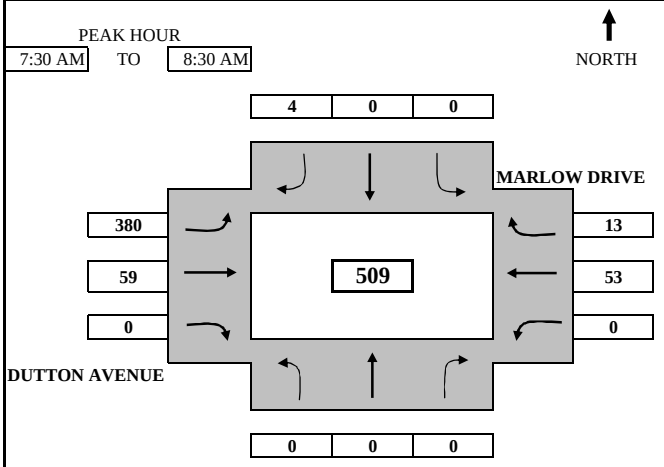
Note: Queue reported is the number of cars per lane.

B.A.Y.M.E.T.R.I.C.S.

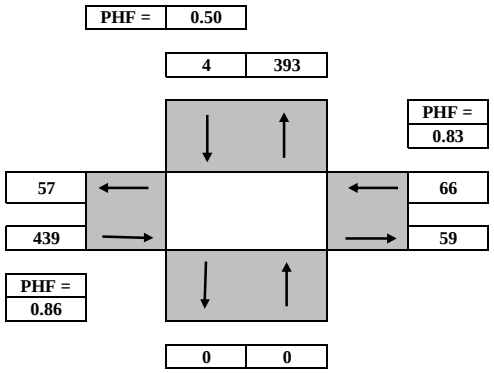
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	**CHABOT DAM TRAFFIC STUDY**	**SURVEY DATE:**	**11/6/2012**	**DAY:**	**TUESDAY**
N-S APPROACH:	**FOOTHILL BOULEVARD**	**SURVEY TIME:**	**7:00 AM**	**TO**	**9:00 AM**
E-W APPROACH:	**DUTTON AVENU - MARLOW DRIVE**	**JURISDICTION:**	**SAN LEANDRO**	**FILE:**	**3211076-1AM**

PEAK HOUR 7:30 AM TO 8:30 AM



ARRIVAL / DEPARTURE VOLUMES



TIME	PERIOD		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
From		To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
SURVEY DATA															
7:00 AM	to	7:15 AM				0		2	58	12			13	1	**86**
7:15 AM	to	7:30 AM				0		3	139	17			23	5	**187**
7:30 AM	to	7:45 AM				0		4	255	29			36	11	**335**
7:45 AM	to	8:00 AM				0		4	344	39			53	13	**453**
8:00 AM	to	8:15 AM				0		6	441	60			72	14	**593**
8:15 AM	to	8:30 AM				0		7	519	76			76	18	**696**
8:30 AM	to	8:45 AM				0		8	570	85			83	20	**766**
8:45 AM	to	9:00 AM				0		9	625	100			99	21	**854**
TOTAL BY PERIOD															
7:00 AM	to	7:15 AM	0	0	0	0	0	2	58	12	0	0	13	1	**86**
7:15 AM	to	7:30 AM	0	0	0	0	0	1	81	5	0	0	10	4	**101**
7:30 AM	to	7:45 AM	0	0	0	0	0	1	116	12	0	0	13	6	**148**
7:45 AM	to	8:00 AM	0	0	0	0	0	0	89	10	0	0	17	2	**118**
8:00 AM	to	8:15 AM	0	0	0	0	0	2	97	21	0	0	19	1	**140**
8:15 AM	to	8:30 AM	0	0	0	0	0	1	78	16	0	0	4	4	**103**
8:30 AM	to	8:45 AM	0	0	0	0	0	1	51	9	0	0	7	2	**70**
8:45 AM	to	9:00 AM	0	0	0	0	0	1	55	15	0	0	16	1	**88**
HOURLY TOTALS															
7:00 AM	to	8:00 AM	0	0	0	0	0	4	344	39	0	0	53	13	**453**
7:15 AM	to	8:15 AM	0	0	0	0	0	4	383	48	0	0	59	13	**507**
7:30 AM	to	8:30 AM	0	0	0	0	0	4	380	59	0	0	53	13	**509**
7:45 AM	to	8:45 AM	0	0	0	0	0	4	315	56	0	0	47	9	**431**
8:00 AM	to	9:00 AM	0	0	0	0	0	5	281	61	0	0	46	8	**401**

TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

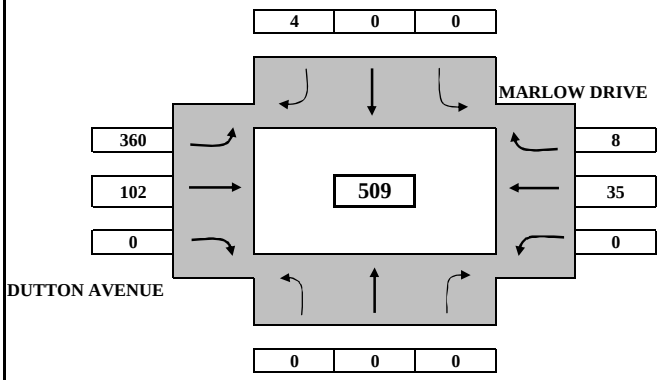
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

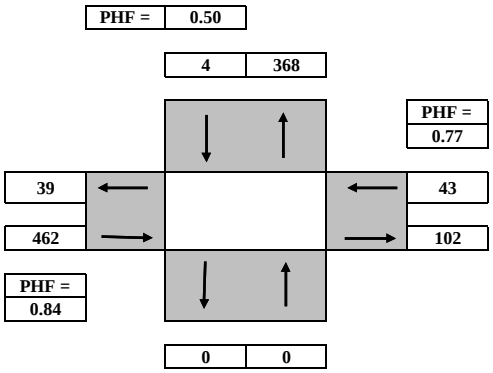
PROJECT:	**CHABOT DAM TRAFFIC STUDY**	**SURVEY DATE:**	**11/6/2012**	**DAY:**	**TUESDAY**
N-S APPROACH:	**FOOTHILL BOULEVARD**	**SURVEY TIME:**	**4:00 PM**	**TO**	**6:00 PM**
E-W APPROACH:	**DUTTON AVENU - MARLOW DRIVE**	**JURISDICTION:**	**SAN LEANDRO**	**FILE:**	**3211076-1PM**

PEAK HOUR 4:45 PM TO 5:45 PM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME	PERIOD		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
From		To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
SURVEY DATA															
4:00 PM	to	4:15 PM				0		0	70	18			8	1	**97**
4:15 PM	to	4:30 PM				0		1	146	47			19	1	**214**
4:30 PM	to	4:45 PM				0		1	219	64			28	3	**315**
4:45 PM	to	5:00 PM				0		2	294	83			36	6	**421**
5:00 PM	to	5:15 PM				0		4	391	111			45	7	**558**
5:15 PM	to	5:30 PM				0		5	503	136			56	10	**710**
5:30 PM	to	5:45 PM				0		5	579	166			63	11	**824**
5:45 PM	to	6:00 PM				0		5	645	194			72	12	**928**
TOTAL BY PERIOD															
4:00 PM	to	4:15 PM	0	0	0	0	0	0	70	18	0	0	8	1	**97**
4:15 PM	to	4:30 PM	0	0	0	0	0	1	76	29	0	0	11	0	**117**
4:30 PM	to	4:45 PM	0	0	0	0	0	0	73	17	0	0	9	2	**101**
4:45 PM	to	5:00 PM	0	0	0	0	0	1	75	19	0	0	8	3	**106**
5:00 PM	to	5:15 PM	0	0	0	0	0	2	97	28	0	0	9	1	**137**
5:15 PM	to	5:30 PM	0	0	0	0	0	1	112	25	0	0	11	3	**152**
5:30 PM	to	5:45 PM	0	0	0	0	0	0	76	30	0	0	7	1	**114**
5:45 PM	to	6:00 PM	0	0	0	0	0	0	66	28	0	0	9	1	**104**
HOURLY TOTALS															
4:00 PM	to	5:00 PM	0	0	0	0	0	2	294	83	0	0	36	6	**421**
4:15 PM	to	5:15 PM	0	0	0	0	0	4	321	93	0	0	37	6	**461**
4:30 PM	to	5:30 PM	0	0	0	0	0	4	357	89	0	0	37	9	**496**
4:45 PM	to	5:45 PM	0	0	0	0	0	4	360	102	0	0	35	8	**509**
5:00 PM	to	6:00 PM	0	0	0	0	0	3	351	111	0	0	36	6	**507**

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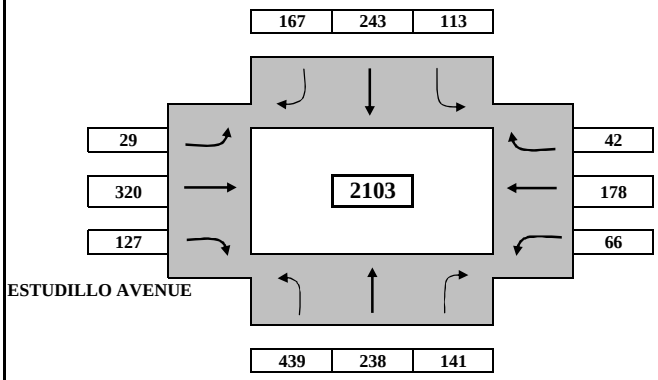
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

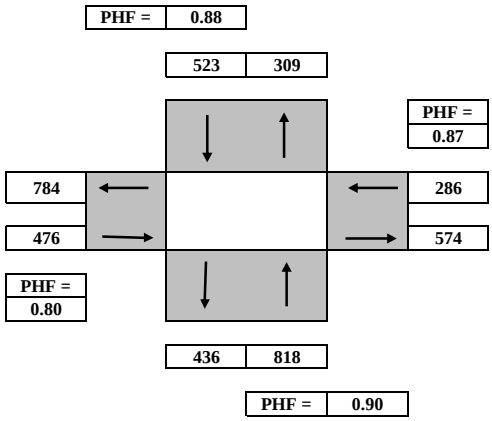
PROJECT:	**CHABOT DAM TRAFFIC STUDY**	**SURVEY DATE:**	**11/6/2012**	**DAY:**	**TUESDAY**
N-S APPROACH:	**MacARTHUR BOULEVARD**	**SURVEY TIME:**	**7:00 AM**	**TO**	**9:00 AM**
E-W APPROACH:	**ESTUDILLO AVENUE**	**JURISDICTION:**	**SAN LEANDRO**	**FILE:**	**3211076-2AM**

PEAK HOUR 7:30 AM TO 8:30 AM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
From		To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
SURVEY DATA															
7:00 AM	to	7:15 AM	38	22	20	14	45	31	6	61	21	15	24	7	**304**
7:15 AM	to	7:30 AM	121	47	45	29	78	57	8	123	43	27	52	14	**644**
7:30 AM	to	7:45 AM	221	84	79	56	124	94	16	207	77	44	97	27	**1126**
7:45 AM	to	8:00 AM	330	150	109	86	203	133	25	273	102	62	137	38	**1648**
8:00 AM	to	8:15 AM	448	216	139	119	268	177	30	374	144	82	192	45	**2234**
8:15 AM	to	8:30 AM	560	285	186	142	321	224	37	443	170	93	230	56	**2747**
8:30 AM	to	8:45 AM	669	333	216	169	358	301	42	509	195	106	249	62	**3209**
8:45 AM	to	9:00 AM	759	359	237	193	398	381	48	569	214	114	272	67	**3611**
TOTAL BY PERIOD															
7:00 AM	to	7:15 AM	38	22	20	14	45	31	6	61	21	15	24	7	**304**
7:15 AM	to	7:30 AM	83	25	25	15	33	26	2	62	22	12	28	7	**340**
7:30 AM	to	7:45 AM	100	37	34	27	46	37	8	84	34	17	45	13	**482**
7:45 AM	to	8:00 AM	109	66	30	30	79	39	9	66	25	18	40	11	**522**
8:00 AM	to	8:15 AM	118	66	30	33	65	44	5	101	42	20	55	7	**586**
8:15 AM	to	8:30 AM	112	69	47	23	53	47	7	69	26	11	38	11	**513**
8:30 AM	to	8:45 AM	109	48	30	27	37	77	5	66	25	13	19	6	**462**
8:45 AM	to	9:00 AM	90	26	21	24	40	80	6	60	19	8	23	5	**402**
HOURLY TOTALS															
7:00 AM	to	8:00 AM	330	150	109	86	203	133	25	273	102	62	137	38	**1648**
7:15 AM	to	8:15 AM	410	194	119	105	223	146	24	313	123	67	168	38	**1930**
7:30 AM	to	8:30 AM	439	238	141	113	243	167	29	320	127	66	178	42	**2103**
7:45 AM	to	8:45 AM	448	249	137	113	234	207	26	302	118	62	152	35	**2083**
8:00 AM	to	9:00 AM	429	209	128	107	195	248	23	296	112	52	135	29	**1963**

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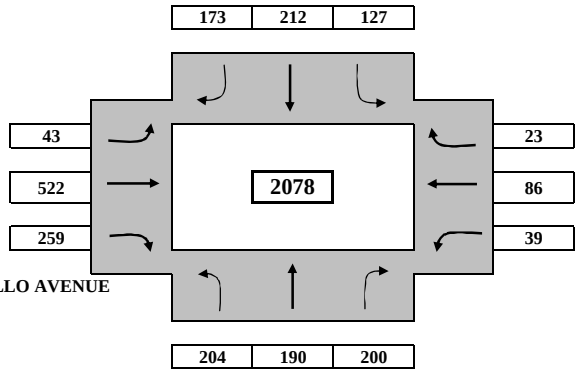
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

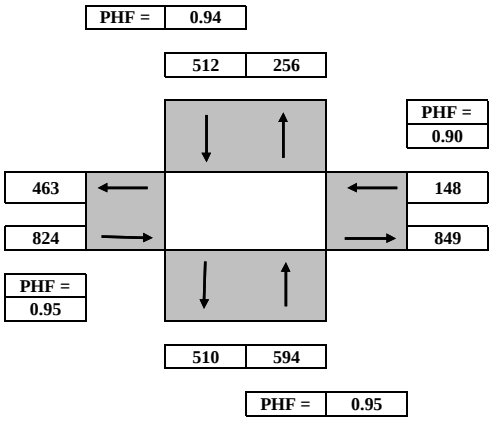
PROJECT:	**CHABOT DAM TRAFFIC STUDY**	**SURVEY DATE:**	**11/6/2012**	**DAY:**	**TUESDAY**
N-S APPROACH:	**MacARTHUR BOULEVARD**	**SURVEY TIME:**	**4:00 PM**	**TO**	**6:00 PM**
E-W APPROACH:	**ESTUDILLO AVENUE**	**JURISDICTION:**	**SAN LEANDRO**	**FILE:**	**3211076-2PM**

PEAK HOUR 4:45 PM TO 5:45 PM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME	PERIOD		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
From		To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
SURVEY DATA															
4:00 PM	to	4:15 PM	41	40	55	27	50	51	11	126	44	7	17	6	**475**
4:15 PM	to	4:30 PM	79	82	94	66	98	101	18	242	81	11	38	8	**918**
4:30 PM	to	4:45 PM	132	133	132	101	153	147	28	352	124	23	58	11	**1394**
4:45 PM	to	5:00 PM	183	181	187	136	196	200	37	480	204	32	83	17	**1936**
5:00 PM	to	5:15 PM	226	228	227	163	245	248	50	617	270	45	107	21	**2447**
5:15 PM	to	5:30 PM	284	272	281	198	309	285	57	743	334	52	126	28	**2969**
5:30 PM	to	5:45 PM	336	323	332	228	365	320	71	874	383	62	144	34	**3472**
5:45 PM	to	6:00 PM	393	371	369	258	398	356	82	971	429	72	155	41	**3895**
TOTAL BY PERIOD															
4:00 PM	to	4:15 PM	41	40	55	27	50	51	11	126	44	7	17	6	**475**
4:15 PM	to	4:30 PM	38	42	39	39	48	50	7	116	37	4	21	2	**443**
4:30 PM	to	4:45 PM	53	51	38	35	55	46	10	110	43	12	20	3	**476**
4:45 PM	to	5:00 PM	51	48	55	35	43	53	9	128	80	9	25	6	**542**
5:00 PM	to	5:15 PM	43	47	40	27	49	48	13	137	66	13	24	4	**511**
5:15 PM	to	5:30 PM	58	44	54	35	64	37	7	126	64	7	19	7	**522**
5:30 PM	to	5:45 PM	52	51	51	30	56	35	14	131	49	10	18	6	**503**
5:45 PM	to	6:00 PM	57	48	37	30	33	36	11	97	46	10	11	7	**423**
HOURLY TOTALS															
4:00 PM	to	5:00 PM	183	181	187	136	196	200	37	480	204	32	83	17	**1936**
4:15 PM	to	5:15 PM	185	188	172	136	195	197	39	491	226	38	90	15	**1972**
4:30 PM	to	5:30 PM	205	190	187	132	211	184	39	501	253	41	88	20	**2051**
4:45 PM	to	5:45 PM	204	190	200	127	212	173	43	522	259	39	86	23	**2078**
5:00 PM	to	6:00 PM	210	190	182	122	202	156	45	491	225	40	72	24	**1959**

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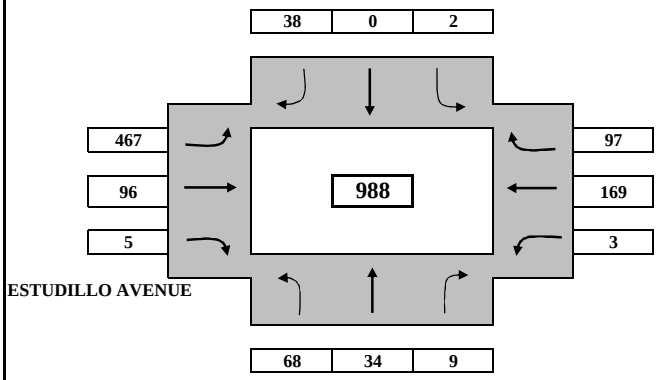
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

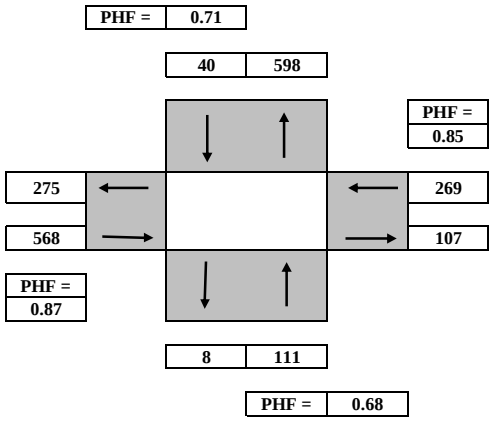
PROJECT:	**CHABOT DAM TRAFFIC STUDY**	**SURVEY DATE:**	**11/6/2012**	**DAY:**	**TUESDAY**
N-S APPROACH:	**BENEDICT DRIVE**	**SURVEY TIME:**	**7:00 AM**	**TO**	**9:00 AM**
E-W APPROACH:	**ESTUDILLO AVENUE**	**JURISDICTION:**	**SAN LEANDRO**	**FILE:**	**3211076-3AM**

PEAK HOUR 7:30 AM TO 8:30 AM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME	PERIOD		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
From		To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
SURVEY DATA															
7:00 AM	to	7:15 AM	8	4	0	0	1	5	70	17	1	1	33	17	**157**
7:15 AM	to	7:30 AM	13	9	0	2	1	12	168	28	1	1	72	38	**345**
7:30 AM	to	7:45 AM	24	15	0	2	1	23	289	44	2	2	119	69	**590**
7:45 AM	to	8:00 AM	45	31	4	3	1	33	408	59	2	2	157	99	**844**
8:00 AM	to	8:15 AM	70	39	6	3	1	47	543	85	5	3	200	118	**1120**
8:15 AM	to	8:30 AM	81	43	9	4	1	50	635	124	6	4	241	135	**1333**
8:30 AM	to	8:45 AM	91	51	9	5	2	56	711	169	8	4	274	143	**1523**
8:45 AM	to	9:00 AM	95	53	12	6	2	61	776	208	12	6	301	159	**1691**
TOTAL BY PERIOD															
7:00 AM	to	7:15 AM	8	4	0	0	1	5	70	17	1	1	33	17	**157**
7:15 AM	to	7:30 AM	5	5	0	2	0	7	98	11	0	0	39	21	**188**
7:30 AM	to	7:45 AM	11	6	0	0	0	11	121	16	1	1	47	31	**245**
7:45 AM	to	8:00 AM	21	16	4	1	0	10	119	15	0	0	38	30	**254**
8:00 AM	to	8:15 AM	25	8	2	0	0	14	135	26	3	1	43	19	**276**
8:15 AM	to	8:30 AM	11	4	3	1	0	3	92	39	1	1	41	17	**213**
8:30 AM	to	8:45 AM	10	8	0	1	1	6	76	45	2	0	33	8	**190**
8:45 AM	to	9:00 AM	4	2	3	1	0	5	65	39	4	2	27	16	**168**
HOURLY TOTALS															
7:00 AM	to	8:00 AM	45	31	4	3	1	33	408	59	2	2	157	99	**844**
7:15 AM	to	8:15 AM	62	35	6	3	0	42	473	68	4	2	167	101	**963**
7:30 AM	to	8:30 AM	68	34	9	2	0	38	467	96	5	3	169	97	**988**
7:45 AM	to	8:45 AM	67	36	9	3	1	33	422	125	6	2	155	74	**933**
8:00 AM	to	9:00 AM	50	22	8	3	1	28	368	149	10	4	144	60	**847**

TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

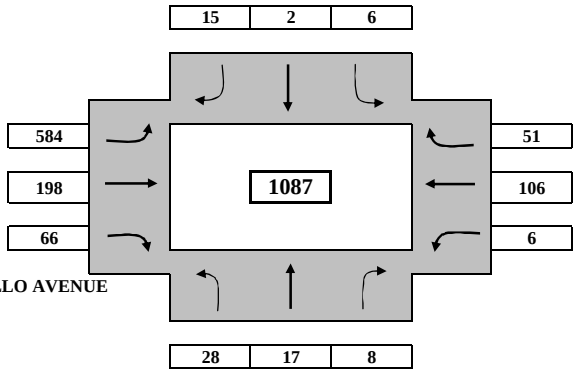
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

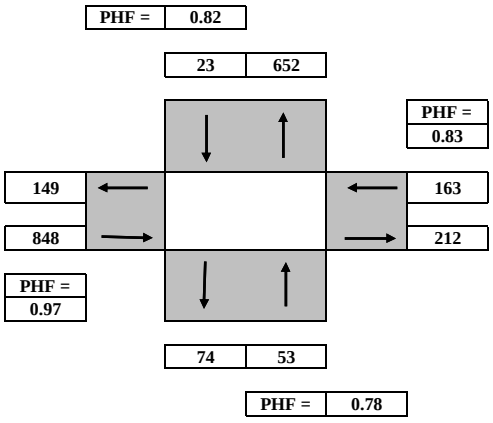
PROJECT:	**CHABOT DAM TRAFFIC STUDY**	**SURVEY DATE:**	**11/6/2012**	**DAY:**	**TUESDAY**
N-S APPROACH:	**BENEDICT DRIVE**	**SURVEY TIME:**	**4:00 PM**	**TO**	**6:00 PM**
E-W APPROACH:	**ESTUDILLO AVENUE**	**JURISDICTION:**	**SAN LEANDRO**	**FILE:**	**3211076-3PM**

PEAK HOUR 4:45 PM TO 5:45 PM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME	PERIOD		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
From		To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
SURVEY DATA															
4:00 PM	to	4:15 PM	7	2	5	1	0	2	139	46	14	1	21	8	**246**
4:15 PM	to	4:30 PM	17	5	5	1	1	3	273	88	32	2	40	11	**478**
4:30 PM	to	4:45 PM	19	5	6	1	2	7	398	132	49	3	67	21	**710**
4:45 PM	to	5:00 PM	28	10	8	2	2	13	535	190	72	7	92	41	**1000**
5:00 PM	to	5:15 PM	38	15	10	4	2	17	684	237	80	7	119	55	**1268**
5:15 PM	to	5:30 PM	42	19	12	6	3	18	831	286	99	7	148	63	**1534**
5:30 PM	to	5:45 PM	47	22	14	7	4	22	982	330	115	9	173	72	**1797**
5:45 PM	to	6:00 PM	48	25	16	8	4	22	1105	360	125	9	201	74	**1997**
TOTAL BY PERIOD															
4:00 PM	to	4:15 PM	7	2	5	1	0	2	139	46	14	1	21	8	**246**
4:15 PM	to	4:30 PM	10	3	0	0	1	1	134	42	18	1	19	3	**232**
4:30 PM	to	4:45 PM	2	0	1	0	1	4	125	44	17	1	27	10	**232**
4:45 PM	to	5:00 PM	9	5	2	1	0	6	137	58	23	4	25	20	**290**
5:00 PM	to	5:15 PM	10	5	2	2	0	4	149	47	8	0	27	14	**268**
5:15 PM	to	5:30 PM	4	4	2	2	1	1	147	49	19	0	29	8	**266**
5:30 PM	to	5:45 PM	5	3	2	1	1	4	151	44	16	2	25	9	**263**
5:45 PM	to	6:00 PM	1	3	2	1	0	0	123	30	10	0	28	2	**200**
HOURLY TOTALS															
4:00 PM	to	5:00 PM	28	10	8	2	2	13	535	190	72	7	92	41	**1000**
4:15 PM	to	5:15 PM	31	13	5	3	2	15	545	191	66	6	98	47	**1022**
4:30 PM	to	5:30 PM	25	14	7	5	2	15	558	198	67	5	108	52	**1056**
4:45 PM	to	5:45 PM	28	17	8	6	2	15	584	198	66	6	106	51	**1087**
5:00 PM	to	6:00 PM	20	15	8	6	2	9	570	170	53	2	109	33	**997**

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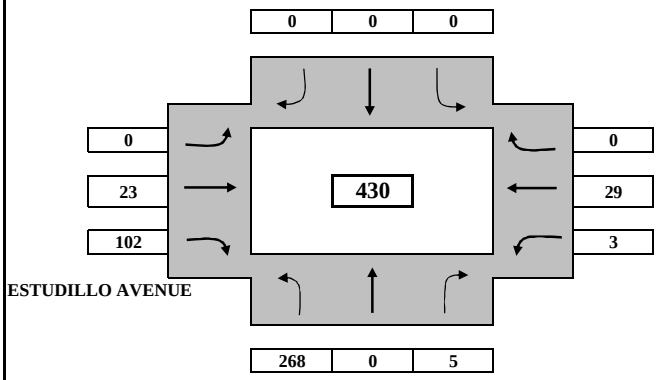
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

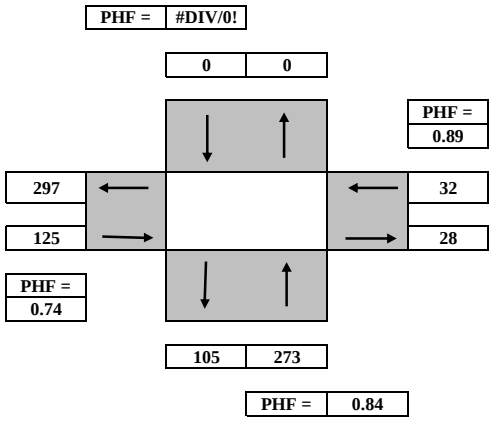
PROJECT:	**CHABOT DAM TRAFFIC STUDY**	**SURVEY DATE:**	**11/6/2012**	**DAY:**	**TUESDAY**
N-S APPROACH:	**LAKE CHABOT ROAD**	**SURVEY TIME:**	**7:00 AM**	**TO**	**9:00 AM**
E-W APPROACH:	**ESTUDILLO AVENUE**	**JURISDICTION:**	**SAN LEANDRO**	**FILE:**	**3211076-4AM**

PEAK HOUR 7:30 AM TO 8:30 AM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME	PERIOD		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
From		To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
SURVEY DATA															
7:00 AM	to	7:15 AM	48		0					7	15	0	7		**77**
7:15 AM	to	7:30 AM	104		0					12	20	1	10		**147**
7:30 AM	to	7:45 AM	177		1					13	45	2	18		**256**
7:45 AM	to	8:00 AM	258		1					20	80	2	27		**388**
8:00 AM	to	8:15 AM	322		4					29	100	2	34		**491**
8:15 AM	to	8:30 AM	372		5					35	122	4	39		**577**
8:30 AM	to	8:45 AM	413		7					45	145	5	42		**657**
8:45 AM	to	9:00 AM	454		7					52	171	6	51		**741**
TOTAL BY PERIOD															
7:00 AM	to	7:15 AM	48	0	0	0	0	0	0	7	15	0	7	0	**77**
7:15 AM	to	7:30 AM	56	0	0	0	0	0	0	5	5	1	3	0	**70**
7:30 AM	to	7:45 AM	73	0	1	0	0	0	0	1	25	1	8	0	**109**
7:45 AM	to	8:00 AM	81	0	0	0	0	0	0	7	35	0	9	0	**132**
8:00 AM	to	8:15 AM	64	0	3	0	0	0	0	9	20	0	7	0	**103**
8:15 AM	to	8:30 AM	50	0	1	0	0	0	0	6	22	2	5	0	**86**
8:30 AM	to	8:45 AM	41	0	2	0	0	0	0	10	23	1	3	0	**80**
8:45 AM	to	9:00 AM	41	0	0	0	0	0	0	7	26	1	9	0	**84**
HOURLY TOTALS															
7:00 AM	to	8:00 AM	258	0	1	0	0	0	0	20	80	2	27	0	**388**
7:15 AM	to	8:15 AM	274	0	4	0	0	0	0	22	85	2	27	0	**414**
7:30 AM	to	8:30 AM	268	0	5	0	0	0	0	23	102	3	29	0	**430**
7:45 AM	to	8:45 AM	236	0	6	0	0	0	0	32	100	3	24	0	**401**
8:00 AM	to	9:00 AM	196	0	6	0	0	0	0	32	91	4	24	0	**353**

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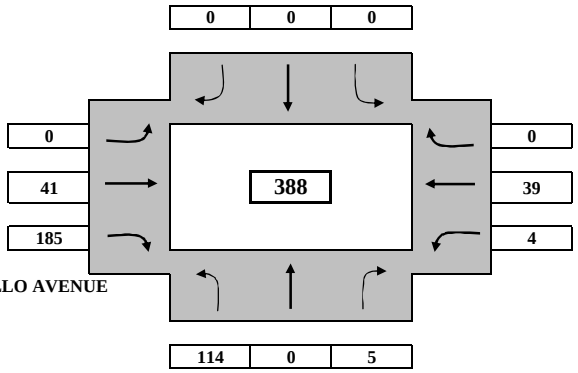
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

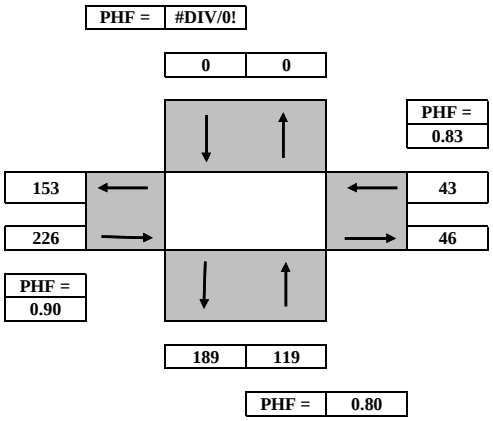
PROJECT:	**CHABOT DAM TRAFFIC STUDY**	**SURVEY DATE:**	**11/6/2012**	**DAY:**	**TUESDAY**
N-S APPROACH:	**LAKE CHABOT ROAD**	**SURVEY TIME:**	**4:00 PM**	**TO**	**6:00 PM**
E-W APPROACH:	**ESTUDILLO AVENUE**	**JURISDICTION:**	**SAN LEANDRO**	**FILE:**	**3211076-4PM**

PEAK HOUR 4:30 PM TO 5:30 PM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME	PERIOD		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
From		To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
SURVEY DATA															
4:00 PM	to	4:15 PM	22		1					13	37	0	8		**81**
4:15 PM	to	4:30 PM	39		2					24	81	1	15		**162**
4:30 PM	to	4:45 PM	69		4					28	125	3	23		**252**
4:45 PM	to	5:00 PM	97		4					45	168	4	33		**351**
5:00 PM	to	5:15 PM	132		6					53	223	5	45		**464**
5:15 PM	to	5:30 PM	153		7					65	266	5	54		**550**
5:30 PM	to	5:45 PM	176		7					73	301	6	72		**635**
5:45 PM	to	6:00 PM	200		8					78	333	6	77		**702**
TOTAL BY PERIOD															
4:00 PM	to	4:15 PM	22	0	1	0	0	0	0	13	37	0	8	0	**81**
4:15 PM	to	4:30 PM	17	0	1	0	0	0	0	11	44	1	7	0	**81**
4:30 PM	to	4:45 PM	30	0	2	0	0	0	0	4	44	2	8	0	**90**
4:45 PM	to	5:00 PM	28	0	0	0	0	0	0	17	43	1	10	0	**99**
5:00 PM	to	5:15 PM	35	0	2	0	0	0	0	8	55	1	12	0	**113**
5:15 PM	to	5:30 PM	21	0	1	0	0	0	0	12	43	0	9	0	**86**
5:30 PM	to	5:45 PM	23	0	0	0	0	0	0	8	35	1	18	0	**85**
5:45 PM	to	6:00 PM	24	0	1	0	0	0	0	5	32	0	5	0	**67**
HOURLY TOTALS															
4:00 PM	to	5:00 PM	97	0	4	0	0	0	0	45	168	4	33	0	**351**
4:15 PM	to	5:15 PM	110	0	5	0	0	0	0	40	186	5	37	0	**383**
4:30 PM	to	5:30 PM	114	0	5	0	0	0	0	41	185	4	39	0	**388**
4:45 PM	to	5:45 PM	107	0	3	0	0	0	0	45	176	3	49	0	**383**
5:00 PM	to	6:00 PM	103	0	4	0	0	0	0	33	165	2	44	0	**351**

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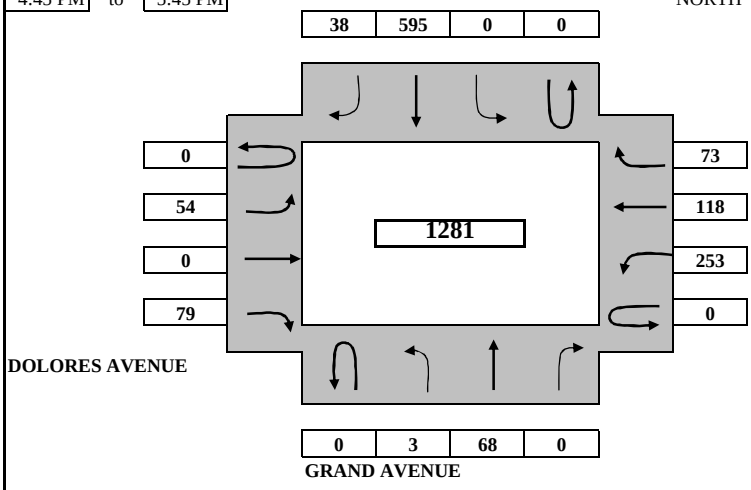
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

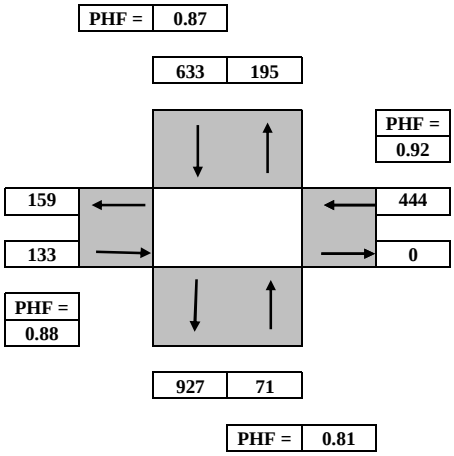
PROJECT:	**CHABOT DAM TRAFFIC COUNTS**	**SURVEY DATE:**	**2/28/2013**	**DAY:**	**THURSDAY**
N-S APPROACH:	**GRAND AVENUE**	**SURVEY TIME:**	**4:00 PM**	**TO**	**6:00 PM**
E-W APPROACH:	**DOLORES AVENUE**	**JURISDICTION:**	**SAN LEANDRO**	**FILE:**	**3302022-PM**

PEAK HOUR 4:45 PM to 5:45 PM

NORTH



ARRIVAL / DEPARTURE VOLUMES & APPROACH PHF



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																			
4:00 PM	to	4:15 PM		2	24				121	3		6		8		56	21	24	**265**
4:15 PM	to	4:30 PM		2	47				244	14		15		20		111	50	47	**550**
4:30 PM	to	4:45 PM		4	62				387	19		20		32		178	75	61	**838**
4:45 PM	to	5:00 PM		6	78				522	28		31		46		249	111	75	**1146**
5:00 PM	to	5:15 PM		7	88				670	34		54		61		314	143	97	**1468**
5:15 PM	to	5:30 PM		7	110				837	49		61		87		376	165	116	**1808**
5:30 PM	to	5:45 PM		7	130				982	57		74		111		431	193	134	**2119**
5:45 PM	to	6:00 PM		8	149				1123	69		86		131		482	216	149	**2413**
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	2	24	0	0	0	121	3	0	6	0	8	0	56	21	24	**265**
4:15 PM	to	4:30 PM	0	0	23	0	0	0	123	11	0	9	0	12	0	55	29	23	**285**
4:30 PM	to	4:45 PM	0	2	15	0	0	0	143	5	0	5	0	12	0	67	25	14	**288**
4:45 PM	to	5:00 PM	0	2	16	0	0	0	135	9	0	11	0	14	0	71	36	14	**308**
5:00 PM	to	5:15 PM	0	1	10	0	0	0	148	6	0	23	0	15	0	65	32	22	**322**
5:15 PM	to	5:30 PM	0	0	22	0	0	0	167	15	0	7	0	26	0	62	22	19	**340**
5:30 PM	to	5:45 PM	0	0	20	0	0	0	145	8	0	13	0	24	0	55	28	18	**311**
5:45 PM	to	6:00 PM	0	1	19	0	0	0	141	12	0	12	0	20	0	51	23	15	**294**
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	6	78	0	0	0	522	28	0	31	0	46	0	249	111	75	**1146**
4:15 PM	to	5:15 PM	0	5	64	0	0	0	549	31	0	48	0	53	0	258	122	73	**1203**
4:30 PM	to	5:30 PM	0	5	63	0	0	0	593	35	0	46	0	67	0	265	115	69	**1258**
4:45 PM	to	5:45 PM	0	3	68	0	0	0	595	38	0	54	0	79	0	253	118	73	**1281**
5:00 PM	to	6:00 PM	0	2	71	0	0	0	601	41	0	55	0	85	0	233	105	74	**1267**
PEAK HOUR SUMMARY																			
4:45 PM	to	5:45 PM	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	TOTAL
VOLUME			0	3	68	0	0	0	595	38	0	54	0	79	0	253	118	73	**1281**
PHF BY MOVEMENT			0.00	0.38	0.77	0.00	0.00	0.00	0.89	0.63	0.00	0.59	0.00	0.76	0.00	0.89	0.82	0.83	OVERALL
PHF BY APPROACH			0.81				0.87				0.88				0.92				0.94

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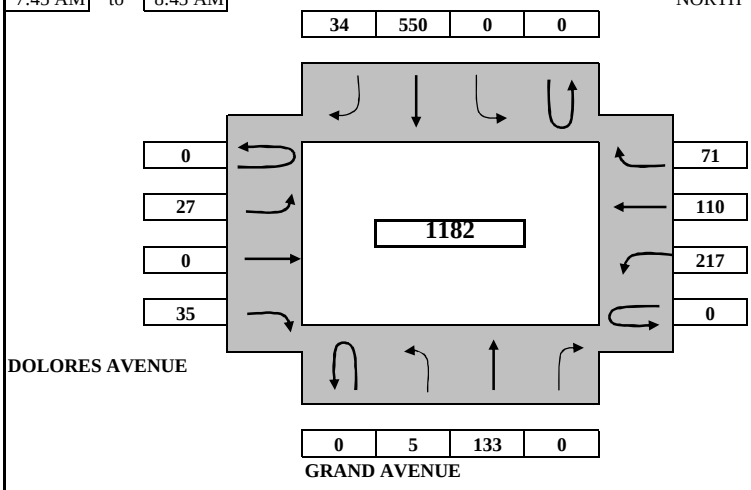
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

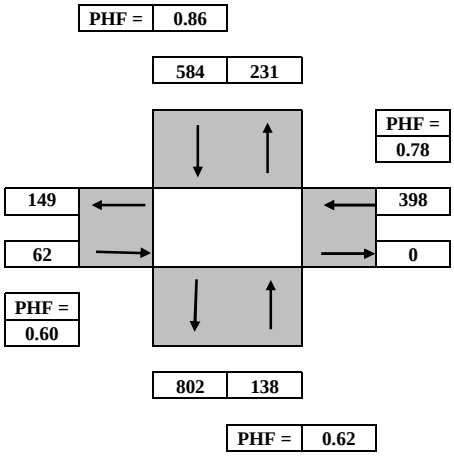
PROJECT:	**CHABOT DAM TRAFFIC COUNTS**	**SURVEY DATE:**	**2/28/2013**	**DAY:**	**THURSDAY**
N-S APPROACH:	**GRAND AVENUE**	**SURVEY TIME:**	**7:00 AM**	**TO**	**9:00 AM**
E-W APPROACH:	**DOLORES AVENUE**	**JURISDICTION:**	**SAN LEANDRO**	**FILE:**	**3302022-AM**

PEAK HOUR
7:45 AM to 8:45 AM

NORTH



ARRIVAL / DEPARTURE VOLUMES & APPROACH PHF



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																			
7:00 AM	to	7:15 AM		0	10				66	0		4		3		20	6	2	**111**
7:15 AM	to	7:30 AM		0	26				147	2		10		7		53	20	7	**272**
7:30 AM	to	7:45 AM		1	41				248	8		19		16		107	40	14	**494**
7:45 AM	to	8:00 AM		2	75				388	10		34		27		189	73	27	**825**
8:00 AM	to	8:15 AM		2	131				551	17		41		34		251	96	46	**1169**
8:15 AM	to	8:30 AM		3	156				676	30		42		43		286	121	66	**1423**
8:30 AM	to	8:45 AM		6	174				798	42		46		51		324	150	85	**1676**
8:45 AM	to	9:00 AM		6	190				874	44		49		59		372	178	102	**1874**
TOTAL BY PERIOD																			
7:00 AM	to	7:15 AM	0	0	10	0	0	0	66	0	0	4	0	3	0	20	6	2	**111**
7:15 AM	to	7:30 AM	0	0	16	0	0	0	81	2	0	6	0	4	0	33	14	5	**161**
7:30 AM	to	7:45 AM	0	1	15	0	0	0	101	6	0	9	0	9	0	54	20	7	**222**
7:45 AM	to	8:00 AM	0	1	34	0	0	0	140	2	0	15	0	11	0	82	33	13	**331**
8:00 AM	to	8:15 AM	0	0	56	0	0	0	163	7	0	7	0	7	0	62	23	19	**344**
8:15 AM	to	8:30 AM	0	1	25	0	0	0	125	13	0	1	0	9	0	35	25	20	**254**
8:30 AM	to	8:45 AM	0	3	18	0	0	0	122	12	0	4	0	8	0	38	29	19	**253**
8:45 AM	to	9:00 AM	0	0	16	0	0	0	76	2	0	3	0	8	0	48	28	17	**198**
HOURLY TOTALS																			
7:00 AM	to	8:00 AM	0	2	75	0	0	0	388	10	0	34	0	27	0	189	73	27	**825**
7:15 AM	to	8:15 AM	0	2	121	0	0	0	485	17	0	37	0	31	0	231	90	44	**1058**
7:30 AM	to	8:30 AM	0	3	130	0	0	0	529	28	0	32	0	36	0	233	101	59	**1151**
7:45 AM	to	8:45 AM	0	5	133	0	0	0	550	34	0	27	0	35	0	217	110	71	**1182**
8:00 AM	to	9:00 AM	0	4	115	0	0	0	486	34	0	15	0	32	0	183	105	75	**1049**
PEAK HOUR SUMMARY																			
7:45 AM	to	8:45 AM	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	TOTAL
VOLUME			0	5	133	0	0	0	550	34	0	27	0	35	0	217	110	71	**1182**
PHF BY MOVEMENT			0.00	0.42	0.59	0.00	0.00	0.00	0.84	0.65	0.00	0.45	0.00	0.80	0.00	0.66	0.83	0.89	OVERALL
PHF BY APPROACH			0.62				0.86				0.60				0.78				0.86

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B A Y M E T R I C S

CHABOT DAM PROJECT IN SAN LEANDRO

Date	*2-Nov-12 Friday*				*3-Nov-12 Saturday*				*4-Nov-12 Sunday***				*5-Nov-12 Monday*				*6-Nov-12 Tuesday*				*7-Nov-12 Wednesday*				*8-Nov-12 Thursday*			
Location	**1. Along Marlow Drive between Foothill Boulevard & Middleton Street**																											
Direction	*EB*		*WB*		*EB*		*WB*		*EB*		*WB*		*EB*		*WB*		*EB*		*WB*		*EB*		*WB*		*EB*		*WB*	
Time	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN
1200	4	0	0	0	2	0	1	0	5	0	3	0	2	0	1	0	0	0	0	0	3	0	2	0	1	0	0	0
1215	2	0	1	0	3	0	1	0	11	0	3	0	1	0	0	0	2	0	0	0	3	0	1	0	2	0	0	0
1230	0	0	1	0	1	0	0	0	2	0	4	0	0	0	1	0	2	0	0	0	3	0	1	0	6	0	1	0
1245	0	6	0	2	2	8	0	2	9	27	2	12	2	5	0	2	0	4	0	0	4	13	1	5	5	14	0	1
100	1	3	0	2	1	7	2	3	3	25	0	9	2	5	1	2	0	4	0	0	1	11	2	5	1	14	0	1
115	1	2	0	1	1	5	0	2	4	18	1	7	1	5	0	2	0	2	0	0	1	9	2	6	0	12	0	1
130	0	2	0	0	2	6	0	2	1	17	1	4	0	5	0	1	0	0	0	0	0	6	0	5	0	6	0	0
145	0	2	0	0	5	9	1	3	3	11	0	2	0	3	0	1	0	0	1	1	4	6	0	4	2	3	0	0
200	1	2	0	0	0	8	0	1	0	8	1	3	1	2	0	0	0	0	0	1	0	5	0	2	1	3	0	0
215	0	1	1	1	0	7	0	1	1	5	1	3	0	1	1	1	1	1	0	1	0	4	0	0	0	3	0	0
230	1	2	0	1	1	6	1	2	2	6	0	2	0	1	0	1	0	1	0	1	0	4	0	0	0	3	1	1
245	0	2	0	1	0	1	1	2	1	4	0	2	3	4	1	2	0	1	0	0	1	1	1	1	0	1	1	2
300	1	2	1	2	5	6	1	3	1	5	0	1	1	4	1	3	0	1	0	0	1	2	1	2	0	0	0	2
315	1	3	0	1	2	8	0	3	1	5	0	0	0	4	1	3	1	1	1	1	0	2	0	2	0	0	0	2
330	0	2	2	3	2	9	0	2	0	3	1	1	0	4	0	3	2	3	0	1	1	3	0	2	0	0	0	1
345	1	3	1	4	2	11	0	1	0	2	0	1	0	1	0	2	0	3	0	1	0	2	0	1	1	1	0	0
400	0	2	1	4	0	6	1	1	0	1	0	1	0	0	0	1	0	3	0	1	1	2	1	1	0	1	0	0
415	0	1	0	4	0	4	3	4	1	1	0	1	0	0	1	1	1	3	0	0	0	2	0	1	0	1	2	2
430	1	2	1	3	3	5	0	4	1	2	0	0	0	0	1	2	1	2	0	0	0	1	0	1	0	1	0	2
445	2	3	0	2	1	4	0	4	1	3	1	1	1	1	0	2	1	3	1	1	1	2	0	1	1	1	1	3
500	1	4	1	2	0	4	0	3	1	4	0	1	0	1	0	2	0	3	0	1	1	2	3	3	1	2	0	3
515	0	4	1	3	0	4	0	0	1	4	0	1	0	1	0	1	0	2	1	2	2	4	0	3	1	3	2	3
530	3	6	1	3	2	3	1	1	4	7	1	2	1	2	3	3	2	3	0	2	1	5	1	4	1	4	3	6
545	1	5	2	5	1	3	0	1	0	6	0	1	2	3	1	4	2	4	1	2	1	5	0	4	1	4	2	7
600	6	10	1	5	1	4	2	3	2	7	0	1	3	6	1	5	10	14	2	4	5	9	0	1	8	11	1	8
615	2	12	4	8	4	8	0	3	0	6	2	3	6	12	2	7	9	23	0	3	6	13	3	4	9	19	3	9
630	2	11	3	10	1	7	4	6	2	4	0	2	2	13	9	13	2	23	5	8	2	14	9	12	3	21	6	12
645	12	22	4	12	1	7	4	10	1	5	4	6	6	17	6	18	10	31	6	13	11	24	8	20	16	36	12	22
700	4	20	5	16	4	10	2	10	3	6	5	11	3	17	10	27	4	25	8	19	2	21	5	25	6	34	3	24
715	12	30	8	20	6	12	2	12	2	8	4	13	6	17	6	31	14	30	13	32	11	26	12	34	8	33	10	31
730	7	35	9	26	3	14	0	8	1	7	11	24	15	30	14	36	8	36	14	41	9	33	12	37	15	45	10	35
745	17	40	11	33	7	20	7	11	2	8	3	23	20	44	11	41	11	37	20	55	14	36	11	40	18	47	18	41
800	11	47	16	44	5	21	2	11	9	14	0	18	6	47	18	49	12	45	15	62	7	41	22	57	14	55	13	51
815	15	50	20	56	12	27	5	14	9	21	8	22	17	58	14	57	22	53	16	65	24	54	20	65	15	62	17	58
830	13	56	9	56	7	31	11	25	4	24	4	15	15	58	15	58	16	61	9	60	13	58	5	58	18	65	8	56
845	15	54	8	53	8	32	6	24	14	36	6	18	20	58	1	48	14	64	12	52	16	60	15	62	11	58	10	48
900	9	52	8	45	8	35	10	32	7	34	5	23	18	70	2	32	10	62	13	50	8	61	9	49	9	53	8	43
915	15	52	12	37	12	35	11	38	15	40	6	21	16	69	14	32	10	50	9	43	10	47	8	37	11	49	4	30
930	12	51	8	36	5	33	7	34	8	44	3	20	9	63	13	30	7	41	9	43	7	41	7	39	6	37	9	31
945	9	45	11	39	13	38	12	40	15	45	0	14	13	56	9	38	16	43	13	44	14	39	5	29	10	36	7	28
1000	11	47	9	40	18	48	9	39	14	52	4	13	8	46	8	44	11	44	12	43	7	38	10	30	15	42	5	25
1015	12	44	7	35	12	48	14	42	6	43	9	16	19	49	9	39	12	46	5	39	11	39	2	24	13	44	2	23
1030	18	50	2	29	13	56	5	40	17	52	5	18	13	53	8	34	11	50	6	36	11	43	1	18	11	49	14	28
1045	26	67	13	31	15	58	13	41	14	51	8	26	14	54	2	27	14	48	2	25	17	46	7	20	7	46	4	25
1100	15	71	14	36	22	62	9	41	17	54	7	29	13	59	5	24	12	49	3	16	13	52	4	14	11	42	7	27
1115	22	81	5	34	15	65	19	46	16	64	1	21	14	54	5	20	9	46	5	16	19	60	5	17	14	43	9	34

1130	9	72	15	47	18	70	5	46	10	57	4	20	8	49	8	20	13	48	6	16	7	56	5	21	8	40	11	31
1145	18	64	10	44	18	73	8	41	17	60	6	18	17	52	8	26	10	44	4	18	15	54	5	19	8	41	7	34
1200	19	68	9	39	30	81	11	43	14	57	11	22	18	57	3	24	20	52	7	22	21	62	6	21	23	53	1	28
1215	15	61	6	40	29	95	16	40	18	59	8	29	14	57	14	33	17	60	7	24	21	64	2	18	16	55	15	34
1230	18	70	6	31	10	87	10	45	23	72	5	30	12	61	8	33	17	64	8	26	17	74	9	22	19	66	10	33
1245	18	70	8	29	22	91	9	46	16	71	11	35	10	54	7	32	16	70	8	30	6	65	2	19	19	77	4	30
1300	18	69	7	27	15	76	13	48	20	77	6	30	9	45	4	33	11	61	4	27	11	55	7	20	8	62	7	36
1315	8	62	9	30	15	62	10	42	17	76	5	27	17	48	5	24	19	63	13	33	12	46	11	29	21	67	3	24
1330	16	60	10	34	28	80	2	34	19	72	3	25	15	51	12	28	10	56	9	34	19	48	10	30	15	63	3	17
1345	19	61	8	34	24	82	16	41	15	71	4	18	10	51	6	27	17	57	6	32	5	47	9	37	14	58	9	22
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1415	15	69	5	36	26	97	21	54	21	73	6	21	23	67	6	33	18	61	7	30	21	58	7	37	20	67	12	27
1430	20	73	8	34	16	85	11	63	27	81	11	29	24	76	7	28	12	63	3	24	10	49	8	35	25	77	0	24
1445	19	73	8	34	21	82	10	57	15	81	9	34	16	82	5	27	28	74	0	18	22	66	10	36	19	82	6	21
1500	27	81	7	28	17	80	5	47	15	78	11	37	15	78	12	30	15	73	14	24	22	75	8	33	18	82	7	25
1515	20	86	9	32	20	74	9	35	24	81	6	37	30	85	10	34	31	86	5	22	23	77	9	35	20	82	9	22
1530	20	86	10	34	22	80	7	31	15	69	8	34	21	82	7	34	28	102	8	27	32	99	7	34	17	74	3	25
1545	25	92	6	32	15	74	10	31	12	66	10	35	23	89	5	34	24	98	11	38	15	92	3	27	22	77	10	29
1600	32	97	8	33	11	68	12	38	20	71	5	29	25	99	5	27	28	111	3	27	29	99	6	25	23	82	8	30
1615	19	96	9	33	20	68	9	38	13	60	2	25	18	87	7	24	21	101	11	33	25	101	3	19	46	108	11	32
1630	31	107	7	30	27	73	2	33	23	68	6	23	19	85	7	24	28	101	10	35	19	88	9	21	30	121	5	34
1645	25	107	8	32	18	76	10	33	21	77	5	18	21	83	6	25	20	97	9	33	23	96	6	24	37	136	12	36
1700	21	96	11	35	20	85	12	33	16	73	5	18	22	80	2	22	20	89	11	41	23	90	8	26	35	148	11	39
1715	37	114	10	36	30	95	12	36	19	79	4	20	33	95	2	17	28	96	9	39	20	85	10	33	37	139	13	41
1730	28	111	6	35	18	86	9	43	33	89	6	20	23	99	6	16	23	91	13	42	23	89	10	34	32	141	6	42
1745	22	108	8	35	20	88	7	40	23	91	10	25	36	114	1	11	29	100	5	38	33	99	3	31	26	130	6	36
1800	30	117	11	35	14	82	7	35	14	89	3	23	37	129	11	20	30	110	9	36	42	118	14	37	31	126	10	35
1815	36	116	8	33	14	66	10	33	24	94	3	22	28	124	12	30	41	123	5	32	33	131	11	38	24	113	16	38
1830	27	115	7	34	25	73	7	31	14	75	9	25	23	124	10	34	28	128	8	27	26	134	7	35	33	114	8	40
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1915	23	86	4	31	14	81	0	9	16	72	1	20	32	106	12	43	30	93	8	33	13	97	9	23	20	88	6	23
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1945	20	67	5	27	18	68	7	11	11	59	3	8	17	88	5	31	17	91	6	26	16	84	11	35	17	59	1	15
2000	20	74	3	19	11	60	2	12	12	47	4	9	14	78	2	24	19	94	3	18	21	78	5	33	14	60	4	16
2015	11	62	6	21	10	56	7	19	14	45	2	10	19	65	3	15	11	75	1	11	19	84	1	25	10	50	1	11
2030	7	58	2	16	9	48	2	18	11	48	5	14	11	61	2	12	12	59	2	12	19	75	3	20	19	60	1	7
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2100	8	42	7	24	11	44	2	13	9	42	1	12	13	53	8	14	11	43	3	8	12	68	4	13	6	45	7	19
2115	13	44	0	18	20	54	4	10	8	36	2	12	16	50	4	15	16	48	1	8	21	70	3	15	4	39	0	18
2130	12	49	15	31	7	52	1	9	5	30	0	7	13	52	1	14	24	60	2	8	16	67	2	14	7	27	1	18
2145	11	44	11	33	9	47	1	8	2	24	2	5	7	49	2	15	10	61	11	17	6	55	4	13	5	22	2	10
2200	16	52	0	26	14	50	1	7	7	22	0	4	6	42	0	7	7	57	10	24	10	53	4	13	1	17	1	4
2215	16	55	4	30	13	43	5	8	9	23	4	6	5	31	0	3	7	48	1	24	7	39	3	13	5	18	0	4
2230	8	51	4	19	12	48	0	7	2	20	2	8	2	20	0	2	4	28	1	23	8	31	1	12	6	17	1	4
2245	5	45	2	10	11	50	5	11	5	23	1	7	4	17	1	1	6	24	1	13	5	30	2	10	7	19	1	3
2300	8	37	0	10	3	39	2	12	4	20	5	12	4	15	1	2	5	22	0	3	5	25	0	6	4	22	0	2
2315	8	29	1	7	5	31	2	9	1	12	0	8	3	13	1	3	2	17	1	3	4	22	0	3	6	23	1	3
2330	11	32	4	7	11	30	0	9	0	10	0	6	6	17	0	3	11	24	1	3	1	15	1	3	4	21	0	2
2345	7	34	1	6	4	23	1	5	4	9	1	6	1	14	0	2	5	23	1	3	0	10	2	3	4	18	1	2
TOTAL	1,184	N/A	553	N/A	1,065	N/A	501	N/A	945	N/A	352	N/A	1,108	N/A	469	N/A	1,146	N/A	496	N/A	1,141	N/A	487	N/A	1,129	N/A	471	N/A
AM		56		56		38		40		45		24		70		58		64		65		61		65		65		58
NOON		81		47		97		63		81		35		82		44		74		43		74		41		82		36
PM		117		36		95		47		94		37		129		45		128		42		134		38		148		42
EVEN		74		33		60		19		48		15		78		24		94		24		84		33		60		19

Telephone: (510) 232-1271 ***Fax: (510) 232-1272***

B A Y M E T R I C S

CHABOT DAM PROJECT IN SAN LEANDRO

Date	*2-Nov-12 Friday*				*3-Nov-12 Saturday*				*4-Nov-12 Sunday***				*5-Nov-12 Monday*				*6-Nov-12 Tuesday*				*7-Nov-12 Wednesday*				*8-Nov-12 Thursday*			
Location	**2. Along Estudillo Avenue between Sylvan Circle & Lake Chabot Park entrance**																											
Direction	*NB*		*SB*		*NB*		*SB*		*NB*		*SB*		*NB*		*SB*		*NB*		*SB*		*NB*		*SB*		*NB*		*SB*	
Time	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN
1200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1215	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
215	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
315	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
330	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
345	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
415	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
430	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
445	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
515	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
530	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
545	0	0	0	0	0	0	0	0	1	1	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
600	0	0	0	0	0	0	0	0	0	1	0	4	0	0	0	0	0	0	8	8	0	0	0	0	0	0	0	0
615	0	0	0	0	0	0	1	1	0	1	0	4	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0
630	0	0	0	0	0	0	0	1	0	1	1	3	0	0	0	0	0	0	0	8	0	0	1	1	0	0	0	0
645	0	0	0	0	2	2	4	5	0	0	0	1	0	0	5	5	0	0	2	10	0	0	1	2	0	0	0	0
700	0	0	1	1	2	4	5	10	0	0	2	3	0	0	3	8	1	1	5	7	0	0	0	2	0	0	2	2
715	1	1	5	6	1	5	4	13	0	0	6	9	0	0	4	12	0	1	1	8	0	0	4	6	1	1	1	3
730	0	1	1	7	0	5	3	16	1	1	2	10	1	1	2	14	1	2	3	11	4	4	2	7	1	2	2	5
745	2	3	7	14	3	6	10	22	0	1	9	19	3	4	3	12	2	4	5	14	0	4	5	11	0	2	5	10
800	0	3	4	17	1	5	6	23	5	6	3	20	2	6	8	17	3	6	6	15	1	5	4	15	2	4	7	15
815	3	5	5	17	3	7	5	24	3	9	5	19	3	9	7	20	1	7	9	23	1	6	7	18	2	5	6	20
830	2	7	9	25	1	8	7	28	5	13	7	24	0	8	3	21	2	8	7	27	1	3	6	22	1	5	1	19
845	1	6	7	25	5	10	4	22	4	17	6	21	3	8	4	22	1	7	4	26	5	8	5	22	3	8	8	22
900	3	9	5	26	3	12	9	25	3	15	14	32	3	9	2	16	5	9	4	24	3	10	8	26	2	8	4	19
915	1	7	3	24	2	11	12	32	1	13	8	35	3	9	7	16	3	11	1	16	4	13	5	24	5	11	5	18
930	3	8	3	18	3	13	4	29	4	12	7	35	5	14	4	17	2	11	2	11	9	21	7	25	3	13	1	18
945	3	10	3	14	7	15	9	34	5	13	5	34	2	13	7	20	0	10	3	10	5	21	2	22	5	15	3	13
1000	4	11	5	14	4	16	9	34	8	18	6	26	3	13	2	20	5	10	5	11	3	21	2	16	4	17	5	14
1015	4	14	3	14	4	18	9	31	1	18	8	26	4	14	6	19	6	13	9	19	5	22	10	21	6	18	0	9
1030	3	14	4	15	8	23	5	32	1	15	9	28	2	11	10	25	4	15	3	20	5	18	3	17	4	19	8	16
1045	2	13	6	18	4	20	9	32	2	12	5	28	3	12	2	20	6	21	7	24	2	15	6	21	2	16	4	17
1100	2	11	4	17	4	20	3	26	6	10	4	26	5	14	1	19	2	18	4	23	6	18	6	25	3	15	5	17
1115	6	13	2	16	9	25	9	26	5	14	7	25	3	13	3	16	4	16	2	16	1	14	4	19	6	15	4	21

1130	5	15	6	18	0	17	8	29	2	15	12	28	2	13	2	8	2	14	9	22	2	11	7	23	4	15	1	14
1145	1	14	8	20	6	19	4	24	4	17	8	31	3	13	7	13	1	9	7	22	6	15	4	21	2	15	4	14
1200	3	15	9	25	3	18	6	27	9	20	8	35	2	10	3	15	6	13	8	26	4	13	5	20	1	13	6	15
1215	0	9	7	30	3	12	6	24	2	17	10	38	4	11	4	16	3	12	5	29	3	15	2	18	4	11	8	19
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1245	2	10	2	22	5	17	8	29	2	16	5	33	3	14	3	15	13	24	4	23	0	9	4	14	4	12	4	24
1300	3	10	4	17	6	20	6	29	7	14	8	33	2	14	7	19	1	19	7	22	2	7	8	17	5	16	6	24
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1500	2	11	5	23	3	15	6	35	8	17	7	41	6	9	5	20	4	9	6	18	1	4	5	20	1	11	12	32
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1600	4	13	4	29	2	24	8	33	7	20	6	27	1	8	7	24	0	12	9	27	3	15	6	24	4	18	8	25
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1630	3	15	6	29	6	22	9	33	6	24	7	34	3	12	9	33	8	20	6	27	11	20	5	22	3	13	2	24
1645	4	15	6	22	3	19	4	30	2	20	2	27	6	16	5	28	1	16	11	32	0	18	2	19	3	16	5	24
1700	3	14	4	22	4	21	6	28	12	25	6	27	9	24	4	25	7	23	2	25	4	19	0	13	2	14	5	21
1715	0	10	5	21	4	17	4	23	5	25	7	22	3	21	5	23	9	25	5	24	0	15	1	8	2	10	1	13
1730	5	12	6	21	5	16	4	18	7	26	3	18	2	20	4	18	1	18	2	20	2	6	0	3	5	12	3	14
1745	12	20	4	19	4	17	2	16	5	29	2	18	0	14	3	16	1	18	0	9	0	6	2	3	2	11	2	11
1800	1	18	3	18	8	21	3	13	2	19	3	15	2	7	3	15	1	12	1	8	3	5	4	7	0	9	0	6
1815	5	23	0	13	3	20	2	11	0	14	0	8	0	4	0	10	0	3	1	4	0	5	0	6	0	7	0	5
1830	1	19	0	7	4	19	0	7	0	7	0	5	0	2	0	6	0	2	0	2	0	3	0	6	0	2	0	2
1845	4	11	1	4	5	20	3	8	0	2	0	3	0	2	0	3	0	1	0	2	0	3	0	4	0	0	0	0
1900	1	11	2	3	0	12	0	5	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
1915	0	6	0	3	0	9	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1930	0	5	0	3	0	5	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1945	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2045	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2215	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2315	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2330	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2345	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	151	N/A	241	N/A	198	N/A	321	N/A	186	N/A	315	N/A	120	N/A	215	N/A	143	N/A	227	N/A	131	N/A	194	N/A	135	N/A	204	N/A
AM		10		26		15		34		17		35		14		22		11		27		21		26		15		22
NOON		25		30		25		42		26		42		14		25		24		29		22		25		19		24
PM		23		30		25		35		29		41		24		33		25		32		20		27		20		35
EVEN		0		0		0		0		0		0		0		0		0		0		0		0		0		0

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B A Y M E T R I C S

CHABOT DAM PROJECT IN SAN LEANDRO

Date	*2-Nov-12 Friday*				*3-Nov-12 Saturday*				*4-Nov-12 Sunday***				*5-Nov-12 Monday*				*6-Nov-12 Tuesday*				*7-Nov-12 Wednesday*				*8-Nov-12 Thursday*			
Location	**3. Along Lake Chabot Road between Astor Drive & Fairmont Drive**																											
Direction	*EB*		*WB*		*EB*		*WB*		*EB*		*WB*		*EB*		*WB*		*EB*		*WB*		*EB*		*WB*		*EB*		*WB*	
Time	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN	15 MIN	60 MIN
1200	2	0	2	0	3	0	1	0	3	0	5	0	1	0	0	0	2	0	2	0	0	0	3	0	1	0	1	0
1215	2	0	0	0	0	0	0	0	1	0	0	0	1	0	2	0	1	0	0	0	2	0	1	0	1	0	1	0
1230	1	0	0	0	2	0	0	0	1	0	1	0	1	0	1	0	2	0	1	0	1	0	2	0	0	0	0	0
1245	1	6	0	2	3	8	1	2	0	5	2	8	0	3	2	5	0	5	1	4	0	3	0	6	0	2	1	3
100	0	4	0	0	0	5	2	3	2	4	1	4	0	2	1	6	1	4	0	2	0	3	0	3	2	3	0	2
115	2	4	0	0	1	6	2	5	4	7	1	5	0	1	0	4	1	4	1	3	0	1	0	2	1	3	0	1
130	1	4	0	0	0	4	1	6	0	6	0	4	1	1	0	3	1	3	1	3	0	0	0	0	0	3	0	1
145	0	3	0	0	0	1	1	6	0	6	2	4	4	5	0	1	1	4	0	2	0	0	0	0	1	4	0	0
200	2	5	0	0	0	1	0	4	0	4	0	3	0	5	0	0	0	3	0	2	1	1	1	1	0	2	1	1
215	0	3	2	2	0	0	3	5	0	0	1	3	0	5	2	2	0	2	0	1	0	1	0	1	0	1	0	1
230	0	2	1	3	1	1	1	5	0	0	1	4	0	4	0	2	0	1	0	0	1	2	0	1	0	1	1	2
245	0	2	0	3	3	4	0	4	0	0	0	2	0	0	0	2	0	0	0	0	0	2	0	1	0	0	0	2
300	0	0	0	3	0	4	1	5	0	0	2	4	0	0	0	2	0	0	0	0	1	2	0	0	0	0	1	2
315	0	0	0	1	0	4	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2
330	1	1	0	0	1	4	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	1
345	0	1	0	0	0	1	0	1	0	0	0	2	0	0	0	0	0	0	0	0	1	2	0	0	0	1	0	1
400	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0
415	0	1	0	0	0	1	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	1	0	0	1	2	1	1
430	2	2	1	1	0	0	0	0	0	0	0	0	1	2	0	1	0	0	0	0	0	1	0	0	1	2	2	3
445	1	3	2	3	0	0	0	0	1	1	0	0	0	2	2	3	0	0	3	3	0	0	1	1	0	2	0	3
500	1	4	1	4	0	0	0	0	0	1	1	1	1	3	2	5	1	1	4	7	0	0	2	3	3	5	2	5
515	1	5	0	4	0	0	2	2	0	1	0	1	1	3	2	6	2	3	3	10	4	4	3	6	2	6	1	5
530	1	4	4	7	1	1	3	5	1	2	1	2	0	2	3	9	2	5	2	12	1	5	6	12	3	8	5	8
545	2	5	7	12	1	2	0	5	1	2	2	4	2	4	9	16	0	5	4	13	1	6	6	17	3	11	3	11
600	4	8	6	17	2	4	5	10	1	3	2	5	2	5	10	24	3	7	14	23	3	9	8	23	1	9	11	20
615	1	8	8	25	1	5	2	10	2	5	2	7	3	7	8	30	4	9	10	30	1	6	11	31	1	8	12	31
630	4	11	9	30	5	9	2	9	3	7	4	10	2	9	14	41	9	16	20	48	11	16	11	36	10	15	16	42
645	9	18	13	36	6	14	1	10	1	7	2	10	6	13	24	56	7	23	15	59	6	21	16	46	7	19	19	58
700	3	17	22	52	15	27	4	9	2	8	3	11	5	16	21	67	5	25	24	69	10	28	29	67	7	25	24	71
715	2	18	17	61	22	48	7	14	5	11	8	17	14	27	29	88	17	38	30	89	10	37	29	85	15	39	31	90
730	7	21	41	93	20	63	11	23	9	17	7	20	9	34	50	124	12	41	45	114	18	44	41	115	12	41	40	114
745	25	37	47	127	16	73	6	28	7	23	6	24	18	46	56	156	24	58	67	166	20	58	63	162	20	54	63	158
800	17	51	51	156	26	84	14	38	7	28	11	32	28	69	47	182	31	84	57	199	27	75	49	182	20	67	56	190
815	9	58	64	203	11	73	13	44	16	39	11	35	17	72	60	213	12	79	57	226	12	77	62	215	10	62	58	217
830	20	71	36	198	7	60	11	44	15	45	17	45	15	78	43	206	15	82	30	211	12	71	34	208	16	66	44	221
845	12	58	33	184	9	53	16	54	15	53	16	55	20	80	34	184	22	80	39	183	20	71	44	189	17	63	35	193
900	15	56	31	164	24	51	26	66	7	53	18	62	18	70	33	170	16	65	44	170	12	56	33	173	16	59	22	159
915	15	62	17	117	17	57	19	72	15	52	14	65	15	68	20	130	11	64	25	138	16	60	27	138	9	58	18	119
930	11	53	15	96	14	64	18	79	13	50	35	83	17	70	20	107	11	60	20	128	13	61	22	126	13	55	12	87
945	17	58	18	81	16	71	27	90	20	55	16	83	15	65	24	97	14	52	28	117	11	52	17	99	12	50	21	73
1000	15	58	15	65	21	68	26	90	19	67	12	77	9	56	20	84	15	51	20	93	8	48	27	93	14	48	23	74
1015	14	57	18	66	13	64	16	87	15	67	26	89	15	56	18	82	13	53	20	88	13	45	14	80	9	48	18	74
1030	11	57	12	63	21	71	31	100	17	71	22	76	20	59	23	85	17	59	30	98	14	46	22	80	11	46	16	78
1045	13	53	19	64	16	71	18	91	16	67	19	79	12	56	21	82	11	56	20	90	14	49	11	74	11	45	12	69
1100	14	52	21	70	22	72	23	88	20	68	15	82	15	62	11	73	19	60	14	84	8	49	13	60	6	37	11	57
1115	16	54	13	65	10	69	9	81	17	70	24	80	13	60	15	70	11	58	16	80	19	55	16	62	9	37	12	51

1130	18	61	14	67	13	61	23	73	26	79	19	77	16	56	11	58	14	55	21	71	9	50	21	61	21	47	16	51
1145	19	67	16	64	14	59	21	76	17	80	14	72	12	56	20	57	14	58	16	67	22	58	24	74	14	50	22	61
1200	16	69	25	68	22	59	17	70	22	82	19	76	18	59	14	60	19	58	24	77	31	81	21	82	20	64	20	70
1215	14	67	20	75	37	86	12	73	17	82	22	74	9	55	22	67	19	66	20	81	18	80	18	84	17	72	10	68
1230	17	66	13	74	21	94	16	66	17	73	16	71	18	57	15	71	17	69	16	76	20	91	27	90	11	62	12	64
1245	18	65	14	72	20	100	24	69	20	76	22	79	11	56	12	63	20	75	22	82	14	83	30	96	25	73	24	66
1300	19	68	14	61	25	103	24	76	20	74	27	87	13	51	19	68	14	70	19	77	23	75	24	99	15	68	13	59
1315	16	70	19	60	23	89	12	76	18	75	21	86	18	60	10	56	16	67	18	75	10	67	15	96	15	66	8	57
1330	26	79	19	66	22	90	19	79	28	86	27	97	11	53	22	63	22	72	16	75	21	68	18	87	19	74	20	65
1345	18	79	15	67	18	88	28	83	22	88	24	99	19	61	16	67	22	74	18	71	28	82	20	77	14	63	20	61
1400	12	72	17	70	15	78	23	82	22	90	17	89	20	68	14	62	17	77	19	71	14	73	21	74	11	59	17	65
1415	19	75	19	70	16	71	25	95	23	95	20	88	13	63	17	69	17	78	13	66	25	88	13	72	20	64	14	71
1430	25	74	16	67	23	72	20	96	18	85	21	82	15	67	13	60	22	78	23	73	10	77	21	75	11	56	15	66
1445	20	76	23	75	19	73	19	87	15	78	30	88	19	67	16	60	31	87	24	79	25	74	18	73	10	52	18	64
1500	20	84	20	78	17	75	21	85	16	72	21	92	16	63	20	66	25	95	21	81	25	85	27	79	19	60	19	66
1515	30	95	23	82	23	82	18	78	24	73	22	94	13	63	22	71	31	109	15	83	24	84	28	94	21	61	20	72
1530	32	102	16	82	18	77	16	74	25	80	10	83	31	79	16	74	29	116	18	78	26	100	22	95	18	68	14	71
1545	13	95	28	87	13	71	16	71	17	82	21	74	25	85	23	81	27	112	26	80	26	101	18	95	29	87	22	75
1600	27	102	32	99	19	73	16	66	19	85	25	78	37	106	33	94	35	122	24	83	33	109	23	91	27	95	17	73
1615	26	98	22	98	20	70	19	67	20	81	24	80	39	132	21	93	25	116	24	92	28	113	23	86	26	100	27	80
1630	33	99	30	112	18	70	14	65	12	68	12	82	31	132	24	101	30	117	25	99	45	132	19	83	38	120	25	91
1645	31	117	22	106	17	74	18	67	23	74	18	79	32	139	30	108	36	126	21	94	35	141	23	88	35	126	19	88
1700	35	125	27	101	17	72	21	72	31	86	14	68	32	134	19	94	37	128	22	92	48	156	19	84	35	134	19	90
1715	42	141	25	104	15	67	14	67	12	78	16	60	39	134	23	96	48	151	23	91	32	160	16	77	25	133	29	92
1730	40	148	15	89	8	57	17	70	14	80	14	62	27	130	21	93	29	150	14	80	43	158	22	80	32	127	27	94
1745	44	161	21	88	20	60	8	60	10	67	15	59	30	128	27	90	36	150	17	76	32	155	20	77	16	108	21	96
1800	32	158	18	79	16	59	16	55	11	47	10	55	29	125	20	91	19	132	17	71	25	132	28	86	14	87	22	99
1815	23	139	29	83	10	54	18	59	5	40	7	46	26	112	20	88	15	99	16	64	27	127	19	89	20	82	13	83
1830	16	115	18	86	20	66	23	65	7	33	13	45	20	105	14	81	20	90	13	63	28	112	12	79	13	63	3	59
1845	26	97	17	82	7	53	13	70	8	31	9	39	15	90	13	67	16	70	12	58	23	103	12	71	9	56	16	54
1900	28	93	21	85	10	47	15	69	15	35	10	39	14	75	13	60	24	75	10	51	17	95	16	59	15	57	8	40
1915	13	83	18	74	3	40	16	67	3	33	10	42	13	62	9	49	13	73	11	46	14	82	15	55	11	48	13	40
1930	9	76	8	64	6	26	9	53	5	31	11	40	12	54	6	41	11	64	9	42	17	71	12	55	9	44	2	39
1945	14	64	7	54	4	23	8	48	3	26	7	38	10	49	9	37	12	60	7	37	10	58	7	50	7	42	2	25
2000	8	44	8	41	13	26	6	39	5	16	7	35	14	49	5	29	13	49	7	34	7	48	6	40	7	34	3	20
2015	11	42	11	34	7	30	4	27	5	18	2	27	8	44	7	27	7	43	7	30	13	47	4	29	8	31	5	12
2030	6	39	3	29	6	30	4	22	4	17	2	18	11	43	4	25	14	46	6	27	6	36	3	20	7	29	3	13
2045	16	41	4	26	4	30	4	18	7	21	4	15	4	37	7	23	5	39	5	25	3	29	3	16	7	29	2	13
2100	6	39	3	21	6	23	7	19	5	21	1	9	3	26	2	20	4	30	3	21	10	32	8	18	4	26	4	14
2115	8	36	9	19	7	23	5	20	4	20	1	8	9	27	5	18	7	30	9	23	5	24	6	20	3	21	6	15
2130	6	36	3	19	1	18	7	23	3	19	5	11	7	23	2	16	3	19	5	22	5	23	8	25	3	17	0	12
2145	5	25	5	20	4	18	6	25	3	15	2	9	5	24	0	9	5	19	5	22	5	25	5	27	1	11	2	12
2200	6	25	3	20	5	17	4	22	2	12	3	11	7	28	4	11	2	17	5	24	2	17	4	23	2	9	4	12
2215	5	22	5	16	6	16	5	22	4	12	4	14	4	23	8	14	3	13	3	18	4	16	4	21	2	8	4	10
2230	8	24	0	13	2	17	2	17	0	9	2	11	5	21	2	14	2	12	2	15	7	18	0	13	4	9	1	11
2245	12	31	6	14	5	18	1	12	1	7	1	10	3	19	0	14	3	10	3	13	2	15	4	12	2	10	0	9
2300	12	37	2	13	4	17	4	12	1	6	3	10	3	15	0	10	2	10	3	11	3	16	0	8	1	9	3	8
2315	3	35	2	10	4	15	4	11	1	3	3	9	0	11	4	6	2	9	2	10	1	13	1	5	3	10	5	9
2330	3	30	2	12	3	16	0	9	3	6	1	8	1	7	0	4	3	10	1	9	3	9	1	6	2	8	0	8
2345	4	22	0	6	1	12	1	9	2	7	1	8	1	5	1	5	2	9	1	7	2	9	2	4	3	9	2	10
TOTAL	1,184	N/A	1,273	N/A	977	N/A	986	N/A	871	N/A	940	N/A	1,090	N/A	1,283	N/A	1,172	N/A	1,348	N/A	1,197	N/A	1,355	N/A	967	N/A	1,205	N/A
AM		71		203		84		90		55		83		80		213		84		226		77		215		67		221
NOON		79		75		103		100		95		99		68		85		87		98		91		99		74		78
PM		161		112		82		85		86		94		139		108		151		99		160		95		134		99
EVEN		44		41		30		39		21		35		49		29		49		34		48		40		34		20

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APPENDIX G

Air Quality Calculations

Chabot Dam - Outlet Works (off-road)

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	4	**Precipitation Freq (Days)**	63		

1.3 User Entered Comments

Project Characteristics -

Land Use -

Construction Phase - Outlet Works from PD

Off-road Equipment - project description

Off-road Equipment - project description

Trips and VMT - all on-road emissions handled off model with EMFAC2013

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2014	0.11	0.71	0.43	0.00	0.00	0.04	0.04	0.00	0.04	0.04	0.00	83.97	83.97	0.01	0.00	84.15
Total	**0.11**	**0.71**	**0.43**	**0.00**	**0.00**	**0.04**	**0.04**	**0.00**	**0.04**	**0.04**	**0.00**	**83.97**	**83.97**	**0.01**	**0.00**	**84.15**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2014	0.11	0.71	0.43	0.00	0.00	0.04	0.04	0.00	0.04	0.04	0.00	83.97	83.97	0.01	0.00	84.15
Total	**0.11**	**0.71**	**0.43**	**0.00**	**0.00**	**0.04**	**0.04**	**0.00**	**0.04**	**0.04**	**0.00**	**83.97**	**83.97**	**0.01**	**0.00**	**84.15**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**					**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**					**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Demolition - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.02	0.16	0.08	0.00		0.01	0.01		0.01	0.01	0.00	20.69	20.69	0.00	0.00	20.72
Total	**0.02**	**0.16**	**0.08**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**20.69**	**20.69**	**0.00**	**0.00**	**20.72**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.2 Demolition - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.02	0.16	0.08	0.00		0.01	0.01		0.01	0.01	0.00	20.69	20.69	0.00	0.00	20.72
Total	**0.02**	**0.16**	**0.08**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**20.69**	**20.69**	**0.00**	**0.00**	**20.72**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.3 Construct Outlet Works - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.09	0.54	0.35	0.00		0.04	0.04		0.04	0.04	0.00	63.28	63.28	0.01	0.00	63.43
Total	**0.09**	**0.54**	**0.35**	**0.00**		**0.04**	**0.04**		**0.04**	**0.04**	**0.00**	**63.28**	**63.28**	**0.01**	**0.00**	**63.43**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.3 Construct Outlet Works - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.09	0.54	0.35	0.00		0.04	0.04		0.04	0.04	0.00	63.28	63.28	0.01	0.00	63.43
Total	**0.09**	**0.54**	**0.35**	**0.00**		**0.04**	**0.04**		**0.04**	**0.04**	**0.00**	**63.28**	**63.28**	**0.01**	**0.00**	**63.43**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Total					

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW

5.0 Energy Detail

5.1 Mitigation Measures Energy

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unmitigated	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**					**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**					**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

Chabot Dam - Conventional Earthwork

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	4	**Precipitation Freq (Days)**	63		

1.3 User Entered Comments

Project Characteristics -

Land Use -

Construction Phase - project description

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2014	0.01	0.05	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.13	6.13	0.00	0.00	6.14
2015	0.59	4.48	2.89	0.01	0.00	0.24	0.24	0.00	0.24	0.24	0.00	480.99	480.99	0.05	0.00	481.98
Total	**0.60**	**4.53**	**2.93**	**0.01**	**0.00**	**0.24**	**0.24**	**0.00**	**0.24**	**0.24**	**0.00**	**487.12**	**487.12**	**0.05**	**0.00**	**488.12**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2014	0.01	0.05	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.13	6.13	0.00	0.00	6.14
2015	0.59	4.48	2.89	0.01	0.00	0.24	0.24	0.00	0.24	0.24	0.00	480.99	480.99	0.05	0.00	481.98
Total	**0.60**	**4.53**	**2.93**	**0.01**	**0.00**	**0.24**	**0.24**	**0.00**	**0.24**	**0.24**	**0.00**	**487.12**	**487.12**	**0.05**	**0.00**	**488.12**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**					**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**					**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Dewater - Installation (Rig) - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.00	0.02	0.02	0.00		0.00	0.00		0.00	0.00	0.00	3.72	3.72	0.00	0.00	3.73
Total	**0.00**	**0.02**	**0.02**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**3.72**	**3.72**	**0.00**	**0.00**	**3.73**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.2 Dewater - Installation (Rig) - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.00	0.02	0.02	0.00		0.00	0.00		0.00	0.00	0.00	3.72	3.72	0.00	0.00	3.73
Total	**0.00**	**0.02**	**0.02**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**3.72**	**3.72**	**0.00**	**0.00**	**3.73**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.2 Dewater - Installation (Rig) - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.00	0.03	0.04	0.00		0.00	0.00		0.00	0.00	0.00	5.59	5.59	0.00	0.00	5.59
Total	**0.00**	**0.03**	**0.04**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**5.59**	**5.59**	**0.00**	**0.00**	**5.59**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.2 Dewater - Installation (Rig) - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.00	0.03	0.04	0.00		0.00	0.00		0.00	0.00	0.00	5.59	5.59	0.00	0.00	5.59
Total	**0.00**	**0.03**	**0.04**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**5.59**	**5.59**	**0.00**	**0.00**	**5.59**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.3 Dewater - Installation (Dozer) - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.00	0.03	0.01	0.00		0.00	0.00		0.00	0.00	0.00	2.41	2.41	0.00	0.00	2.42
Total	**0.00**	**0.03**	**0.01**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**2.41**	**2.41**	**0.00**	**0.00**	**2.42**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.3 Dewater - Installation (Dozer) - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.00	0.03	0.01	0.00		0.00	0.00		0.00	0.00	0.00	2.41	2.41	0.00	0.00	2.42
Total	**0.00**	**0.03**	**0.01**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**2.41**	**2.41**	**0.00**	**0.00**	**2.42**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.4 Dewater - Operation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.26	2.04	1.34	0.00		0.11	0.11		0.11	0.11	0.00	226.50	226.50	0.02	0.00	226.93
Total	**0.26**	**2.04**	**1.34**	**0.00**		**0.11**	**0.11**		**0.11**	**0.11**	**0.00**	**226.50**	**226.50**	**0.02**	**0.00**	**226.93**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.4 Dewater - Operation - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.26	2.04	1.34	0.00		0.11	0.11		0.11	0.11	0.00	226.50	226.50	0.02	0.00	226.93
Total	**0.26**	**2.04**	**1.34**	**0.00**		**0.11**	**0.11**		**0.11**	**0.11**	**0.00**	**226.50**	**226.50**	**0.02**	**0.00**	**226.93**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.5 Prep HR&Stockpile - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.05	0.35	0.23	0.00		0.02	0.02		0.02	0.02	0.00	36.04	36.04	0.00	0.00	36.13
Total	**0.05**	**0.35**	**0.23**	**0.00**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**36.04**	**36.04**	**0.00**	**0.00**	**36.13**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.5 Prep HR&Stockpile - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.05	0.35	0.23	0.00		0.02	0.02		0.02	0.02	0.00	36.04	36.04	0.00	0.00	36.13
Total	**0.05**	**0.35**	**0.23**	**0.00**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**36.04**	**36.04**	**0.00**	**0.00**	**36.13**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.6 Excavation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.10	0.79	0.51	0.00		0.04	0.04		0.04	0.04	0.00	84.70	84.70	0.01	0.00	84.88
Total	**0.10**	**0.79**	**0.51**	**0.00**		**0.04**	**0.04**		**0.04**	**0.04**	**0.00**	**84.70**	**84.70**	**0.01**	**0.00**	**84.88**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.6 Excavation - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.10	0.79	0.51	0.00		0.04	0.04		0.04	0.04	0.00	84.70	84.70	0.01	0.00	84.88
Total	**0.10**	**0.79**	**0.51**	**0.00**		**0.04**	**0.04**		**0.04**	**0.04**	**0.00**	**84.70**	**84.70**	**0.01**	**0.00**	**84.88**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.7 Site Prep for Filing - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.01	0.06	0.04	0.00		0.00	0.00		0.00	0.00	0.00	5.37	5.37	0.00	0.00	5.38
Total	**0.01**	**0.06**	**0.04**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**5.37**	**5.37**	**0.00**	**0.00**	**5.38**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.7 Site Prep for Filing - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.01	0.06	0.04	0.00		0.00	0.00		0.00	0.00	0.00	5.37	5.37	0.00	0.00	5.38
Total	**0.01**	**0.06**	**0.04**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**5.37**	**5.37**	**0.00**	**0.00**	**5.38**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.8 Place and Compact Fill - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.15	1.16	0.69	0.00		0.06	0.06		0.06	0.06	0.00	116.09	116.09	0.01	0.00	116.35
Total	**0.15**	**1.16**	**0.69**	**0.00**		**0.06**	**0.06**		**0.06**	**0.06**	**0.00**	**116.09**	**116.09**	**0.01**	**0.00**	**116.35**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.8 Place and Compact Fill - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.15	1.16	0.69	0.00		0.06	0.06		0.06	0.06	0.00	116.09	116.09	0.01	0.00	116.35
Total	**0.15**	**1.16**	**0.69**	**0.00**		**0.06**	**0.06**		**0.06**	**0.06**	**0.00**	**116.09**	**116.09**	**0.01**	**0.00**	**116.35**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.9 Site Finish HR&Stockpiles - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.01	0.06	0.05	0.00		0.00	0.00		0.00	0.00	0.00	6.72	6.72	0.00	0.00	6.73
Total	**0.01**	**0.06**	**0.05**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**6.72**	**6.72**	**0.00**	**0.00**	**6.73**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.9 Site Finish HR&Stockpiles - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.01	0.06	0.05	0.00		0.00	0.00		0.00	0.00	0.00	6.72	6.72	0.00	0.00	6.73
Total	**0.01**	**0.06**	**0.05**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**6.72**	**6.72**	**0.00**	**0.00**	**6.73**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Total					

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW

5.0 Energy Detail

5.1 Mitigation Measures Energy

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unmitigated	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**					**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**					**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

CDSM Construction (off-road)

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	4	**Precipitation Freq (Days)**	63		

1.3 User Entered Comments

Project Characteristics -

Construction Phase - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Off-road Equipment - PD

Land Use -

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2014	0.24	2.46	0.98	0.00	0.00	0.10	0.10	0.00	0.10	0.10	0.00	273.74	273.74	0.02	0.00	274.16
2015	0.07	0.52	0.31	0.00	0.00	0.03	0.03	0.00	0.03	0.03	0.00	53.19	53.19	0.01	0.00	53.31
Total	**0.31**	**2.98**	**1.29**	**0.00**	**0.00**	**0.13**	**0.13**	**0.00**	**0.13**	**0.13**	**0.00**	**326.93**	**326.93**	**0.03**	**0.00**	**327.47**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2014	0.26	2.27	1.17	0.00	0.00	0.10	0.10	0.00	0.10	0.10	0.00	273.74	273.74	0.02	0.00	274.16
2015	0.07	0.52	0.31	0.00	0.00	0.03	0.03	0.00	0.03	0.03	0.00	53.19	53.19	0.01	0.00	53.31
Total	**0.33**	**2.79**	**1.48**	**0.00**	**0.00**	**0.13**	**0.13**	**0.00**	**0.13**	**0.13**	**0.00**	**326.93**	**326.93**	**0.03**	**0.00**	**327.47**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**					**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**					**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

3.2 Prep HR&Stockpile - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.03	0.19	0.12	0.00		0.01	0.01		0.01	0.01	0.00	18.02	18.02	0.00	0.00	18.07
Total	**0.03**	**0.19**	**0.12**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**18.02**	**18.02**	**0.00**	**0.00**	**18.07**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.2 Prep HR&Stockpile - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.03	0.19	0.12	0.00		0.01	0.01		0.01	0.01	0.00	18.02	18.02	0.00	0.00	18.07
Total	**0.03**	**0.19**	**0.12**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**18.02**	**18.02**	**0.00**	**0.00**	**18.07**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.3 Excavation of CDSM Platform - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.01	0.11	0.07	0.00		0.01	0.01		0.01	0.01	0.00	10.71	10.71	0.00	0.00	10.74
Total	**0.01**	**0.11**	**0.07**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**10.71**	**10.71**	**0.00**	**0.00**	**10.74**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.3 Excavation of CDSM Platform - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.01	0.11	0.07	0.00		0.01	0.01		0.01	0.01	0.00	10.71	10.71	0.00	0.00	10.74
Total	**0.01**	**0.11**	**0.07**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**10.71**	**10.71**	**0.00**	**0.00**	**10.74**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.4 Setup CDSM Rigs - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.03	0.25	0.13	0.00		0.01	0.01		0.01	0.01	0.00	32.31	32.31	0.00	0.00	32.36
Total	**0.03**	**0.25**	**0.13**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**32.31**	**32.31**	**0.00**	**0.00**	**32.36**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.4 Setup CDSM Rigs - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.03	0.24	0.13	0.00		0.01	0.01		0.01	0.01	0.00	32.31	32.31	0.00	0.00	32.36
Total	**0.03**	**0.24**	**0.13**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**	**0.00**	**32.31**	**32.31**	**0.00**	**0.00**	**32.36**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.5 CDSM Production - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.17	1.91	0.67	0.00		0.07	0.07		0.07	0.07	0.00	212.70	212.70	0.01	0.00	212.99
Total	**0.17**	**1.91**	**0.67**	**0.00**		**0.07**	**0.07**		**0.07**	**0.07**	**0.00**	**212.70**	**212.70**	**0.01**	**0.00**	**212.99**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.5 CDSM Production - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.19	1.73	0.85	0.00		0.07	0.07		0.07	0.07	0.00	212.70	212.70	0.01	0.00	212.99
Total	**0.19**	**1.73**	**0.85**	**0.00**		**0.07**	**0.07**		**0.07**	**0.07**	**0.00**	**212.70**	**212.70**	**0.01**	**0.00**	**212.99**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.6 Tear Down CDSM Rigs - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.00	0.03	0.01	0.00		0.00	0.00		0.00	0.00	0.00	3.40	3.40	0.00	0.00	3.41
Total	**0.00**	**0.03**	**0.01**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**3.40**	**3.40**	**0.00**	**0.00**	**3.41**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.6 Tear Down CDSM Rigs - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.00	0.02	0.01	0.00		0.00	0.00		0.00	0.00	0.00	3.40	3.40	0.00	0.00	3.41
Total	**0.00**	**0.02**	**0.01**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**3.40**	**3.40**	**0.00**	**0.00**	**3.41**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.7 Place and Compact Fill - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.06	0.46	0.28	0.00		0.02	0.02		0.02	0.02	0.00	46.43	46.43	0.00	0.00	46.53
Total	**0.06**	**0.46**	**0.28**	**0.00**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**46.43**	**46.43**	**0.00**	**0.00**	**46.53**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.7 Place and Compact Fill - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.06	0.46	0.27	0.00		0.02	0.02		0.02	0.02	0.00	46.43	46.43	0.00	0.00	46.53
Total	**0.06**	**0.46**	**0.27**	**0.00**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**46.43**	**46.43**	**0.00**	**0.00**	**46.53**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.8 Site Finish HR&Stockpile - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.01	0.03	0.03	0.00		0.00	0.00		0.00	0.00	0.00	3.36	3.36	0.00	0.00	3.37
Total	**0.01**	**0.03**	**0.03**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**3.36**	**3.36**	**0.00**	**0.00**	**3.37**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.8 Site Finish HR&Stockpile - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.01	0.03	0.03	0.00		0.00	0.00		0.00	0.00	0.00	3.36	3.36	0.00	0.00	3.37
Total	**0.01**	**0.03**	**0.03**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**3.36**	**3.36**	**0.00**	**0.00**	**3.37**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Total					

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW

5.0 Energy Detail

5.1 Mitigation Measures Energy

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unmitigated	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**					**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**					**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

Chabot Dam
Construction Emissions Summary

10-hour Operational

Conventional Earthwork	**Pollutants (tons)**								
Construction Phase/Emission Source	**ROG**	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**	**Metric Tons CO_2e**	**Metric Tons CO_2e**	**Days**
Outlet Works subtotal	*0.13*	*1.17*	*0.60*	*0.00*	*0.06*	*0.05*	*192*	*188*	225
Off-Road	0.11	0.71	0.43	0	0.04	0.04	84	84	
On-Road	0.02	0.46	0.17	0.00	0.02	0.01	108	104	
Conventional Earthwork subtotal (includes dewatering)	*0.72*	*7.33*	*3.81*	*0.02*	*0.34*	*0.31*	*1,117*	*1,098*	
Off-Road	0.60	4.53	2.93	0.01	0.24	0.24	488	488	
On-Road	0.12	2.80	0.88	0.01	0.10	0.07	629	610	
Internal and External Trips subtotal	0.03	0.65	0.12	0.00	0.02	0.01	121	119	
Total Emissions (tons)	0.88	9.15	4.52	0.02	0.42	0.38	1,429	1,405	
Average Daily Emissions (lbs/day)	7.83	81.33	40.21	0.17	3.72	3.34			
Mitigated Daily Emissions (lbs/day)	7.83	65.06	40.21	0.17	3.72	3.34			
BAAQMD Thresholds of Significance	54	54			82	54			

CDSM	**Pollutants (tons)**								
Construction Phase/Emission Source	**ROG**	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**	**Metric Tons CO_2e**	**Metric Tons CO_2e**	**Days**
Outlet Works subtotal	*0.13*	*1.17*	*0.60*	*0.00*	*0.06*	*0.05*	*192*	*188*	115
Off-Road	0.11	0.71	0.43	0	0.04	0.04	84	84	
On-Road	0.02	0.46	0.17	0.00	0.02	0.01	108	104	
CDSM subtotal	*0.39*	*4.16*	*1.97*	*0.00*	*0.18*	*0.16*	*637*	*627*	
Off-Road	0.33	2.84	1.54	0	0.13	0.13	337	337	
On-Road	0.06	1.32	0.43	0.00	0.05	0.03	300	291	
Internal and External Trips subtotal	*0.03*	*0.65*	*0.12*	*0.00*	*0.02*	*0.01*	*121*	*119*	
Total Emissions (tons)	0.55	5.98	2.69	0.01	0.26	0.23	950	934	
Average Daily Emissions (lbs/day)	9.50	103.94	46.74	0.09	4.45	3.99			
Mitigated Daily Emissions (lbs/day)	9.50	83.15	46.74	0.09	4.45	3.99			
BAAQMD Thresholds of Significance	54	54			82	54			

Chabot Dam
Construction On-Road Emissions

Phase	Duration (work days)	One-Way Trips: Daily One-Way Trips	Equipment Delivery	Material Delivery	Hauling	Total Activity: Total Trips	Total Distance	Total Pollutants (tons): ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$	Metric Tons CO_2e	Metric Tons CO_2e (LCFS/Pav)
Outlet Work	70														
Mobilization	10														
Haul Trucks	10	49	9	40	0	409	12,270	0.00	0.12	0.02	0.00	0.00	0.00	22.74	22.40
Worker Trips	10	46				460	9,200	0.00	0.00	0.01	0.00	0.00	0.00	3.65	3.28
Demolition	10														
Haul Trucks	10	8	4	0	4	44	1,320	0.00	0.01	0.00	0.00	0.00	0.00	2.45	2.41
Worker Trips	10	54				540	10,800	0.00	0.01	0.02	0.00	0.00	0.00	4.28	3.85
Construct Outlet Works Upgrade	30														
Haul Trucks	30	40	20	20	0	620	18,600	0.01	0.18	0.03	0.00	0.01	0.00	34.47	33.96
Worker Trips	30	54				1,620	32,400	0.00	0.02	0.05	0.00	0.00	0.00	12.84	11.54
Demobilization	20														
Haul Trucks	20	45	5	20	0	405	12,150	0.00	0.12	0.02	0.00	0.00	0.00	22.52	22.18
Worker Trips	20	30				600	12,000	0.00	0.01	0.02	0.00	0.00	0.00	4.76	4.28
Outlet Works Total								***0.02***	***0.46***	***0.17***	***0.00***	***0.02***	***0.01***	***107.70***	***103.89***
Dewatering For Conventional	210														
Mobilization	10														
Haul Trucks	10	4	4	0	0	4	120	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.22
Worker Trips	10	16				160	3,200	0.00	0.00	0.00	0.00	0.00	0.00	1.27	1.14
Installation	40														
Haul Trucks	40	2	0	2	0	80	2,400	0.00	0.02	0.00	0.00	0.00	0.00	4.45	4.38
Worker Trips	40	16				640	12,800	0.00	0.01	0.02	0.00	0.00	0.00	5.07	4.56
Operation	150														
Haul Trucks	150	6	4	2	0	304	9,120	0.00	0.09	0.02	0.00	0.00	0.00	16.90	16.65
Worker Trips	150	4				600	12,000	0.00	0.01	0.02	0.00	0.00	0.00	4.76	4.28
Demobilization	10														
Haul Trucks	10	4	4	0	0	4	120	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.22
Worker Trips	10	8				80	1,600	0.00	0.00	0.00	0.00	0.00	0.00	0.63	0.57
Dewatering Total								***0.01***	***0.13***	***0.06***	***0.00***	***0.01***	***0.00***	***33.53***	***32.02***
Conventional Earthwork	150														
Mobilization	10														
Haul Trucks	10	4	4	0	0	4	120	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.22
Worker Trips	10	56				560	11,200	0.00	0.01	0.02	0.00	0.00	0.00	4.44	3.99
Prep HR and Stockpiles	20														
Haul Trucks	20	20	16	4	0	96	2,880	0.00	0.03	0.00	0.00	0.00	0.00	5.34	5.26
Worker Trips	20	72				1,440	28,800	0.00	0.02	0.04	0.00	0.00	0.00	11.41	10.26
Excavation	30														
Haul Trucks	30	72	10	4	58	1,870	56,100	0.02	0.53	0.10	0.00	0.02	0.01	103.97	102.41
Worker Trips	30	126				3,780	75,600	0.01	0.04	0.11	0.00	0.01	0.00	29.96	26.94
Site Prep for Filling	10														
Haul Trucks	10	43	3	40	0	403	12,090	0.00	0.11	0.02	0.00	0.00	0.00	22.41	22.07
Worker Trips	10	40				400	8,000	0.00	0.00	0.01	0.00	0.00	0.00	3.17	2.85
Place and Compact Fill	50														
Haul Trucks	50	114	4	74	36	5,504	165,120	0.06	1.57	0.28	0.00	0.05	0.03	306.03	301.44
Worker Trips	50	96				4,800	96,000	0.01	0.05	0.14	0.00	0.01	0.00	38.05	34.21
Site Finishing (HR and Stockpiles)	20														
Haul Trucks	20	59	9	50	0	1,009	30,270	0.01	0.29	0.05	0.00	0.01	0.01	56.10	55.26
Worker Trips	20	60				1,200	24,000	0.00	0.01	0.03	0.00	0.00	0.00	9.51	8.55
Demobilization	10														
Haul Trucks	10	4	4	0	0	4	120	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.22
Worker Trips	10	56				560	11,200	0.00	0.01	0.02	0.00	0.00	0.00	4.44	3.99
Conventional Earthwork Total								***0.12***	***2.67***	***0.82***	***0.01***	***0.10***	***0.07***	***595.28***	***577.67***
CDSM Option	115														
Mobilization	10														
Haul Trucks	10	4	4	0	0	4	120	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.22
Worker Trips	10	56				560	11,200	0.00	0.01	0.02	0.00	0.00	0.00	4.44	3.99
Prep HR and Stockpiles	10														
Haul Trucks	10	20	16	4	0	56	1,680	0.00	0.02	0.00	0.00	0.00	0.00	3.11	3.07
Worker Trips	10	72				720	14,400	0.00	0.01	0.02	0.00	0.00	0.00	5.71	5.13
Excavation CDSM Platform	5														
Haul Trucks	5	27	7	4	16	107	3,210	0.00	0.03	0.01	0.00	0.00	0.00	5.95	5.86
Worker Trips	5	76				380	7,600	0.00	0.00	0.01	0.00	0.00	0.00	3.01	2.71
Setup 2 CDSM Rigs	10														
Haul Trucks	10	50	10	40	0	410	12,300	0.00	0.12	0.02	0.00	0.00	0.00	22.80	22.45
Worker Trips	10	72				720	14,400	0.00	0.01	0.02	0.00	0.00	0.00	5.71	5.13
CDSM Production	25														
Haul Trucks	25	45	5	40	0	1,005	30,150	0.01	0.29	0.05	0.00	0.01	0.01	55.88	55.04
Worker Trips	25	72				1,800	36,000	0.00	0.02	0.05	0.00	0.00	0.00	14.27	12.83
Strength Test	10														
Haul Trucks	10	0	0	0	0	-	-	-	-	-	-	-	-	-	
Worker Trips	10	40				400	8,000	0.00	0.00	0.01	0.00	0.00	0.00	3.17	2.85
Tear Down 2 CDSM Rigs	5														
Haul Trucks	5	76	6	70	0	356	10,680	0.00	0.10	0.02	0.00	0.00	0.00	19.79	19.50
Worker Trips	5	56				280	5,600	0.00	0.00	0.01	0.00	0.00	0.00	2.22	2.00
Place and Compact Fill	20														
Haul Trucks	20	104	10	70	24	1,890	56,700	0.02	0.54	0.10	0.00	0.02	0.01	105.09	103.51
Worker Trips	20	70				1,400	28,000	0.00	0.02	0.04	0.00	0.00	0.00	11.10	9.98
Site Finishing (HR and Stockpiles)	10														
Haul Trucks	10	60	10	50	0	510	15,300	0.01	0.15	0.03	0.00	0.00	0.00	28.36	27.93
Worker Trips	10	60				600	12,000	0.00	0.01	0.02	0.00	0.00	0.00	4.76	4.28
Demobilization	10														
Haul Trucks	10	4	4	0	0	4	120	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.22
Worker Trips	10	56				560	11,200	0.00	0.01	0.02	0.00	0.00	0.00	4.44	3.99
CDSM Total								***0.06***	***1.32***	***0.43***	***0.00***	***0.05***	***0.03***	***300.24***	***290.68***

Internal Trips (Worst-Case Scenario)

Phase	Duration (work days)	Daily One-Way Trips	Total One-Way Trips	One-Way Trip Distance (miles)	Total VMT	Pollutants (tons): ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$	CO_2	CO2 (LCFS/Pavley)
Excavation	30	1167	35,000	0.98	34,271	0.01	0.33	0.06	0.00	0.01	0.01	60.34	59.44
Replacement	50	700	35,000	0.98	34,271	0.01	0.33	0.06	0.00	0.01	0.01	60.34	59.44
Total Internal Trips						***0.03***	***0.65***	***0.12***	***0.00***	***0.02***	***0.01***	***120.68***	***118.87***

On-Road Emission Factors (SFBAAB-2014)

	Pollutants (grams/mile): ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$	CO_2	CO2 (LCFS/Pavley)
Passenger Vehicles	0.068	0.493	1.303	0.004	0.073	0.043	376.525	338.50
Haul Trucks	0.336	8.623	1.537	0.017	0.257	0.183	1760.696	1734.29

Work days per week	5	days
Haul Truck Trip Length	30	miles
Worker Trip Length	20	miles
Upper Haul Route Length	0.98	miles
Lower Haul Route Length	0.45	miles

Chabot Dam
Construction On-Road Emissions

Construction Phase/Equipment	Start Date	End Date	Work Days	Number	Hrs/Day	Horsepower	Load Factor	Pollutants (tons) ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$	MT CO_2e
Outlet Works								***0.11***	***0.71***	***0.43***	***0***	***0.04***	***0.04***	***84.15***
Demolition	10/15/2014	10/28/2014	10											
Crane				2	10	208	0.2881							
Loader				1	10	75	0.3685							
Dozer (T/L/B)				1	10	75	0.3685							
Work skiff (Other General Industrial Equipment)				1	10	150	0.3417							
Barge (Other Construction Equipment)				1	10	327	0.4154							
Construct Outlet Works	10/29/2014	12/9/2014	30											
Air compressor				2	10	78	0.3216							
Generator				1	10	84	0.4958							
Welding Set				2	10	46	0.3015							
Dump Truck (Off-Highway Truck)				1	10	381	0.3819							
Loader				1	10	75	0.3685							
Dozer (T/L/B)				1	10	75	0.3685							
Work skiff (boat) (Other Gen Ind Equip)				1	10	150	0.3417							
Dewatering for Conventional								**Only Dewatering**						
Installation	12/10/2014	2/3/2015	40					0	0.02	0.02	0	0	0	3.73
Bulldozer				1	10	358	0.3953	0	0.03	0.04	0	0	0	5.59
Drill rig				1	10	82	0.5025	***0***	***0.05***	***0.06***	***0***	***0***	***0***	***9.32***
Operation	2/4/2015	9/1/2015	150											
Generator				2	10	84	0.4958							
Bulldozer				1	10	358	0.3953							
Drill rig				1	10	82	0.5025							
Conventional Earthwork								0.01	0.05	0.04	0	0	0	6.14
Prep of HR and Stockpiles	2/25/2015	3/24/2015	20					0.59	4.48	2.89	0.01	0.24	0.24	481.98
Bulldozer				1	10	358	0.3953	***0.6***	***4.53***	***2.93***	***0.01***	***0.24***	***0.24***	***488.12***
Compactor (Roller)				1	10	84	0.3752							
Wood grinder/chipper (Other Gen Ind Equip)				2	10	150	0.3417							
Tree trimming vehicle (Aerial Lift)				4	10	34	0.3082							
Excavation	3/25/2015	5/5/2015	30											
Bulldozer				2	10	358	0.3953							
Excavator				2	10	157	0.3819							
Rubber tire loaders				3	10	87	0.3618							
Site Preparation for Filling	5/6/2015	5/19/2015	10											
Compactor (Roller)				3	10	84	0.3752							
Place and Compact Fill	5/20/2015	7/28/2015	50											
Rubber tire loaders				2	10	87	0.3618							
Bulldozer				2	10	358	0.3953							
Compactor (Roller)				2	10	84	0.3752							
Site Finish HR and Stockpiles	7/29/2015	8/25/2015	20											
Loader				1	10	75	0.3685							
Compactor (Roller)				1	10	84	0.3752							
CDSM								0.26	2.27	1.17	0	0.1	0.1	274.16
Prep of HR and Stockpiles	10/15/2014	10/28/2014	10					0.07	0.57	0.37	0	0.03	0.03	62.63
Bulldozer				1	10	358	0.3953	***0.33***	***2.84***	***1.54***	***0***	***0.13***	***0.13***	***336.79***
Compactor (Roller)				1	10	84	0.3752	Note: Totals for CDSM include dewatering						
Wood grinder/chipper (Other Gen Ind Equip)				2	10	150	0.3417							
Tree trimming vehicle (Aerial Lift)				4	10	34	0.3082							
Excavation of CDSM Platform	10/29/2014	11/4/2014	5											
Bulldozer				2	10	358	0.3953							
Rubber tire loaders				3	10	87	0.3618							
Setup 2 CDSM Rigs	11/5/2014	11/18/2014	10											
Crane				2	10	208	0.2881							
Grout plant (Other Construction Equipment)				2	10	327	0.4154							
Trailers (Generator)				2	10	84	0.4958							
Rubber tire loaders				3	10	87	0.3618							
CDSM Production	11/19/2014	12/23/2014	25											
Base Rig (Crane)				2	10	208	0.2881							
Generator				1	10	1500	0.4958							
Generator				2	10	460	0.4958							
Backhoes				2	10	115	0.3685							
Rubber tire loaders				3	10	87	0.3618							
Tear Down 2 CDSM Rigs	1/7/2015	1/13/2015	5											
Crane				2	10	208	0.2881							
Place and Compact Fill	1/14/2015	2/10/2015	20											
Bulldozer				2	10	358	0.3953							
Compactor (Roller)				1	10	84	0.3752							
Rubber tire loaders				3	10	87	0.3618							
Site Finish HR and Stockpiles	2/11/2015	2/24/2015	10											
Loader				1	10	75	0.3685							
Compactor (Roller)				1	10	84	0.3752							

Chabot Dam Assumptions
SCREEN3 Inputs

SCREEN3 Input	Conventional	CDSM	
Emission rate (g/s)	0.01752	0.02092	
Source Release Height (m)			
Height (m)	5	5	
Side	800.0	800	
Initial lateral dimension of volume (m)	186.05	186.05	Initial lateral dimension/4.3
Initial vertical dimension of volume (m)	1.16	1.16	Initial vertical dimension/4.3
Receptor height above ground (m)	2	2	
Urban/rural option	R	R	
Distance from Centroid	480	480	
Concentration (@ receptor 480m)	2.771	3.309	
50	0	0	
100	0	0	
150	0	0	
200	0	0	
250	0	0	
300	0	0	
350	0	0	
400	0	0	
450	2.865	3.421	
500	2.71	3.236	

Emissions

PM10	3.72	4.45	lbs/day
PM2.5	3.34	3.99	lbs/day

Cancer Risk Calculation

Cancer Risk Equations (Risk = Dose-Inhalation * CPF)

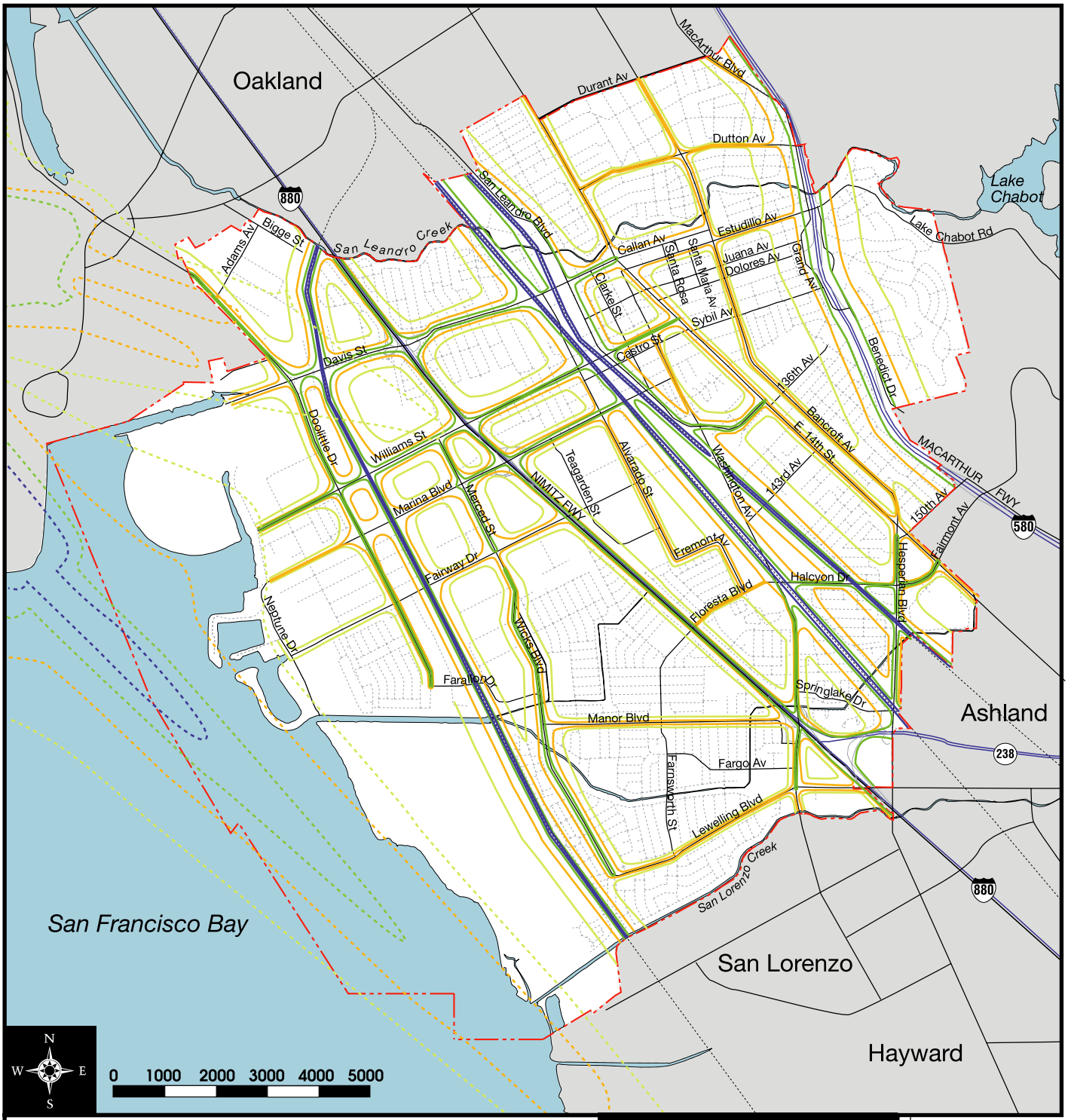
Cancer Potency Factor (Inhalation)	1.1	mg/kg/day
Concentration (annual avg)	0.3309	$\mu g/m^3$
Breathing Rate	302	liter/kg/day
Inhalation Absorption Factor	1	DPM
Exposure Frequency	350	days/year
Exposure Duration	70	years
Averaging Time Period	25550	days/period
Multiplying Factor	318.55	$\mu g/m^3$
Adjustment Exposure Period	1.00	years
Cancer Risk (w/ adjustment)	1.51	
Health Hazard REL (DPM)	5	$\mu g/m^3$
Health Hazard Index	0.06618	
Adjustment Factor	0.1	
Concentration	3.309	

EMFAC2011 Emission Rates
Region Type: Air Basin
Region: San Francisco Bay Area
Calendar Year: 2014
Season: Annual
Vehicle Classification: EMFAC2007 Categories

Region	CalYr	Season	Veh_Class	Fuel	MdlYr	Speed (miles/hr)	Population (vehicles)	VMT (miles/day	Trips (trips/day)	ROG_RUNEX (gms/mile)	CO_RUNEX (gms/mile)	NOX_RUNEX (gms/mile)	CO2_RUNEX (gms/mile)	CO2_RUNEX_Pavley (gms/mile)		PM10_RUNEX (gms/mile)	PM10_PMTW (gms/mile)	PM10_PMBW (gms/mile)		PM2_5_RUNEX (gms/mile)	PM2_5_PMTW (gms/mile)	PM2_5_PMBW (gms/mile)	SOX_RUNEX (gms/mile)
San Francis	2014	Annual	LDA	GAS	Aggregate	Aggregate	2812158	98052435	17707132	0.045603397	1.445620129	0.139626932	338.9694216	301.1292	0.046853	0.002103012	0.007999958	0.036749814	0.019660906	0.001910996	0.00199999	0.01574992	0.003407989
San Francis	2014	Annual	LDA	DSL	Aggregate	Aggregate	13208.48	430993.1	77835.36	0.050253135	0.266568042	0.652968874	352.2260574	310.2152	0.081797	0.037047186	0.007999958	0.036749815	0.051833321	0.034083412	0.00199999	0.015749919	0.003362568
San Francis	2014	Annual	LDT1	GAS	Aggregate	Aggregate	321591.3	11334007	1959440	0.116224824	3.514124064	0.368834391	390.1254238	356.0995	0.049491	0.004740901	0.007999959	0.036749815	0.022066381	0.004316472	0.00199999	0.01574992	0.00395364
San Francis	2014	Annual	LDT1	DSL	Aggregate	Aggregate	455.7314	14866.69	2405.855	0.088492535	0.397213609	0.807953569	361.2034701	319.5704	0.118812	0.074062632	0.007999959	0.036749815	0.085887531	0.068137622	0.00199999	0.01574992	0.003448272
San Francis	2014	Annual	LDT2	GAS	Aggregate	Aggregate	846663.5	31463268	5329805	0.051116811	1.892841029	0.249375774	461.5361023	427.2143	0.046819	0.002069434	0.007999958	0.036749815	0.019638872	0.001888963	0.00199999	0.01574992	0.004638739
San Francis	2014	Annual	LDT2	DSL	Aggregate	Aggregate	418.7829	15363.82	2416.487	0.058961263	0.30035645	0.737251306	355.0894556	316.7681	0.091559	0.046808868	0.007999959	0.036749816	0.060814069	0.04306416	0.00199999	0.01574992	0.003389904
San Francis	2014	Annual	T7	GAS	Aggregate	Aggregate	508.1414	60020.25	10166.89	1.106436122	34.22122993	6.044211566	584.6674365	575.8974	0.045925	0.001174969	0.007999959	0.036749817	0.018754801	0.001004891	0.00199999	0.01574992	0.006410078
San Francis	2014	Annual	T7	DSL	Aggregate	Aggregate	28507.59	3934593	0	0.336318773	1.536531162	8.622808304	1760.695678	1734.285	0.256558	0.161020539	0.035188757	0.060348718	0.182799821	0.148138896	0.008797189	0.025863736	0.01679786

APPENDIX H

Noise Calculations



LEGEND

Transportation Noise Sources

- 75 dB Ldn
- 70 dB Ldn
- 65 dB Ldn
- 60 dB Ldn

Aviation Noise Sources

- 75 dB CNEL
- 70 dB CNEL
- 65 dB CNEL
- 60 dB CNEL

Source: Illingworth and Rodkin, 2000

2000 NOISE CONTOURS

FIGURE 6-2

San Leandro General Plan Update, 2002

CHABOT DAM SEISMIC RETROFIT
NOISE CALCULATIONS

Noise levels are measured in decibel units, a logarithmic scale. The noise level at a given distance from a noise source can be calculated using the Inverse Square Law of Noise formula given below:

$$L_2 = L_1 - 20 \log (R_2/R_1)$$

Where: L_1 = Noise level measured at a distance R_1 from the source and
L_2 = Noise level at a selected distance R_2 from the source.

The Alameda County Noise Element of 1994 contains graphs and information to estimate noise levels when combining sounds. To combine different sound levels, Figure 1 is used to determine the dB increase based on difference in dB levels between the two sounds. When combining two sounds, each with equal sound levels, the sum of the sounds is the original level plus 3 dB (Alameda County Noise Element 1994). A decibel calculator is available online (http://sphere.sourceforge.net/flik/misc/db.html) that estimates noise levels when combining two or more sound sources. The online noise calculator produces the same results as the Alameda County Noise Element Figure 1, but can be used to combine more than two distinct noise sources.

Noise Levels from Construction Equipment

Noise levels associated with each piece of equipment are shown in **Table 3.9-4**.

Table 3.9-4
Construction Equipment 50-Foot Noise Emission Limits

Equipment Category	Maximum Noise Level (A-weighted decibels)[1,2]	Short/Continuous
Air Compressor[3]	70	Short
Bulldozer	85	Continuous
Concrete Pump	76	Continuous
CDSM Rig	75	Continuous
Crane	85	Continuous
Dump Truck	84	Continuous
Excavator	85	Continuous
Front End Loader	80	Continuous
Generator	78	Continuous

Table 3.9-4 Construction Equipment 50-Foot Noise Emission Limits		
Equipment Category	**Maximum Noise Level (A-weighted decibels)[1,2]**	**Short/Continuous**
Grader	85	Continuous
Grout Batching	85	Continuous
Hydraulic Backhoe	90	Short
Jackhammer	85	Short
Sheepfoot or Vibrating Roller	80	Continuous
Truck (dump, delivery)	84	Continuous

Notes:
1 Measured at 50 feet from the construction equipment, with a "slow" (1 second) time constant.
2 Noise limits apply to total noise emitted from equipment and associated components operating at full power while engaged in its intended operation.
3 Portable air compressor rated at 75 cubic feet per minute or greater and that operates at greater than 50 pounds per square inch.
Source: EBMUD 2010 and Burleson Consulting 2013

The highest noise level would be from a hydraulic backhoe with Lmax of 90 dBA at 50 feet. The maximum noise level for other construction equipment at the dam face would be 85 dBA. Assuming that two pieces of 85 dBA construction equipment were operating at the same time would result in a noise level of 88 dBA.

A. WORST CASE DAYTIME NOISE LEVELS

The worst case daytime noise levels (Table 3.9-5) were calculated as follows for the dam excavation area and stockpile locations. The maximum noise levels would be the same for the CDSM option or the conventional earthwork option.

1. DAM EXCAVATION AREA

CDSM Option + Outlet Works Together

One Hydraulic Backhoe – Maximum 90 dBA

Earth Moving Equipment – Maximum 85 dBA

Grout Batching – Maximum 85 dBA

Stationary Equipment

Combination of 2 CDSM Rigs, Pump, and Generator 82 dBA

Using the Noise Calculator- Combined Noise Level is 92 dBA.

Conventional Earthwork + Outlet Works Together

One Hydraulic Backhoe – Maximum 90 dBA

Two pieces of earth moving equipment – 88 dBA

Using the Noise Calculator- Combined Noise Level is 92 dBA

MAXIMUM DAYTIME NOISE LEVEL AT NEAREST SENSITIVE RECEPTOR TO DAM

The nearest residence was measured at 1,500 feet from Chabot Dam.

Using the inverse law, the noise level would be reduced by 29.5 dBA because of the distance from the dam.

$L_2 = 92 - 20 \log (1{,}500/50) = 63$ dBA – Maximum Noise Level

The nearest residence is within 1,500 feet of the dam excavation area; the maximum noise level from construction activities would attenuate to 63 dBA at this residence. A natural noise attenuation factor is the presence of mature trees, vegetation, and topography that would shield many receptors from line-of-sight noise transmission generated by construction activities. This noise level at the nearest residence would be further reduced by an estimated 3 dBA to about 60 dBA because of the elevation difference between the residences and dam excavation area (150 feet) and the attenuation provided by trees and vegetation.

The maximum daytime noise level from the dam to the nearest receptor would be 60 dBA. As a mitigation measure, additional noise reductions would be achieved through engine control and noise control procedures that would further reduce the noise levels to **54 dBA**.

2. STAGING AREAS AND HAUL ROUTES

Noise analyses, similar to above, were completed for the potential stockpile locations assuming that one dump truck (84 dBA) and one piece of earth-moving equipment (85 dBA) would be operating at the same time with a combined noise level of 87 dBA.

The project includes two stockpile locations within the park and two external that were evaluated during alternatives analysis.

1) Filter Pond Stockpile

The nearest residence to the Filter Pond Stockpile is 800 feet away. The stockpile elevation is 190 feet amsl and the residence is at 98 feet amsl, according to Google Earth. The perceived noise from equipment at the stockpile area would be:

$L_2 = 87 - 20 \log (800/50) = 63$ dBA

This noise level at the nearest residence would be further reduced by at least 1 dBA to about 62 dBA because of the elevation difference between the residences and stockpile area and the attenuation provided by trees and vegetation. As a mitigation measure, additional noise reductions would be achieved through engine control and noise control procedures that would further reduce the noise levels to **52 dBA**.

2) Park Stockpile and Haul Routes

The nearest residence to the Park Stockpile and haul routes is 500 feet away. The stockpile elevation is 112 feet amsl and residence is at 245 feet amsl, according to Google Earth. The perceived noise from equipment at the stockpile area would be:

$L_2 = 87 - 20 \log (500/50) = 67$ dBA

This noise level at the nearest residence would be further reduced by at least 1 dBA to about 66 dBA because of the elevation difference between the residences and stockpile area and the attenuation provided by trees and vegetation. As a mitigation measure, additional noise reductions would be achieved through engine control and noise control procedures that would further reduce the noise levels to **56 dBA**.

3) Quarry Stockpile

The nearest residence to the Quarry Stockpile is 950 feet away. The stockpile elevation is 575 amsl feet and residence is at 473 feet amsl, according to Google Earth. The perceived noise from equipment at the stockpile area would be:

$L_2 = 87 - 20 \log (950/50) = 61$ dBA

This noise level at the nearest residence would be further reduced by at least 1 dBA to about 60 dBA because of the elevation difference between the residences and stockpile area and the attenuation provided by trees and vegetation. As a mitigation measure, additional noise reductions would be achieved through engine control and noise control procedures that would further reduce the noise levels to **50 dBA**.

4) Covington Stockpile

The Covington Stockpile would require dump trucks to traverse Lake Chabot Road adjacent to residences. The stockpile location is adjacent to the east of Highway 580, across the freeway from residences. Intermittent noise from equipment would not be expected to significantly contribute to noise levels experienced by the nearest residents on the west side of the Freeway. Additional traffic noise along Lake Chabot Road would likely not affect nearby residents.

B. WORST CASE NIGHTTIME NOISE LEVELS

Nighttime construction would only occur under the CDSM option and a hydraulic backhoe would not be used concurrently with CDSM. Activities would not occur at the stockpiles or along haul routes during nighttime hours.

CDSM Option

Earth Moving Equipment – Maximum 85 dBA

Grout Batching – Maximum 85 dBA

Stationary Equipment

Combination of 2 CDSM Rigs, Pump, and Generator 82 dBA

Using the Noise Calculator- Combined Noise Level is 89 dBA.

MAXIMUM NIGHTTIME NOISE LEVEL AT NEAREST SENSITIVE RECEPTOR TO DAM

The nearest residence was measured at 1,500 feet from Chabot Dam.

Using the inverse law, the noise level would be reduced by 29.5 dBA because of the distance from the dam.

$L_2 = 89 - 20 \log (1{,}500/50) = 60$ dBA – Maximum Noise Level

The nearest residence is within 1,500 feet of the dam excavation area; the maximum noise level from construction activities would attenuate to 60 dBA at this residence. A natural noise attenuation factor is the presence of mature trees, vegetation, and topography that would shield many receptors from line-of-sight noise transmission generated by construction activities. This noise level at the nearest residence would be further reduced by an estimated 3 dBA to about 57 dBA because of the elevation difference between the residences and dam excavation area (150 feet) and the attenuation provided by trees and vegetation.

The maximum nighttime noise level from the dam to the nearest receptor would be 57 dBA. As a mitigation measure, additional noise reductions would be achieved through engine control and noise control procedures that would further reduce the noise levels to **51 dBA**.

APPENDIX I

Hazardous Materials Assessment

Technical Report

Chabot Dam Seismic Upgrade
Hazardous Materials Assessment

Prepared for

East Bay Municipal Utility District
Engineering & Construction Department

April 2013

Prepared by

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In association with

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Contents

Section **Page**

Tables

Figures

Appendices

Acronyms and Abbreviations

AAI	All Appropriate Inquiries
ADMP	Asbestos Dust Mitigation Plan
Alameda County CS	Alameda County Contaminated Sites database
AST	Aboveground Storage Tank
ATCM	Asbestos Airborne Toxic Control Measure
AWP	Annual Workplan Properties
BAAQMD	Bay Area Air Quality Management District
CA FID	California Facility Inventory Database
Cal/EPA	California Environmental Protection Agency
CDSM	Cement Deep Soil Mixing
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CESQG	Conditionally Exempt Small Quantity Generators
CHMIRS	California Hazardous Materials Information Reporting System
CORRACTS	Corrective Action Report
CORTESE	"Cortese" Hazardous Waste & Substances Sites List
DOGGR	California Department of Conservation, Division of Oil, Gas, and Geothermal Resources
DTSC	Department of Toxic Substances Control
EBMUD	East Bay Municipal Utility District
EBRPD	East Bay Regional Park District
EDR	Environmental Data Resources, Inc.
EIR	Environmental Impact Report
EPA	U.S. Environmental Protection Agency
ERNS	Emergency Response Notification System
HAZNET	Facility and Manifest Data
HCP	Hazard Communication Program
HMA	Hazardous Materials Assessment
HMI	Hazardous Materials Impacts
IIPP	Injury and Illness Prevention Program
IWMB	Integrated Waste Management Board
kg	kilograms

LQG	Large Quantity Generator
LUST	leaking underground storage tank
MSL	mean sea level
NFA	No Further Action
NFRAP	No Further Remedial Action Planned
NOA	naturally occurring asbestos
NPL	National Priorities List
PCBs	polychlorinated biphenyls
RCRA	Resource Conservation and Recovery Act
RWQCB	Regional Water Quality Control Board
SLIC	Spills, Leaks, Investigations, and Cleanups Program
SQG	Small Quantity Generators
SWEEPS	Statewide Environmental Evaluation and Planning System
SWF/LF	Solid Waste Facility/Landfill
SWIS	Solid Waste Information System
SWRCB	State Water Resources Control Board
TSD	Treatment, Storage, and Disposal
USGS	U.S. Geological Survey
UST	underground storage tank
VCP	Voluntary Cleanup Program
WMUDS/SWAT	Waste Management Unit Database System/Solid Waste Assessment Test

1 Introduction

East Bay Municipal Utility District (EBMUD) authorized Ninyo& Moore (in association with AECOM) to perform this Hazardous Materials Assessment (HMA) for incorporation into the Environmental Impact Report (EIR) for the Chabot Dam Seismic Upgrade Project (proposed project) in the City of Oakland, City of San Leandro, and unincorporated Alameda County (Castro Valley), California.

The HMA was performed to identify contaminated and potentially contaminated areas and other hazardous materials issues in the project area. The project area extends from Lake Chabot and Lake Chabot Park in the north to Lake Chabot Road in the south, and from Estudillo Avenue in the west to Lake Chabot Road in the east(Figures 1 and 2).

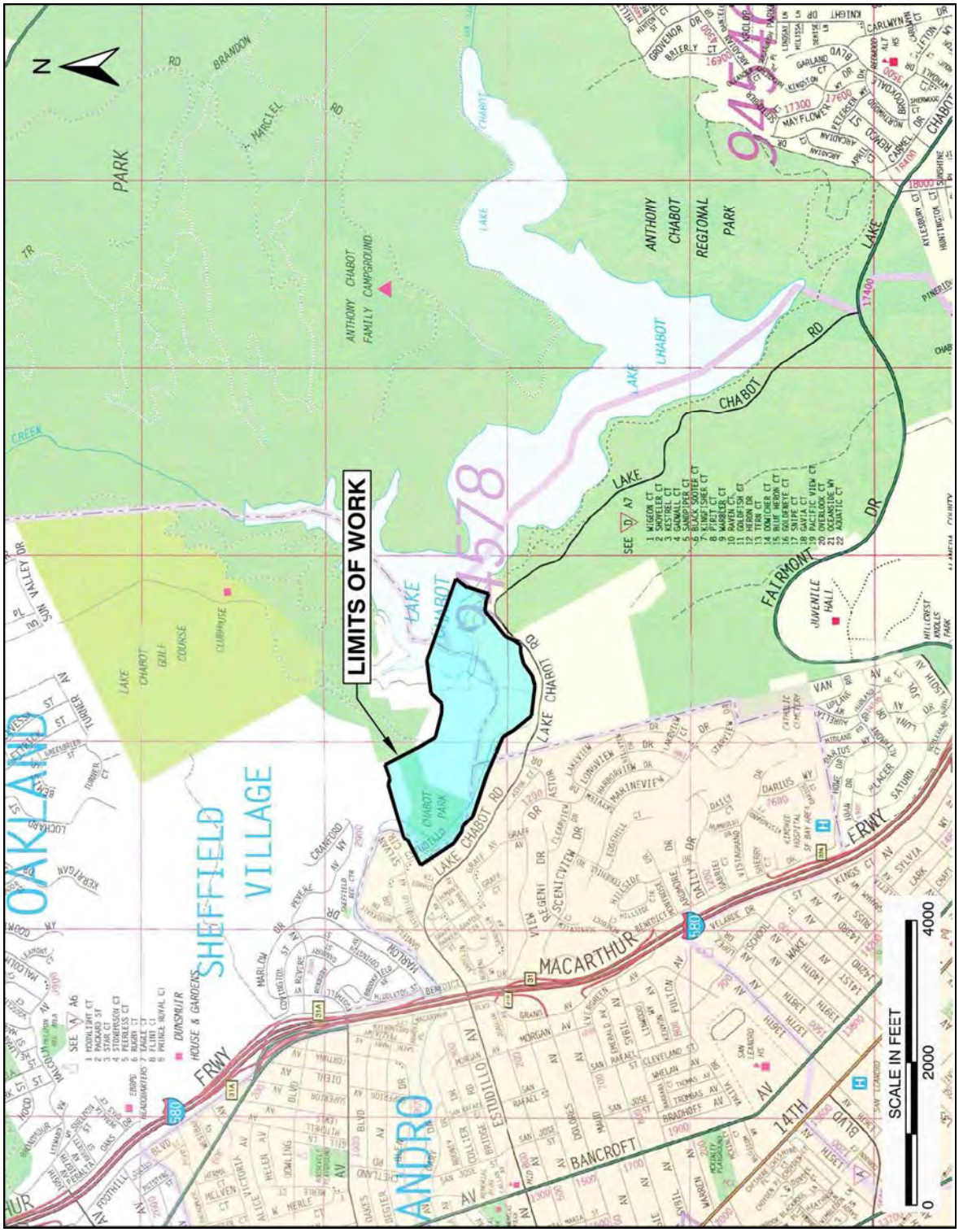
The proposed project would include: improving embankment soils on the downstream side of Chabot Dam, to help them withstand shaking generated by maximum credible earthquake on the Hayward Fault without significant strength loss; helping limit permanent deformation or settlement at the dam crest, to acceptable levels; and helping prevent damage to the Outlet Works from design level earthquake—while continuing reservoir and Outlet Works operation during project construction. Embankment soils improvement would be performed by either Cement Deep Soil Mixing (CDSM) or conventional earthwork. Both options would require transportation of excavated soil by either the Upper Haul Route or the Lower Haul Route, to the Filter Pond Stockpile and/or the Park Stockpile. The Outlet Works upgrade would consist of pavilion demolition, relining or replacement of pipes, valve installation, and filling the outlet tower with low-strength flowable fill or concrete.

1.1 Purpose and Scope of Investigation

The purpose of the HMA was to evaluate the likelihood that hazardous materials may be present in soil or groundwater beneath the project area as a result of past activities. The likelihood of specific locations in the project area having been contaminated by hazardous materials was ranked according to the following categories:

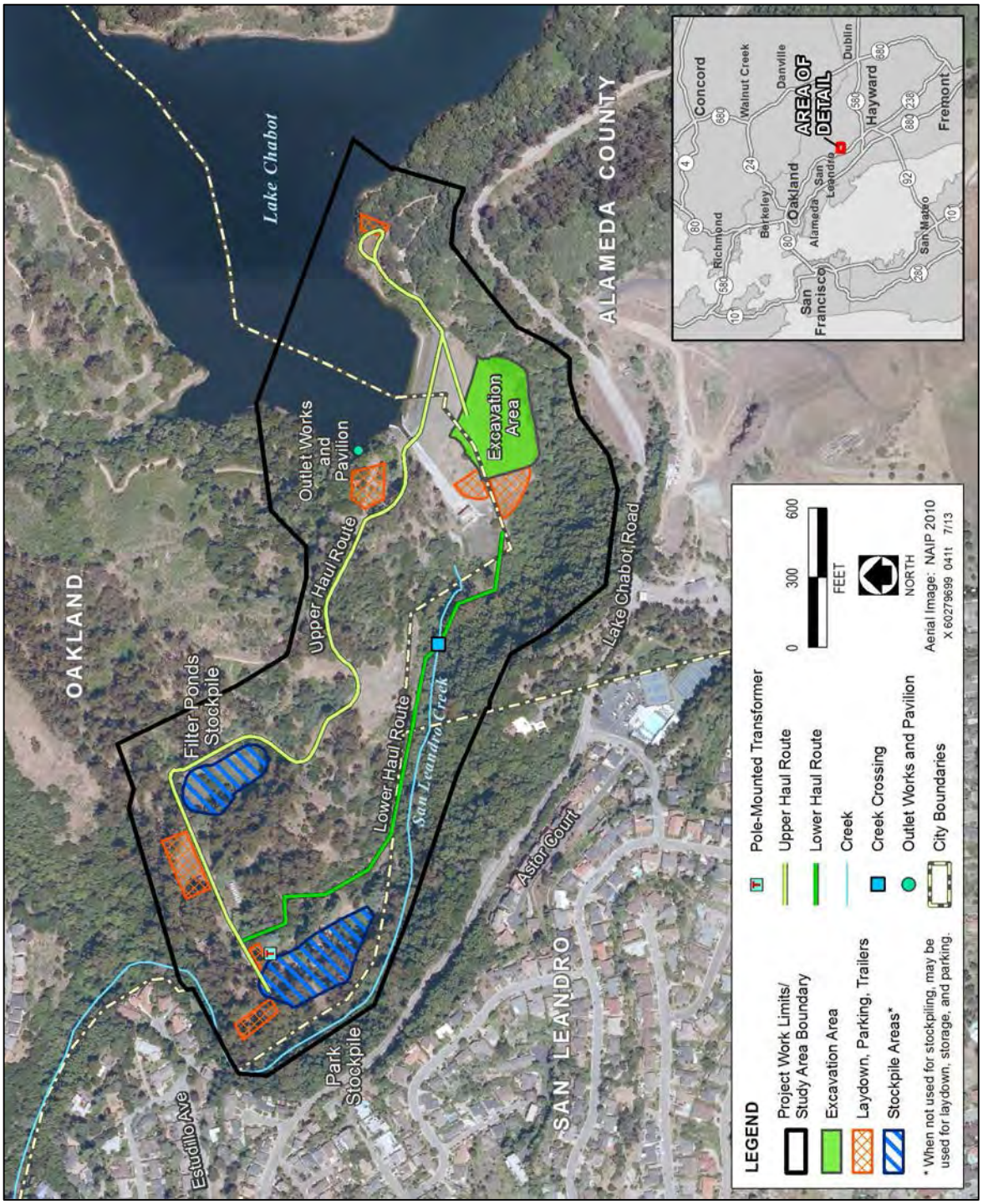
High: property with known or probable contamination in the project area (e.g., a leaking underground storage tank [UST] where remediation has not been started or is not yet finished).

Moderate: property with potential or suspected contamination in the project area (e.g., a leaking UST in the final stages of remediation or in post-remediation monitoring; a property with known use for storage of hazardous materials that has received violation notices from inspecting agency or where visual evidence of inadequate chemical and storage practices—such as significant staining—has been observed but where no environmental assessments have occurred; and facilities where USTs are likely to be present and/or facilities that have used significant quantities of hazardous materials, but appear to be abandoned by their former operators).



Source: Thomas Guide 2008, AECOM 2013

Figure 1-1 Site Location



Source: AECOM 2013, Terra Engineers 2013, EBMUD 2013

Figure 1-2 Site Plan

Low: property that is used for or stores hazardous materials but has no significant violations, known releases, or evidence of inadequate chemical handling practices (e.g., USTs or dry cleaning facilities with no documented releases or locations where remediation of previous releases have been completed).

Ninyo& Moore was retained to conduct the HMA, with the data to be incorporated into the EIR for the project area that is outlined in Figure 1-1, to identify locations where unauthorized releases of hazardous materials have occurred. The scope of the HMA included but was not limited to the following tasks:

- reviewing lease records, maps and environmental reports of the project area, if provided by EBMUD, to evaluate probable past uses and their possible impacts on existing environmental conditions;
- conducting interviews with property representatives regarding the environmental status of the project area;
- performing a site reconnaissance to visually identify locations of possibly contaminated surficial soil or surface water, improperly stored hazardous materials, possible sources of polychlorinated biphenyls (PCB), and possible risks of contamination from past activities in the project area and adjacent properties;
- reviewing readily available local regulatory agency files for the project area (requests were made to the County Department of Health Services, the local Air Pollution Control District, and the local Fire and Building Departments);
- reviewing available regulatory agency databases for the project area and properties located within a specified radius of the project area (the purpose of this review was to evaluate possible environmental impacts to the project area through database identification of locations of known hazardous waste sites, landfills, and leaking USTs, permitted facilities that utilize USTs, and facilities that use, store, or dispose hazardous materials);
- reviewing readily available historical documents, including aerial photographs of the project area and adjacent properties, Sanborn Insurance maps, Building Department records (project area only), and reverse city directories, as appropriate; and
- preparing a draft and a final HMA report (with color photographs), documenting findings and providing opinions and recommendations regarding possible environmental impacts in the project area.

In general accordance with applicable sections of ASTM International(ASTM) E 1527-05, the following items (which are out-of-scope items with respect to the HMA)are not addressed: radon, lead in drinking water, wetlands, regulatory compliance, cultural and historic risk, industrial hygiene, health and safety, ecological resources, endangered species, indoor air quality, and high-voltage power lines.

1.2 Limitations

This HMA has been prepared for use by EBMUD. The information presented in this report is based on the project scope of the HMA (described in Section 1.1). Ninyo & Moore has relied on information provided by others in the description of historical conditions and review of regulatory databases and files. Ninyo & Moore makes no warranties or guarantees regarding the accuracy or completeness of the information provided or compiled by others. Ninyo& Moore observed the interior and exterior of

the properties during tours provided by site contacts. Ninyo & Moore conducted interviews with individual tenants in the project area.

No HMA can completely eliminate uncertainty regarding the potential for hazardous materials conditions in connection with a property. Performance of the HMA is intended to reduce, but cannot eliminate, uncertainty regarding the presence of hazardous materials conditions. The available data do not provide definitive information relative to past uses, operations, or incidents in the project area or adjacent properties. Existence of contamination in the project area that was not identified during the HMA is possible and cannot be adequately assessed without additional research beyond the scope of the HMA as discussed in this technical report document. Further evaluation of these types of risks could include subsurface exploration, sampling, and/or other forms of testing.

In addition, some substances may be present in the project area or project vicinity, in quantities below those categorized as actionable by existing environmental regulations. Ninyo & Moore cannot be responsible if regulatory standards are changed in the future in a manner that renders the existing project area conditions actionable.

The objective of the HMA was to evaluate whether hazardous materials or other adverse environmental conditions are present because of past or ongoing use of the project area and/or facilities in the project vicinity. The scope of investigation for the HMA is generally consistent with applicable sections of ASTM 2005 guidance (Designation Number E1527-05) and U.S. Environmental Protection Agency (EPA) Standards and Practices for All Appropriate Inquiries (AAI). However, because ASTM and AAI standards were established to provide innocent landowner liability protection under the Comprehensive Environmental Response, Compensation, and Liability Act for the purchaser of a property, and because the proposed project would not involve a purchase transaction, the applicability of the ASTM/AAI standards is limited.

2 Environmental Setting

This section provides descriptions of land uses in the project area as well as regional topographic, geologic, and hydrogeologic conditions. It specifically discusses these components of the proposed project: CDSM, Conventional Earthwork, Upper Haul Route, Lower Haul Route, Filter Pond Stockpile, Park Stockpile, and Outlet Works.

2.1 Overview

The project area covers approximately 92 acres in the City of Oakland, City of San Leandro, and unincorporated Alameda County (Castro Valley), California (Figure 1-1). Portions of the project area are in the East Bay Regional Park District's (EBRPD) Lake Chabot Regional Park, the City of San Leandro Chabot Park, Lake Chabot, and on EBMUD property. The project area extends from Lake Chabot Road in the south and east to Estudillo Avenue in the west.

2.2 Proposed Project Components

2.2.1 Cement Deep Soil Mixing

CDSM would occur on approximately 70,000 square feet of the project area, at a location on the downstream slope of Chabot Dam (Figure 1-2). This area is bound to the north by Chabot Dam crest and the Upper Haul Route, to the west by Chabot Dam spillway, to the east by vacant land, and to the south by vacant land and the Lower Haul Route. The area includes fill material that makes up the downstream slope of Chabot Dam. No structures were observed in this location.

2.2.2 Conventional Earthwork

Conventional earthwork would occur on approximately 141,000 square feet of the project area, at a location on the downstream slope of Chabot Dam (Figure 1-2). This area is bound to the north by Chabot Dam crest and the Upper Haul Route, to the west by the Chabot Dam spillway, to the east by vacant land, and to the south by vacant land and the Lower Haul Route. The area includes fill material that makes up the downstream slope of Chabot Dam. No structures were observed in this location.

2.2.3 Upper Haul Route

The Upper Haul Route is approximately 4,740 feet long and approximately 10 to 16 feet wide. The Upper Haul Route begins at the east side of the Chabot Dam crest and ends at the Filter Pond Stockpile (Figure 1-2). The Upper Haul Route is paved with asphalt west of the eastern side of the Chabot Dam crest. East of the eastern side of the Chabot Dam crest, the Upper Haul Route is an unpaved dirt road. No structures were observed on the Upper Haul Route.

2.2.4 Lower Haul Route

The Lower Haul Route is approximately 2,380 feet long and approximately 15 to 25 feet wide. The Lower Haul Route begins at the downstream toe of Chabot Dam and ends at the Park Stockpile (Figure 1-2). The Lower Haul Route is unpaved and is bordered by vegetation. It crosses San Leandro

Creek approximately 600 feet from its starting point. No structures were observed on the Lower Haul Route.

2.2.5 Filter Pond Stockpile

The Filter Pond Stockpile would be located on approximately 64,000 square feet of EBMUD property, on the northwestern portion of the project area (Figure 1-2). The location of the Filter Pond Stockpile is bound to the northwest and northeast by the Upper Haul Route and to the south by vacant land beyond which is the Lower Haul Route. The Filter Pond Stockpile location includes a pair of vacant meadows that are bordered by vegetation. No structures were observed at the Filter Pond Stockpile location.

2.2.6 Park Stockpile

The Park Stockpile would be located on approximately 105,000 square feet of EBMUD property, leased to and operated by the City of San Leandro as Chabot Park on the western portion of the project area (Figure 1-2). The location of the Park Stockpile is bound to the northwest and northeast by the Lower Haul Route and to the south by vacant land beyond which is the project area boundary. The Park Stockpile location is within Chabot Park, and observed features included a paved access road, a power pole and pole-mounted transformer, unpaved parking areas, picnic areas, and a swing set.

2.2.7 Outlet Works

The Outlet Works are located at the EBMUD-owned appurtenant facilities on the northeastern portion of the project area (Figure 1-2). The Outlet Works location is bound to the east by Lake Chabot, to the north by vacant land, and to the south and west by vacant land beyond which is the Upper Haul Route. The Outlet Works consists of an approximately 48-foot-tall stone masonry tower, capped by a 13-foot-high reinforced concrete pavilion. The tower houses an 8-foot diameter, brick-lined outlet shaft that passes water from Lake Chabot into the 36-inch-diameter water line in Tunnel No. 2.

2.3 Regional Conditions

The following discussion includes topographic, geologic, and groundwater conditions in the project vicinity, based on the document review and visual observations of the project area and adjacent property.

2.3.1 Project Vicinity Topography

Based on a review of the U.S. Geological Survey (USGS) 7.5-Minute Topographic Quadrangle Maps Series of Hayward, 1993, and San Leandro, 1993,elevation in the project vicinity varies from approximately 150 to 350 feet above mean sea level (MSL) (USGS 1993). The topography is hilly and gently slopes towards Lake Chabot to the north and San Leandro Creek to the southwest.

2.3.2 Project Vicinity Geology

The project area is located within the Coast Ranges Geomorphic province. The Coast Ranges are northwest trending and are underlain by marine and non-marine sedimentary rocks. These sedimentary units are underlain by either the Mesozoic Franciscan Formation (metamorphosed

seafloor deposits) or the granitic Salinian Block. The Oakland area is situated on a broad, alluvial plain that slopes gently west from hills to San Francisco Bay. The alluvial plain is comprised of alluvial sediments, derived from erosion of the hills to the east.

Examination of the Geologic Map of the Hayward Quadrangle, Contra Costa and Alameda Counties revealed outcrops of Franciscan Formation rock in the project area (Dibblee 2005). Franciscan Formation rock is associated with naturally occurring asbestos (NOA). Based on the presence of Franciscan Formation rock in the project area, potential exists for its soil to have been affected by NOA, which represents a potential environmental concern for the proposed project.

2.3.3 Project Vicinity Groundwater

Project vicinity groundwater depth was obtained from the Summary of August 2011 Field Investigation Program Memo, Chabot Dam Remediation Concept Project (URS2011). According to this memo, the groundwater elevation ranges from 128 to 175 feet above MSL. Groundwater flow direction was not included, but it can be assumed to generally follow topography to the north towards Lake Chabot or to the southwest towards San Leandro Creek.

3 Historical Information

The following discussion summarizes the results of the review of historical resources, including Sanborn Fire Insurance Rate maps, aerial photographs, topographic maps, oil and gas maps, and historical city directories, as provided in Environmental Data Resources, Inc. (EDR).

3.1 Sanborn Fire Insurance Maps

According to EDR, Sanborn Fire Insurance maps do not exist for the project area. A copy of the Sanborn Fire Insurance Rate Map Report is provided in Appendix A (EDR 2012b).

3.2 Aerial Photographs

Aerial photographs have been collected in some areas for the continental United States since the 1920s, with variable coverage and frequency (generally based on an area's importance to national defense). Aerial photographs offer an opportunity for direct observation of conditions across a period of time. These observations may include the locations of tank pits, drums, pits, ponds, lagoons, stained / stressed vegetation, or other development features that can indicate potential contaminant sources.

Aerial photographs of the project area were provided by EDR (EDR2012c). For the HMA, Ninyo & Moore reviewed aerial photographs taken in 1939, 1946, 1958, 1965, 1975, 1982, 1993, 1998, and 2005. These photographs varied in scale and clarity, and were taken from various altitudes. A copy of the EDR Aerial Photo Decade Package is provided in Appendix A.

The aerial photograph review served to verify information gained from other sources and, in some cases, served as the primary source of information. Information gathered from aerial photography is summarized below. Because the project area is quite large, the descriptions include limited data in the interest of brevity, focusing on notable features in locations of potential concern as revealed by regulatory data or the site reconnaissance. Historical features of potential environmental concern that were noted but were not revealed by other sources are described.

1939 Aerial Photograph: This is the earliest aerial photograph available. Most of the project area consists of undeveloped, grassy fields and forested hillsides. Visible features include the southwest portion of Lake Chabot, Chabot Dam, the old spillway, and the Outlet Works on the southwest edge of Lake Chabot. Other visible features include the Filter Ponds, apparently in use and filled with water. Numerous unpaved roads crisscross the project area.

1946 Aerial Photograph: The project area appears much the same as it did in the 1939 photograph. The northernmost Filter Pond has dried up.

1958 Aerial Photograph: The project area appears much the same as it did in the 1939 and 1946 photographs.

1965 Aerial Photograph: The project area appears similar to the previous photographs.

1975 Aerial Photograph: This photograph is very grainy; smaller on-site features such as the reservoir tower are not observable. The project area appears similar to the previous photographs.

1982 Aerial Photograph: This photograph also is very grainy. The dam, roads, and the southern-most Filter Pond, with cover, are the only observable human-made features. A new spillway can be seen, located west of Chabot Dam.

1993 Aerial Photograph: The project area appears similar to the 1982 photograph.

1998 Aerial Photograph: This photograph is grainy. The southern-most Filter Pond appears to be uncovered and dry. Otherwise, the project area appears similar to the 1993 photograph.

2005 Aerial Photograph: The two former Filter Ponds appear as open, grassy areas. No other obvious changes are notable in this photograph.

Based on information provided by Richard Kanazawa of EBMUD, clean fill was placed on the Filter Ponds in 2003. Because the fill placed on the Filter Pond Stockpile portion of the proposed project was classified as clean fill by EBMUD, it does not represent a potential environmental concern.

Based on the review of aerial photographs, no specific locations of concern were revealed in the project area.

3.3 Topographic Maps

Ninyo & Moore obtained historical topographic maps from EDR, for 1899, 1915, 1947, 1948, 1950, 1959, 1968, 1973, 1980, and 1993 (EDR 2012d). USGS 7.5 Minute Series maps for Hayward and San Leandro included the project area. A copy of the EDR Historical Topographic Map Report is provided in Appendix A. The following are brief descriptions of the project area, based on a review of the individual historical topographic maps.

1899 Topographic Map: This is the earliest topographic map available. Chabot Dam is shown on this map. The scale of the map is too large to identify smaller details.

1915 Topographic Map: The project area appears similar to the 1899 topographic map.

1947 Topographic Map: The project area appears developed with Chabot Dam. The elevation of the spillway is listed as 235 feet above MSL.

1948 Topographic Map: The northwestern portion of the project area (Filter Pond Stockpile) is labeled "Chabot Filtration Plant." Otherwise, the project area appears similar to the 1947 topographic map.

1950 Topographic Map: The project area appears similar to the 1948 topographic map.

1959 Topographic Map: The project area appears similar to the 1950 topographic map. The western portion of the project area is labeled "Lake Chabot Park."

1968 Topographic Map: The project area appears similar to the 1959 topographic map.

1973 Topographic Map: The project area appears similar to the 1968 topographic map.

1980 Topographic Map: The project area appears similar to the 1973 topographic map.

1993 Topographic Map: The spillway is shown on the map, west of Chabot Dam. The project area appears similar to the 1980 topographic map.

Based on the review of topographic maps, no specific locations of concern were revealed in the project area.

3.4 Oil and Gas Maps

According to the California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR), Online Mapping System (DOGGR 2012), the project area does not lie within the administrative boundaries of an oil field. No oil or gas wells are located in the project area.

3.5 City Directories

EDR provided a historical city directory report for the project area and project vicinity (EDR 2012e). City directories were searched from 1920 through 2012; no listings were found for the project area. A copy of the EDR-City Directory Abstract is provided in Appendix A.

3.6 Interviews and Correspondence

Ninyo & Moore interviewed and/or corresponded by phone/e-mail with the following contacts regarding the proposed project:

- Alameda County: Rosanna Garcia, Environmental Health Department
- Bay Area Air Quality Management District: Rochelle Reed, Public Records Section
- California Environmental Protection Agency: Department of Toxic Substances Control
- City of Oakland: Celestina Pacheco, Fire Prevention Bureau, Hazardous Materials
- City of San Leandro: Gail Chino, Environmental Services Section
- East Bay Municipal Utility District: Bill Maggiore, Richard Kanazawa, John Schroeter, and John Walter
- San Francisco Bay Regional Water Quality Control Board: Melinda Wong, Public Records

Results of the interviews and correspondence revealed no environmental concerns, with the exception of the potential presence of NOA (discussed in Section 2.3.2) as well as the potential presence of asbestos containing materials and lead-based paint in the Outlet Works (discussed in Section 5.7).

3.7 Previous Reports

Previous reports regarding environmental concerns were not provided by EBMUD to Ninyo & Moore or AECOM.

4 Environmental Database Review

Ninyo & Moore reviewed the EDR Radius Map Report with GeoCheck Report for Lake Chabot Dam; this report is based on an environmental information database search completed by EDR on November 1, 2012, that included federal, state, and local databases (EDR 2012a). This section discusses the databases that contain noted locations of environmental concern and includes the regulatory status of project area facilities and potential environmental impacts of the proposed project. A copy of the EDR Radius Map Report with GeoCheck Report for Lake Chabot Dam is provided in Appendix B.

Groundwater elevation ranged from 128 to 175 feet above MSL (URS 2011). Groundwater flow direction was not reported, but can be assumed to generally follow topography to the north towards Lake Chabot or to the southwest towards San Leandro Creek.

The EDR report also included a list of "orphan sites" that could not be mapped by the addresses included in the file. Ninyo & Moore reviewed this list and found that 1 of the 22 "orphan sites" is a facility located in or adjacent to the project area. This facility is included in the HMA and has been verified by other investigative means (site reconnaissance and historical data review).

Table 4-1shows the number of facilities within the specified search radii of the project area that are listed in EDR's environmental database search.

Table 4-1: Environmental Database Search

Database(s)	Description	Facilities Listed*
Federal Databases		
NPL	The NPL is the EPA's database of uncontrolled or abandoned hazardous waste facilities that have been listed for priority remedial actions under the Superfund Program. Updated quarterly.	0
CERCLIS/ NFRAP	The CERCLIS database is a compilation of facilities that EPA has investigated or is investigating for a release or threatened release of hazardous substances pursuant to the CERCLA of 1980. NFRAP refers to facilities that have been removed and archived from its inventory of CERCLA sites.	0
Institutional Control / Engineering Control	Superfund sites that have either engineering or institutional controls. The data includes the control and the media contaminated.	0
RCRA CORRACTS/ TSD	The EPA maintains a database of RCRA facilities associated with TSD of hazardous materials that are undergoing "corrective action." A "corrective action" order is issued when a release of hazardous waste or constituents occurs into the environment from a RCRA facility.	0
RCRA Non-CORRACTS/ TSD	The RCRA Non-CORRACTS/TSD Database is a compilation by EPA of facilities that report storage, transportation, treatment, or disposal of hazardous waste. Unlike the RCRA CORRACTS/TSD database, the RCRA Non-CORRACTS/TSD database does not include RCRA facilities where corrective action is required.	0
RCRA	The RCRA Generators database, maintained by EPA, lists facilities that generate	0

Table 4-1: Environmental Database Search

Database(s)	Description	Facilities Listed*
Generators	hazardous waste as part of their normal business practices. Generators are listed as large, small, or conditionally exempt. LQGs produce at least 1,000 kg/month of non-acutely hazardous waste or 1 kg/month of acutely hazardous waste. SQGs produce 100 to 1,000 kg/month of non-acutely hazardous waste. CESQGs are those that generate less than 100 kg/month of non-acutely hazardous waste.	
ERNS	ERNS records and stores information on reported releases of oil and hazardous substances.	0
State Databases		
Response	The Cal Sites database is maintained by Cal/EPA, DTSC. This database contains information on AWP and both known and potentially contaminated properties. Two-thirds of these properties have been classified, based on available information, as needing NFA by DTSC. The remaining properties are in various stages of review and remediation to determine whether a problem exists.	0
EnviroStor	Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high priority and high potential risk.	0
SWF/LF	The SWF/LF database consists of open and closed solid waste disposal facilities and transfer stations. The data comes from the IWMB's SWIS database.	0
LUST	Databases of the LUST information system are maintained by SWRCB and RWQCB.	1
UST/AST	The UST Information System and AST database are maintained by SWRCB, which may include the owner and location of the USTs/ASTs.	0
VCP	The VCP database is a Cal/EPA listing of properties involved in the voluntary remediation program.	0
Brownfields	This database is a DTSC tracking system of California Brownfields sites.	0
Indian Reservation	USGS map layer portrays Native American-administered land within the U.S. with an area equal to or greater than 640 acres.	0
Indian LUST	This is a database maintained by EPA for LUSTs on Native American land in Arizona, California, New Mexico, and Nevada.	0
Indian UST	This is a database maintained by EPA for USTs on Native American land.	0
Non-ASTM Databases		
Alameda County CS	This is a listing of contaminated sites overseen by the Toxic Release Program and LUST Program.	1
HAZNET	The HAZNET database contains facility and manifest data.	1
Hist UST	The Hist UST database lists historical registered USTs.	1
SLIC	The SLIC database is maintained by RWQCB.	0
CA FID USTs	The FID UST contains active and inactive UST locations and is maintained by SWRCB.	1
SWEEPS USTs	This UST listing was updated and maintained by a company contracted by SWRCB in the early 1990s. The listing is no longer updated or maintained.	1

Table 4-1: Environmental Database Search

Database(s)	Description	Facilities Listed*
CHMIRS	The CHMIRS contains information on hazardous materials reporting.	0
WMUDS/ SWAT	The WMUDS/SWAT is used for program tracking and inventory of waste management units. The system is maintained by SWRCB.	0
Hist CORTESE	The Hist CORTESE database is designated by SWRCB LUST, IWB SWF/LF, and DTSC sites. This listing is no longer updated by the state agency.	1

Notes:
Alameda County CS – Alameda County Contaminated Sites
AST – Aboveground Storage Tank
AWP – Annual Workplan Properties
CA FID – California Facility Inventory Database
Cal/EPA – California Environmental Protection Agency
CERCLA – Comprehensive Environmental Response, Compensation and Liability Act
CERCLIS – Comprehensive Environmental Response, Compensation, and Liability Information System
CESQG – Conditionally Exempt Small Quantity Generators
CHMIRS – California Hazardous Materials Information Reporting System
CORRACTS – Corrective Action Report
CORTESE – "Cortese" Hazardous Waste & Substances Sites List
DTSC – Department of Toxic Substances Control
EPA – United States Environmental Protection Agency
ERNS – Emergency Response Notification System
HAZNET – Facility and Manifest Data
IWMB – Integrated Waste Management Board
kg – kilograms
LQG – Large Quantity Generator
LUST – Leaking Underground Storage Tanks
NFA – No Further Action
NFRAP – No Further Remedial Action Planned
NPL – National Priorities List
RCRA – Resource Conservation and the Recovery Act
RWQCB – Regional Water Quality Control Board
SLIC – Spills, Leaks, Investigations, and Cleanups Program
SQG – Small Quantity Generators
SWEEPS – Statewide Environmental Evaluation and Planning System
SWF/LF – Solid Waste Facility/Landfill
SWIS – Solid Waste Information System
SWRCB – State Water Resources Control Board
TSD – Treatment, Storage, and Disposal
USGS – United States Geological Survey
UST – Underground Storage Tank
VCP – Voluntary Cleanup Program
WMUDS/SWAT – Waste Management Unit Database System/Solid Waste Assessment Test
*Some facilities have multiple listings under a single database.
Source: Data compiled by Ninyo& Moore in 2013

4.1 Federal Databases

Facilities in the project area and search radius are not listed in the federal databases.

4.2 State Databases

Facilities in the project area are not listed in the Leaking Underground Storage Tank (LUST) database. M&K ARCO #I at 1401 Grand Avenue in San Leandro, approximately 0.43 miles west and downgradient from the project area, was listed in the database as an open case impacting groundwater. Based on the distance and direction relative to groundwater flow from the project area, the facility is not considered to be an environmental concern for the proposed project.

Facilities in the project area and search radius are not listed in the remaining state databases.

4.3 Non-ASTM Databases

One facility is listed in the Non-ASTM database as being in the project area. The facility, the EBMUD Chabot Filter Plant, is listed in the HAZNET database and is located at the end of East Estudillo Avenue. Furthermore, the facility is located within the proposed Filter Pond Stockpile location in the project area. The facility is listed in the database for transportation of approximately 44 tons of contaminated soil from cleanup of a release of unknown origin, extent, or material. Mr. John Walter of EBMUD was contacted regarding this database listing, but Mr. Walter had no additional information relating to the release at the Chabot Filter Plant. The release represents a potential environmental concern. Facilities within the search radius were not listed in the HAZNET database.

Facilities in the project area are not listed in the Alameda County Contaminated Sites (CS) and Hist Cortese databases. One facility within the search radius is listed in the Alameda County CS and Hist Cortese databases—M&K ARCO #I at 1401 Grand Avenue in San Leandro, approximately 0.43 miles west and crossgradient from the project area. This is the same facility that is listed in the LUST database (discussed in Section 4.2). Based on the distance and direction relative to groundwater flow from the project area, the facility is not considered to be an environmental concern.

Facilities in the project area are not listed in the California Facility Inventory Database (CA FID) UST, Hist UST, and Statewide Environmental Evaluation and Planning System (SWEEPS) UST databases. One facility within the search radius is listed in the CA FID UST, Hist UST, and SWEEPS UST databases as Lake Chabot Road Quarry at 13575 Lake Chabot Road in San Leandro, approximately 0.03 mile east-southeast and crossgradient from the project area. Four gasoline USTs at the facility are listed as inactive. No violations are recorded in the databases, and the facility is not associated with a LUST case. Based on the status of the facility, the facility is not considered to be an environmental concern.

Facilities in the project area and search radius are not listed in the remaining Non-ASTM databases.

5 Site Reconnaissance

A site reconnaissance was conducted by Ninyo & Moore on October 29, 2012, with AECOM and EBMUD representatives, to provide specific, current information about the project area that was not obtainable through an environmental records review or historical information review. Photographs of the project area are provided in Appendix C.

During the site reconnaissance, Ninyo & Moore looked for several indicators of potential environmental impacts in the project area, including but not limited to significant staining or degraded pavement, USTs, ASTs, storage of hazardous materials and wastes, groundwater monitoring wells and remediation systems, transformers, pesticide use, industrial facilities, existing or historic fuel stations, stressed vegetation, and the presence of pits, ponds, or lagoons. The presence of features such as ASTs, USTs, or chemical storage areas alone is not sufficient to classify a property as Moderate or High with regard to risk.

Table 5-1 summarizes Ninyo & Moore's observations of the project area. In general, properties were inspected during tours of the facilities, given by EBMUD; interviews with EBMUD staff members also were conducted.

5.1 Cement Deep Soil Mixing

Several wells were observed in CDSM locations. These wells are piezometers for monitoring geotechnical conditions of Chabot Dam. The presence of the wells does not represent an environmental concern.

5.2 Conventional Earthwork

Several wells were observed in the Conventional Earthwork locations. These wells are piezometers for monitoring geotechnical conditions of Chabot Dam. The presence of the wells does not represent an environmental concern.

5.3 Upper Haul Route

Features representing environmental concerns were not observed in the Upper Haul Route during the site reconnaissance.

5.4 Lower Haul Route

Features representing environmental concerns were not observed in the Lower Haul Route during the site reconnaissance.

Table 5-1: Site Reconnaissance Observations

Proposed Project Locations	Existing Project Area Use	Chemical Storage Areas	Dumped, Burned Material	Hydraulic Equipment (Lifts)	Electrical Transformers (potentially containing PCBs)	Chemical/Pesticide Mixing Areas	Sumps, Pits, Ponds, Lagoons, Clarifiers	Potentially Lead-Based Paint	Groundwater Monitoring Wells or Other Wells	Remediation Equipment/Evidence or Remediation	Potentially Asbestos Containing Materials	Storage Tanks (underground or aboveground)	Drums	Stressed Vegetation	Discolored/Stained Soils	Degraded/Heavily Stained Pavement
CDSM	Downstream slope of Chabot Dam	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N
Conventional Earthwork	Downstream slope of Chabot Dam	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N
Upper Haul Route	Asphalt/concrete paved and unpaved dirt road	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Lower Haul Route	Asphalt paved and unpaved dirt road	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Filter Pond Stockpile	Vacant land	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Park Stockpile	Chabot Park	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N
Outlet Works	Pavilion, tower, and tunnel	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Notes:
N – Not observed during reconnaissance
Y – Yes, observed during reconnaissance
The existence of, for example, tanks or chemical storage areas alone generally is not sufficient to classify a property as Moderate or High with regard to risk. Evidence of a release, such as significant staining, groundwater monitoring wells or remediation equipment, would be cause to classify a property as Moderate or High.

Source: Data compiled by Ninyo& Moore in 2013

5.5 Filter Pond Stockpile

Features representing environmental concerns were not observed in the Filter Pond Stockpile location during the site reconnaissance.

5.6 Park Stockpile

A pole-mounted transformer was observed on the northern portion of the Park Stockpile location. Historically, PCBs (a group of hazardous substances and suspected human carcinogens) were widely

used as an additive in cooling oils for electrical components. Typical sources of PCBs can include electrical transformers. The use of PCBs in electrical transformers manufactured before 1978 was not regulated by EPA. Electrical transformers manufactured since 1978, which do not contain PCBs, should be stamped to indicate that the product is PCB-free. Ninyo& Moore did not assess the pole-mounted transformer during the site reconnaissance. However, because of the age of the facilities in the project area, the pole-mounted transformer possibly contains PCBs. Therefore, Ninyo & Moore considers the presence of the pole-mounted transformer to be an environmental concern for the proposed project.

5.7 Outlet Works

The pavilion and tower observed at the Outlet Works location were painted. Based on the age of these structures (built in 1923), lead-based paint may have been used during the original construction and up to 1978, when the use of lead-based paint was regulated by EPA. Similarly, based on the age of the pavilion and tower structures, tunnel no. 2, and the outlet pipeline, asbestos containing materials may have been used during the original construction. The potential presence of lead-based paint and asbestos containing materials represents an environmental concern for the proposed project.

6 Specific Environmental Concerns

Based on the results of Ninyo& Moore's historical research, review of the environmental database, regulatory agency inquiries, and site reconnaissance, project area locations were evaluated and classified as High, Moderate, or Low with regard to the potential for detrimental impacts during project construction activities. Specific locations of High or Moderate risk are presented in Table 6-1. Specific locations that are categorized as High or Moderate risk in Table 6-1 were evaluated based on the information obtained and the likelihood that hazardous materials in them may have an impact on soil and / or groundwater that is likely to be disturbed during project construction.

Table 6-1: Identified Specific Environmental Concerns

Proposed Project Location	Specific Environmental Concern	Reason for Risk Class[1]	Data Source[2]	Risk Class[3]	Within Project Area	Applicable HMI/Mitigation Measure
CDSM	No specific areas of concern	N / A	N / A	N / A	N / A	HMI-1, HMI-2
Conventional Earthwork	No specific areas of concern	N / A	N / A	N / A	N / A	HMI-1, HMI-2
Upper Haul Route	No specific areas of concern	N / A	N / A	N / A	N / A	HMI-1, HMI-2
Lower Haul Route	No specific areas of concern	N / A	N / A	N / A	N / A	HMI-1, HMI-2
Filter Pond Stockpile	HAZNET listing of Chabot Dam Filter Plant	Lack of specific information regarding the release and subsequent cleanup	D, H	M	Y	HMI-1, HMI-2, HMI-3
Park Stockpile	Potential presence of PCBs in pole-mounted transformer	Age of construction of Park Stockpile	R, H	M	Y	HMI-1, HMI-2, HMI-4
Outlet Works	Lead-based paint	Age of construction of Outlet Works	R, H	M	Y	HMI-1, HMI-2, HMI-5
	Asbestos containing materials	Age of construction of Outlet Works	R, H	M	Y	HMI-1, HMI-2, HMI-6

Notes:
HMI – Hazardous Material Impact
LUST – Leaking Underground Storage Tank
N / A – Not Applicable
Y – Yes
[1]Description of environmental concern / primary reasons for risk class
[2]Indicates primary information sources for listing: R=Reconnaissance, D=Database, H=Historical Documentation, I= Interviews / Correspondence
[3] Risk Class H = high, M = moderate, L = low

Source: Data compiled by Ninyo& Moore in 2013

7 Non-Specific Environmental Concerns

The following are non-specific, widespread concerns in the project area:

Based on the presence of Franciscan Formation rock in the project area, potential exists for its soil to have been affected by NOA.

Project construction activities, including demolition, may encounter or generate hazardous or solid wastes and debris, and may result in exposure of the public and/or the environment to hazardous materials.

8 Potential Hazardous Materials Impacts and Mitigation Measures

8.1 Proposed Project-Wide Hazardous Materials Impacts and Mitigation Measures

HMI-1: NOA is associated with Franciscan Formation rock that has been determined to be present in the project area. Because of the presence of Franciscan Formation rock, soil in the project area may have been affected by NOA. Project construction activities that disturb soils in the proposed project area, including excavation for CDSM or Conventional Earthwork, soil stockpiling, road construction, and demolition may generate dust that contains NOA, which may result in the exposure of workers, the public, and/or the environment to hazardous materials.

> Mitigation Measure HMI-1: Soils to be disturbed in the proposed project area shall be sampled and tested for NOA. If soils to be disturbed in the proposed project area are confirmed to have NOA, project construction activities, including excavation for CDSM or Conventional Earthwork, soil stockpiling, road construction, and demolition, shall be performed under an Asbestos Dust Mitigation Plan (ADMP), in accordance with the Asbestos Airborne Toxic Control Measure (ATCM) as administered by the Bay Area Air Quality Management District (BAAQMD), to reduce public and worker exposure to NOA by employing the best available dust mitigation practices. If soils to be disturbed in the proposed project area are not found to contain NOA, an application for exemption from the ATCM will be submitted to the BAAQMD.

HMI-2: Project construction activities may include the use of hazardous materials (e.g., diesel fuel, oil, lubricants, hydraulic fluid, paints, solvents, cements, and adhesives), may encounter or generate hazardous or solid wastes and debris, and may result in exposure of workers, the public, and/or the environment to hazardous materials.

> Mitigation Measure HMI-2 – Implementation of a Hazard Communication Program (HCP) and an Injury and Illness Prevention Program (IIPP) by the construction contractor shall minimize construction worker exposure to hazardous materials. Hazardous waste generated during project construction shall be contained, sampled, and disposed in accordance with all applicable federal, state, and local laws and regulations. With regard to hazardous materials, the licensing and training of personnel, accumulation limits, time limits, reporting, and record keeping shall be regulated by the federal Resource Conservation and Recovery Act (RCRA) and the California Hazardous Waste Control Law.

8.2 CDSM Hazardous Materials Impacts and Mitigation Measures

Impacts HMI-1 and HMI-2 potentially will occur at the CDSM location. Mitigation Measure HMI-1 and Mitigation Measure HMI-2 shall be implemented at this location.

8.3 Conventional Earthwork Hazardous Materials Impacts and Mitigation Measures

Impacts HMI-1 and HMI-2 potentially will occur at the Conventional Earthwork location. Mitigation Measure HMI-1 and Mitigation Measure HMI-2 shall be implemented at this location.

8.4 Upper Haul Route Hazardous Materials Impacts and Mitigation Measures

Impacts HMI-1 and HMI-2 potentially will occur at the Upper Haul Route location. Mitigation Measure HMI-1 and Mitigation Measure HMI-2 shall be implemented at this location.

8.5 Lower Haul Route Hazardous Materials Impacts and Mitigation Measures

Impacts HMI-1 and HMI-2 potentially will occur at the Lower Haul Route location. Mitigation Measure HMI-1 and Mitigation Measure HMI-2 shall be implemented at this location.

8.6 Filter Pond Stockpile Hazardous Materials Impacts and Mitigation Measures

Impacts HMI-1 and HMI-2 potentially will occur at the Filter Pond Stockpile location. Mitigation Measure HMI-1 and Mitigation Measure HMI-2 shall be implemented at this location.

In addition, HMI-3 potentially will occur at the Filter Pond Stockpile location.

> HMI-3: Project construction activities at the Filter Pond Stockpile location, including grading and stockpiling, potentially will result in exposure of workers, the public, and/or the environment to contaminated soil related to a release of unknown origin at the Chabot Dam Filter Plant.
>
> > Mitigation Measure HMI-3: If potentially contaminated soil related to a release at the Chabot Dam Filter Plant is to be disturbed by project construction activities such as grading, then EBMUD or its contractors shall conduct an evaluation of potentially contaminated soil related to the release at the Chabot Dam Filter Plant, including sampling and analysis of shallow soils, for evaluation of contamination.

8.7 Park Stockpile Hazardous Materials Impacts and Mitigation Measures

Impacts HMI-1 and HMI-2 potentially will occur at the Park Stockpile location. Mitigation Measure HMI-1 and Mitigation Measure HMI-2 shall be implemented at this location.

In addition, HMI-4 potentially will occur at the Park Stockpile location.

HMI-4: Project construction activities at the Park Stockpile location may include relocating or removal of a pole-mounted transformer that potentially will result in exposure of workers, the public, and/or the environment to hazardous materials.

Mitigation Measure HMI-4: The construction contractor shall assess the pole-mounted transformer for the presence of PCBs, based on the age of the pole-mounted transformer, if project construction activities necessitate the removal or relocation of the pole-mounted transformer. If the pole-mounted transformer is dated prior to 1978, it shall be considered to contain hazardous materials and disposed.

8.8 Outlet Works Hazardous Materials Impacts and Mitigation Measures

Impacts HMI-1 and HMI-2 potentially will occur at the Outlet Works location. Mitigation Measure HMI-1 and Mitigation Measure HMI-2 shall be implemented at this location.

In addition, HMI-5 and HMI-6 potentially will occur at the Outlet Works location.

HMI-5: Project construction activities at the Outlet Works location may include demolition of structures potentially painted with lead-based paint, which will result in exposure of workers, the public, and/or the environment to hazardous materials.

Mitigation Measure HMI-5: Before beginning project construction activities, EBMUD or its contractors shall conduct an evaluation of all structures (built before 1980) to be demolished, to evaluate the presence of lead-based paint. Remediation shall be implemented in accordance with the recommendations of these evaluations.

HMI-6: Project construction activities at the Outlet Works location may include demolition of structures constructed with asbestos containing materials, which will result in exposure of workers, the public, and/or the environment to hazardous materials.

Mitigation Measure HMI-6: Before beginning project construction activities, EBMUD or its contractors shall conduct an evaluation of all structures (built before 1980) to be demolished, to evaluate the presence of asbestos containing materials. Remediation shall be implemented in accordance with the recommendations of these evaluations.

With implementation of the proposed mitigation measures, impacts related to potential hazardous materials will be less than significant.

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