Bradshaw Terminal - Terminal Construction - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Bradshaw Terminal - Terminal Construction

Sacramento County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	5.80	0.00	0
Other Asphalt Surfaces	2.13	Acre	2.13	92,782.80	0
Other Non-Asphalt Surfaces	0.80	Acre	0.80	34,848.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2024
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Bradshaw Terminal Construction Only

Land Use - Bradshaw Terminal Construction Only. ~5.8 acres of Terminal Grading. 0.8 acre concrete gangways, 2.13 acre of new asphalt paving

Construction Phase - Default Durations Consistent with anticipated Project-Specific Timeline except Tank Installation adjusted to 40 days. Rail Installation Assumed 20 working days

Off-road Equipment - Other Construction Equipment for Rail Install

Off-road Equipment - Generators increased to 2, Welders increased to 4

Off-road Equipment - Welders increased to 3

Grading - Est. 1,150 CY Fill, 6,920 CY of Cut

Construction Off-road Equipment Mitigation - PM10 Reduction for groundcover from SCAQMD Fugitive Dst Table XI-a (2007)

Bradshaw Terminal - Terminal Construction - Sacramento County, Annual

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Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	0	7658
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	230.00	40.00

2.0 Emissions Summary

2.1 Overall Construction

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					
2022	0.1165	1.0096	0.9906	1.8000e-003	0.0906	0.0484	0.1390	0.0411	0.0454	0.0865	0.0000	155.6903	155.6903	0.0356	1.5000e-003	157.0276
Maximum	**0.1165**	**1.0096**	**0.9906**	**1.8000e-003**	**0.0906**	**0.0484**	**0.1390**	**0.0411**	**0.0454**	**0.0865**	**0.0000**	**155.6903**	**155.6903**	**0.0356**	**1.5000e-003**	**157.0276**

Bradshaw Terminal - Terminal Construction - Sacramento County, Annual

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3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	8/1/2022	8/12/2022	5	10	
2	Tank Installation	Building Construction	8/12/2022	10/6/2022	5	40	
3	Grading	Grading	8/13/2022	9/9/2022	5	20	
4	Rail Installation	Grading	9/10/2022	10/7/2022	5	20	
5	Paving	Paving	9/10/2022	10/7/2022	5	20	

Acres of Grading (Site Preparation Phase): 15

Acres of Grading (Grading Phase): 20

Acres of Paving: 2.93

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating –

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Tank Installation	Cranes	1	7.00	231	0.29
Tank Installation	Forklifts	3	8.00	89	0.20
Tank Installation	Generator Sets	2	8.00	84	0.74
Tank Installation	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Tank Installation	Welders	4	8.00	46	0.45
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36

Bradshaw Terminal - Terminal Construction - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Paving	Rollers		2	8.00	80	0.38
Rail Installation	Excavators		0	8.00	158	0.38
Rail Installation	Graders		0	8.00	187	0.41
Rail Installation	Other Construction Equipment		1	8.00	172	0.42
Rail Installation	Rubber Tired Dozers		0	8.00	247	0.40
Rail Installation	Tractors/Loaders/Backhoes		0	8.00	97	0.37

<u>Trips and VMT</u>

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Tank Installation	13	54.00	21.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Rail Installation	1	3.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Bradshaw Terminal - Terminal Construction - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Site Preparation - 2022

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					
Fugitive Dust					0.0420	0.0000	0.0420	0.0216	0.0000	0.0216	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0159	0.1654	0.0985	1.9000e-004		8.0600e-003	8.0600e-003		7.4200e-003	7.4200e-003	0.0000	16.7197	16.7197	5.4100e-003	0.0000	16.8549
Total	**0.0159**	**0.1654**	**0.0985**	**1.9000e-004**	**0.0420**	**8.0600e-003**	**0.0501**	**0.0216**	**7.4200e-003**	**0.0290**	**0.0000**	**16.7197**	**16.7197**	**5.4100e-003**	**0.0000**	**16.8549**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.5000e-004	3.6000e-004	4.5300e-003	1.0000e-005	2.4600e-003	1.0000e-005	2.4700e-003	6.3000e-004	1.0000e-005	6.4000e-004	0.0000	1.0816	1.0816	4.0000e-005	3.0000e-005	1.0923
Total	**5.5000e-004**	**3.6000e-004**	**4.5300e-003**	**1.0000e-005**	**2.4600e-003**	**1.0000e-005**	**2.4700e-003**	**6.3000e-004**	**1.0000e-005**	**6.4000e-004**	**0.0000**	**1.0816**	**1.0816**	**4.0000e-005**	**3.0000e-005**	**1.0923**

Bradshaw Terminal - Terminal Construction - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Tank Installation - 2022

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	0.0573	0.4587	0.5025	8.2000e-004		0.0230	0.0230		0.0220	0.0220	0.0000	68.9424	68.9424	0.0130	0.0000	69.2671
Total	**0.0573**	**0.4587**	**0.5025**	**8.2000e-004**		**0.0230**	**0.0230**		**0.0220**	**0.0220**	**0.0000**	**68.9424**	**68.9424**	**0.0130**	**0.0000**	**69.2671**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.0000e-004	0.0241	7.0200e-003	8.0000e-005	2.4600e-003	2.2000e-004	2.6800e-003	7.1000e-004	2.1000e-004	9.2000e-004	0.0000	8.0626	8.0626	2.1000e-004	1.1800e-003	8.4201
Worker	3.3300e-003	2.1700e-003	0.0272	7.0000e-005	7.9300e-003	4.0000e-005	7.9800e-003	2.1100e-003	4.0000e-005	2.1500e-003	0.0000	6.4896	6.4896	2.2000e-004	2.0000e-004	6.5537
Total	**4.2300e-003**	**0.0263**	**0.0342**	**1.5000e-004**	**0.0104**	**2.6000e-004**	**0.0107**	**2.8200e-003**	**2.5000e-004**	**3.0700e-003**	**0.0000**	**14.5522**	**14.5522**	**4.3000e-004**	**1.3800e-003**	**14.9739**

Bradshaw Terminal - Terminal Construction - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading - 2022

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					
Fugitive Dust					0.0303	0.0000	0.0303	0.0146	0.0000	0.0146	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0195	0.2086	0.1527	3.0000e-004		9.4100e-003	9.4100e-003		8.6600e-003	8.6600e-003	0.0000	26.0547	26.0547	8.4300e-003	0.0000	26.2654
Total	**0.0195**	**0.2086**	**0.1527**	**3.0000e-004**	**0.0303**	**9.4100e-003**	**0.0397**	**0.0146**	**8.6600e-003**	**0.0233**	**0.0000**	**26.0547**	**26.0547**	**8.4300e-003**	**0.0000**	**26.2654**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.2000e-004	6.0000e-004	7.5600e-003	2.0000e-005	4.1100e-003	1.0000e-005	4.1200e-003	1.0500e-003	1.0000e-005	1.0600e-003	0.0000	1.8027	1.8027	6.0000e-005	5.0000e-005	1.8205
Total	**9.2000e-004**	**6.0000e-004**	**7.5600e-003**	**2.0000e-005**	**4.1100e-003**	**1.0000e-005**	**4.1200e-003**	**1.0500e-003**	**1.0000e-005**	**1.0600e-003**	**0.0000**	**1.8027**	**1.8027**	**6.0000e-005**	**5.0000e-005**	**1.8205**

Bradshaw Terminal - Terminal Construction - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Rail Installation - 2022

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					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.7600e-003	0.0382	0.0402	6.0000e-005		1.9900e-003	1.9900e-003		1.8300e-003	1.8300e-003	0.0000	5.4280	5.4280	1.7600e-003	0.0000	5.4719
Total	**3.7600e-003**	**0.0382**	**0.0402**	**6.0000e-005**	**0.0000**	**1.9900e-003**	**1.9900e-003**	**0.0000**	**1.8300e-003**	**1.8300e-003**	**0.0000**	**5.4280**	**5.4280**	**1.7600e-003**	**0.0000**	**5.4719**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	6.0000e-005	7.6000e-004	0.0000	2.2000e-004	0.0000	2.2000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1803	0.1803	1.0000e-005	1.0000e-005	0.1821
Total	**9.0000e-005**	**6.0000e-005**	**7.6000e-004**	**0.0000**	**2.2000e-004**	**0.0000**	**2.2000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.1803**	**0.1803**	**1.0000e-005**	**1.0000e-005**	**0.1821**

3.6 Paving - 2022

Bradshaw Terminal - Terminal Construction - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.0110	0.1113	0.1458	2.3000e-004		5.6800e-003	5.6800e-003		5.2200e-003	5.2200e-003	0.0000	20.0275	20.0275	6.4800e-003	0.0000	20.1895
Paving	2.7900e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0138**	**0.1113**	**0.1458**	**2.3000e-004**		**5.6800e-003**	**5.6800e-003**		**5.2200e-003**	**5.2200e-003**	**0.0000**	**20.0275**	**20.0275**	**6.4800e-003**	**0.0000**	**20.1895**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.6000e-004	3.0000e-004	3.7800e-003	1.0000e-005	1.1000e-003	1.0000e-005	1.1100e-003	2.9000e-004	1.0000e-005	3.0000e-004	0.0000	0.9013	0.9013	3.0000e-005	3.0000e-005	0.9102
Total	**4.6000e-004**	**3.0000e-004**	**3.7800e-003**	**1.0000e-005**	**1.1000e-003**	**1.0000e-005**	**1.1100e-003**	**2.9000e-004**	**1.0000e-005**	**3.0000e-004**	**0.0000**	**0.9013**	**0.9013**	**3.0000e-005**	**3.0000e-005**	**0.9102**

Bradshaw Terminal - Terminal Construction - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Bradshaw Terminal - Terminal Construction

Sacramento County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	5.80	0.00	0
Other Asphalt Surfaces	2.13	Acre	2.13	92,782.80	0
Other Non-Asphalt Surfaces	0.80	Acre	0.80	34,848.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2024
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Bradshaw Terminal Construction Only

Land Use - Bradshaw Terminal Construction Only. ~5.8 acres of Terminal Grading. 0.8 acre concrete gangways, 2.13 acre of new asphalt paving

Construction Phase - Default Durations Consistent with anticipated Project-Specific Timeline except Tank Installation adjusted to 40 days. Rail Installation Assumed 20 working days

Off-road Equipment - Other Construction Equipment for Rail Install

Off-road Equipment - Generators increased to 2, Welders increased to 4

Off-road Equipment - Welders increased to 3

Grading - Est. 1,150 CY Fill, 6,920 CY of Cut

Construction Off-road Equipment Mitigation - PM10 Reduction for groundcover from SCAQMD Fugitive Dst Table XI-a (2007)

Bradshaw Terminal - Terminal Construction - Sacramento County, Summer

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Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	0	7658
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	230.00	40.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

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	lb/day										lb/day					
2022	6.4080	57.3246	47.8271	0.0898	9.4525	2.7750	12.2275	4.5952	2.5974	7.1926	0.0000	8,583.7125	8,583.7125	1.9393	0.0821	8,656.6536
Maximum	**6.4080**	**57.3246**	**47.8271**	**0.0898**	**9.4525**	**2.7750**	**12.2275**	**4.5952**	**2.5974**	**7.1926**	**0.0000**	**8,583.7125**	**8,583.7125**	**1.9393**	**0.0821**	**8,656.6536**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	8/1/2022	8/12/2022	5	10	
2	Tank Installation	Building Construction	8/12/2022	10/6/2022	5	40	
3	Grading	Grading	8/13/2022	9/9/2022	5	20	
4	Rail Installation	Grading	9/10/2022	10/7/2022	5	20	
5	Paving	Paving	9/10/2022	10/7/2022	5	20	

Acres of Grading (Site Preparation Phase): 15

Acres of Grading (Grading Phase): 20

Date: 4/7/2022 10:48 PM

Bradshaw Terminal - Terminal Construction - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Acres of Paving: 2.93

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating –

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Tank Installation	Cranes	1	7.00	231	0.29
Tank Installation	Forklifts	3	8.00	89	0.20
Tank Installation	Generator Sets	2	8.00	84	0.74
Tank Installation	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Tank Installation	Welders	4	8.00	46	0.45
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Rail Installation	Excavators	0	8.00	158	0.38
Rail Installation	Graders	0	8.00	187	0.41
Rail Installation	Other Construction Equipment	1	8.00	172	0.42
Rail Installation	Rubber Tired Dozers	0	8.00	247	0.40
Rail Installation	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Bradshaw Terminal - Terminal Construction - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Tank Installation	13	54.00	21.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Rail Installation	1	3.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Bradshaw Terminal - Terminal Construction - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Site Preparation - 2022

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	lb/day										lb/day					
Fugitive Dust					8.4034	0.0000	8.4034	4.3188	0.0000	4.3188			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**8.4034**	**1.6126**	**10.0159**	**4.3188**	**1.4836**	**5.8024**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1304	0.0658	1.0633	2.5900e-003	0.5118	1.4800e-003	0.5133	0.1311	1.3700e-003	0.1324		261.3797	261.3797	7.8100e-003	6.8000e-003	263.6008
Total	**0.1304**	**0.0658**	**1.0633**	**2.5900e-003**	**0.5118**	**1.4800e-003**	**0.5133**	**0.1311**	**1.3700e-003**	**0.1324**		**261.3797**	**261.3797**	**7.8100e-003**	**6.8000e-003**	**263.6008**

Bradshaw Terminal - Terminal Construction - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Tank Installation - 2022

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	lb/day										lb/day					
Off-Road	2.8664	22.9326	25.1268	0.0412		1.1476	1.1476		1.0997	1.0997	0.0000	3,799.8013	3,799.8013	0.7160		3,817.7019
Total	**2.8664**	**22.9326**	**25.1268**	**0.0412**		**1.1476**	**1.1476**		**1.0997**	**1.0997**	**0.0000**	**3,799.8013**	**3,799.8013**	**0.7160**		**3,817.7019**

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0454	1.1439	0.3444	4.1500e-003	0.1265	0.0111	0.1377	0.0364	0.0106	0.0471		444.4002	444.4002	0.0116	0.0651	464.0843
Worker	0.1956	0.0988	1.5949	3.8800e-003	0.4108	2.2300e-003	0.4130	0.1090	2.0500e-003	0.1110		392.0695	392.0695	0.0117	0.0102	395.4011
Total	**0.2410**	**1.2427**	**1.9393**	**8.0300e-003**	**0.5373**	**0.0133**	**0.5507**	**0.1454**	**0.0127**	**0.1581**		**836.4697**	**836.4697**	**0.0233**	**0.0753**	**859.4854**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading - 2022

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	lb/day										lb/day					
Fugitive Dust					3.0278	0.0000	3.0278	1.4641	0.0000	1.4641			0.0000			0.0000
Off-Road	1.9486	20.8551	15.2727	0.0297		0.9409	0.9409		0.8656	0.8656	0.0000	2,872.0464	2,872.0464	0.9289		2,895.2684
Total	**1.9486**	**20.8551**	**15.2727**	**0.0297**	**3.0278**	**0.9409**	**3.9687**	**1.4641**	**0.8656**	**2.3297**	**0.0000**	**2,872.0464**	**2,872.0464**	**0.9289**		**2,895.2684**

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1087	0.0549	0.8860	2.1600e-003	0.4265	1.2400e-003	0.4278	0.1092	1.1400e-003	0.1104		217.8164	217.8164	6.5100e-003	5.6700e-003	219.6673
Total	**0.1087**	**0.0549**	**0.8860**	**2.1600e-003**	**0.4265**	**1.2400e-003**	**0.4278**	**0.1092**	**1.1400e-003**	**0.1104**		**217.8164**	**217.8164**	**6.5100e-003**	**5.6700e-003**	**219.6673**

Bradshaw Terminal - Terminal Construction - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Rail Installation - 2022

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	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3760	3.8151	4.0203	6.1800e-003		0.1991	0.1991		0.1831	0.1831	0.0000	598.3313	598.3313	0.1935		603.1691
Total	**0.3760**	**3.8151**	**4.0203**	**6.1800e-003**	**0.0000**	**0.1991**	**0.1991**	**0.0000**	**0.1831**	**0.1831**	**0.0000**	**598.3313**	**598.3313**	**0.1935**		**603.1691**

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0109	5.4900e-003	0.0886	2.2000e-004	0.0228	1.2000e-004	0.0229	6.0500e-003	1.1000e-004	6.1700e-003		21.7816	21.7816	6.5000e-004	5.7000e-004	21.9667
Total	**0.0109**	**5.4900e-003**	**0.0886**	**2.2000e-004**	**0.0228**	**1.2000e-004**	**0.0229**	**6.0500e-003**	**1.1000e-004**	**6.1700e-003**		**21.7816**	**21.7816**	**6.5000e-004**	**5.7000e-004**	**21.9667**

Bradshaw Terminal - Terminal Construction - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Paving - 2022

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	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225	0.0000	2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	0.2790					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.3819**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**	**0.0000**	**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0543	0.0274	0.4430	1.0800e-003	0.1141	6.2000e-004	0.1147	0.0303	5.7000e-004	0.0308		108.9082	108.9082	3.2500e-003	2.8300e-003	109.8337
Total	**0.0543**	**0.0274**	**0.4430**	**1.0800e-003**	**0.1141**	**6.2000e-004**	**0.1147**	**0.0303**	**5.7000e-004**	**0.0308**		**108.9082**	**108.9082**	**3.2500e-003**	**2.8300e-003**	**109.8337**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Bradshaw Terminal - Rail Construction
Sacramento County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	1.25	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2024
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Rail Construction Only

Land Use - Rail Runaround Construction Only. Appx. 1.25-acre site

Construction Phase - Estimated Schedule

Off-road Equipment - 1 dozer, 2 tractors/loaders/backhoes

Off-road Equipment - 1 Other Construction Equipment

Off-road Equipment - Dozer and Tractor/Loader/Backhoes

Grading - Est. 2,300 CY Import

Construction Off-road Equipment Mitigation - Construction BMPs

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	4.00	22.00

Bradshaw Terminal - Rail Construction - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstructionPhase	NumDays	4.00	10.00
tblConstructionPhase	NumDays	2.00	5.00
tblGrading	MaterialImported	0.00	2,300.00

2.0 Emissions Summary

2.1 Overall Construction

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					
2022	0.0175	0.1982	0.1239	3.1000e-004	0.0423	8.6800e-003	0.0510	0.0209	7.9900e-003	0.0289	0.0000	28.5000	28.5000	6.4000e-003	1.4900e-003	29.1033
Maximum	**0.0175**	**0.1982**	**0.1239**	**3.1000e-004**	**0.0423**	**8.6800e-003**	**0.0510**	**0.0209**	**7.9900e-003**	**0.0289**	**0.0000**	**28.5000**	**28.5000**	**6.4000e-003**	**1.4900e-003**	**29.1033**

Bradshaw Terminal - Rail Construction - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	8/8/2022	8/12/2022	5	5	
2	Grading	Grading	8/10/2022	9/8/2022	5	22	
3	Rail Installation	Grading	8/23/2022	9/5/2022	5	10	

Acres of Grading (Site Preparation Phase): 2.19

Acres of Grading (Grading Phase): 11

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating –

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	0	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	0	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Rail Installation	Graders	0	8.00	187	0.41
Rail Installation	Other Construction Equipment	1	8.00	172	0.42
Rail Installation	Rubber Tired Dozers	0	8.00	247	0.40
Rail Installation	Tractors/Loaders/Backhoes	0	7.00	97	0.37

Bradshaw Terminal - Rail Construction - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	2	5.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	288.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Rail Installation	1	3.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Bradshaw Terminal - Rail Construction - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Site Preparation - 2022

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					
Fugitive Dust					6.4500e-003	0.0000	6.4500e-003	3.3100e-003	0.0000	3.3100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.2400e-003	0.0234	0.0134	3.0000e-005		1.1400e-003	1.1400e-003		1.0500e-003	1.0500e-003	0.0000	2.3244	2.3244	7.5000e-004	0.0000	2.3432
Total	**2.2400e-003**	**0.0234**	**0.0134**	**3.0000e-005**	**6.4500e-003**	**1.1400e-003**	**7.5900e-003**	**3.3100e-003**	**1.0500e-003**	**4.3600e-003**	**0.0000**	**2.3244**	**2.3244**	**7.5000e-004**	**0.0000**	**2.3432**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0000e-005	3.0000e-005	3.1000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0751	0.0751	0.0000	0.0000	0.0759
Total	**4.0000e-005**	**3.0000e-005**	**3.1000e-004**	**0.0000**	**9.0000e-005**	**0.0000**	**9.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0751**	**0.0751**	**0.0000**	**0.0000**	**0.0759**

Bradshaw Terminal - Rail Construction - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2022

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					
Fugitive Dust					0.0325	0.0000	0.0325	0.0167	0.0000	0.0167	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0124	0.1290	0.0825	1.5000e-004		6.3300e-003	6.3300e-003		5.8200e-003	5.8200e-003	0.0000	13.5136	13.5136	4.3700e-003	0.0000	13.6229
Total	**0.0124**	**0.1290**	**0.0825**	**1.5000e-004**	**0.0325**	**6.3300e-003**	**0.0389**	**0.0167**	**5.8200e-003**	**0.0225**	**0.0000**	**13.5136**	**13.5136**	**4.3700e-003**	**0.0000**	**13.6229**

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	5.9000e-004	0.0265	4.9600e-003	9.0000e-005	2.4400e-003	2.2000e-004	2.6500e-003	6.7000e-004	2.1000e-004	8.8000e-004	0.0000	9.2539	9.2539	3.7000e-004	1.4700e-003	9.7003
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.7000e-004	1.8000e-004	2.2200e-003	1.0000e-005	6.5000e-004	0.0000	6.5000e-004	1.7000e-004	0.0000	1.8000e-004	0.0000	0.5288	0.5288	2.0000e-005	2.0000e-005	0.5340
Total	**8.6000e-004**	**0.0267**	**7.1800e-003**	**1.0000e-004**	**3.0900e-003**	**2.2000e-004**	**3.3000e-003**	**8.4000e-004**	**2.1000e-004**	**1.0600e-003**	**0.0000**	**9.7827**	**9.7827**	**3.9000e-004**	**1.4900e-003**	**10.2344**

Bradshaw Terminal - Rail Construction - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Rail Installation - 2022

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					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8800e-003	0.0191	0.0201	3.0000e-005		1.0000e-003	1.0000e-003		9.2000e-004	9.2000e-004	0.0000	2.7140	2.7140	8.8000e-004	0.0000	2.7359
Total	**1.8800e-003**	**0.0191**	**0.0201**	**3.0000e-005**	**0.0000**	**1.0000e-003**	**1.0000e-003**	**0.0000**	**9.2000e-004**	**9.2000e-004**	**0.0000**	**2.7140**	**2.7140**	**8.8000e-004**	**0.0000**	**2.7359**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-005	3.0000e-005	3.8000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0901	0.0901	0.0000	0.0000	0.0910
Total	**5.0000e-005**	**3.0000e-005**	**3.8000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.0901**	**0.0901**	**0.0000**	**0.0000**	**0.0910**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Bradshaw Terminal - Rail Construction
Sacramento County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	1.25	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2024
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Rail Construction Only

Land Use - Rail Runaround Construction Only. Appx. 1.25-acre site

Construction Phase - Estimated Schedule

Off-road Equipment - 1 dozer, 2 tractors/loaders/backhoes

Off-road Equipment - 1 Other Construction Equipment

Off-road Equipment - Dozer and Tractor/Loader/Backhoes

Grading - Est. 2,300 CY Import

Construction Off-road Equipment Mitigation - Construction BMPs

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	4.00	22.00
tblConstructionPhase	NumDays	4.00	10.00
tblConstructionPhase	NumDays	2.00	5.00

Bradshaw Terminal - Rail Construction - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblGrading	MaterialImported	0.00	2,300.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

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	lb/day										lb/day					
2022	2.1240	23.3957	13.7014	0.0340	5.8657	1.0505	6.9163	2.9316	0.9672	3.8988	0.0000	3,400.7666	3,400.7666	0.8095	0.1494	3,465.5371
Maximum	**2.1240**	**23.3957**	**13.7014**	**0.0340**	**5.8657**	**1.0505**	**6.9163**	**2.9316**	**0.9672**	**3.8988**	**0.0000**	**3,400.7666**	**3,400.7666**	**0.8095**	**0.1494**	**3,465.5371**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	8/8/2022	8/12/2022	5	5	
2	Grading	Grading	8/10/2022	9/8/2022	5	22	
3	Rail Installation	Grading	8/23/2022	9/5/2022	5	10	

Acres of Grading (Site Preparation Phase): 2.19

Acres of Grading (Grading Phase): 11

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating –

Bradshaw Terminal - Rail Construction - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	0	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	0	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Rail Installation	Graders	0	8.00	187	0.41
Rail Installation	Other Construction Equipment	1	8.00	172	0.42
Rail Installation	Rubber Tired Dozers	0	8.00	247	0.40
Rail Installation	Tractors/Loaders/Backhoes	0	7.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	2	5.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	288.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Rail Installation	1	3.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Bradshaw Terminal - Rail Construction - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Site Preparation - 2022

Mitigated Construction On-Site

Category	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
	lb/day										lb/day					
Fugitive Dust					2.5802	0.0000	2.5802	1.3260	0.0000	1.3260			0.0000			0.0000
Off-Road	0.8972	9.3701	5.3722	0.0106		0.4553	0.4553		0.4189	0.4189	0.0000	1,024.8949	1,024.8949	0.3315		1,033.1817
Total	**0.8972**	**9.3701**	**5.3722**	**0.0106**	**2.5802**	**0.4553**	**3.0355**	**1.3260**	**0.4189**	**1.7449**	**0.0000**	**1,024.8949**	**1,024.8949**	**0.3315**		**1,033.1817**

Mitigated Construction Off-Site

Category	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
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0181	9.1500e-003	0.1477	3.6000e-004	0.0380	2.1000e-004	0.0382	0.0101	1.9000e-004	0.0103		36.3027	36.3027	1.0800e-003	9.4000e-004	36.6112
Total	**0.0181**	**9.1500e-003**	**0.1477**	**3.6000e-004**	**0.0380**	**2.1000e-004**	**0.0382**	**0.0101**	**1.9000e-004**	**0.0103**		**36.3027**	**36.3027**	**1.0800e-003**	**9.4000e-004**	**36.6112**

Bradshaw Terminal - Rail Construction - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2022

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	lb/day										lb/day					
Fugitive Dust					2.9583	0.0000	2.9583	1.5168	0.0000	1.5168			0.0000			0.0000
Off-Road	1.1253	11.7260	7.4984	0.0140		0.5751	0.5751		0.5291	0.5291	0.0000	1,354.2035	1,354.2035	0.4380		1,365.1529
Total	**1.1253**	**11.7260**	**7.4984**	**0.0140**	**2.9583**	**0.5751**	**3.5334**	**1.5168**	**0.5291**	**2.0459**	**0.0000**	**1,354.2035**	**1,354.2035**	**0.4380**		**1,365.1529**

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	lb/day										lb/day					
Hauling	0.0544	2.2758	0.4468	8.5100e-003	0.2283	0.0196	0.2480	0.0625	0.0188	0.0813		927.2811	927.2811	0.0372	0.1470	972.0134
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0290	0.0146	0.2363	5.7000e-004	0.0609	3.3000e-004	0.0612	0.0161	3.0000e-004	0.0165		58.0844	58.0844	1.7400e-003	1.5100e-003	58.5779
Total	**0.0834**	**2.2904**	**0.6831**	**9.0800e-003**	**0.2892**	**0.0199**	**0.3091**	**0.0787**	**0.0191**	**0.0977**		**985.3655**	**985.3655**	**0.0390**	**0.1485**	**1,030.5913**

3.4 Rail Installation - 2022

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	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3760	3.8151	4.0203	6.1800e-003		0.1991	0.1991		0.1831	0.1831	0.0000	598.3313	598.3313	0.1935		603.1691
Total	**0.3760**	**3.8151**	**4.0203**	**6.1800e-003**	**0.0000**	**0.1991**	**0.1991**	**0.0000**	**0.1831**	**0.1831**	**0.0000**	**598.3313**	**598.3313**	**0.1935**		**603.1691**

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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0109	5.4900e-003	0.0886	2.2000e-004	0.0228	1.2000e-004	0.0229	6.0500e-003	1.1000e-004	6.1700e-003		21.7816	21.7816	6.5000e-004	5.7000e-004	21.9667
Total	**0.0109**	**5.4900e-003**	**0.0886**	**2.2000e-004**	**0.0228**	**1.2000e-004**	**0.0229**	**6.0500e-003**	**1.1000e-004**	**6.1700e-003**		**21.7816**	**21.7816**	**6.5000e-004**	**5.7000e-004**	**21.9667**

Rail Emissions - Onsite Switching Operations

	Trips	
	Northbound	Southbound
Weekday	1	1
Saturday	0	0
Sunday	0	0
Avg. Daily	0.71	0.71

1.43 Average Daily Total Trips

100% Percent trips are Diesel

0% Percent Trips Electricity

1.43 Average DailyTrips Diesel

3.9 Gallons/mile Single Level DMU Fuel Consumption

1 Miles Length one-way

5.57 Gallons Consumption per day

	Pollutants					
Units	NOX	ROG	PM10	PM2.5	CO2	CH4
g/day	115.89	5.01	1.67	1.67	56,884.29	4.46
lb/day	2.55E-01	1.11E-02	3.68E-03	3.68E-03	1.25E+02	9.83E-03
lb/hr	0.01	0.00	0.00	0.00	5.23	0.00
lbs/yr	93.25	4.03	1.34	1.34	45,774.10	3.59
Tons/year	0.05	0.00	0.00	0.00	22.89	0.00

	1	25	GWP
Tons CO2e,	22.89	0.04	
MTCO2e	20.76	0.04	
		20.80	

https://ww2.arb.ca.gov/ghg-gwps
CH4 Global Warming Potential

1 ton
0.907185 Metric Ton

Emissions Rates	
Pollutant	Grams/Gallon
PM2.5	0.3
NOX	20.8
PM10	0.3
CO2	10,210
CH4	0.8
ROG	0.9

Appendix B, Table B2-7 DMU Air Quality Analysis, Emission Factors in g/gal

HC Emissions	0.04	g/bhp-hr	EPA 2009, Table 1, Tier 4
NOx Emissions	1	g/bhp-hr	EPA 2009, Table 1, Tier 4
CO Emissions	1.28	g/bhp-hr	EPA 2009, Table 1, Tier 4
PM10 Emissions	0.015	g/bhp-hr	EPA 2009, Table 1, Tier 4
Bhp-Gal Conversion	20.8	bhp-hr/gal	EPA 2009, Table 3 (passenger train)
VOC/HC Conversion	1.053	-	EPA 2009, page 4
PM2.5/PM10 Conversion	0.97	-	EPA 2009, page 4

ROG Emission Factor	0.9	g/gal	Calculated
NOx Emission Factor	20.8	g/gal	Calculated
CO Emission Factor	26.6	g/gal	Calculated
PM10 Emission Factor	0.3	g/gal	Calculated
PM2.5 Emission Factor	0.3	g/gal	Calculated
CO2 Emission Factor	10,210	g/gal	Climate Registry 2013, Table 12.1
CH4 Emission Factor	0.8	g/gal	Climate Registry 2013, Table 13.7
N2O Emission Factor	0.3	g/gal	Climate Registry 2013, Table 13.7

Rail Emissions - Offsite RD Delivery from UPRR Yard

	Trips	
	Northbound	Southbound
Weekday	1	1
Saturday	0	0
Sunday	0	0
Avg. Daily	0.71	0.71

1.43 Average Daily Total Trips

100% Percent trips are Diesel

0% Percent Trips Electricity

1.43 Average DailyTrips Diesel

3.9 Gallons/mile Single Level DMU Fuel Consumption

13.7 Miles Length one-way

76.33 Gallons Consumption per day

Emissions Rates	
Pollutant	Grams/Gallon
PM2.5	0.3
NOX	20.8
PM10	0.3
CO2	10,210
CH4	0.8
ROG	0.9

	Pollutants					
Units	NOX	ROG	PM10	PM2.5	CO2	CH4
g/day	1,587.63	68.70	22.90	22.90	779,314.71	61.06
lb/day	3.50E+00	1.51E-01	5.05E-02	5.05E-02	1.72E+03	1.35E-01
lb/hr	0.15	0.01	0.00	0.00	71.59	0.01
lbs/yr	1,277.55	55.28	18.43	18.43	627,105.13	49.14
Tons/year	0.64	0.03	0.01	0.01	313.55	0.02

	1	25	GWP
Tons CO2e,	313.55	0.61	
MTCO2e	284.45	0.56	
		285.01	

https://ww2.arb.ca.gov/ghg-gwps
CH4 Global Warming Potential

1 ton
0.907185 Metric Ton

Appendix B, Table B2-7 DMU Air Quality Analysis, Emission Factors in g/gal

HC Emissions	0.04	g/bhp-hr	EPA 2009, Table 1, Tier 4
NOx Emissions	1	g/bhp-hr	EPA 2009, Table 1, Tier 4
CO Emissions	1.28	g/bhp-hr	EPA 2009, Table 1, Tier 4
PM10 Emissions	0.015	g/bhp-hr	EPA 2009, Table 1, Tier 4
Bhp-Gal Conversion	20.8	bhp-hr/gal	EPA 2009, Table 3 (passenger train)
VOC/HC Conversion	1.053	-	EPA 2009, page 4
PM2.5/PM10 Conversion	0.97	-	EPA 2009, page 4

ROG Emission Factor	0.9	g/gal	Calculated
NOx Emission Factor	20.8	g/gal	Calculated
CO Emission Factor	26.6	g/gal	Calculated
PM10 Emission Factor	0.3	g/gal	Calculated
PM2.5 Emission Factor	0.3	g/gal	Calculated
CO2 Emission Factor	10,210	g/gal	Climate Registry 2013, Table 12.1
CH4 Emission Factor	0.8	g/gal	Climate Registry 2013, Table 13.7
N2O Emission Factor	0.3	g/gal	Climate Registry 2013, Table 13.7

Bradshaw Terminal - New Modular Building - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Bradshaw Terminal - New Modular Building
Sacramento County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	1.44	1000sqft	0.03	1,440.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2023
Utility Company	Sacramento Municipal Utility District				
CO2 Intensity (lb/MWhr)	358	**CH4 Intensity (lb/MWhr)**	0.0129	**N2O Intensity (lb/MWhr)**	0.0017

1.3 User Entered Comments & Non-Default Data

Project Characteristics - SMUD CO2e Intensity Factor adjusted to 358 per CEC 2020 Power Content Label General Mix for SMUD

Land Use - Use as an office. Building-related emissions analysis only. Mobile emissions assessed seperately.

Construction Phase - Operational Analysis Only

Vehicle Trips - Mobile Assessed Seperately

Table Name	Column Name	Default Value	New Value
tblProjectCharacteristics	CO2IntensityFactor	374.84	358
tblProjectCharacteristics	PrecipitationFrequency	0	58
tblProjectCharacteristics	WindSpeed	0	3.5
tblVehicleTrips	ST_TR	2.21	0.00
tblVehicleTrips	SU_TR	0.70	0.00
tblVehicleTrips	WD_TR	9.74	0.00

Bradshaw Terminal - New Modular Building - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.0 Emissions Summary

2.1 Overall Construction

Not Applicable

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	6.2900e-003	0.0000	2.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	4.0000e-005	4.0000e-005	0.0000	0.0000	4.0000e-005
Energy	1.0000e-004	9.2000e-004	7.7000e-004	1.0000e-005		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	4.2478	4.2478	1.4000e-004	3.0000e-005	4.2612
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.2720	0.0000	0.2720	0.0161	0.0000	0.6739
Water						0.0000	0.0000		0.0000	0.0000	0.0906	0.2962	0.3868	3.2000e-004	2.0000e-004	0.4539
Total	**6.3900e-003**	**9.2000e-004**	**7.9000e-004**	**1.0000e-005**	**0.0000**	**7.0000e-005**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**7.0000e-005**	**0.3626**	**4.5440**	**4.9066**	**0.0165**	**2.3000e-004**	**5.3891**

3.0 Construction Detail

Not Applicable

Bradshaw Terminal - New Modular Building - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
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	Primary	Diverted	Pass-by
General Office Building	10.00	5.00	6.50	33.00	48.00	19.00	77	19	4

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Office Building	0.538353	0.056973	0.184081	0.133246	0.026575	0.006093	0.013235	0.009306	0.000942	0.000548	0.026135	0.001006	0.003507

Bradshaw Terminal - New Modular Building - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	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					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	3.2503	3.2503	1.2000e-004	2.0000e-005	3.2579
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	3.2503	3.2503	1.2000e-004	2.0000e-005	3.2579
NaturalGas Mitigated	1.0000e-004	9.2000e-004	7.7000e-004	1.0000e-005		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.9974	0.9974	2.0000e-005	2.0000e-005	1.0034
NaturalGas Unmitigated	1.0000e-004	9.2000e-004	7.7000e-004	1.0000e-005		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.9974	0.9974	2.0000e-005	2.0000e-005	1.0034

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	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
Land Use	kBTU/yr	tons/yr										MT/yr					
General Office Building	18691.2	1.0000e-004	9.2000e-004	7.7000e-004	1.0000e-005		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.9974	0.9974	2.0000e-005	2.0000e-005	1.0034
Total		**1.0000e-004**	**9.2000e-004**	**7.7000e-004**	**1.0000e-005**		**7.0000e-005**	**7.0000e-005**		**7.0000e-005**	**7.0000e-005**	**0.0000**	**0.9974**	**0.9974**	**2.0000e-005**	**2.0000e-005**	**1.0034**

Bradshaw Terminal - New Modular Building - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Office Building	20016	3.2503	1.2000e-004	2.0000e-005	3.2579
Total		**3.2503**	**1.2000e-004**	**2.0000e-005**	**3.2579**

Date: 4/8/2022 5:00 PM

Bradshaw Terminal - New Modular Building - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.0 Area Detail

6.1 Mitigation Measures Area

Category	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
	tons/yr										MT/yr					
Mitigated	6.2900e-003	0.0000	2.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	4.0000e-005	4.0000e-005	0.0000	0.0000	4.0000e-005
Unmitigated	6.2900e-003	0.0000	2.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	4.0000e-005	4.0000e-005	0.0000	0.0000	4.0000e-005

6.2 Area by SubCategory

Unmitigated

SubCategory	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
	tons/yr										MT/yr					
Architectural Coating	6.7000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	5.6200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	2.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	4.0000e-005	4.0000e-005	0.0000	0.0000	4.0000e-005
Total	**6.2900e-003**	**0.0000**	**2.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**4.0000e-005**	**4.0000e-005**	**0.0000**	**0.0000**	**4.0000e-005**

Bradshaw Terminal - New Modular Building - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.3868	3.2000e-004	2.0000e-004	0.4539
Unmitigated	0.3868	3.2000e-004	2.0000e-004	0.4539

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	0.255937 / 0.156864	0.3868	3.2000e-004	2.0000e-004	0.4539
Total		**0.3868**	**3.2000e-004**	**2.0000e-004**	**0.4539**

Bradshaw Terminal - New Modular Building - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.2720	0.0161	0.0000	0.6739
Unmitigated	0.2720	0.0161	0.0000	0.6739

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	1.34	0.2720	0.0161	0.0000	0.6739
Total		**0.2720**	**0.0161**	**0.0000**	**0.6739**

Bradshaw Terminal - New Modular Building - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Bradshaw Terminal - New Modular Building - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Bradshaw Terminal - New Modular Building
Sacramento County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	1.44	1000sqft	0.03	1,440.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2023
Utility Company	Sacramento Municipal Utility District				
CO2 Intensity (lb/MWhr)	358	**CH4 Intensity (lb/MWhr)**	0.0129	**N2O Intensity (lb/MWhr)**	0.0017

1.3 User Entered Comments & Non-Default Data

Project Characteristics - SMUD CO2e Intensity Factor adjusted to 358 per CEC 2020 Power Content Label General Mix for SMUD

Land Use - Use as an office. Building-related emissions analysis only. Mobile emissions assessed seperately.

Construction Phase - Operational Analysis Only

Vehicle Trips - Mobile Assessed Seperately

Table Name	Column Name	Default Value	New Value
tblProjectCharacteristics	CO2IntensityFactor	374.84	358
tblProjectCharacteristics	PrecipitationFrequency	0	58
tblProjectCharacteristics	WindSpeed	0	3.5
tblVehicleTrips	ST_TR	2.21	0.00
tblVehicleTrips	SU_TR	0.70	0.00
tblVehicleTrips	WD_TR	9.74	0.00

2.0 Emissions Summary

Bradshaw Terminal - New Modular Building - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction (Maximum Daily Emission)

Not Applicable

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	lb/day										lb/day					
Area	0.0345	0.0000	1.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		3.2000e-004	3.2000e-004	0.0000		3.4000e-004
Energy	5.5000e-004	5.0200e-003	4.2200e-003	3.0000e-005		3.8000e-004	3.8000e-004		3.8000e-004	3.8000e-004		6.0246	6.0246	1.2000e-004	1.1000e-004	6.0604
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0350**	**5.0200e-003**	**4.3700e-003**	**3.0000e-005**	**0.0000**	**3.8000e-004**	**3.8000e-004**	**0.0000**	**3.8000e-004**	**3.8000e-004**		**6.0249**	**6.0249**	**1.2000e-004**	**1.1000e-004**	**6.0607**

Bradshaw Terminal - New Modular Building - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.0 Construction Detail

Not Applicable

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Category	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
	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
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	Primary	Diverted	Pass-by
General Office Building	10.00	5.00	6.50	33.00	48.00	19.00	77	19	4

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Office Building	0.538353	0.056973	0.184081	0.133246	0.026575	0.006093	0.013235	0.009306	0.000942	0.000548	0.026135	0.001006	0.003507

Bradshaw Terminal - New Modular Building - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	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	lb/day										lb/day					
NaturalGas Mitigated	5.5000e-004	5.0200e-003	4.2200e-003	3.0000e-005		3.8000e-004	3.8000e-004		3.8000e-004	3.8000e-004		6.0246	6.0246	1.2000e-004	1.1000e-004	6.0604
NaturalGas Unmitigated	5.5000e-004	5.0200e-003	4.2200e-003	3.0000e-005		3.8000e-004	3.8000e-004		3.8000e-004	3.8000e-004		6.0246	6.0246	1.2000e-004	1.1000e-004	6.0604

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	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
Land Use	kBTU/yr	lb/day										lb/day					
General Office Building	51.2088	5.5000e-004	5.0200e-003	4.2200e-003	3.0000e-005		3.8000e-004	3.8000e-004		3.8000e-004	3.8000e-004		6.0246	6.0246	1.2000e-004	1.1000e-004	6.0604
Total		**5.5000e-004**	**5.0200e-003**	**4.2200e-003**	**3.0000e-005**		**3.8000e-004**	**3.8000e-004**		**3.8000e-004**	**3.8000e-004**		**6.0246**	**6.0246**	**1.2000e-004**	**1.1000e-004**	**6.0604**

Bradshaw Terminal - New Modular Building - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	lb/day										lb/day					
Mitigated	0.0345	0.0000	1.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		3.2000e-004	3.2000e-004	0.0000		3.4000e-004
Unmitigated	0.0345	0.0000	1.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		3.2000e-004	3.2000e-004	0.0000		3.4000e-004

6.2 Area by SubCategory

<u>Unmitigated</u>

	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	lb/day										lb/day					
Architectural Coating	3.6600e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0308					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		3.2000e-004	3.2000e-004	0.0000		3.4000e-004
Total	**0.0345**	**0.0000**	**1.5000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**3.2000e-004**	**3.2000e-004**	**0.0000**		**3.4000e-004**

Bradshaw Terminal - New Modular Building - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Bradshaw - Employee Trips - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Bradshaw - Employee Trips
Sacramento County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2023
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Operational Mobile Analysis Only

Land Use - Operational Mobile Analysis Only

Construction Phase - Operational Mobile Analysis Only

Off-road Equipment -

Vehicle Trips - 10 trips per day, Weekdays Only. Default Commercial trip length. 100% Primary. 100% Non Res C-W Trips.

Fleet Mix - Fleet mix 50/50 LDA/LDT1

Table Name	Column Name	Default Value	New Value
tblFleetMix	HHD	9.3060e-003	0.00
tblFleetMix	LDA	0.54	0.50
tblFleetMix	LDT1	0.06	0.50
tblFleetMix	LDT2	0.18	0.00

Bradshaw - Employee Trips - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblFleetMix	LHD1	0.03	0.00
tblFleetMix	LHD2	6.0930e-003	0.00
tblFleetMix	MCY	0.03	0.00
tblFleetMix	MDV	0.13	0.00
tblFleetMix	MH	3.5070e-003	0.00
tblFleetMix	MHD	0.01	0.00
tblFleetMix	OBUS	9.4200e-004	0.00
tblFleetMix	SBUS	1.0060e-003	0.00
tblFleetMix	UBUS	5.4800e-004	0.00
tblVehicleTrips	CW_TTP	0.00	100.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	WD_TR	0.00	10.00

2.0 Emissions Summary

2.1 Overall Construction

Not Applicable

Bradshaw - Employee Trips - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	2.4300e-003	2.3600e-003	0.0311	8.0000e-005	9.5300e-003	5.0000e-005	9.5900e-003	2.5300e-003	5.0000e-005	2.5800e-003	0.0000	7.3307	7.3307	2.5000e-004	2.2000e-004	7.4021
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.4300e-003**	**2.3600e-003**	**0.0311**	**8.0000e-005**	**9.5300e-003**	**5.0000e-005**	**9.5900e-003**	**2.5300e-003**	**5.0000e-005**	**2.5800e-003**	**0.0000**	**7.3307**	**7.3307**	**2.5000e-004**	**2.2000e-004**	**7.4022**

3.0 Construction Detail

Not Applicable

Bradshaw - Employee Trips - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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	2.4300e-003	2.3600e-003	0.0311	8.0000e-005	9.5300e-003	5.0000e-005	9.5900e-003	2.5300e-003	5.0000e-005	2.5800e-003	0.0000	7.3307	7.3307	2.5000e-004	2.2000e-004	7.4021
Unmitigated	2.4300e-003	2.3600e-003	0.0311	8.0000e-005	9.5300e-003	5.0000e-005	9.5900e-003	2.5300e-003	5.0000e-005	2.5800e-003	0.0000	7.3307	7.3307	2.5000e-004	2.2000e-004	7.4021

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	10.00	0.00	0.00	26,000	26,000
Total	10.00	0.00	0.00	26,000	26,000

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
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	Primary	Diverted	Pass-by
User Defined Industrial	10.00	5.00	6.50	100.00	0.00	0.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.500000	0.500000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

Bradshaw - Employee Trips - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	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					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	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
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Bradshaw - Employee Trips - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Bradshaw - Employee Trips - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Unmitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005

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	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

Bradshaw - Employee Trips - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Bradshaw - Employee Trips - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Bradshaw - Employee Trips - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Bradshaw - Employee Trips - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Bradshaw - Employee Trips
Sacramento County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2023
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Operational Mobile Analysis Only

Land Use - Operational Mobile Analysis Only

Construction Phase - Operational Mobile Analysis Only

Off-road Equipment -

Vehicle Trips - 10 trips per day, Weekdays Only. Default Commercial trip length. 100% Primary. 100% Non Res C-W Trips.

Fleet Mix - Fleet mix 50/50 LDA/LDT1

Table Name	Column Name	Default Value	New Value
tblFleetMix	HHD	9.3060e-003	0.00
tblFleetMix	LDA	0.54	0.50
tblFleetMix	LDT1	0.06	0.50
tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LHD1	0.03	0.00
tblFleetMix	LHD2	6.0930e-003	0.00

Bradshaw - Employee Trips - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblFleetMix	MCY	0.03	0.00
tblFleetMix	MDV	0.13	0.00
tblFleetMix	MH	3.5070e-003	0.00
tblFleetMix	MHD	0.01	0.00
tblFleetMix	OBUS	9.4200e-004	0.00
tblFleetMix	SBUS	1.0060e-003	0.00
tblFleetMix	UBUS	5.4800e-004	0.00
tblVehicleTrips	CW_TTP	0.00	100.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	WD_TR	0.00	10.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Not Applicable

Bradshaw - Employee Trips - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0248	0.0166	0.2814	6.8000e-004	0.0760	4.2000e-004	0.0764	0.0201	3.8000e-004	0.0205		68.3476	68.3476	2.0300e-003	1.7500e-003	68.9187
Total	**0.0249**	**0.0166**	**0.2815**	**6.8000e-004**	**0.0760**	**4.2000e-004**	**0.0764**	**0.0201**	**3.8000e-004**	**0.0205**		**68.3478**	**68.3478**	**2.0300e-003**	**1.7500e-003**	**68.9189**

3.0 Construction Detail

Not Applicable

Bradshaw - Employee Trips - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Category	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
	lb/day										lb/day					
Mitigated	0.0248	0.0166	0.2814	6.8000e-004	0.0760	4.2000e-004	0.0764	0.0201	3.8000e-004	0.0205		68.3476	68.3476	2.0300e-003	1.7500e-003	68.9187
Unmitigated	0.0248	0.0166	0.2814	6.8000e-004	0.0760	4.2000e-004	0.0764	0.0201	3.8000e-004	0.0205		68.3476	68.3476	2.0300e-003	1.7500e-003	68.9187

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	10.00	0.00	0.00	26,000	26,000
Total	10.00	0.00	0.00	26,000	26,000

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
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	Primary	Diverted	Pass-by
User Defined Industrial	10.00	5.00	6.50	100.00	0.00	0.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.500000	0.500000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

Bradshaw - Employee Trips - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	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	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	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
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Bradshaw - Employee Trips - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	lb/day										lb/day					
Mitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

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	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

Bradshaw - Employee Trips - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Bradshaw - Employee Trips - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Bradshaw - Employee Trips
Sacramento County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2023
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Operational Mobile Analysis Only

Land Use - Operational Mobile Analysis Only

Construction Phase - Operational Mobile Analysis Only

Off-road Equipment -

Vehicle Trips - 10 trips per day, Weekdays Only. Default Commercial trip length. 100% Primary. 100% Non Res C-W Trips.

Fleet Mix - Fleet mix 50/50 LDA/LDT1

Table Name	Column Name	Default Value	New Value
tblFleetMix	HHD	9.3060e-003	0.00
tblFleetMix	LDA	0.54	0.50
tblFleetMix	LDT1	0.06	0.50
tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LHD1	0.03	0.00
tblFleetMix	LHD2	6.0930e-003	0.00

Bradshaw - Employee Trips - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblFleetMix	MCY	0.03	0.00
tblFleetMix	MDV	0.13	0.00
tblFleetMix	MH	3.5070e-003	0.00
tblFleetMix	MHD	0.01	0.00
tblFleetMix	OBUS	9.4200e-004	0.00
tblFleetMix	SBUS	1.0060e-003	0.00
tblFleetMix	UBUS	5.4800e-004	0.00
tblVehicleTrips	CW_TTP	0.00	100.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	WD_TR	0.00	10.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Not Applicable

Date: 4/7/2022 7:57 PM

Bradshaw - Employee Trips - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0174	0.0204	0.2430	6.0000e-004	0.0760	4.2000e-004	0.0764	0.0201	3.8000e-004	0.0205		60.6236	60.6236	2.3300e-003	2.0100e-003	61.2795
Total	**0.0174**	**0.0204**	**0.2431**	**6.0000e-004**	**0.0760**	**4.2000e-004**	**0.0764**	**0.0201**	**3.8000e-004**	**0.0205**		**60.6239**	**60.6239**	**2.3300e-003**	**2.0100e-003**	**61.2797**

3.0 Construction Detail

Not Applicable

Bradshaw - Employee Trips - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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	lb/day										lb/day					
Mitigated	0.0174	0.0204	0.2430	6.0000e-004	0.0760	4.2000e-004	0.0764	0.0201	3.8000e-004	0.0205		60.6236	60.6236	2.3300e-003	2.0100e-003	61.2795
Unmitigated	0.0174	0.0204	0.2430	6.0000e-004	0.0760	4.2000e-004	0.0764	0.0201	3.8000e-004	0.0205		60.6236	60.6236	2.3300e-003	2.0100e-003	61.2795

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	10.00	0.00	0.00	26,000	26,000
Total	10.00	0.00	0.00	26,000	26,000

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
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	Primary	Diverted	Pass-by
User Defined Industrial	10.00	5.00	6.50	100.00	0.00	0.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.500000	0.500000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

Bradshaw - Employee Trips - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	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	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	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
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Bradshaw - Employee Trips - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	lb/day										lb/day					
Mitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

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	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

Bradshaw - Employee Trips - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Bradshaw - Vendor Trips
Sacramento County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2023
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Operational Mobile Analysis Only

Land Use - Operational Mobile Analysis Only

Construction Phase - Operational Mobile Analysis Only

Off-road Equipment -

Vehicle Trips - 224 trips per day, Weekdays Only. AVG 25 mile trip per survey of Vendors. 100% Primary. 100% Non Res C-NW Trips.

Fleet Mix - Fleet mix 100% HHDT

Table Name	Column Name	Default Value	New Value
tblFleetMix	HHD	9.3060e-003	1.00
tblFleetMix	LDA	0.54	0.00
tblFleetMix	LDT1	0.06	0.00
tblFleetMix	LDT2	0.18	0.00

Bradshaw - Vendor Trips - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblFleetMix	LHD1	0.03	0.00
tblFleetMix	LHD2	6.0930e-003	0.00
tblFleetMix	MCY	0.03	0.00
tblFleetMix	MDV	0.13	0.00
tblFleetMix	MH	3.5070e-003	0.00
tblFleetMix	MHD	0.01	0.00
tblFleetMix	OBUS	9.4200e-004	0.00
tblFleetMix	SBUS	1.0060e-003	0.00
tblFleetMix	UBUS	5.4800e-004	0.00
tblVehicleTrips	CNW_TL	6.50	25.00
tblVehicleTrips	CNW_TTP	0.00	100.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	WD_TR	0.00	224.00

2.0 Emissions Summary

2.1 Overall Construction

Not Applicable

Date: 4/7/2022 8:00 PM

Bradshaw - Vendor Trips - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0888	5.6121	1.0525	0.0225	0.6149	0.0419	0.6568	0.1688	0.0401	0.2089	0.0000	2,230.9826	2,230.9826	0.0891	0.3538	2,338.6290
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0888**	**5.6121**	**1.0526**	**0.0225**	**0.6149**	**0.0419**	**0.6568**	**0.1688**	**0.0401**	**0.2089**	**0.0000**	**2,230.9827**	**2,230.9827**	**0.0891**	**0.3538**	**2,338.6290**

3.0 Construction Detail

Not Applicable

Bradshaw - Vendor Trips - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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	0.0888	5.6121	1.0525	0.0225	0.6149	0.0419	0.6568	0.1688	0.0401	0.2089	0.0000	2,230.9826	2,230.9826	0.0891	0.3538	2,338.6290
Unmitigated	0.0888	5.6121	1.0525	0.0225	0.6149	0.0419	0.6568	0.1688	0.0401	0.2089	0.0000	2,230.9826	2,230.9826	0.0891	0.3538	2,338.6290

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	224.00	0.00	0.00	1,456,000	1,456,000
Total	224.00	0.00	0.00	1,456,000	1,456,000

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
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	Primary	Diverted	Pass-by
User Defined Industrial	10.00	5.00	25.00	0.00	0.00	100.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000

Bradshaw - Vendor Trips - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	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					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	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
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Bradshaw - Vendor Trips - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Unmitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005

Bradshaw - Vendor Trips - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

Date: 4/7/2022 8:00 PM

Bradshaw - Vendor Trips - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Bradshaw - Vendor Trips - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Bradshaw - Vendor Trips - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Bradshaw - Vendor Trips - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Bradshaw - Vendor Trips
Sacramento County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2023
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Operational Mobile Analysis Only

Land Use - Operational Mobile Analysis Only

Construction Phase - Operational Mobile Analysis Only

Off-road Equipment -

Vehicle Trips - 224 trips per day, Weekdays Only. AVG 25 mile trip per survey of Vendors. 100% Primary. 100% Non Res C-NW Trips.

Fleet Mix - Fleet mix 100% HHDT

Table Name	Column Name	Default Value	New Value
tblFleetMix	HHD	9.3060e-003	1.00
tblFleetMix	LDA	0.54	0.00
tblFleetMix	LDT1	0.06	0.00
tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LHD1	0.03	0.00
tblFleetMix	LHD2	6.0930e-003	0.00

Bradshaw - Vendor Trips - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblFleetMix	MCY	0.03	0.00
tblFleetMix	MDV	0.13	0.00
tblFleetMix	MH	3.5070e-003	0.00
tblFleetMix	MHD	0.01	0.00
tblFleetMix	OBUS	9.4200e-004	0.00
tblFleetMix	SBUS	1.0060e-003	0.00
tblFleetMix	UBUS	5.4800e-004	0.00
tblVehicleTrips	CNW_TL	6.50	25.00
tblVehicleTrips	CNW_TTP	0.00	100.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	WD_TR	0.00	224.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Not Applicable

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	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.6947	40.7709	8.0539	0.1735	4.8768	0.3223	5.1991	1.3349	0.3084	1.6433		18,936.0820	18,936.0820	0.7574	3.0025	19,849.7518
Total	**0.6947**	**40.7709**	**8.0540**	**0.1735**	**4.8768**	**0.3223**	**5.1991**	**1.3349**	**0.3084**	**1.6433**		**18,936.0822**	**18,936.0822**	**0.7574**	**3.0025**	**19,849.7520**

Bradshaw - Vendor Trips - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.0 Construction Detail

Not Applicable

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Category	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
	lb/day										lb/day					
Mitigated	0.6947	40.7709	8.0539	0.1735	4.8768	0.3223	5.1991	1.3349	0.3084	1.6433		18,936.0820	18,936.0820	0.7574	3.0025	19,849.7518
Unmitigated	0.6947	40.7709	8.0539	0.1735	4.8768	0.3223	5.1991	1.3349	0.3084	1.6433		18,936.0820	18,936.0820	0.7574	3.0025	19,849.7518

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	224.00	0.00	0.00	1,456,000	1,456,000
Total	224.00	0.00	0.00	1,456,000	1,456,000

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
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	Primary	Diverted	Pass-by
User Defined Industrial	10.00	5.00	25.00	0.00	0.00	100.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000

Bradshaw - Vendor Trips - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	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	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	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
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Bradshaw - Vendor Trips - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	lb/day										lb/day					
Mitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

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	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

Bradshaw - Vendor Trips - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Bradshaw - Vendor Trips - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Bradshaw - Vendor Trips
Sacramento County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2023
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Operational Mobile Analysis Only

Land Use - Operational Mobile Analysis Only

Construction Phase - Operational Mobile Analysis Only

Off-road Equipment -

Vehicle Trips - 224 trips per day, Weekdays Only. AVG 25 mile trip per survey of Vendors. 100% Primary. 100% Non Res C-NW Trips.

Fleet Mix - Fleet mix 100% HHDT

Table Name	Column Name	Default Value	New Value
tblFleetMix	HHD	9.3060e-003	1.00
tblFleetMix	LDA	0.54	0.00
tblFleetMix	LDT1	0.06	0.00
tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LHD1	0.03	0.00
tblFleetMix	LHD2	6.0930e-003	0.00

Bradshaw - Vendor Trips - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblFleetMix	MCY	0.03	0.00
tblFleetMix	MDV	0.13	0.00
tblFleetMix	MH	3.5070e-003	0.00
tblFleetMix	MHD	0.01	0.00
tblFleetMix	OBUS	9.4200e-004	0.00
tblFleetMix	SBUS	1.0060e-003	0.00
tblFleetMix	UBUS	5.4800e-004	0.00
tblVehicleTrips	CNW_TL	6.50	25.00
tblVehicleTrips	CNW_TTP	0.00	100.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	WD_TR	0.00	224.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Not Applicable

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	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.6659	44.1133	8.1806	0.1736	4.8768	0.3233	5.2001	1.3349	0.3093	1.6442		18,944.7989	18,944.7989	0.7559	3.0040	19,858.8871
Total	**0.6659**	**44.1133**	**8.1807**	**0.1736**	**4.8768**	**0.3233**	**5.2001**	**1.3349**	**0.3093**	**1.6442**		**18,944.7991**	**18,944.7991**	**0.7559**	**3.0040**	**19,858.8874**

Bradshaw - Vendor Trips - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.0 Construction Detail

Not Applicable

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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	lb/day										lb/day					
Mitigated	0.6659	44.1133	8.1806	0.1736	4.8768	0.3233	5.2001	1.3349	0.3093	1.6442		18,944.7980	18,944.7980	0.7559	3.0040	19,858.8871
Unmitigated	0.6659	44.1133	8.1806	0.1736	4.8768	0.3233	5.2001	1.3349	0.3093	1.6442		18,944.7980	18,944.7980	0.7559	3.0040	19,858.8871

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	224.00	0.00	0.00	1,456,000	1,456,000
Total	224.00	0.00	0.00	1,456,000	1,456,000

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
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	Primary	Diverted	Pass-by
User Defined Industrial	10.00	5.00	25.00	0.00	0.00	100.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000

Bradshaw - Vendor Trips - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	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	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	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
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Bradshaw - Vendor Trips - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	lb/day										lb/day					
Mitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

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	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

Bradshaw - Vendor Trips - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Memorandum

24 November 2021

To	Roland Curry, Kinder Morgan Project Manager		
Copy to	Chryss Meier, GHD Environmental Planner		
From	Elizabeth Meisman, GHD Wildlife Biologist	**Tel**	707-267-2217
Subject	Bradshaw Rail Terminal – Biological Reconnaissance Site Visit to Support CEQA	**Project no.**	12555811

SFPP, L.P. (SFPP), a subsidiary of Kinder Morgan, proposes to expand its Bradshaw Terminal to allow for renewable diesel (RD) and B100 (biodiesel) operations. To assist with preparation the project's California Environmental Quality Act (CEQA) document, GHD evaluated the potential for sensitive biological resources (federally or state listed or state special status plants and wildlife, sensitive natural communities, and wetlands) to occur within the terminal sites and potential impacts to these resources (if any). Based on occurrence records, habitat availability, and the reconnaissance-level site visit, no special status plant or wildlife biological resources are expected to occur at the sites, with the exception of potential seasonal nesting by protected migratory birds. The potential for wetlands on-site will be determined through an upcoming formal wetland delineation

Regards

Elizabeth Meisman
Wildlife Biologist

Memorandum

1. Introduction

SFPP, L.P. (SFPP), a subsidiary of Kinder Morgan, proposes to expand the Kinder Morgan Bradshaw Terminal to allow for Renewable Diesel (RD) and B100 (biodiesel) operations (hereafter “Project”; Attachment 1, Figure 1). The terminal is located at 2901 Bradshaw Road, Sacramento, California (Attachment 1, Figures 2.1). The proposed rail turnaround along the Sacramento Regional Rail Transit (SacRT) is located nearby (Attachment 1, Figure 2.2). The Project includes the construction and operation of the following components: rail offloading, storage tanks, and truck-blending and loading racks. The Project facilities would have capacity for up to 20,000 barrels per day (BPD) (5 Days/Week) of total renewable diesel product with an option to include 1,800 BPD of biodiesel.

To assist with preparation the Project’s CEQA document, GHD evaluated the potential for sensitive biological resources (federally or state listed or state special status plants and wildlife, sensitive natural communities, and wetlands) to occur within the Project site. In addition, potential Project impacts to these resources (if any), were evaluated. Special status species and resources are the primary focus of this evaluation. Common species or resources without special protections are not considered. The purpose of this biological reconnaissance technical memorandum is to document the results of the August 12, 2021 site visit and provide information to support the Project’s CEQA document.

1.1 Rail and Loading Facilities

The Project will include two rail spurs dedicated for biodiesel and RD offloading. The spurs will have a total of 22 railcar storage locations. Two new motorized mobile gangways systems are included for accessing the top of each railcar and for venting. There will be three offloading spots dedicated to either offloading biodiesel or RD. All other locations will be dedicated to offloading RD only. The two systems will be clearly marked and identified for the two different offloading products. The biodiesel offloading system will include a valve manifold system to direct product flow to either the existing 5,000 barrel (bbl) customer dedicated B-7 Biodiesel storage tank or into the proposed new communal storage tank (discussed below).

Offloading hoses, valves, fittings, instruments, etc. will be connected to common piping suction headers. Piping systems (with pumps, valves, meters, instruments, etc.) will be included to transfer the product from railcars, to storage tank, and to a new single lane truck rack. The Project is also required to install a new rail run-around on SacRT right of way (ROW) for railcar delivery purposes. Union Pacific Railroad (UPRR) will accommodate switches up to 5 times per week.

1.2 Storage Tanks

The Project includes construction and operation of two new storage tanks within a new secondary containment area. Proposed new storage tanks would be:

- 50,000 bbl RD storage tank
- 15,000 bbl Biodiesel storage tank for communal biodiesel

1.3 Truck-Blending and Road Racks

The Project will also include a new two-lane truck blending and loading rack, with option of red dye injection. The truck rack will be capable of blending biodiesel with California Air Resources Board (CARB) or RD. Both new truck lanes will be capable of blending up to 20 percent Biodiesel with either 80 percent CARB or RD. (B5, B10, and B20).

There will be two separate and independent offloading headers:

- One for biodiesel; and
- One for RD.

One lane will be dedicated to a single customer (customer-dedicated lane) while the second lane will be used for community load outs (community lane). The customer-dedicated lane will be supplied from the existing B-7 Biodiesel storage tank. A new piping system will be required from existing pumps to new truck rack.

New rack pumps will be installed and be capable of providing up to 10,000 bbls/day of product throughput to each truck loading lane (total of 20,000 bbls/day for two lanes). A red dye skid is included with red dye injection options on dedicated loading arms only. The loading arms will be capable of flushing residual red dye from the system between truckloads.

1.4 Operation

Site operations, including receipt and unloading of rail cars, and truck loading, would occur during site operational hours. The site currently operates 24/7. The rail system will be able to offload up to 20,000 BPD (5 Days/Week) of total RD product with an option to include 1,800 BPD of Biodiesel.

The Biodiesel product offloaded from rail will be stored in either the proposed 15,000 bbl storage tank dedicated to community storage or can be delivered into the existing 5k bbl B-7 storage tank. All new above ground B100 piping will be heat traced and insulated and the new storage Biodiesel tank will be insulated.

2. Survey Methods

2.1 Database Searches (CNDDB, CNPS, IPaC, NOAA Fisheries, and NWI)

A database search for sensitive biological resource records in the Project vicinity was conducted by GHD on August 11, 2021. Database searches (Attachment 2) included the California Natural Diversity Database (CNDDB; CDFW 2021a), California Native Plant Society (CNPS) Inventory of Rare and Endangered Vascular Plants (CNPS 2021), U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC; USFWS 2021), and the National Oceanic and Atmospheric Administration (NOAA) Fisheries West Coast Region California Species List Tools (NMFS 2021). The search encompassed the Carmichael U.S. Geological Survey 7.5-minute quadrangle. Figure 3 (Attachment 1) shows all special status species records tracked by the CNDDB that are known to occur within a one-mile radius of the Project. A search of the USFWS National Wetlands Inventory for the Project vicinity was completed on August 11, 2021 (Attachment 1, Figure 4).

2.2 Field Survey

A reconnaissance field survey was conducted by Elizabeth Meisman, GHD Wildlife Biologist, on August 12, 2021 from 09:30 to 13:00. Weather conditions were hazy and with a light breeze (Beaufort scale 2), about 79 to 93 degrees Fahrenheit.

The survey included the proposed terminal expansion site (Attachment 1, Figure 2.1) and rail turnaround (Attachment 1, Figure 2.2). The surveyor walked the perimeter and a meandering transect throughout the large rectangular field, where the rail offload area is proposed (Attachment 1, Figure 2.1). Additionally, the surveyor walked the sidewalk adjacent to the existing SacRT rail line to assess the proposed rail turnaround area (access to the SacRT ROW was not permitted).

The survey methods were intended to assess the potential for special status resources and habitats to occur within the Project sites. The survey involved a physical search of the area, including inspecting the ground, shrubs, holes, and trees for the presence of any wildlife species (additionally, the bark of vegetation and the ground layer under vegetation were inspected for evidence of wildlife species, such as feathers, pellets, whitewash, scat, tracks, etc.); assessing the potential for available habitat to support rare plants; and visual observations to identify Sensitive Natural Communities (SNCs). No protocol-level surveys for wetlands, SNCs, or special status plants and wildlife were conducted at this time.

3. Results

3.1 Summary of General Biological Resources

The proposed terminal expansion site primarily consists of a large rectangular field. Although this field has not been developed, it appears to have been formerly graded and hosts numerous non-native plant species (Attachment 3, Table 1). The dominant vegetation consisted of grass species, Russian thistle (*Salsola australis*), and sapling tree of heaven (*Ailanthus altissima*). There was extensive human trash (e.g., likely from homeless people) and the field had been recently mowed at the time of the site visit. This field is bordered by existing SFPP facilities to the west, a commercial business park to the south and east, and Folsom Boulevard and residential properties to the north (Attachment 1, Figure 2.1).

The proposed rail turnaround site is located along the existing SacRT rail line which runs parallel to Folsom Boulevard (immediately to the south). The existing rail line is bordered by residential properties to the southeast and north, by commercial properties to the northeast and southwest, and by agricultural land to the northwest (Attachment 1, Figure 2.2).

Overall, across the terminal and rail turnaround sites, there was little natural habitat structure. There are some trees that may provide suitable nesting habitat for common avian species protected by the federal Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (FGC). There is a line of planted trees (all approximately 15-20 diameter at breast height) along the eastern border of the large rectangular field composed of coast redwood (*Sequoia sempervirens*) trees as well as blue (*Quercus douglasii*) and valley oaks (*Q. lobata*). Additional oak trees are present along the SacRT rail line.

No suitable habitat for any special status species was observed (full lists of species observed on-site are provided in Attachment 3, Tables 1 through 4) within or directly adjacent to the Project sites. Several representative photographs are included in Attachment 4 to document the site condition at the time of the site visit.

3.2 Wetlands and Waters

The eastern third of a drainage running roughly west to east across the large rectangular field at the proposed terminal expansion site was identified as a potential wetland or jurisdictional aquatic resources. Large (approximately 30-inch) culverts are present at both the west and east sides of the field. Hydrophytic vegetation including willows (*Salix* sp.), Fremont cottonwood (*Populus fremontii*), tall flatsedge (*Cyperus eragrostis*), and an unidentified rush (*Juncus* sp.) were present near the culvert at the eastern edge of the field. No areas of standing water were visible during the reconnaissance-level site visit; however, the site visit occurred during the driest time of year in this region without any recent rainfall. A formal wetland delineation was completed on September 23, 2021, to investigate the presence of aquatic resources on-site, see separate Wetland Determination Technical Memorandum for details (GHD 2021). No potentially jurisdictional wetlands or waters of the U.S. or State were observed in the Project site or in areas to be impacted by proposed Project activities. No impact would result. No additional technical studies or permits specific to wetlands and waters are anticipated.

3.3 Sensitive Natural Communities (SNCs)

No SNCs were observed in the Project site. No impact would result. No technical additional studies or permits specific to SNCs are anticipated.

3.4 Special Status Plants

No special status plant species were observed on-site; however, the field survey was not protocol level nor conducted during the appropriate growing season windows for species with potential to occur in the vicinity (the site visit occurred during the late summer outside of the blooming period for some plants). Nonetheless, based on existing habitat, the Project sites are unlikely to support special status plants, and no impacts are expected. A list of all plant species detected during the reconnaissance-level site visit are presented in Attachment 3, Table 1. No impacts to special status plants are expected as a result of the Project. No additional technical studies or permits specific to special status plants are anticipated.

3.5 Special Status Wildlife

No special status wildlife species were observed on-site. A list of terrestrial wildlife or sign thereof observed during the reconnaissance-level site visit is presented in Attachment 3, Table 2. A list of all bird species detected during the site visit and their associated breeding codes are presented in Attachment 3, Table 3 and 4. As many neotropical avian species have migrated south by late summer, Table 4 is not a comprehensive list of all species that could occur throughout the breeding season (in addition, the survey was not protocol-level). No other wildlife species were observed. Based on existing habitat, the Project sites likely only support urban-adapted common wildlife species. With implementation of the proposed avoidance and minimization measures (Section 5), impacts to special status wildlife species would be less than significant. No additional studies or permits specific to special status wildlife are required.

3.6 Habitat Conservation Plans and Natural Community Conservation Plans

Habitat Conservation Plans (HCPs) and Natural Community Conservation Plans are site-specific plans to address effects on sensitive species of plants and animals. The South Sacramento HCP overlaps the Project site. This HCP covers eight plants, five invertebrates, two amphibians, two reptiles, nine birds, and two mammals. The Project site does not provide suitable habitat for any of these species; no impact would result. There are no such adopted Natural Community Conservation Plans covering the Project site; no impact would result.

3.7 Critical Habitat

The Project site does not overlap any federally designated critical habitat. No impact would result.

3.8 Habitat Connectivity

Wildlife corridors refer to established migration routes commonly used by resident and migratory species for passage from one geographic location to another. Maintaining the continuity of established wildlife corridors is important to: a) sustain species with specific foraging requirements, b) preserve a species' distribution potential, and c) retain diversity among many wildlife populations. Therefore, resource agencies consider wildlife corridors to be a sensitive resource.

No wildlife movement corridors or regional wildlife linkages have been identified within the Project site. The Project site is not located within or near a high-integrity forest habitat "natural landscape block" identified in the California Essential Habitat Connectivity Project (Data Basin 2021). The Project site does not contain riparian or aquatic habitat or intersect riparian corridors. No impact on movement of native resident or migratory fish or essential fish habitat would result. No new barriers to terrestrial wildlife movement would result from the Project, and the Project would not substantially interfere with migratory birds, bats, or other species. The impact would be less than significant.

4. Discussion

No sensitive biological resources were observed during the August 16, 2021 reconnaissance-level site visit. Several common avian species were observed on-site that are protected by the MBTA and FGC (Attachment 3, Table 2). Trees adjacent to the Project sites could provide suitable nesting habitat for migratory bird species.

No suitable bat roosting habitat was observed within the Project sites. Requisite foraging habitat may be present in the periphery. The proposed Project may involve installation of new lighting; however, that lighting would be limited security lighting, and would be hooded and downcast consistent with City of Rancho Cordova requirements. Thus, no impacts to special status bats are expected as a result of the Project.

5. Proposed Avoidance and Minimization Measures

Potential Project impacts to special status birds during construction may include visual disturbance, habitat destruction, and noise disturbance. The following measures are proposed to avoid potential impacts.

- Ground disturbance and vegetation clearing shall be conducted, if possible, during the fall and/or winter months and outside of the avian nesting season (generally February 1 – September 1) to avoid any direct effects to protected birds. If ground disturbance cannot be confined to work outside of the nesting season, a qualified ornithologist shall conduct pre-construction surveys within the vicinity of the Project Area, to check for nesting activity of native birds and to evaluate the site for presence of raptors and special status bird species. The ornithologist shall conduct at minimum a one-day pre-construction survey within the 7-day period prior to vegetation removal and ground-disturbing activities. If ground disturbance or vegetation removal work lapses for seven days or longer during the breeding season, a qualified ornithologist shall conduct a supplemental avian pre-construction survey before Project work is reinitiated.
- If active nests are detected within the construction footprint or up to 500 feet from construction activities, the ornithologist shall flag a buffer around each nest (assuming property access). Construction activities shall avoid nest sites until the ornithologist determines that the young have fledged or nesting activity has ceased. If nests are documented outside of the construction (disturbance) footprint, but within 500 feet of the construction area, buffers would be implemented as needed (buffer size dependent on species). Buffer sizes for common species would be determined on a case-by-case basis in consultation with the CDFW and, if applicable, with USFWS. Buffer sizes would consider factors such as (1) noise and human disturbance levels at the construction site at the time of the survey and the noise and disturbance expected during the construction activity; (2) distance and amount of vegetation or other screening between the construction site and the nest; and (3) sensitivity of individual nesting species and behaviors of the nesting birds.
- If active nests are detected during the survey, the qualified ornithologist shall monitor all nests at least once per week to determine whether birds are being disturbed. Activities that might, in the opinion of the qualified ornithologist, disturb nesting activities (e.g., excessive noise), shall be prohibited within the buffer zone until such a determination is made. If signs of disturbance or distress are observed, the qualified ornithologist shall immediately implement adaptive measures to reduce disturbance. These measures may include, but are not limited to, increasing buffer size, halting disruptive construction activities in the vicinity of the nest until fledging is confirmed or nesting activity has ceased, placement of visual screens or sound dampening structures between the nest and construction activity, reducing speed limits, replacing and updating noisy equipment, queuing trucks to distribute idling noise, locating vehicle access points and loading and shipping facilities away from noise-sensitive receptors, reducing the number of noisy construction activities occurring simultaneously, and/or reorienting and/or relocating construction equipment to minimize noise at noise-sensitive receptors.

6. Conclusion

Based on occurrence records, habitat availability, the reconnaissance-level site visit, and Wetland Determination, no sensitive biological resources (federally or state listed or state special status plants and wildlife, sensitive natural communities, or wetlands) are expected to occur in the Project site, with the exception of potential seasonal nesting by protected migratory birds. No additional technical studies or permits are anticipated.

7. References

California Department of Fish and Wildlife (CDFW). 2021a. *California Natural Diversity Database (CNDDB).* USGS 7.5 Minute Quadrangles. State of California, Natural Resources Agency, Department of Fish and Wildlife, Biogeographic Data Branch, Sacramento, California, USA. https://www.wildlife.ca.gov/Data/CNDDB (08/11/2021)

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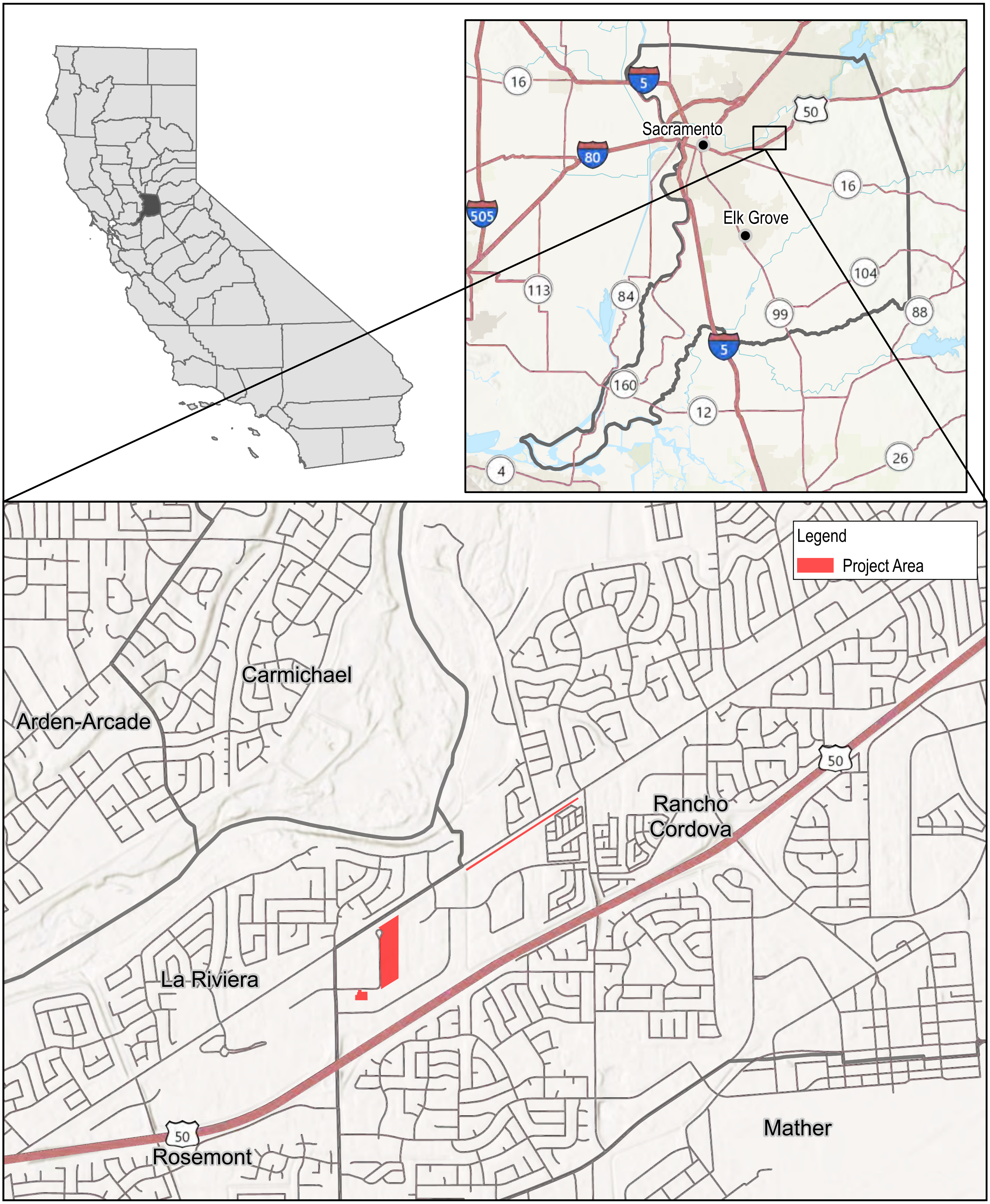
National Marine Fisheries Service (NFMS). 2021. *NOAA Fisheries West Coast Region California Species List Tool.* U.S. Department of Commerce, National Oceanic and Atmospheric Administration Fisheries, NMFS, Portland, Oregon, USA. https://archive.fisheries.noaa.gov/wcr/maps_data/california_species_list_tools.html (08/11/2021)

U.S. Fish and Wildlife Service (USFWS). 2021. *IPaC - Information for Planning and Consultation.* Department of the Interior, U.S. Fish and Wildlife Service, Arcata Fish and Wildlife Office, Arcata, CA, USA. https://ecos.fws.gov/ipac/ (08/11/2021)

Attachment 1

Figures



Paper Size ANSI A

0 1,000 2,000

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California II FIPS 0402 Feet

N

GHD

Kinder Morgan
Bradshaw Terminal Renewable by Rail

Project No. **12555811**
Revision No. **-**
Date **9/14/2021**

Vicinity Map

FIGURE 1

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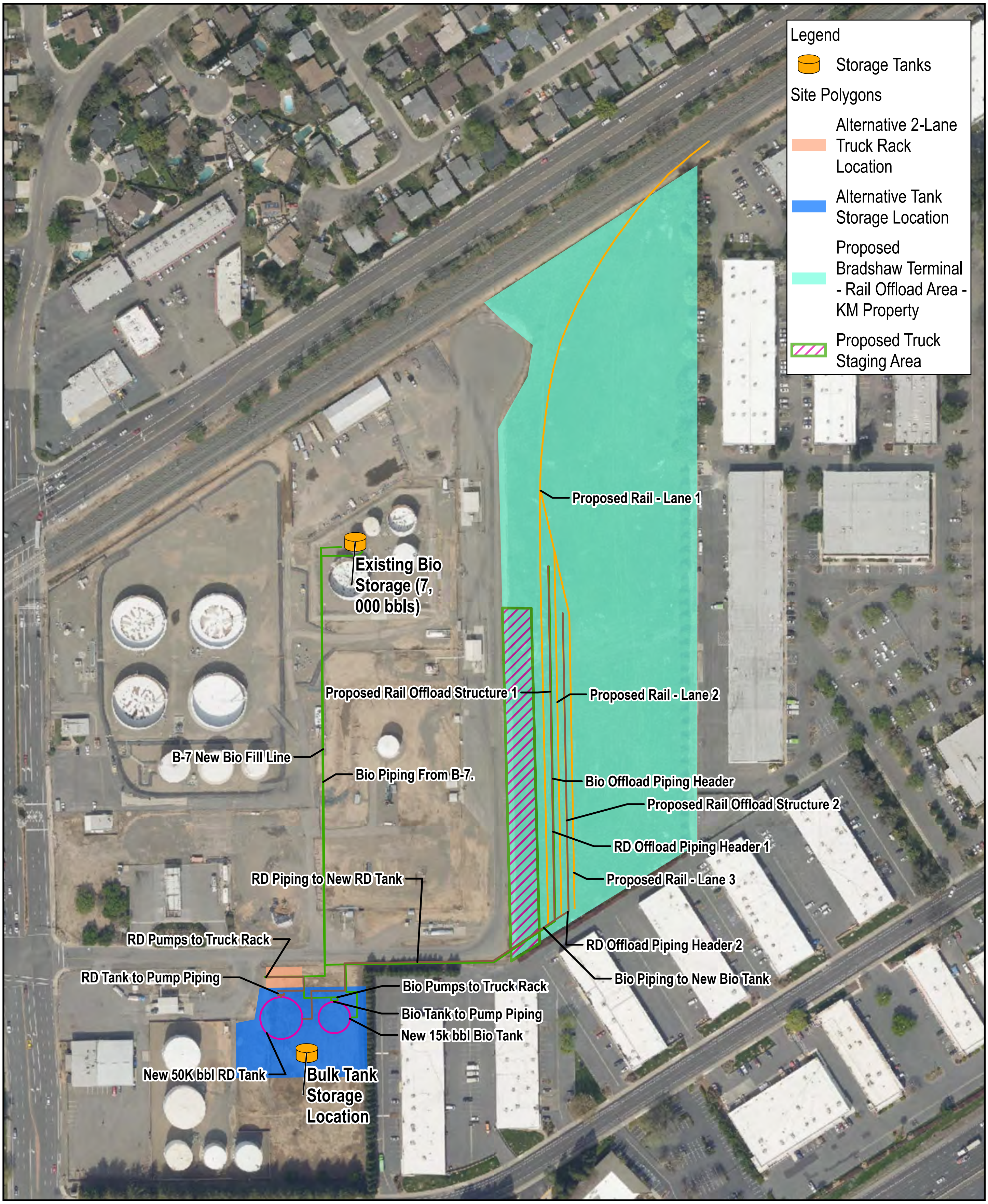
Data source: transportation: USGS The National Map: National Transportation Dataset; U.S. Census Bureau – TIGER/Line; U.S. Forest Service. Data Refreshed July, 2021.; World Topographic Map - labelless: City of Elk Grove, County of Sacramento, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, Bureau of Land Management, EPA, NPS; World Hillshade: Esri, NASA, NGA, USGS, FEMA; World Hillshade: Esri, CGIAR, USGS. Created by: zporteous



Paper Size ANSI A

0 100 200

US Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California II FIPS 0402 Feet

N

GHD

Kinder Morgan
Bradshaw Terminal Renewable by Rail

Project Area - Bradshaw Terminal

Project No. **12555811**
Revision No. **-**
Date **9/14/2021**

FIGURE 2.1

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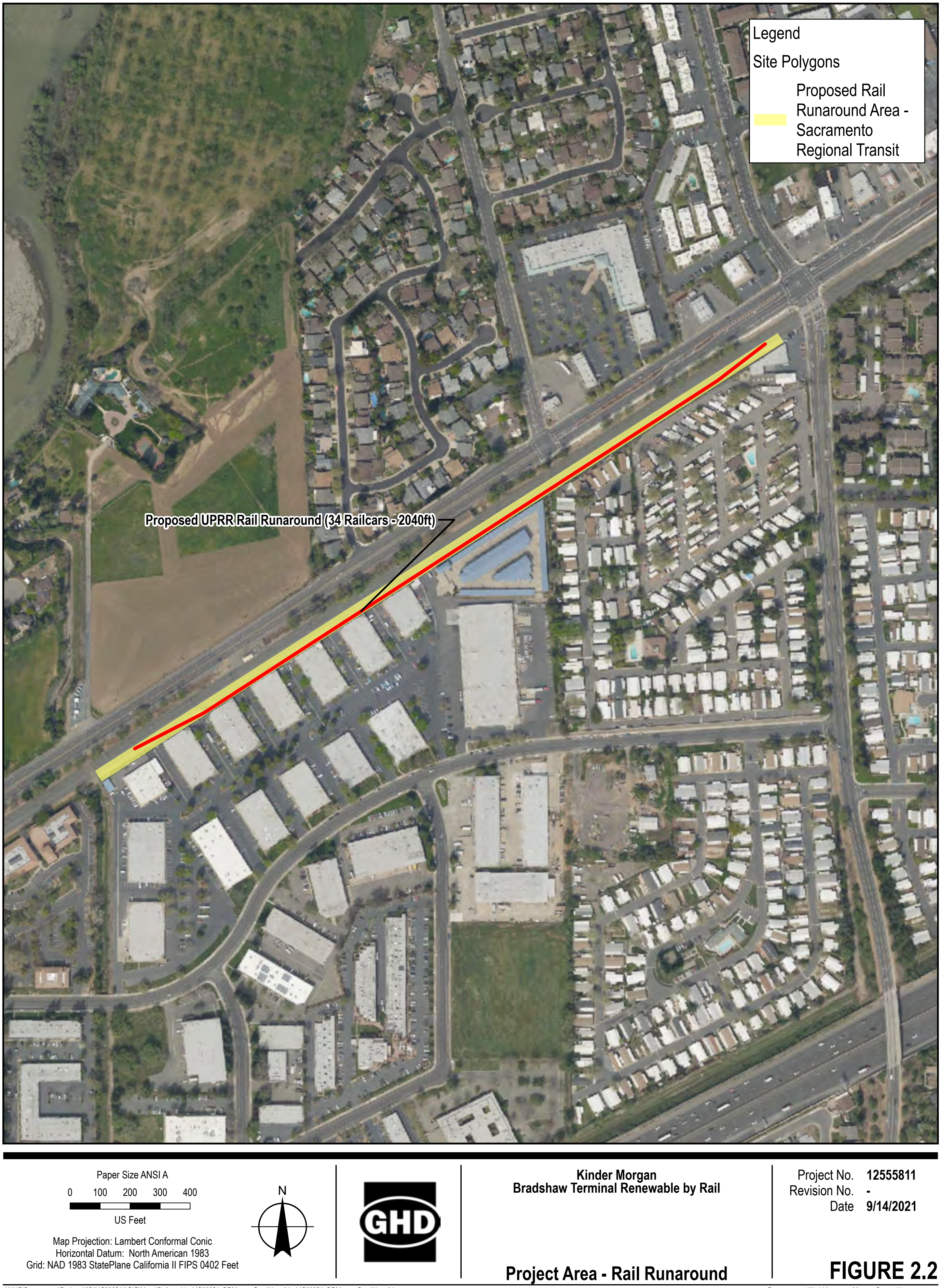
Print date: 14 Sep 2021 - 12:41

Data source: World Imagery: Maxar, Microsoft. Created by: zporteous



Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California II FIPS 0402 Feet

GHD

Kinder Morgan
Bradshaw Terminal Renewable by Rail

Project Area - Rail Runaround

Project No. **12555811**
Revision No. **-**
Date **9/14/2021**

FIGURE 2.2

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Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California II FIPS 0402 Feet

GHD

Kinder Morgan
Bradshaw Terminal Renewable by Rail

Project No. **12555811**
Revision No. **-**
Date **9/14/2021**

CNDDB Species

FIGURE 3

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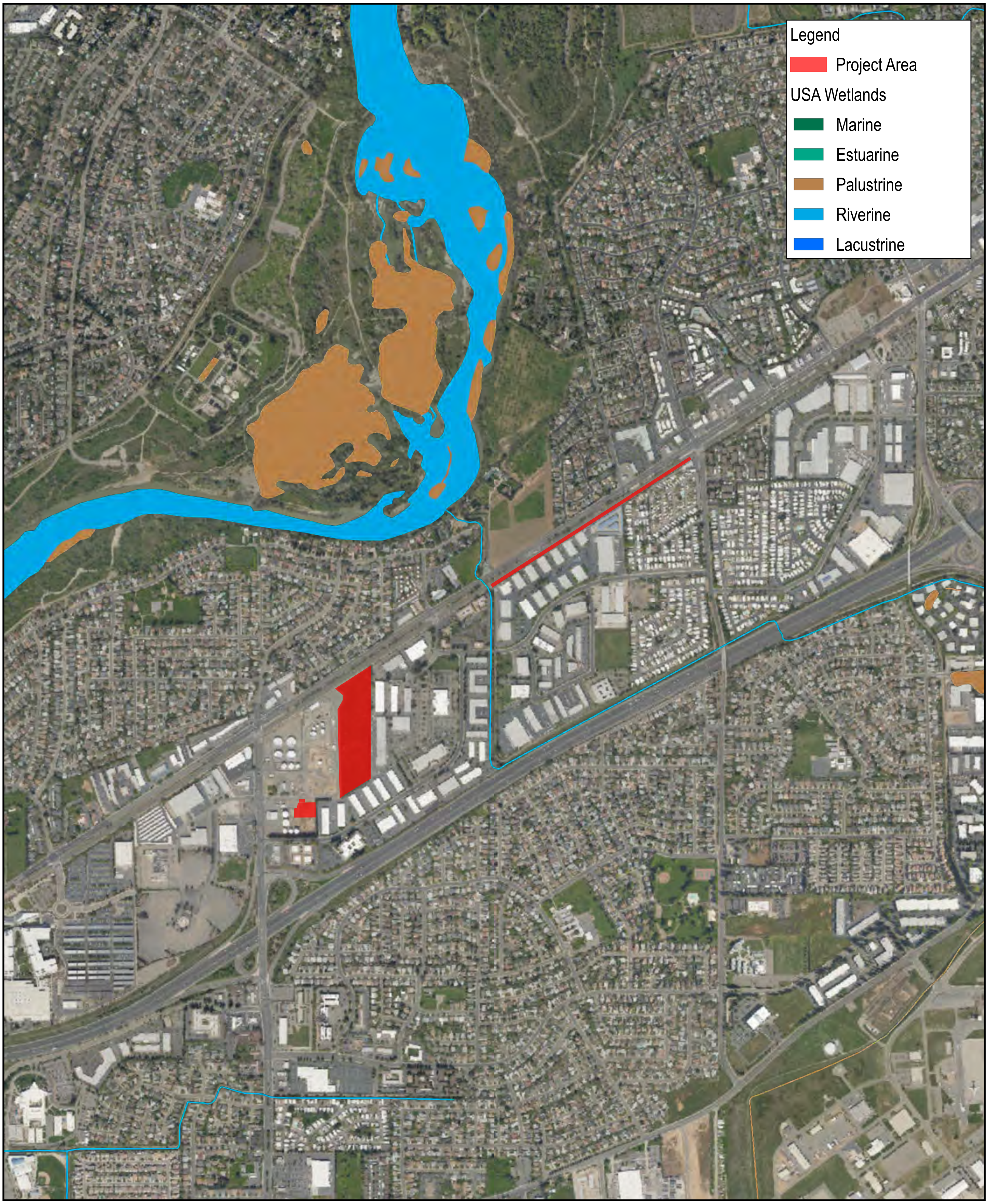
Print date: 14 Sep 2021 - 13:31

Data source: World Imagery: Maxar. Created by: zporteous



Paper Size ANSI A

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Miles

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
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GHD

Kinder Morgan
Bradshaw Terminal Renewable by Rail

Project No. **12555811**
Revision No. **-**
Date **9/14/2021**

National Wetlands Inventory

FIGURE 4

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Print date: 14 Sep 2021 - 11:53

Data source: World Imagery: Earthstar Geographics
USA Wetlands: This work is licensed under the Esri Master License Agreement. View Summary | View Terms of Use Important Note: This item requires an ArcGIS Online organizational subscription or an ArcGIS Developer account and does not consume credits. To access this item, you'll need to do one of the following: Sign in with an

Attachment 2

Database Searches

Appendix B, Table 1. Bradshaw Renewable Diesel & Bio by Rail Project – 1-Quad Database Search of CDFW CNDDB centered on Project quad (Eureka) on 08.11.2021.

Scientific Name	Common Name	Taxon Group	FedList	CalList	GRank	SRank	CRPR	OthrStatus	Habitats	GenHab	MicroHab
Accipiter cooperii	Cooper's hawk	Birds	None	None	G5	S4		CDFW_WL-Watch List | IUCN_LC-Least Concern	Cismontane woodland | Riparian forest | Riparian woodland | Upper montane coniferous forest	Woodland, chiefly of open, interrupted or marginal type.	Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also, live oaks.
Agelaius tricolor	tricolored blackbird	Birds	None	Threatened	G1G2	S1S2		BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_EN-Endangered | NABCI_RWL-Red Watch List | USFWS_BCC-Birds of Conservation Concern	Freshwater marsh | Marsh & swamp | Swamp | Wetland	Highly colonial species, most numerous in Central Valley & vicinity. Largely endemic to California.	Requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony.

Aquila chrysaetos	golden eagle	Birds	None	None	G5	S3		BLM_S-Sensitive | CDF_S-Sensitive | CDFW_FP-Fully Protected | CDFW_WL-Watch List | IUCN_LC-Least Concern | USFWS_BCC-Birds of Conservation Concern	Broadleaved upland forest | Cismontane woodland | Coastal prairie | Great Basin grassland | Great Basin scrub | Lower montane coniferous forest | Pinon & juniper woodlands | Upper montane coniferous forest | Valley & foothill grassland	Rolling foothills, mountain areas, sage-juniper flats, and desert.	Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.
Ardea alba	great egret	Birds	None	None	G5	S4		CDF_S-Sensitive | IUCN_LC-Least Concern	Brackish marsh | Estuary | Freshwater marsh | Marsh & swamp | Riparian forest | Wetland	Colonial nester in large trees.	Rookery sites located near marshes, tide-flats, irrigated pastures, and margins of rivers and lakes.

Ardea herodias	great blue heron	Birds	None	None	G5	S4		CDF_S-Sensitive | IUCN_LC-Least Concern	Brackish marsh | Estuary | Freshwater marsh | Marsh & swamp | Riparian forest | Wetland	Colonial nester in tall trees, cliffsides, and sequestered spots on marshes.	Rookery sites in close proximity to foraging areas: marshes, lake margins, tide-flats, rivers and streams, wet meadows.
Athene cunicularia	burrowing owl	Birds	None	None	G4	S3		BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern | USFWS_BCC-Birds of Conservation Concern	Coastal prairie | Coastal scrub | Great Basin grassland | Great Basin scrub | Mojavean desert scrub | Sonoran desert scrub | Valley & foothill grassland	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation.	Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.

Branchinecta lynchi	vernal pool fairy shrimp	Crustaceans	Threatened	None	G3	S3		IUCN_VU-Vulnerable	Valley & foothill grassland | Vernal pool | Wetland	Endemic to the grasslands of the Central Valley, Central Coast mountains, and South Coast mountains, in astatic rain-filled pools.	Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.
Branchinecta mesovallensis	midvalley fairy shrimp	Crustaceans	None	None	G2	S2S3			Vernal pool | Wetland	Vernal pools in the Central Valley.	
Buteo regalis	ferruginous hawk	Birds	None	None	G4	S3S4		CDFW_WL-Watch List | IUCN_LC-Least Concern | USFWS_BCC-Birds of Conservation Concern	Great Basin grassland | Great Basin scrub | Pinon & juniper woodlands | Valley & foothill grassland	Open grasslands, sagebrush flats, desert scrub, low foothills and fringes of pinyon and juniper habitats.	Eats mostly lagomorphs, ground squirrels, and mice. Population trends may follow lagomorph population cycles.

Buteo swainsoni	Swainson's hawk	Birds	None	Threatened	G5	S3		BLM_S-Sensitive | IUCN_LC-Least Concern | USFWS_BCC-Birds of Conservation Concern	Great Basin grassland | Riparian forest | Riparian woodland | Valley & foothill grassland	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, & agricultural or ranch lands with groves or lines of trees.	Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.
Desmocerus californicus dimorphus	valley elderberry longhorn beetle	Insects	Threatened	None	G3T2	S3			Riparian scrub	Occurs only in the Central Valley of California, in association with blue elderberry (Sambucus mexicana).	Prefers to lay eggs in elderberries 2-8 inches in diameter; some preference shown for "stressed" elderberries.
Dumontia oregonensis	hairy water flea	Crustaceans	None	None	G1G3	S1			Vernal pool	Vernal pools. In California, known only from Mather Field.	

Elanus leucurus	white-tailed kite	Birds	None	None	G5	S3S4		BLM_S-Sensitive | CDFW_FP-Fully Protected | IUCN_LC-Least Concern	Cismontane woodland | Marsh & swamp | Riparian woodland | Valley & foothill grassland | Wetland	Rolling foothills and valley margins with scattered oaks & river bottomlands or marshes next to deciduous woodland.	Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.

Emys marmorata	western pond turtle	Reptiles	None	None	G3G4	S3		BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_VU-Vulnerable | USFS_S-Sensitive	Aquatic | Artificial flowing waters | Klamath/North coast flowing waters | Klamath/North coast standing waters | Marsh & swamp | Sacramento/San Joaquin flowing waters | Sacramento/San Joaquin standing waters | South coast flowing waters | South coast standing waters | Wetland	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6000 ft elevation.	Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.
Gratiola heterosepala	Boggs Lake hedge-hyssop	Dicots	None	Endangered	G2	S2	1B.2	BLM_S-Sensitive	Freshwater marsh | Marsh & swamp | Vernal pool | Wetland	Marshes and swamps (freshwater), vernal pools.	Clay soils; usually in vernal pools, sometimes on lake margins. 4-2410 m.

Hydrochara rickseckeri	Ricksecker's water scavenger beetle	Insects	None	None	G2?	S2?			Aquatic | Sacramento/San Joaquin flowing waters | Sacramento/San Joaquin standing waters	Aquatic.	
Juncus leiospermus var. ahartii	Ahart's dwarf rush	Monocots	None	None	G2T1	S1	1B.2		Valley & foothill grassland	Valley and foothill grassland.	Restricted to the edges of vernal pools in grassland. 30-100 m.
Legenere limosa	legenere	Dicots	None	None	G2	S2	1B.1	BLM_S-Sensitive | SB_UCBG-UC Botanical Garden at Berkeley	Vernal pool | Wetland	Vernal pools.	In beds of vernal pools. 1-1005 m.
Lepidurus packardi	vernal pool tadpole shrimp	Crustaceans	Endangered	None	G4	S3S4		IUCN_EN-Endangered	Valley & foothill grassland | Vernal pool | Wetland	Inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid water.	Pools commonly found in grass-bottomed swales of unplowed grasslands. Some pools are mud-bottomed and highly turbid.

Linderiella occidentalis	California linderiella	Crustaceans	None	None	G2G3	S2S3		IUCN_NT-Near Threatened	Vernal pool	Seasonal pools in unplowed grasslands with old alluvial soils underlain by hardpan or in sandstone depressions.	Water in the pools has very low alkalinity, conductivity, and total dissolved solids.
Northern Hardpan Vernal Pool	Northern Hardpan Vernal Pool	Herbaceous	None	None	G3	S3.1			Vernal pool | Wetland		
Oncorhynchus mykiss irideus pop. 11	steelhead - Central Valley DPS	Fish	Threatened	None	G5T2Q	S2		AFS_TH-Threatened	Aquatic | Sacramento /San Joaquin flowing waters	Populations in the Sacramento and San Joaquin rivers and their tributaries.	
Orcuttia viscida	Sacramento Orcutt grass	Monocots	Endangered	Endangered	G1	S1	1B.1	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Vernal pool | Wetland	Vernal pools.	15-85 m.
Riparia riparia	bank swallow	Birds	None	Threatened	G5	S2		BLM_S-Sensitive | IUCN_LC-Least Concern	Riparian scrub | Riparian woodland	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert.	Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.

Sagittaria sanfordii	Sanford's arrowhead	Monocots	None	None	G3	S3	1B.2	BLM_S-Sensitive	Marsh & swamp | Wetland	Marshes and swamps.	In standing or slow-moving freshwater ponds, marshes, and ditches. 0-605 m.
Spea hammondii	western spadefoot	Amphibians	None	None	G2G3	S3		BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_NT-Near Threatened	Cismontane woodland | Coastal scrub | Valley & foothill grassland | Vernal pool | Wetland	Occurs primarily in grassland habitats, but can be found in valley-foothill hardwood woodlands.	Vernal pools are essential for breeding and egg-laying.

Taxidea taxus	American badger	Mammals	None	None	G5	S3		CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern	Alkali marsh | Alkali playa | Alpine | Alpine dwarf scrub | Bog & fen | Brackish marsh | Broadleaved upland forest | Chaparral | Chenopod scrub | Cismontane woodland | Closed-cone coniferous forest | Coastal bluff scrub | Coastal dunes | Coastal prairie | Coastal scrub | Desert dunes | Desert wash | Freshwater marsh |	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils.	Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.

Appendix B, Table 2. Bradshaw Renewable Diesel & Bio by Rail Project – 1-Quad Database Search of CNPS Rare Plant Inventory centered on Project quad (Eureka) on 08.11.2021.										
Scientific Name	**Common Name**	**Family**	**CRPR**	**GRank**	**SRank**	**CESA**	**FESA**	**Blooming Period**	**Habitat**	**Micro Habitat**
Sagittaria sanfordii	Sanford's arrowhead	Alismataceae	1B.2	G3	S3	None	None	May-Oct(Nov)	Marshes and swamps	
Gratiola heterosepala	Boggs Lake hedge-hyssop	Plantaginaceae	1B.2	G2	S2	CE	None	Apr-Aug	Marshes and swamps, Vernal pools	
Juncus leiospermus var. ahartii	Ahart's dwarf rush	Juncaceae	1B.2	G2T1	S1	None	None	Mar-May	Valley and foothill grassland	
Legenere limosa	legenere	Campanulaceae	1B.1	G2	S2	None	None	Apr-Jun	Vernal pools	
Orcuttia viscida	Sacramento Orcutt grass	Poaceae	1B.1	G1	S1	CE	FE	Apr-Jul(Sep)	Vernal pools	
Brodiaea rosea ssp. vallicola	valley brodiaea	Themidaceae	4.2	G5T3	S3	None	None	Apr-May(Jun)	Valley and foothill grassland, Vernal pools	Alluvial Terraces, Gravelly, Sandy, Silt

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Sacramento County, California

Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Reptiles

NAME	STATUS
Giant Garter Snake *Thamnophis gigas* Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog Rana draytonii Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander Ambystoma californiense There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt Hypomesus transpacificus Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/321	Threatened

Insects

NAME	STATUS
Valley Elderberry Longhorn Beetle Desmocerus californicus dimorphus Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp Branchinecta conservatio Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp Branchinecta lynchi Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/498	Threatened

Vernal Pool Tadpole Shrimp Lepidurus packardi Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
Sacramento Orcutt Grass Orcuttia viscida Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/5507	Endangered
Slender Orcutt Grass Orcuttia tenuis Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/1063	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Aug 31
California Thrasher Toxostoma redivivum This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jan 1 to Jul 31
Clark's Grebe Aechmophorus clarkii This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jun 1 to Aug 31
Common Yellowthroat Geothlypis trichas sinuosa This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/2084	Breeds May 20 to Jul 31

Golden Eagle Aquila chrysaetos
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Breeds Jan 1 to Aug 31

Lawrence's Goldfinch Carduelis lawrencei
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9464

Breeds Mar 20 to Sep 20

Long-eared Owl asio otus
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3631

Breeds Mar 1 to Jul 15

Nuttall's Woodpecker Picoides nuttallii
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9410

Breeds Apr 1 to Jul 20

Oak Titmouse Baeolophus inornatus
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9656

Breeds Mar 15 to Jul 15

Olive-sided Flycatcher Contopus cooperi
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3914

Breeds May 20 to Aug 31

Tricolored Blackbird Agelaius tricolor
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3910

Breeds Mar 15 to Aug 10

Wrentit Chamaea fasciata
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds Mar 15 to Aug 10

Yellow-billed Magpie Pica nuttalli
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9726

Breeds Apr 1 to Jul 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ

"Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)

A week is marked as having no data if there were no survey events for that week.

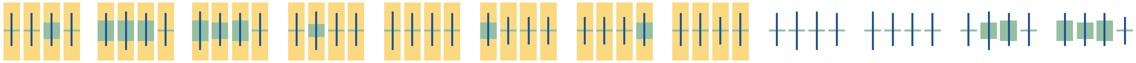
Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

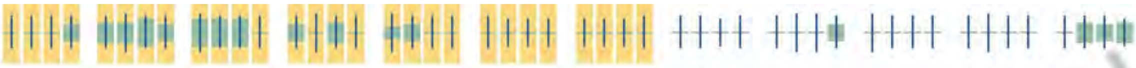
■ probability of presence ■ breeding season | survey effort – no data

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

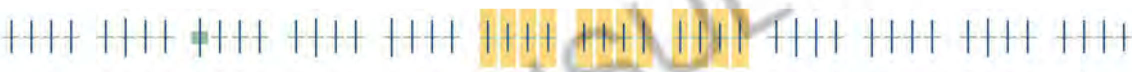
Bald Eagle
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



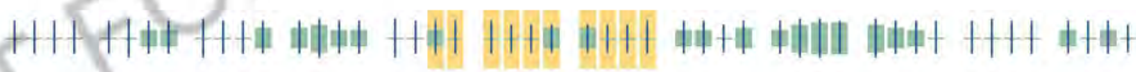
California Thrasher
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



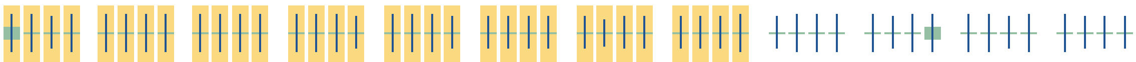
Clark's Grebe
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



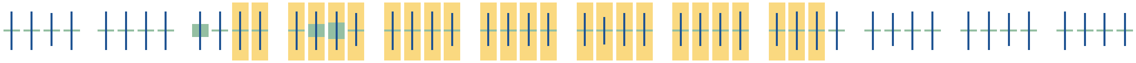
Common Yellowthroat
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



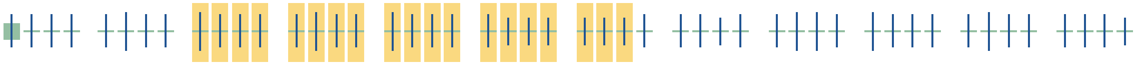
Golden Eagle
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



Lawrence's Goldfinch
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

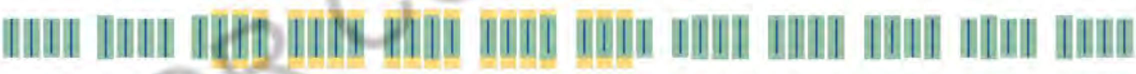


Long-eared Owl
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

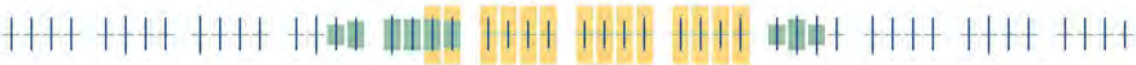


Nuttall's Woodpecker
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

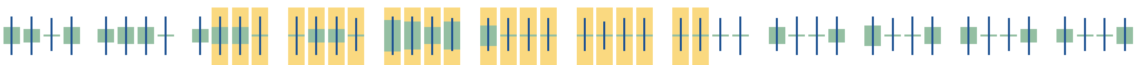
Oak Titmouse
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



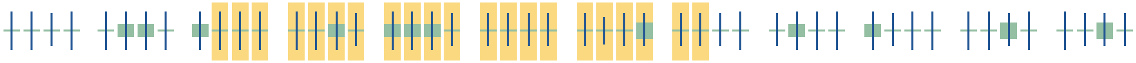
Olive-sided Flycatcher
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Tricolored Blackbird
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

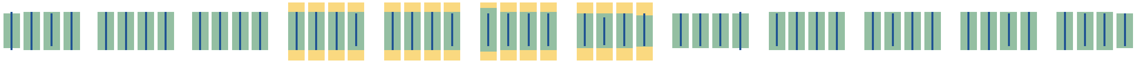


Wrentit
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



SPECIES JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Yellow-billed Magpie
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

RIVERINE
- R4SBAx

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Quad Name **Carmichael**
Quad Number **38121-E3**

1. ESA Anadromous Fish

SONCC Coho ESU (T) -
CCC Coho ESU (E) -
CC Chinook Salmon ESU (T) -
CVSR Chinook Salmon ESU (T) - **X**
SRWR Chinook Salmon ESU (E) - **X**
NC Steelhead DPS (T) -
CCC Steelhead DPS (T) -
SCCC Steelhead DPS (T) -
SC Steelhead DPS (E) -
CCV Steelhead DPS (T) - **X**
Eulachon (T) -
sDPS Green Sturgeon (T) -

2. ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -
CCC Coho Critical Habitat -
CC Chinook Salmon Critical Habitat -
CVSR Chinook Salmon Critical Habitat -
SRWR Chinook Salmon Critical Habitat -
NC Steelhead Critical Habitat -
CCC Steelhead Critical Habitat -
SCCC Steelhead Critical Habitat -
SC Steelhead Critical Habitat -
CCV Steelhead Critical Habitat - **X**
Eulachon Critical Habitat -
sDPS Green Sturgeon Critical Habitat -

3. ESA Marine Invertebrates

Range Black Abalone (E) -
Range White Abalone (E) -

4. ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

5. **ESA Sea Turtles**

East Pacific Green Sea Turtle (T) -
Olive Ridley Sea Turtle (T/E) -
Leatherback Sea Turtle (E) -
North Pacific Loggerhead Sea Turtle (E) -

6. **ESA Whales**

Blue Whale (E) -
Fin Whale (E) -
Humpback Whale (E) -
Southern Resident Killer Whale (E) -
North Pacific Right Whale (E) -
Sei Whale (E) -
Sperm Whale (E) -

7. **ESA Pinnipeds**

Guadalupe Fur Seal (T) -
Steller Sea Lion Critical Habitat -

8. **Essential Fish Habitat**

Coho EFH -
Chinook Salmon EFH - **X**
Groundfish EFH -
Coastal Pelagics EFH -
Highly Migratory Species EFH -

9. **MMPA Species (See list at left)**
10. **ESA and MMPA Cetaceans/Pinnipeds**

See list at left and consult the NMFS Long Beach office 562-980-4000

MMPA Cetaceans -
MMPA Pinnipeds -

Attachment 3

Tables

Table 1 Plant Species Observed On-site

Scientific Name	Common Name	Status	Family
Ailanthus altissima	tree of heaven	invasive non-native	Simaroubaceae
Amaranthus blitoides	prostrate pigweed	native	Amaranthaceae
Avena fatua	wildoats	invasive non-native	Poaceae
Baccharis pilularis	coyote brush	native	Asteraceae
Brassica rapa	common mustard	invasive non-native	Brassicaceae
Celtis sinensis	Chinese hackberry	non-native	Cannabaceae
Centaurea solstitialis	yellow starthistle	non-native	Asteraceae
Cleome ruidosperma	fringed spiderflower	invasive non-native	Capparaceae
Convolvulus arvensis	field bindweed	non-native	Convolvulaceae
Croton setiger	turkey mullein	native	Euphorbiaceae
Cynara cardunculus	artichoke thistle	invasive non-native	Asteraceae
Cynodon dactylon	Bermuda grass	invasive non-native	Poaceae
Cyperus eragrostis	tall flatsedge	native	Cyperaceae
Daucus carota	Queen Anne's lace	non-native	Apiaceae
Epilobium brachycarpum	willow herb	native	Onagraceae
Erigeron bonariensis	flax-leaved horseweed	non-native	Asteraceae
Euphorbia maculata	spotted spurge	non-native	Euphorbiaceae
Galium sp.	unknown bedstraw	unknown	Rubiaceae
Juncus sp.	unknown rush	native	Juncaceae
Lactuca serriola	prickly lettuce	non-native	Asteraceae
Lathyrus latifolius	perennial pea	non-native	Fabaceae
Lepidium latifolium	perennial pepperweed	invasive non-native	Brassicaceae
Malva parviflora	cheeseweed mallow	non-native	Malvaceae
Photinia ×fraseri	Fraser's photinia	non-native	Rosaceae
Plantago sp.	unknown plantago	unknown	Plantaginaceae
Populus fremontii	Fremont cottonwood	native	Salicaceae
Quercus douglasii	blue oak	native	Fagaceae
Quercus lobata	valley oak	native	Fagaceae
Rubus armeniacus	Himalayan blackberry	invasive non-native	Rosaceae
Rumex sp.	unknown dock	unknown	Polygonaceae
Salix sp.	unknown species	native	Salicaceae
Salsola australis	Russian thistle	non-native	Chenopodiaceae
Sequoia sempervirens	coast redwood	native	Cupressaceae
Tragopogon porrifolius	purple salsify	non-native	Asteraceae
Washingtonia robusta	Mexican fan palm	invasive non-native	Arecaceae

Table 2 Terrestrial Wildlife Observed On-site

Scientific Name	Common Name	Nativity/Special Status	Observation Type
Didelphis virginiana	Virginia Opossum	Native/None	Carcass
Spermophilus beecheyi	California Ground Squirrel	Native/None	Burrow colony

Scientific Name	Common Name	Nativity/Special Status	Observation Type
Sylvilagus bachmani	Brush Rabbit	Native/None	Scat
Tamiasciurus douglasii	Douglas Squirrel	Native/None	Seen/heard
Urocyon cinereoargenteus	Gray Fox	Native/None	Scat and tracks

Table 3 ***List of breeding codes, associated bird behavior, and breeding status (the highest ranking code was recorded for each species during the survey).***

Breeding Rank	Breeding Code	Description	Breeding Status
1	N	Active nest	Breeding
2	M	Carrying nesting material	Breeding
3	F	Carrying food or fecal sac	Breeding
4	D	Distraction display/feigning	Breeding
5	L	Local young fed by parents	Breeding
6	Y	Local young incapable of sustained flight	Breeding
7	C	Copulation or courtship observed	Breeding
8	T	Territorial behavior	Unconfirmed
9	S	Territorial song or drumming heard	Unconfirmed
10	E	Encountered in study area	Unconfirmed
11	O	Encountered flying over the study area	Unconfirmed

Table 4 ***Avian Species Detected On-site***

Alpha Code	Common Name	Latin Name	Highest Breeding Status	Breeding Code	Special Status
ROPI	Rock Pigeon	*Columba livia*	Encountered in study area	E	None; invasive
MODO	Mourning Dove	*Zenaida macroura*	Encountered in study area	E	FGC
WEKI	Western Kingbird	*Tyrannus verticalis*	Encountered in study area	E	FGC
CSJA	California Scrub-Jay	*Aphelocoma californica*	Encountered in study area	E	FGC
AMCR	American Crow	*Corvus brachyrhynchos*	Encountered in study area	E	FGC
CORA	Common Raven	*Corvus corax*	Encountered flying over the study area	O	FGC
EUST	European Starling	*Sturnus vulgaris*	Encountered in study area	E	None; invasive
WEBL	Western Bluebird	*Sialia mexicana*	Encountered in study area	E	FGC
HOFI	House Finch	*Haemorhous mexicanus*	Encountered in study area	E	FGC
Definitions: FGC = protected by California Fish and Game Code					

Attachment 4

Representative Site Photographs

Image 1. View of large rectangular field, where the rail offload area is proposed at the Terminal site, facing south.

Image 2. View of large rectangular field, where the rail offload area is proposed at the Terminal site, facing south from middle of field.

Image 3. View of large rectangular field, where the rail offload area is proposed at the Terminal site, facing north (including view of Folsom Blvd).

Image 4. View of human trash in large rectangular field, where the rail offload area is proposed at the Terminal site, facing southeast.

Image 5. View of large rectangular field, where the rail offload area is proposed at the Terminal site, including drainage, facing east.

Image 6. View of large rectangular field, where the rail offload area is proposed at the Terminal site, including drainage, facing east from western culvert.

Image 7. View of large rectangular field, where the rail offload area is proposed at the Terminal site, facing west towards existing Kinder Morgan facilities.

Technical Memorandum

October 21, 2021

To	Roland Curry (Kinder Morgan)	**Tel**	972-331-8555
Copy to	Chryss Meier (GHD), Paul White (GHD), Elizabeth Meisman (GHD)	**Email**	kevin.janni@ghd.com
From	Kevin Janni (GHD)	**Ref. No.**	12555811
Subject	SFPP Bradshaw Rail Terminal – Wetland Determination		

On August 12, 2021, GHD performed an evaluation for the potential of sensitive biological resources (federal or state listed special status plants and wildlife, sensitive natural communities, and wetlands) to occur at the SFPP, L.P. (SFPP) Bradshaw Terminal (38°34'18.74"N, 121°19'57.34"W) located in Sacramento County, California. During this survey, a potential wetland was observed within a human-made linear drainage ditch running roughly west to east across the large rectangular field at the site.

Subsequently, GHD re-visited the site on September 23, 2021, to evaluate the location following the three-parameter criteria (hydrophytic vegetation, hydric soils, and hydrology) outlined in the United States Army Corps of Engineers' (USACE) *Corps of Engineers Wetland Delineation Manual* (1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0).* Following the State Water Resources Control Board (SWRCB) guidance, these manuals and the methodologies outlined therein must be followed when determining whether an area meets the state definition of a wetland.

Additionally, GHD followed the USACE's Regulatory Guidance Letter No. 05-05 for Ordinary High Water Mark Identification in the evaluation of the linear drainage ditch as a surface water.

This technical memorandum presents the state and federal regulatory context regarding wetlands and waters of the state and summarizes the results of the on-site wetland and waters determination.

1. Regulatory Context

The following subsections summarize the state and federal definition of wetlands, the state definition of "waters of the state," and the criteria for wetland delineation as stated in the California Water Boards' (SWRCB and Regional Water Quality Control Boards) *State Policy for Water Quality Control: State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* (Adopted April 2, 2019) and SWRCB's *Implementation Guidance for the State Wetland Definition and Procedures for Discharges of Dredged and Fill Material to Waters of the State* (April 2020).

1.1 State and Federal Definition of Wetlands

The State of California and the United States Federal Government have two (2) different, yet similar, definitions of a wetland.

The *State Policy for Water Quality Control: State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* defines an area as wetland as follows:

– "*An area is a wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation*."

The Environmental Protection Agency (EPA) and the USACE define a wetland as:

– "*Wetlands are areas that are inundated or saturated by surface of groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas*."

The primary difference between these definitions is that California allows for the presence of hydric substrates as a criterion for wetland identification (not only wetland soils) and wetland hydrology for an area devoid of vegetation (less than five [5] percent cover) to be considered a wetland.

1.2 Wetlands and California's "Waters of the State"

The Water Code (subdivision [e] of Section 13050) defines "waters of the state" broadly to include "any surface water or groundwater, including saline waters, within the boundaries of the state." "Waters of the state" includes all "waters of the United States (hereafter WOTUS)," and as clarified in the *State Policy for Water Quality Control: State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State*, this includes:

– Wetlands that meet the current definition, or any historic definition, of WOTUS are waters of the state. The SWRCB determined that all WOTUS are also waters of the state by regulation, prior to any regulatory or judicial limitations on the federal definition of WOTUS (California Code of Regulations Title 23; Section 3831[w]).
– Features that have been determined by the United States Environmental Protection Agency (EPA) or the USACE to be WOTUS in an approved jurisdictional determination.
– WOTUS included in an aquatic resource report verified by the USACE upon which a permitting decision was based.
– Features that are consistent with any current or historical final judicial interpretation of WOTUS or any current or historic federal regulation defining WOTUS under the federal Clean Water Act.

As further outlined in *State Policy for Water Quality Control: State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State*, the following wetlands are waters of the state:

1. Natural Wetlands,
2. Wetlands created by modification of a surface water of the state, and
3. Artificial wetlands that meet any of the following criteria:
    a. Approved by an agency as compensatory mitigation for impacts to other waters of the state, except where the approving agency explicitly identifies the mitigation as being of limited duration;
    b. Specifically identified in a water quality control plan as a wetland or other water of the state;
    c. Resulted from historic human activity, is not subject to ongoing operation and maintenance, and has become a relatively permanent part of the natural landscape; or
    d. Greater than or equal to one acre in size, unless the artificial wetland was constructed, and is currently used and maintained, primarily for one or more of the following purposes (i.e., the following artificial wetlands are not waters of the state unless they also satisfy the criteria set forth in 2, 3a, or 3b):
        i. Industrial or municipal wastewater treatment or disposal,
        ii. Settling of sediment,

iii. Detention, retention, infiltration, or treatment of stormwater runoff and other pollutants subject to regulation under a municipal construction, or industrial stormwater permitting program,
iv. Treatment of surface waters,
v. Agricultural crop irrigation or stock watering,
vi. Fire suppression,
vii. Industrial processing or cooling,
viii. Active surface mining 0 even if the site is managed for interim wetlands functions and values,
ix. Log storage,
x. Treatment, storage, or distribution of recycle water, or
xi. Maximizing groundwater recharge (this does not include wetlands that have incidental groundwater recharge benefits); or
xii. Fields flooded for rice growing.

All artificial wetlands that are less than an acre in size and do not satisfy the criteria set forth in 2, 3.a, 3.b, or 3.c are not waters of the state. If an aquatic feature meets the wetland definition the burden is on the applicant to demonstrate that the wetland is not a water of the state.

1.3 State Criteria for Performing Wetland Delineations

The *State Policy for Water Quality Control: State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* sets the following criteria for wetland delineation:

– The permitting authority shall rely on any wetland area delineation from a final aquatic resources report verified by the USACE for the purposes of determining the extent of wetland WOTUS.
– A delineation of any wetland areas potentially impacted by the project that are not delineated in a final aquatic resources report verified by the USACE shall be performed using the methods described in the three federal documents listed below (collectively referred to as “1987 Manual and Supplements” to determine whether the area meets the state definition of a wetland as defined above.
  - Environmental Laboratory. 1987. U.S. Army Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1. U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
  - U.S. Army Corps of Engineers. 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). ed. J.S. Wakely, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-08-28. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
  - U.S. Army Corps of Engineers. 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountain, Valleys, and Coast Region (Version 2.0). ed. J.S. Wakely, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-10-3. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

2. Area of Interest

The human-made linear drainage ditch located in a west-to-east orientation on the site is hereafter referred to as the Area of Interest (AOI, [Attachment 1, Figure 1]). During the August 12, 2021 field survey, some hydrophytic vegetation was observed growing within the AOI. Specifically, willow (*Salix* sp.), Fremont cottonwood (*Populus fremontii*), tall flatsedge (*Cyperus eragrostis*), and an unidentified rush (*Juncus* sp.) were observed near the culvert at the eastern edge of the field.

3. Desktop Review

Prior to conducting the on-site wetland determination, GHD reviewed available online resources to gather information related to the potential presence of a wetland on-site. This included an examination of the United States Fish and Wildlife Service's (USFWS) National Wetland Inventory (NWI) maps, Federal Emergency Management Agency (FEMA) floodplain maps, Natural Resources Conservation Service (NRSC) soil maps, and current and historic aerial imagery.

The NWI map (Attachment 2) does not show the presence of a wetland located within or immediately adjacent to the AOI. The FEMA floodplain map (Attachment 3) shows that the AOI does not occur within a flood hazard zone. The NRCS soil map (Attachment 4) shows that the AOI is comprised of Natomas loam, 0 to 2 percent slopes. The NRCS' Custom Soil Report and the Soil Data Access (SDA) Hydric Soil List confirmed that Natomas loam is not listed as a hydric soil. Only the northernmost area of the larger field adjacent to the AOI has the presence of hydric soils (Americanos-Urban land complex, 0 to 2 percent slopes).

Historic aerial imagery from 1947, 1957, and 1964 (viewed on historicaerials.com) shows that the AOI and adjacent areas were primarily used for agricultural activities. The AOI is observable on each of these images suggesting that it was created to direct water related to these activities. Between 1966 and 1993, a facility was initially constructed to the west of the AOI and expanded over the subsequent decades. The AOI was likely left in place for rain or floodwater drainage from the facility. Further, between 1966 and 1993, development occurred east and south of the AOI. Between 2002 and 2005, additional buildings were constructed immediately east of the AOI.

4. Field Survey

GHD performed the on-site wetland and waters determination on September 23, 2021. The on-site determination was led by Kevin Janni and Elizabeth Meisman. Photographs of the AOI are provided in Attachment 5, specifically Photo 1 and Photo 2, and Wetland Determination Data forms are provided in Attachment 6. Four Sample Points were taken across the AOI (Attachment 1, Figure 2).

Sample Point 1 was taken near a culvert located on the eastern-most portion of the AOI where a large Gooding's Willow (*Salix gooddingii*) occurs alongside Fremont cottonwood. Gooding's Willow is classified as a Facultative Wetland (FACW) plant (i.e., usually occurs in wetlands, but occasionally found in non-wetlands). Fremont cottonwood does not have a wetland indicator designation and would therefore be treated as a non-wetland plant. A soil pit was dug in this location that revealed the presence of a depleted matrix (following the Munsell Soil Color Chart, 60% 7.5 YR 2.5/1; 40% 7.5 YR 4/6), an indicator of hydric soils. However, no primary or secondary indicators of hydrology were observed. Because Sample Point 1 does not meet the three parameter criteria outlined in the USACE's 1987 Manual and Supplements (the SWRCB's required methodology) it would not be considered a wetland.

An adjacent upland location (Sample Point 2) was taken primarily to get a broader understanding of the soil on-site. At this location soil was heavily compacted and a soil pit could not be excavated beyond a few inches deep. Following the NRCS Soil Report (Attachment 4), this soil is would not be classified as a hydric soil. No hydrophytic plants or hydrologic indicators were observed at this Sample Point.

Sample Point 3 was taken where a few individuals of tall flatsedge were observed in non-dominant density. A soil pit was excavated, but the observed soil was identical to Sample Point 2. No evidence of hydrologic indicators was observed. Perennial ryegrass (*Lolium perenne*) was observed as the dominant herbaceous vegetation. Perennial ryegrass is classified as a Facultative (FAC) plant (i.e., equally likely to occur in wetlands or non-wetlands). Because Sample Point 3 does not meet the three parameter criteria outlined in the USACE's 1987 Manual and Supplements (the SWRCB's required methodology) it would not be considered a wetland.

Sample Point 4 was taken near a culvert at the western-most extent of the AOI. No hydrophytic vegetation was observed at this location, the soil was identical to those observed at Sample Point 2 and Sample Point 3, and no indicators of hydrology were observed. Because Sample Point 4 does not meet the three parameter criteria outlined in the USACE's 1987 Manual and Supplements (the SWRCB's required methodology) it would not be considered a wetland.

Because the AOI was determined to be a non-wetland, GHD also made consideration of the linear drainage ditch as a surface water. Following USACE guidance (RGL No. 05-05), the following physical characteristics should be considered when making an OHWM determination, to the extent that they can be identified and are deemed reasonably reliable:

- Natural line impressed on the bank
- Shelving
- Changes in the character of soil
- Destruction of terrestrial vegetation
- Presence of litter and debris
- Wracking
- Vegetation matted down, bent, or absent
- Sediment sorting
- Leaf litter disturbed or washed away
- Scour
- Deposition
- Multiple observed flow events
- Bed and banks
- Water staining
- Change in plant community

The AOI was completely vegetated, and no evidence of the above physical characteristics was observed. There was no natural line impressed on the bank, shelving, destruction of terrestrial vegetation, presence of litter and debris, wracking, vegetation matted down, bent or absent, sediment sorting, leaf litter disturbed or washed away, scour, deposition, or water staining. While there was some hydrophytic vegetation observed at the eastern-most portion of the AOI, near a culvert (Sample Point 1), this vegetation comprises a *de minimis* portion of the entire AOI and should not be considered a true "change in plant community." Likewise, regarding "changes in the character of the soil," the hydric soil observed at Sample Point 1 only extends to approximately six (6) feet west of the culvert and the remainder of the soils observed throughout the AOI did not have characteristics of hydric soils.

Considering the analysis of historical aerial imagery and on-site observations, the linear drainage ditch is a historic relic of past land use and does not appear to convey water consistently or at any duration sufficient to develop an OHWM.

5. Regulatory Analysis

As described in Section 1.3 above, GHD followed California's guidance for determining the presence of a wetland. The State of California requires that a delineation of any wetland areas potentially impacted by the project, that are not delineated in a final aquatic resources report verified by the USACE, shall be performed using the methods described in the USACE's 1987 Manual and Supplements. GHD's observations determined that the AOI does not fit the three-parameter criteria of a wetland as outlined in the 1987 Manual and Supplements; subsequently, it would not be considered a "natural wetland," a "wetland created by modification of a surface water of the state," nor a "artificial wetland," as discussed in Section 1.2 above.

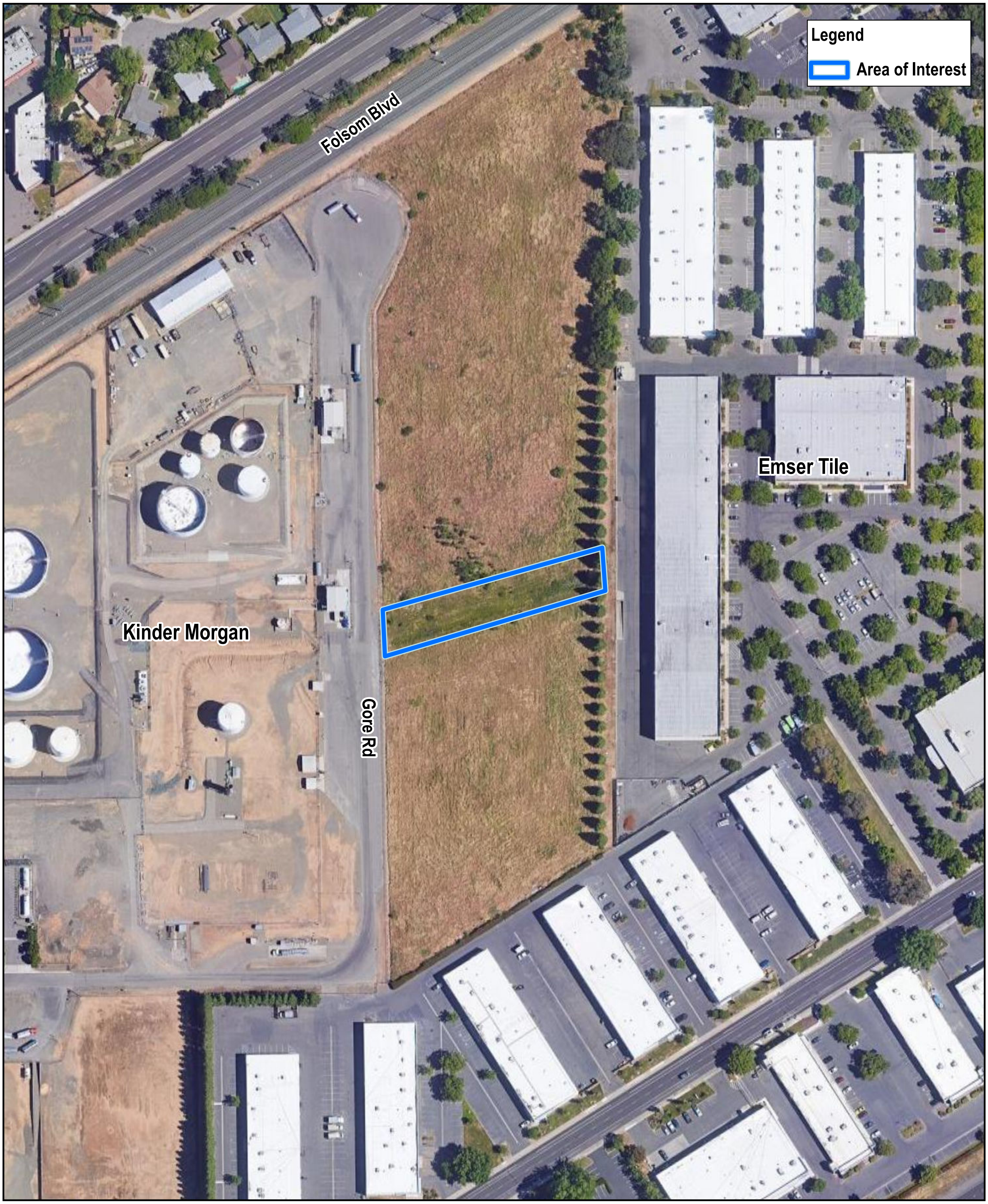
With consideration of the State definition of a wetland, the absence of hydrology throughout the AOI and the presence of hydric soil found only in a small area near the eastern-most culvert suggests that the area does not have continuous or recurrent saturation of the upper substrate caused by groundwater or shallow surface water. Because of the absence of this characteristic, anaerobic conditions in the upper substrate have not developed. Further, the AOI is not dominated by hydrophytes.

6. Conclusions

The presence of a wetland meeting the USACE three-parameter criteria and the SWRCB definition of a wetland was not observed within the AOI during GHD's on-site survey. Further, no physical characteristics of an OHWM were observed within the linear drainage ditch. Observations made on-site are supported by desktop resources that show the absence of NWI mapped wetlands and NRCS mapped hydric soils. The AOI does not occur within a floodplain which suggests that prolonged flooding does not occur; therefore, wetland soils and hydrophytic vegetation are unlikely to adapt to those conditions.

Attachment 1

Figures



Paper Size ANSI A

0 50 100 150 200

Feet

N

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California II FIPS 0402 Feet

GHD

BRADSHAW TERMINAL RENEWABLE BY RAIL
SACRAMENTO COUNTY, CALIFORNIA

Project No. **12555811**
Revision No. **-**
Date **Sep 29, 2021**

AREA OF INTEREST

FIGURE 1

Q:\GIS\PROJECTS\12555000s\12555811\Layouts\MISC001\12555811_01_AreaofInterest.mxd
Print date: 29 Sep 2021 - 12:54

Data source: Google Satelite Imagery

Paper Size ANSI A

0 10 20 30 40

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California II FIPS 0402 Feet

N

GHD

BRADSHAW TERMINAL RENEWABLE BY RAIL
SACRAMENTO COUNTY, CALIFORNIA

WETLAND DETERMINATION
SAMPLE POINTS

Project No. **12555811**
Revision No. **-**
Date **Sep 29, 2021**

FIGURE 2

Q:\GIS\PROJECTS\12555000s\12555811\Layouts\MISC001\12555811_02_WetlandDeterminationSamplePoints.mxd
Print date: 29 Sep 2021 - 14:17

Data source: Google Satelite Imagery.

Attachment 2

National Wetland Inventory Map

U.S. Fish and Wildlife Service
National Wetlands Inventory

Wetland Determination at Bradshaw Rail

October 1, 2021

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

Attachment 3

FEMA Floodplain Map

National Flood Hazard Layer FIRMette

FEMA

121°20'25"W 38°34'28"N

121°19'47"W 38°34'N

Feet 1:6,000

0 250 500 1,000 1,500 2,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- B 20.2 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- 8 Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 10/1/2021 at 11:16 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Attachment 4

NRCS Custom Soil Report

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Sacramento County, California

Rancho Cordova

September 21, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Soil Map

Map Scale: 1:2,780 if printed on A portrait (8.5" x 11") sheet.

Meters: 0 40 80 160 240

Feet: 0 100 200 400 600

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Sacramento County, California
Survey Area Data: Version 19, May 29, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 12, 2019—Jun 1, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
102	Americanos-Urban land complex, 0 to 2 percent slopes	0.3	2.7%
181	Natomas loam, 0 to 2 percent slopes	10.1	90.4%
227	Urban land	0.8	6.9%
Totals for Area of Interest		**11.1**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Sacramento County, California

102—Americanos-Urban land complex, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hhl8
Elevation: 30 to 110 feet
Mean annual precipitation: 18 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 275 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Americanos and similar soils: 65 percent
Urban land: 30 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Americanos

Setting

Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 36 inches: silt loam
H3 - 36 to 54 inches: silt loam
H4 - 54 to 62 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 54 to 62 inches to duripan
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3c
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Urban Land

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8
Hydric soil rating: No

Minor Components

Natomas

Percent of map unit: 3 percent
Hydric soil rating: No

Rossmoor

Percent of map unit: 1 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Hydric soil rating: Yes

Unnamed

Percent of map unit: 1 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Hydric soil rating: Yes

181—Natomas loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hhnt
Elevation: 50 to 180 feet
Mean annual precipitation: 17 to 23 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 275 to 300 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Natomas and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Natomas

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 17 inches: loam

H2 - 17 to 33 inches: loam
H3 - 33 to 78 inches: clay loam
H4 - 78 to 84 inches: stratified gravelly coarse sandy loam to sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.3 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 3c
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Americanos

Percent of map unit: 5 percent
Hydric soil rating: No

Kimball

Percent of map unit: 4 percent
Hydric soil rating: No

San joaquin

Percent of map unit: 4 percent
Hydric soil rating: No

Unnamed, brown subsoil

Percent of map unit: 2 percent
Hydric soil rating: No

227—Urban land

Map Unit Composition

Urban land: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Typical profile

H1 - 0 to 6 inches: variable

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8
Hydric soil rating: No

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Attachment 5

Site Photographs

Site Photographs

Photo 1 View of Area of Interest facing east, near Sample Point 4

Photo 2 View of Area of Interest facing west, near Sample Point 4

Photo 3 View of culvert at east end of the Area of Interest located behind large Willow tree

Photo 4 View of culvert at west end of the Area of Interest near fence line shown on Photo 2

Photo 5 Representative view of upland habitat adjacent to the Area of Interest

Attachment 6

Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bradshaw Terminal City/County: Rancho Cordova/Sacramento Sampling Date: 9/23/21

Applicant/Owner: SFPP State: CA Sampling Point: 1

Investigator(s): Kevin Janni & Elizabeth Meisman Section, Township, Range: Section 34, Township 8 North, Range 6 East

Landform (hillslope, terrace, etc.): drainage ditch Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): California Lat: 38°34'18.72"N Long: 121°19'55.42"W Datum: NAD83

Soil Map Unit Name: Natomas loam, 0-2 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?	✓	
Wetland Hydrology Present?		✓

Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks:

Sample point taken a eastern-most portion of AOI near culvert.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30-foot)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix gooddingii	60	Y	FACW
2. Populus fremontii	15	N	UPL
3. Sequoia sempervirens	15	N	UPL
4.			
	90	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15-foot)			
1. Baccharis pilularis	5	Y	UPL
2.			
3.			
4.			
5.			
	5	= Total Cover	
Herb Stratum (Plot size: 15-foot)			
1. Cynodon dactylon	10	Y	FACU
2. Lolium perenne	5	Y	FAC
3. Avena fatua	5	Y	UPL
4. Paspalum dilatatum	5	Y	FAC
5. Digitara ischaemum	5	Y	FACU
6.			
7.			
8.			
	30	= Total Cover	
Woody Vine Stratum (Plot size: 15-foot)			
1. None			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 70 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 42 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	60	x 2 =	120
FAC species	10	x 3 =	30
FACU species	15	x 4 =	60
UPL species	40	x 5 =	200
Column Totals:	125 (A)		410 (B)

Prevalence Index = B/A = 3.28

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

No dominance of hydrophytic vegetation observed.

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 2.5/1	100					loam	
6-18	7.5YR 2.5/1	60	7.5YR 4/6	40	RM	M	loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes ✓ No ______

Remarks:

Soil at this sample point was very soft and easy to excavate.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ____________

Water Table Present? Yes ______ No ✓ Depth (inches): ____________

Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ____________

Wetland Hydrology Present? Yes ______ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No indicators of hydrology observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bradshaw Terminal City/County: Rancho Cordova/Sacramento Sampling Date: 9/23/21

Applicant/Owner: SFPP State: CA Sampling Point: 2

Investigator(s): Kevin Janni & Elizabeth Meisman Section, Township, Range: Section 34, Township 8 North, Range 6 East

Landform (hillslope, terrace, etc.): flat herbaceous habitat Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): California Lat: 38°34'18.48"N Long: 121°19'55.65"W Datum: NAD83

Soil Map Unit Name: Natomas loam, 0-2 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓

Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks:

Herbaceous upland sample point adjacent to Sample Point 1.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30-foot)	Absolute % Cover	Dominant Species?	Indicator Status
1. None			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: 15-foot)			
1. None			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 15-foot)			
1. Cynodon dactylon	60	Y	FACU
2. Avena fatua	15	N	UPL
3. Digitara ischaemum	10	N	FACU
4. Lactuca serriola	5	N	FACU
5.			
6.			
7.			
8.			
= Total Cover	90		
Woody Vine Stratum (Plot size: 15-foot)			
1. None			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species	75	x 4 =	300
UPL species	15	x 5 =	75
Column Totals:	90 (A)		375 (B)

Prevalence Index = B/A = 4.17

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

No hydrophytic vegetation observed.

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-5	7.5YR 4/4	100					Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ✓

Remarks:

Heavily compacted soils. Unable to excavate deeper than 5-inches using hand shovel. No hydric soil characteristics observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ______ Depth (inches): ______

Water Table Present? Yes ______ No ______ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No ______ Depth (inches): ______

Wetland Hydrology Present? Yes ______ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No evidence of hydrology observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bradshaw Terminal City/County: Rancho Cordova/Sacramento Sampling Date: 9/23/21

Applicant/Owner: SFPP State: CA Sampling Point: 3

Investigator(s): Kevin Janni & Elizabeth Meisman Section, Township, Range: Section 34, Township 8 North, Range 6 East

Landform (hillslope, terrace, etc.): drainage ditch Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): California Lat: 38°34'18.46"N Long: 121°19'56.53"W Datum: NAD83

Soil Map Unit Name: Natomas loam, 0-2 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	✓	
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓
Is the Sampled Area within a Wetland?		✓

Remarks:

Sample point lacks hydric soils and wetland hydrology.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30-foot)			
1. None			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: 15-foot)			
1. None			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 15-foot)			
1. Lolium perenne	70	Y	FAC
2. Lactuca serriola	5	N	FACU
3. Rumex crispus	5	N	FAC
4. Rubus armeniacus	5	N	FAC
5.			
6.			
7.			
8.			
= Total Cover	85		
Woody Vine Stratum (Plot size: 15-foot)			
1. None			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species	80	x 3 = 240
FACU species	5	x 4 = 20
UPL species		x 5 =
Column Totals:	85 (A)	260 (B)

Prevalence Index = B/A = 3.06

Hydrophytic Vegetation Indicators:

- ✓ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

Passes dominance test for hydrophytic vegetation.

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-5	7.5YR 4/4	100					Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ______ **No** ✓

Remarks:

Heavily compacted soils. Unable to excavate deeper than 5-inches using hand shovel. No hydric soil characteristics observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ______ Depth (inches): ______

Water Table Present? Yes ______ No ______ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No ______ Depth (inches): ______

Wetland Hydrology Present? **Yes** ______ **No** ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No evidence of hydrology observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bradshaw Terminal City/County: Rancho Cordova/Sacramento Sampling Date: 9/23/21

Applicant/Owner: SFPP State: CA Sampling Point: 4

Investigator(s): Kevin Janni & Elizabeth Meisman Section, Township, Range: Section 34, Township 8 North, Range 6 East

Landform (hillslope, terrace, etc.): drainage ditch Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): California Lat: 38°34'17.75"N Long: 121°19'59.27"W Datum: NAD83

Soil Map Unit Name: Natomas loam, 0-2 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓
Is the Sampled Area within a Wetland?		✓

Remarks:

Sample Point taken at western-most portion of AOI near culvert.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30-foot)	Absolute % Cover	Dominant Species?	Indicator Status
1. None			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: 15-foot)			
1. None			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 15-foot)			
1. Lolium perenne	45	Y	FAC
2. Digitara ischaemum	25	Y	FACU
3. Lactuca serriola	10	N	FACU
4. Epilobium brachycarpum	5	N	FAC
5.			
6.			
7.			
8.			
= Total Cover	85		
Woody Vine Stratum (Plot size: 15-foot)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species	50	x 3 = 150
FACU species	35	x 4 = 140
UPL species		x 5 =
Column Totals:	85 (A)	290 (B)

Prevalence Index = B/A = 3.41

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

No dominance of hydrophytic vegetation observed.

SOIL

Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	7.5YR 4/4	100					Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes ______ No ✓

Remarks:

No characteristics of hydric soils observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ______ No ______ Depth (inches): ____________

Water Table Present? Yes ______ No ______ Depth (inches): ____________

Saturation Present? (includes capillary fringe) Yes ______ No ______ Depth (inches): ____________

Wetland Hydrology Present? Yes ______ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No evidence of hydrology observed.

Bradshaw Terminal Renewable Diesel & Bio by Rail

Drainage Analysis
Project No. 12555811

February 2022

Prepared for:
Kinder Morgan
1001 Louisiana Street, Suite 1000
Houston, TX 77002

Prepared By:

REGISTERED PROFESSIONAL ENGINEER
ERIK D. FANSELAU
Erik Fanselau
No. 64814
Exp. 6-30-23
★ CIVIL ★
STATE OF CALIFORNIA

Erik Fanselau 2/28/22

Erik Fanselau, PE Date

Table of Contents

Figures

Tables

Appendices

1. Introduction

The purpose of this drainage analysis is to assess the hydrologic and hydraulic characteristics of the modifications to the existing Kinder Morgan petroleum facility located at the southeast corner of the intersection of Bradshaw Road and Folsom Boulevard in Rancho Cordova, California. This facility is approximately 31 acres and consists of petroleum storage tanks, fuel truck loading racks, and related support facilities. The purpose of the project is to expand the use of the facility by adding two new storage tanks, additional fuel truck loading facilities, and new rail car unloading tracks. A new track will branch off of the Union Pacific track and run into the facility and split into two separate unloading tracks. Additional street paving will also be added to support the additional truck traffic.

Figure 1 - Project Location Map

2. Existing Conditions

The existing site is surrounded by developed area and discharges to the City drainage system. For the most part, drainage flows from east to west across the project site. The onsite drainage system consists of a series of ditches, pipes, culverts, and inlets. GHD used existing plans as well as the City website to determine the locations of existing drainage facilities. The onsite system connects to the City system on Bradshaw Road with a 42-inch pipe. This includes the business park to the east that drains to the project site. It is estimated that this offsite shed is approximately 18 acres and discharges to the existing ditch on the project site. Approximately 75% of the site is developed with a combination of tanks, equipment, gravel, and pavement. The remaining portion of the site is undeveloped with an open ditch in the middle of the shed. A SWPPP was previously prepared for other recent site improvements. This SWPPP was created by Arcadis and will be amended for the new project. See Appendix C for a summary of the onsite and offsite culverts.

Based on information provided by Caltrans, the site is located within the Sherman Lake-Sacramento River watershed and Lake Greenhaven subwatershed. The hydrologic area is Morrison Creek. The annual average precipitation is 18.11 inches and the site is also approximately 2000 feet south of the American River. See Appendix E for the Existing Shed Map.

3. Proposed Conditions

The proposed project will increase the amount of impervious pavement by approximately 1.6 acres. However, the overall drainage patterns will not change. The track construction will also require the extension of the existing culvert located in the large ditch in the eastern portion of the property. For the purposes of this analysis, the track structure will be evaluated as pervious material as it will consist of a ballasted section.

Two new tanks will be added to the main tank storage area with respective capacities of 15,000 BBL and 80,000 BBL. Both of the tanks will be located within a containment berm area that prevents the release of the stored product in the event of a failure. The Terminal operates under a Spill Prevention, Control, and Countermeasures Plan approved by the State of California. This also effects the drainage runoff in this shed (P4). In peak storm events there is a culvert with a valve that can be manually opened by an employee to release flows into the adjacent site. From discussions with maintenance staff, these valves are opened infrequently. Shed P10 has a similar situation with a containment berm and valve release. Runoff predominantly infiltrates into ground due to the gravel surface cover although in peak storm events.

A concrete pad will be constructed between the two unloading tracks. This will support the equipment installation for the unloading of the product. The shed delineation for the new track construction was centered on the track for the single track section and between the two tracks for the two track section. This is due to the fact that the track is elevated above adjacent ground and crowned so runoff flows away from the track structure. See Appendix F for the Proposed Shed Map.

4. Floodplain Impact Analysis

The project area is shown in the FEMA FIRM map 06067C0205H dated August 16, 2012. The project is located in Zone X which is defined as areas of minimal flood hazard. As a result, the FEMA designated floodplain would not be negatively impacted by the proposed project.

5. Geotechnical Conditions

A geotechnical analysis for the site was prepared by Ninyo & Moore. Their investigation found the onsite soils consisted of "very dense silty sand, clayey sand, well/poorly graded gravel, and stiff to hard lean clay with sand". Groundwater was not encountered during the subsurface exploration but was estimated to be around 52 feet from a nearby monitoring well. The seismic considerations for the site include strong ground motion. Additional research was performed by reviewing information provided by NRCS. The predominant hydrologic group classification is C. See Appendix D for the soil information.

6. Water Quality

Temporary erosion control measures will be used during construction. As previously mentioned, the site operates under a current SWPPP approved by the State, which will be amended for this project. Due to the total increased impervious area being larger than one acre, permanent water quality treatment will be required. However, hydromodification mitigation will not be required as this area is exempt due to the high level of developed area. The preferred solution for water quality treatment for this project will be a vegetated swale. This swale will be constructed along a portion of the track-side ditch on the east side of the rail car unloading area. This will not capture 100% of the new impervious area but will provide the greatest tributary area for the new pavement. It should also be noted that the discharge from the vegetated swale will be to the existing undeveloped area adjacent to the ditch. This will provide additional treatment and flow dissipation.

The swale was modeled in Hydraflow Express in Civil 3D. The initial design for this swale will be 65 ft long, with a 2-foot bottom width, 3:1 side slopes, 0.5% slope, and 1-ft deep although the depth of flow will only be 2.4 inches. The Water Quality Flow for this area was calculated to be 0.08 cfs based on the design intensity of 0.18 in/hr as provided in the Stormwater Quality Design Manual for the Sacramento Region.

7. Calculations

For this analysis it was determined that the Nolte method was appropriate to calculate the peak flows based on the criteria in the Sacramento City/County Drainage Manual. This methodology is appropriate given that the project site is in a heavily developed area. This methodology requires the impervious to be determined and is one of the inputs for the SacCalc calculations. For the proposed project calculations additional sheds were delineated and the imperviousness adjusted to reflect the new project features. The flows were calculated using the SacCalc software and the results are shown in Appendix G and H.

Pipe and ditch calculations were performed using Hydraflow Express within the Civil 3D 2020 software. The software uses Manning's equation to perform pipe and ditch capacity calculations. Note that the minimum pipe size used for this project was an 18-inch diameter for maintenance purposes. See Appendix I for the swale calculation.

Table 1 – Existing Conditions Peak Flow

Shed	Area (sf)	Area (ac)	% Imperviousness	Nolte Flow (cfs)
X1	31306	0.72	50	0.12
X2	37096	0.85	90	0.44
X3	4829	0.11	50	0.02
X4	174858	4.01	50	0.68
X5	56609	1.30	50	0.22
X6	55617	1.28	90	0.67
X7	19657	0.45	50	0.08
X8	15888	0.36	50	0.06
X9	210711	4.84	50	0.82
X10	45684	1.05	50	0.18
X11	66203	1.52	50	0.26
X12	135965	3.12	50	0.53
X13	16403	0.38	90	0.20
X14	479462	11.01	20	2.00
O-1	784080	18.00	90	9.08
Total		**49.00**		**15.36**

Table 2 – Proposed Conditions Peak Flow

Shed	Area (sf)	Area (ac)	% Imperviousness	Nolte Flow (cfs)
P1	31306	0.72	50	0.12
P2	37096	0.85	90	0.44
P3	4829	0.11	50	0.02
P4	174858	4.01	60	1.03
P5	56609	1.30	50	0.22
P6	55617	1.28	90	0.67
P7	19657	0.45	50	0.08
P8	15888	0.36	50	0.06
P9	210711	4.84	50	0.82
P10	45684	1.05	50	0.18
P11	66203	1.52	50	0.26
P12	135457	3.11	50	0.53
P13	12268	0.28	90	0.15
P14	121419	2.79	30	0.47
P15	318032	7.30	30	1.29
P16	6628	0.15	90	0.08
P17	13875	0.32	90	0.17
P18	24304	0.56	90	0.29
O-1	784080	18.00	90	9.08
Total		**49.00**		**15.96**

8. Conclusions

In summary, the proposed project is not expected to adversely impact the onsite or offsite conditions. The portion of the site that is proposed to have new impervious pavement only represents about 5% of the total area. The increase in flow was only 0.6 cfs which is relatively insignificant. Permanent water quality treatment will be incorporated as feasible. A new vegetated swale will be constructed and provide additional treatment.

9. References

Caltrans Water Quality Planning Tool (website)

FEMA FIRM Map,06067C0205H, dated August 16, 2012.

"Geotechnical Evaluation – Kinder Morgan Bradshaw Terminal", Ninyo & Moore, January 28, 2022.

Sacramento City/County Drainage Manual, December 1996.

Stormwater Pollution Prevention Plan – Bradshaw Terminal, Arcadis, WDID No. 5 S34I024070, July 26, 2021

Stormwater Quality Design Manual for the Sacramento Region, July 2018.

USDA – Natural Resources Conservation Service (NRCS), Soil Survey

Appendices

Appendix A Site Plan


FOLSOM BLVD
EXISTIN SacRT
RIGHT-OF-WAY
PROPOSED RAIL
SPUR
CONNECTION
TO EXISTING
UPRR TRACK
80K WORKING
CAP TANK
15K WORKING
CAP TANK
EXISTING
BUSINESS PARK
BRADSHAW ROAD
PROPOSED
RAILS
PROPOSED
TURN ABOUT
EXISTING
BUSINESS PARK
TERMINAL
ENTRANCE
PROPOSED
TRUCK
LOADING RACK
PROPOSED
ROADS

Appendix B FEMA FIRM Map

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was California State Plane Zone II (FIPSZONE 0402). The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by the County of Sacramento Water Resources Department. This information was derived from digital orthophotos produced with 6-inch pixel resolution and 3.3-foot horizontal accuracy from aerial photography dated March 2001.

This map may reflect more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

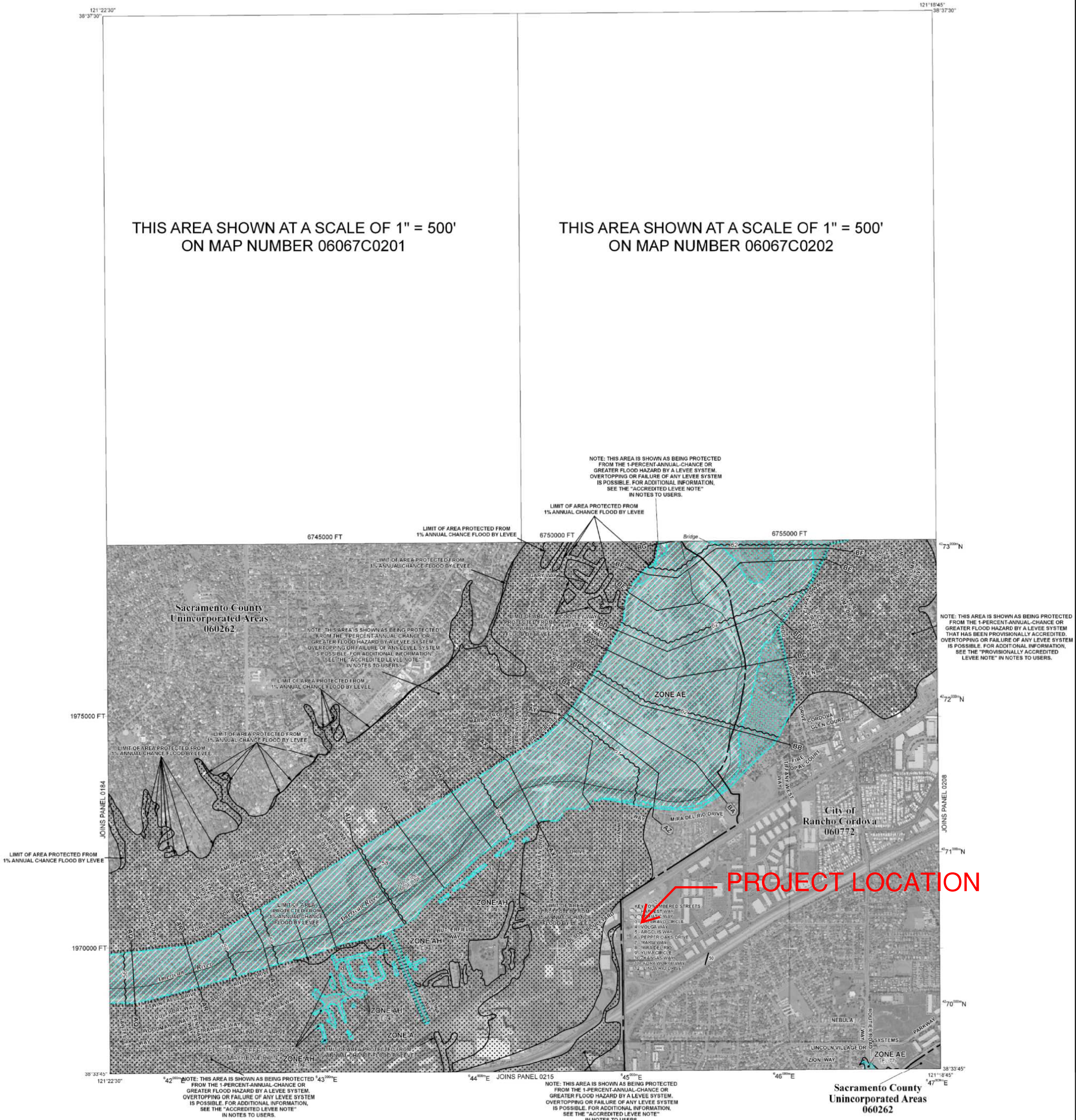
Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information on available products associated with this FIRM visit the **Map Service Center (MSC)** website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have **questions about this map**, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange (FMIX) at **1-877-FEMA-MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.

Accredited Levee Notes to Users: Check with your local community to obtain more information, such as the estimated level of protection provided (which may exceed the 1-percent-annual-chance level) and Emergency Action Plan, on the levee system(s) shown as providing protection for areas on this panel. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit the FEMA Website at http://www.fema.gov/business/nfip/index.shtm.

Provisionally Accredited Levee Notes to Users: Check with your local community to obtain more information, such as the estimated level of protection provided (which may exceed the 1-percent-annual-chance level) and Emergency Action Plan, on the levee system(s) shown as providing protection for areas on this panel. To maintain accreditation, the levee owner or community is required to submit the data and documentation necessary to comply with Section 65.10 of the NFIP regulations by January 26, 2011. If the community or owner does not provide the necessary data and documentation or if the data and documentation provided indicate the levee system does not comply with Section 65.10 requirements, FEMA will revise the flood hazard and risk information for this area to reflect de-accreditation of the levee system. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit the FEMA website at http://www.fema.gov/business/nfip/index.shtm.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary
0.2% annual chance floodplain boundary
Floodway boundary
Zone D boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
Limit of Moderate Wave Action

513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

A — A	Cross section line
23 - - - 23	Transect line
	Culvert, Flume, Penstock or Aqueduct
	Road or Railroad Bridge
	Footbridge
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
4276000mN	1000-meter Universal Transverse Mercator grid values, zone 10
600000 FT	5000-foot grid values: California State Plane coordinate system, zone II (FIPSZONE 0402), Lambert Conformal Conic projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
AUGUST 16, 2012

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

PANEL 0205H

FIRM
FLOOD INSURANCE RATE MAP

SACRAMENTO COUNTY, CALIFORNIA
AND INCORPORATED AREAS

PANEL 205 OF 705

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
RANCHO CORDOVA, CITY OF	060772	0205	H
SACRAMENTO COUNTY	060262	0205	H

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

NATIONAL FLOOD INSURANCE PROGRAM

MAP NUMBER
06067C0205H

EFFECTIVE DATE
AUGUST 16, 2012

Federal Emergency Management Agency

Appendix C Existing Drainage System

Google Earth
42"
36"
12"
42"
12"
15"
???
36"
30"
Bradshaw Rd
Folsom Blvd
Gore Rd
Oates Dr
Kinder Morgan
The Rink
Goodman Distribution Inc
Smile Food Market
Gas station Hunt and sons
Elmira Cir
Allegheny Dr
Escobar Way
Rudway Ct
Capital City Loan & Jewelry Ranchos
Urgent Tires
Juju Korean & BBQ
New World Gift
A & G Cash For Gold
Botanica Shango
Cpm Labs
Green Day Power
Gap2Gap Softball
Sticker Farmer Sacramento
Business Park Dr
VCA Sacramento Veterinary Referral

Appendix D NRCS Soil Information

Engineering Properties

This table gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Hydrologic soil group is a group of soils having similar runoff potential under similar storm and cover conditions. The criteria for determining Hydrologic soil group is found in the National Engineering Handbook, Chapter 7 issued May 2007(http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba). Listing HSGs by soil map unit component and not by soil series is a new concept for the engineers. Past engineering references contained lists of HSGs by soil series. Soil series are continually being defined and redefined, and the list of soil series names changes so frequently as to make the task of maintaining a single national list virtually impossible. Therefore, the criteria is now used to calculate the HSG using the component soil properties and no such national series lists will be maintained. All such references are obsolete and their use should be discontinued. Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonal high water table, saturated hydraulic conductivity after prolonged wetting, and depth to a layer with a very slow water transmission rate. Changes in soil properties caused by land management or climate changes also cause the hydrologic soil group to change. The influence of ground cover is treated independently. There are four hydrologic soil groups, A, B, C, and D, and three dual groups, A/D, B/D, and C/D. In the dual groups, the first letter is for drained areas and the second letter is for undrained areas.

The four hydrologic soil groups are described in the following paragraphs:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Percentage of rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

References:

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Report—Engineering Properties

Absence of an entry indicates that the data were not estimated. The asterisk '*' denotes the representative texture; other possible textures follow the dash. The criteria for determining the hydrologic soil group for individual soil components is found in the National Engineering Handbook, Chapter 7 issued May 2007(http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba). Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Engineering Properties–Sacramento County, California

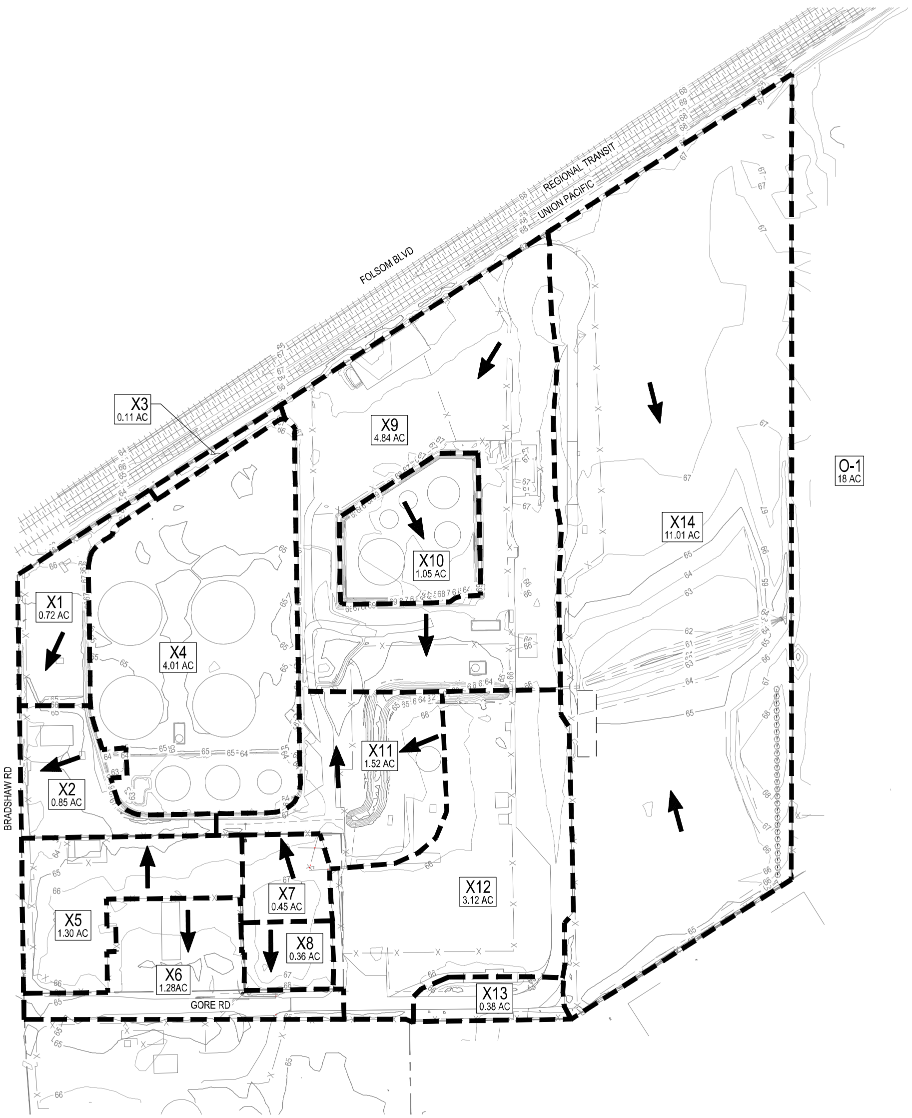
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
102—Americanos-Urban land complex, 0 to 2 percent slopes														
Americanos	65	B	0-8	Silt loam	ML	A-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	95-98-100	75-80-85	25-30-35	NP-5-10
			8-36	Silt loam, loam	ML	A-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	95-98-100	85-90-95	30-35-40	5-8 -10
			36-54	Silt loam, loam	ML	A-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	95-98-100	75-80-85	25-30-35	NP-3 -5
			54-62	Sandy loam	SM	A-2, A-4	0- 0- 0	0- 0- 0	95-98-100	85-90-95	50-55-60	25-35-45	0-7 -14	NP

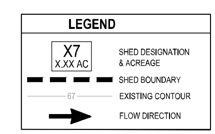
Engineering Properties–Sacramento County, California														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
181—Natomas loam, 0 to 2 percent slopes														
Natomas	85	C	0-17	Loam	CL-ML, CL	A-4, A-6	0- 0- 0	0- 0- 0	100-100-100	95-98-100	80-85-90	50-58-65	25-30-35	5-10-15
			17-33	Loam, clay loam	CL	A-6	0- 0- 0	0- 0- 0	100-100-100	95-98-100	80-85-90	55-65-75	25-30-35	10-15-20
			33-78	Clay loam	CL	A-6	0- 0- 0	0- 0- 0	100-100-100	95-98-100	85-90-95	70-75-80	30-35-40	15-20-25
			78-84	Stratified gravelly coarse sandy loam to sandy loam	SC-SM	A-2, A-4	0- 0- 0	0- 3- 5	65-83-100	60-80-100	45-58-70	25-38-50	25-28-30	5-8 -10
227—Urban land														
Urban land	100		0-6	Variable	—	—	—	—	—	—	—	—	0-7 -14	—

Data Source Information

Soil Survey Area: Sacramento County, California
Survey Area Data: Version 20, Sep 3, 2021

Appendix E Existing Shed Map





No.	Issue	Checked	Approved	Date

Author O. GOODE — Drafting Check E. FANSELAU — Project Manager R. GIBSON

Designer E. FANSELAU — Design Check E. FANSELAU — Project Director

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Client KINDER MORGAN

Project BRADSHAW TERMINAL
RENEWABLE DIESEL AND BIO BY RAIL

Project No.	Date	Scale
12555811	2/10/2022	AS SHOWN

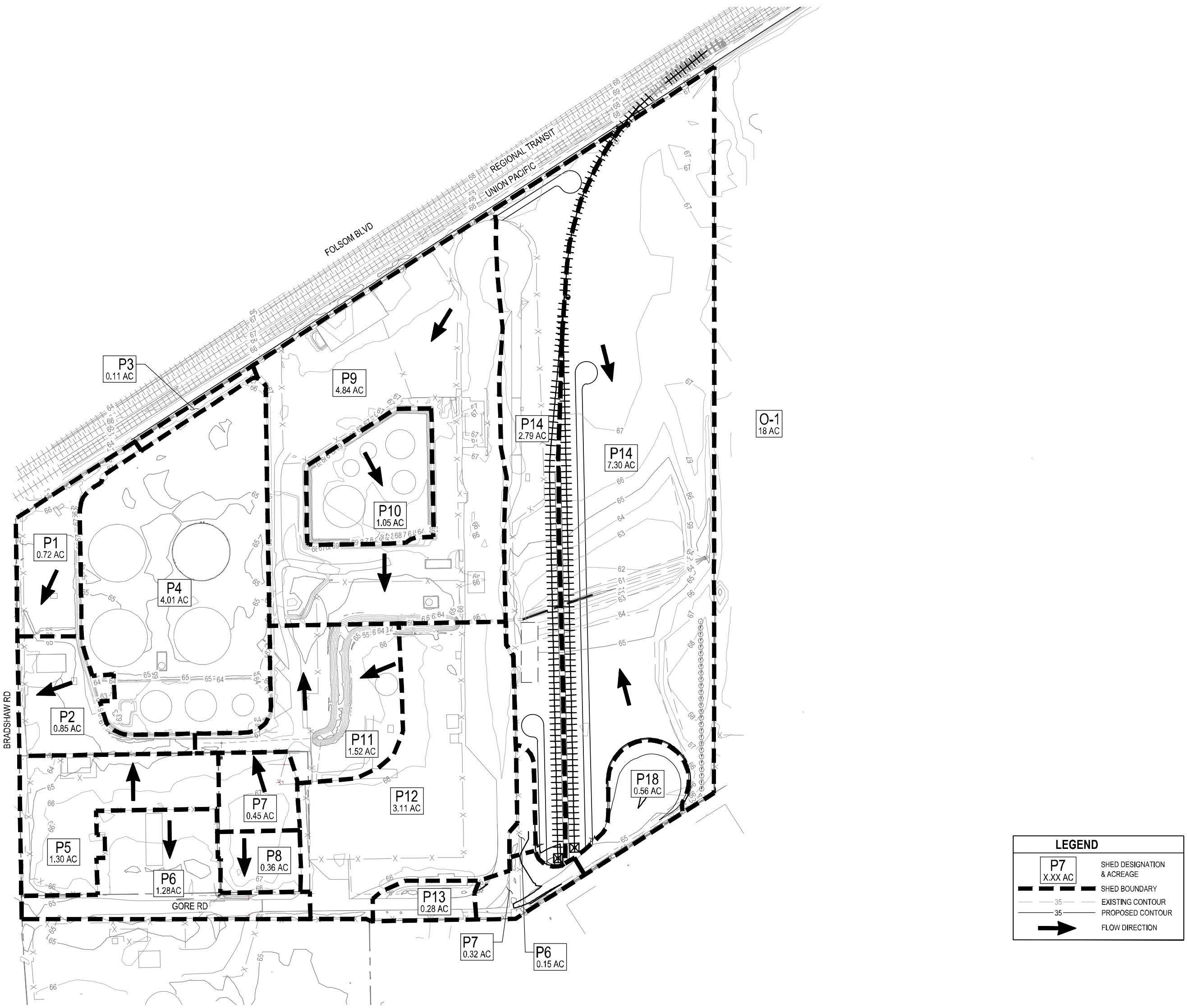
Title **SHED MAP:**
PRE CONSTRUCTION

Size ANSI D

Sheet No. FIGURE 1 — Sheet 1 of 2

Plot Date: 10 February 2022 • 4:21 PM — Plotted By: Owen Goode — Filename: N:\US\Houston\Projects\567\12555811\Tech\Drainage\12555811 KM_DRAINAGE REPORT FIGURES-PRE.dwg

Appendix F Proposed Shed Map



DRAFT

No.	Issue	Checked	Approved	Date

Author O. GOODE | Drafting Check E. FANSELAU | Project Manager R. GIBSON

Designer E. FANSELAU | Design Check E. FANSELAU | Project Director

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Project BRADSHAW TERMINAL
RENEWABLE DIESEL AND BIO BY RAIL

Project No. 12555811 | Date 2/10/2022 | Scale AS SHOWN

Title SHED MAP:
POST CONSTRUCTION

Size ANSI D

Sheet No. FIGURE 2 | Sheet 2 of 2

Plot Date: 10 February 2022 - 4:13 PM | Plotted By: Owen Goode | Filename: N:\US\Houston\Projects\567\12555811\Tech\Drainage\12555811 KM_DRAINAGE REPORT FIGURES-POST.dwg

Appendix G Existing Conditions SacCalc Results

<u>Nolte method results</u>
(Project: Kinder Morgan Existing Conditions)
(Hydrologic zone 3)

ID	Drainage area (acres)	Impervious area (%)	Design Q (cfs)
X2	0.85	90.00	0.44
X1	0.72	50.00	0.12
X4	4.01	50.00	0.68
X7	0.45	50.00	0.08
X5	1.30	50.00	0.22
X6	1.28	90.00	0.67
X8	0.36	50.00	0.06
X9	4.84	50.00	0.82
X10	1.05	50.00	0.18
X11	1.52	50.00	0.26
X12	3.12	50.00	0.53
X13	0.38	90.00	0.20
X14	11.01	20.00	2.00
O-1	18.00	90.00	9.08
X3	0.11	50.00	0.02

Appendix H Proposed Conditions SacCalc Results

Nolte method results
(Project: Kinder Morgan Proposed Conditions)
(Hydrologic zone 3)

ID	Drainage area (acres)	Impervious area (%)	Design Q (cfs)
P2	0.85	90.00	0.44
P1	0.72	50.00	0.12
P4	4.01	60.00	1.03
P7	0.45	50.00	0.08
P5	1.30	50.00	0.22
P6	1.28	90.00	0.67
P8	0.36	50.00	0.06
P9	4.84	50.00	0.82
P10	1.05	50.00	0.18
P11	1.52	50.00	0.26
P12	3.11	50.00	0.53
P13	0.28	90.00	0.15
P14	2.79	30.00	0.47
O-1	18.00	90.00	9.08
P3	0.11	50.00	0.02
P15	7.30	30.00	1.29
P16	0.15	90.00	0.08
P17	0.32	90.00	0.17
P18	0.56	90.00	0.29

Appendix I Water Quality Swale Results

Channel Report

Kinder Morgan Swale

Trapezoidal

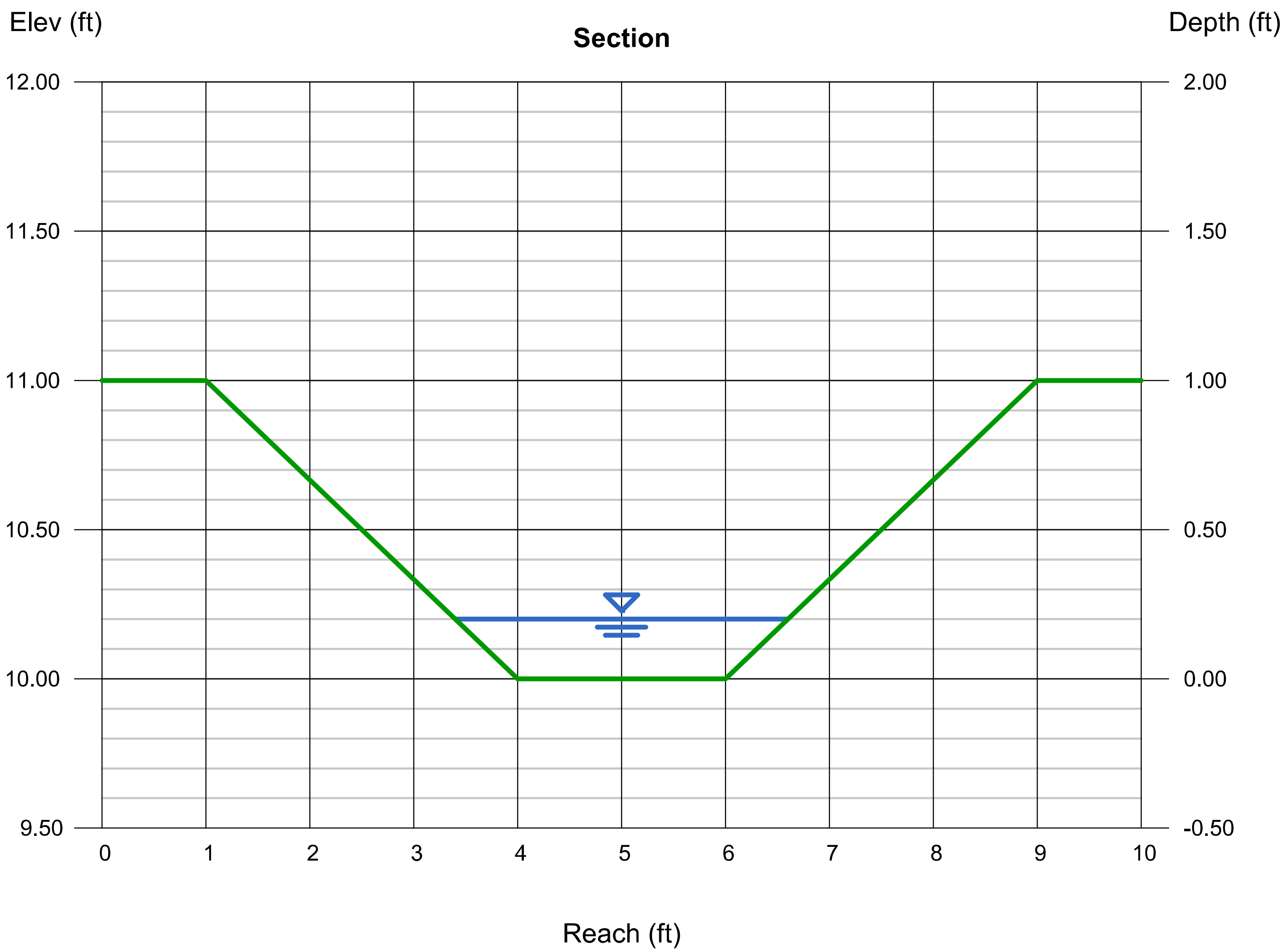
Bottom Width (ft)	=	2.00
Side Slopes (z:1)	=	3.00, 3.00
Total Depth (ft)	=	1.00
Invert Elev (ft)	=	10.00
Slope (%)	=	0.50
N-Value	=	0.200

Calculations

Compute by:		Known Q
Known Q (cfs)	=	0.08

Highlighted

Depth (ft)	=	0.20
Q (cfs)	=	0.080
Area (sqft)	=	0.52
Velocity (ft/s)	=	0.15
Wetted Perim (ft)	=	3.26
Crit Depth, Yc (ft)	=	0.04
Top Width (ft)	=	3.20
EGL (ft)	=	0.20



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BRADSHAW TERMINAL EXPANSION NOISE AND VIBRATION ASSESSMENT

Rancho Cordova, California

April 7, 2022

Prepared for:

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I&R Project: 21-190

INTRODUCTION

Kinder Morgan operates the existing Bradshaw Terminal located in Rancho Cordova, California. The terminal currently receives refined petroleum, biodiesel and blending products through pipelines and trucks for storage and distribution. The objective of this project is to increase the terminals renewable products throughput by designing and constructing new renewable and bio diesel railcar unloading systems, storage tanks, and truck loading systems.

The project involves the design of new rail spurs and unloading equipment on the east side of the terminal limits, with a capacity to offload up to 22 railcars per day. All 22 offloading spots will be capable of offloading Renewable Diesel. Two locations are capable of offloading both Renewable Diesel and B100 Bio diesel. A third location will be dedicated to offload Renewable Diesel but includes a connection for B100 Bio diesel to offload any out of place bio railcars. Renewable diesel will be discharged to a new 80,000-barrel (BBL) storage tank (70,000 BBL working cap), while B100 biodiesel will be stored at either the existing 5,000 BBL B-7 tank, or a new 15,000 BBL tank. The new storage tanks will be installed at the northwest side of the terminal within an existing containment area. The Bradshaw Terminal expansion will also involve construction of a new truck rack capable of loading up to 20,000 BBLs/day of renewable, California Air Resources Board (CARB), and B100 bio diesel through two bays. A new rail spur will be constructed into the terminal that connects to the existing Union Pacific Railroad (UPRR) track located within the existing Sacramento Regional Transit Authority (SacRT) right-of-way immediately north of the terminal. A new railcar run-around track will be constructed off the existing UPRR track in the existing SacRT right-of-way east of the terminal.

This report evaluates the Project's potential to result in significant noise and vibration impacts with respect to applicable California Environmental Quality Act (CEQA) guidelines. The report is divided into two sections: 1) the Setting Section provides a brief description of the fundamentals of environmental noise and vibration, summarizes applicable regulatory criteria, and discusses the results of the ambient noise and vibration monitoring surveys completed to document existing conditions; and, 2) the Impacts and Mitigation Measures Section describes the significance criteria used to evaluate project impacts, provides a discussion of each project impact, and presents mitigation measures, where necessary, to reduce the identified impacts to a less-than-significant level.

SETTING

Fundamentals of Environmental Noise

Noise may be defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. The objectionable nature of sound could be caused by its *pitch* or its *loudness*. *Pitch* is the height or depth of a tone or sound, depending on the relative rapidity (*frequency*) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. *Loudness* is intensity of sound waves combined with the reception characteristics of the ear. Intensity may be compared with the height of an ocean wave in that it is a measure of the amplitude of the sound wave.

In addition to the concepts of pitch and loudness, there are several noise measurement scales which are used to describe noise in a particular location. A *decibel (dB)* is a unit of measurement which indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a ten-fold increase in acoustic energy, while 20 decibels is 100 times more intense, 30 decibels is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10 decibel increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities. Technical terms are defined in Table 1.

There are several methods of characterizing sound. The most common in California is the *A-weighted sound level (dBA).* This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor noise levels in units of dBA are shown in Table 2. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This *energy-equivalent sound/noise descriptor* is called L_{eq}. The most common averaging period is hourly, but L_{eq} can describe any series of noise events of arbitrary duration.

The scientific instrument used to measure noise is the *sound level meter*. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends upon the distance the receptor is from the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dBA.

Since the sensitivity to noise increases during the evening and at night -- because excessive noise interferes with the ability to sleep -- 24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The *Community Noise Equivalent Level* (*CNEL*) is a measure of the cumulative noise exposure in a community, with a 5 dB penalty added to evening (7:00 p.m. - 10:00 p.m.) and a 10 dB addition to nocturnal (10:00 p.m. - 7:00 a.m.) noise levels. The *Day/Night Average Sound Level* (L_{dn}) is essentially the same as CNEL, with the exception that the evening time period is dropped and all occurrences during this three-hour period are grouped into the daytime period.

Effects of Noise

Sleep and Speech Interference

The thresholds for speech interference indoors are about 45 dBA if the noise is steady and above 55 dBA if the noise is fluctuating. Outdoors the thresholds are about 15 dBA higher. Steady noises of sufficient intensity (above 35 dBA) and fluctuating noise levels above about 45 dBA have been shown to affect sleep. Interior residential standards for multi-family dwellings are set by the State of California at 45 dBA L_{dn}. Typically, the highest steady traffic noise level during the daytime is about equal to the L_{dn} and nighttime levels are 10 dBA lower. The standard is designed for sleep and speech protection and most jurisdictions apply the same criterion for all residential uses. Typical structural attenuation is 12-17 dBA with open windows. With closed windows in good condition, the noise attenuation factor is around 20 dBA for an older structure and 25 dBA for a newer dwelling. Sleep and speech interference is therefore possible when exterior noise levels are about 57-62 dBA L_{dn} with open windows and 65-70 dBA L_{dn} if the windows are closed. Levels of 55-60 dBA are common along collector streets and secondary arterials, while 65-70 dBA is a typical value for a primary/major arterial. Levels of 75-80 dBA are normal noise levels at the first row of development outside a freeway right-of-way. In order to achieve an acceptable interior noise environment, bedrooms facing secondary roadways need to be able to have their windows closed, those facing major roadways and freeways typically need special glass windows.

Annoyance

Attitude surveys are used for measuring the annoyance felt in a community for noises intruding into homes or affecting outdoor activity areas. In these surveys, it was determined that the causes for annoyance include interference with speech, radio and television, house vibrations, and interference with sleep and rest. The L_{dn} as a measure of noise has been found to provide a valid correlation of noise level and the percentage of people annoyed. People have been asked to judge the annoyance caused by aircraft noise and ground transportation noise. There continues to be disagreement about the relative annoyance of these different sources. When measuring the percentage of the population highly annoyed, the threshold for ground vehicle noise is about 50 dBA L_{dn}. At a L_{dn} of about 60 dBA, approximately 12 percent of the population is highly annoyed. When the L_{dn} increases to 70 dBA, the percentage of the population highly annoyed increases to about 25-30 percent of the population. There is, therefore, an increase of about 2 percent per dBA between a L_{dn} of 60-70 dBA. Between a L_{dn} of 70-80 dBA, each decibel increase increases by about 3 percent the percentage of the population highly annoyed. People appear to respond more adversely to aircraft noise. When the L_{dn} is 60 dBA, approximately 30-35 percent of the population is believed to be highly annoyed. Each decibel increase to 70 dBA adds about 3 percentage points to the number of people highly annoyed. Above 70 dBA, each decibel increase results in about a 4 percent increase in the percentage of the population highly annoyed.

Fundamentals of Groundborne Vibration

Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several different methods are typically used to quantify vibration amplitude. One method is the Peak Particle Velocity (PPV). The PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. In this report, a PPV descriptor with units of mm/sec or in/sec is used to evaluate construction generated vibration for building damage and human complaints. Table 3 displays the reactions of people and the effects on buildings that continuous or frequent intermittent vibration levels produce. The guidelines in Table 3 represent syntheses of vibration criteria for human response and potential damage to buildings resulting from construction vibration.

Construction activities can cause vibration that varies in intensity depending on several factors. The use of pile driving and vibratory compaction equipment typically generates the highest construction related groundborne vibration levels. Because of the impulsive nature of such activities, the use of the PPV descriptor has been routinely used to measure and assess groundborne vibration and almost exclusively to assess the potential of vibration to cause damage and the degree of annoyance for humans.

The two primary concerns with construction-induced vibration, the potential to damage a structure and the potential to interfere with the enjoyment of life, are evaluated against different vibration limits. Human perception to vibration varies with the individual and is a function of physical setting and the type of vibration. Persons exposed to elevated ambient vibration levels, such as people in an urban environment, may tolerate a higher vibration level.

Structural damage can be classified as cosmetic only, such as paint flaking or minimal extension of cracks in building surfaces; minor, including limited surface cracking; or major, that may threaten the structural integrity of the building. Safe vibration limits that can be applied to assess the potential for damaging a structure vary by researcher. The damage criteria presented in Table 3 include several categories for ancient, fragile, and historic structures, the types of structures most at risk to damage. Most buildings are included within the categories ranging from “Historic and some old buildings” to “Modern industrial/commercial buildings”. Construction-induced vibration that can be detrimental to the building is very rare and has only been observed in instances where the structure is at a high state of disrepair and the construction activity occurs immediately adjacent to the structure.

The annoyance levels shown in Table 3 should be interpreted with care since vibration may be found to be annoying at lower levels than those shown, depending on the level of activity or the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Low-level vibrations frequently cause irritating secondary vibration, such as a slight rattling of windows, doors, or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage.

Railroad and light-rail operations are potential sources of substantial ground vibration depending on distance, the type and the speed of trains, and the type of railroad track. People’s response to ground vibration has been correlated best with the average velocity of the ground. Because the net average of a vibration signal is zero, the Root-mean-square (RMS) amplitude is used to describe smoothed vibration amplitude. Although it is not universally accepted, vibration is commonly expressed in decibel notation using a reference velocity of 1×10^{-6} in./sec. RMS, which equals 0 VdB, and 1 in./sec. equals 120 VdB. The abbreviation “VdB” is used in this document for vibration decibels to reduce the potential for confusion with sound decibels.

Typical background vibration levels in residential areas are usually 50 VdB or lower, well below the threshold of perception for most humans. Perceptible vibration levels inside residences are attributed to the operation of heating and air conditioning systems, door slams and foot traffic. Construction activities, train operations, and street traffic are some of the most common external sources of vibration that can be perceptible inside residences. Table 4 illustrates some common sources of vibration and the association to human perception or the potential for structural damage.

TABLE 1 Definition of Acoustical Terms Used in this Report

Term	Definition
Decibel, dB	A unit describing, the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20 micro Pascals.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro Pascals (or 20 micro Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e. g., 20 micro Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and Ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, L_{eq}	The average A-weighted noise level during the measurement period.
L_{max}, L_{min}	The maximum and minimum A-weighted noise level during the measurement period.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Day/Night Noise Level, L_{dn} or DNL	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 p.m. and 7:00 a.m.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 p.m.to 10:00 p.m. and after addition of 10 decibels to sound levels measured in the night between 10:00 p.m. and 7:00 a.m.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Source: Handbook of Acoustical Measurements and Noise Control, Harris, 1998.

TABLE 2 Typical Noise Levels in the Environment

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110 dBA	Rock band
Jet fly-over at 1,000 feet		
	100 dBA	
Gas lawn mower at 3 feet		
	90 dBA	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	80 dBA	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawn mower, 100 feet	70 dBA	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	60 dBA	
		Large business office
Quiet urban daytime	50 dBA	Dishwasher in next room
Quiet urban nighttime	40 dBA	Theater, large conference room
Quiet suburban nighttime		
	30 dBA	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	20 dBA	
		Broadcast/recording studio
	10 dBA	
	0 dBA	

Source: Technical Noise Supplement (TeNS), California Department of Transportation, September 2013.

TABLE 3 Reaction of People and Damage to Buildings from Continuous or Frequent Intermittent Vibration Levels

Velocity Level, PPV (in/sec)	Human Reaction	Effect on Buildings
0.01	Barely perceptible	No effect
0.04	Distinctly perceptible	Vibration unlikely to cause damage of any type to any structure
0.08	Distinctly perceptible to strongly perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
0.1	Strongly perceptible	Threshold at which there is a risk of damage to fragile buildings with no risk of damage to most buildings
0.25	Strongly perceptible to severe	Threshold at which there is a risk of damage to historic and some old buildings.
0.3	Strongly perceptible to severe	Threshold at which there is a risk of damage to older residential structures
0.5	Severe - Vibrations considered unpleasant	Threshold at which there is a risk of damage to new residential and modern commercial/industrial structures

Source: Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020.

TABLE 4 Typical Levels of Groundborne Vibration

Human/Structural Response	Velocity Level, VdB	Typical Events (50-foot setback)
Threshold, minor cosmetic damage for fragile buildings	100	Blasting from construction projects
		Bulldozers and other heavy tracked construction equipment
Difficulty with tasks such as reading a computer screen	90	
		Commuter rail, upper range
Residential annoyance, infrequent events	80	Rapid transit, upper range
Residential annoyance, occasional events		Commuter rail, typical Bus or truck over bump
Residential annoyance, frequent events	70	Rapid transit, typical
Limit for vibration sensitive equipment, Approximate threshold for human		Bus or truck, typical
	60	
		Typical background vibration
	50	

Source: Transit Noise and Vibration Impact Assessment, US Department of Transportation Federal Transit Administration, September 2018.

Regulatory Background

This section describes the relevant guidelines, policies, and standards established by State Agencies and the City of Rancho Cordova. FTA vibration impact assessment criteria for evaluating vibration impacts associated with transit projects are also described. The State CEQA Guidelines, Appendix G, are used to assess the potential significance of impacts pursuant to local General Plan policies, Municipal Code standards, or the applicable standards of other agencies. A summary of the applicable regulatory criteria is provided below.

State CEQA Guidelines. CEQA contains guidelines to evaluate the significance of effects of environmental noise attributable to a proposed project. Under CEQA, noise impacts would be considered significant if the project would result in:

(a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

(b) Generation of excessive groundborne vibration or groundborne noise levels;

(c) For a project located within the vicinity of a private airstrip or an airport land use plan or where such a plan has not been adopted within two miles of a public airport or public use airport, if the project would expose people residing or working in the project area to excessive noise levels (not applicable).

City of Rancho Cordova General Plan: The Noise Element of the Rancho Cordova General Plan specifies the following regarding construction and operational activities:

Action N.1.4.1 – Limit construction activity to the hours of 7:00 a.m. to 7:00 p.m. weekdays and 8:00 a.m. to 6:00 p.m. weekends when construction is conducted in proximity to residential uses.

Policy N.2.2 - Ensure that operational noise levels of new roadway projects will not result in significant noise impacts.

Action N.2.2.1 - Assess the significance of the noise increase of all roadway improvement projects in existing areas according to the following criteria:

- Where existing traffic noise levels are less than 60 dB L_{dn} at the outdoor activity areas of noise-sensitive uses, a +5 dB L_{dn} increase in noise levels due to roadway improvement projects will be considered significant; and

- Where existing traffic noise levels range between 60 and 65 dB L_{dn} at the outdoor activity areas of noise-sensitive uses, a +3 dB L_{dn} increase in noise levels due to roadway improvement projects will be considered significant; and
- Where existing traffic noise levels are greater than 65 dB L_{dn} at the outdoor activity areas of noise-sensitive uses, a +1.5 dB L_{dn} increase in noise levels due to roadway improvement projects will be considered significant.

Table N-1 and N-2 from the City's General Plan specify the following noise thresholds for new projects that include stationary noise sources (Table N-1) or new noise-sensitive land uses (Table N-2).

Table N-1 City Noise Standards – Noise Level Performance Standards for new projects affected by or including non-transportation noise sources

Stationary Noise Source	Noise Level Descriptor	Daytime Maximum (7 a.m. to 10 p.m.)	Nighttime Maximum (10 p.m. to 7 a.m.)
Typical	Hourly L_{eq}, dB	55	45
Tonal, impulsive, repetitive, or consist primarily of speech or music	Hourly L_{eq}, dB	50	40

The City may impose noise level standards which are more or less restrictive than those specified above based upon determination of existing low or high ambient noise levels.

Table N-2 Maximum Transportation Noise Exposure

Land Use	Outdoor Activity areas[1] L_{dn}/CNEL, dB	Interior Spaces	
		L_{dn}/CNEL, dB	Leq, dB[2]
Residential	60[3]	45	--
Residential subject to noise from railroad tracks, aircraft overflights, or similar noise sources which produce clearly identifiable, discrete noise events (e.g., the passing of a single train)	60[3]	40[5]	--
Transient lodging	60[4]	45	--
Hospitals, nursing homes	60[3]	45	--
Theaters, auditoriums, music halls	--	--	35
Churches, meeting halls	60[3]	--	40
Office buildings	--	--	45
Schools, libraries. Museums	--	--	45
Playgrounds, neighborhood parks	70	--	--

1 *Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use. Where it is not practical to mitigate exterior noise levels at patio or balconies of apartment complexes, a common area such as a pool or recreation area may be designated as the outdoor activity area.*

2 *As determined for a typical worst-case hour during periods of use.*

3 *Where it is not possible to reduce noise in outdoor activity areas to 60 dB Ldn/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB Ldn/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.*

4 *In the case of hotel/motel facilities or other transient lodging, outdoor activity areas such as pool areas may not be included in the project design. In these cases, only the interior noise level criterion will apply.*

5 *The intent of this noise standard is to provide increased protection against sleep disturbance for residences located near railroad tracks.*

Rancho Cordova Municipal Code: The following standards have been established in the Code of Ordinances published by the City of Rancho Cordova.

6.68.070 Exterior Noise Standards

a. The following noise standards, unless otherwise specifically indicated in this chapter, shall apply to all properties within a designated noise area.

Noise Area	County Zoning Districts	Time Period	Exterior Noise Standard
1	RE-1, RD-1, RE-2, RD-2, RE-3, RD-3, RD-4, R-1-A, RD-5, R-2, RD-10, R-2A, RD-20, R-3, R-D-30, RD-40, RM-1, RM-2, A-1-B, AR-1, A-2, AR-2, A-5, AR-5	7 a.m.—10 p.m.	55 dBA
		10 p.m.—7 a.m.	50 dBA

b. It is unlawful for any person at any location within the County to create any noise which causes the noise levels on an affected property, when measured in the designated noise area, to exceed for the duration of time set forth following, the specified exterior noise standards in any one hour by:

Cumulative Duration of the Intrusive Sound	Allowance Decibels
1. Cumulative period of 30 minutes per hour	0
2. Cumulative period of 15 minutes per hour	+ 5
3. Cumulative period of 5 minutes per hour	+10
4. Cumulative period of 1 minute per hour	+15
5. Level not to be exceeded for any time per hour	+20

c. Each of the noise limits specified in subdivision (b) of this section shall be reduced by five dBA for impulsive or simple tone noises, or for noises consisting of speech or music.

d. If the ambient noise level exceeds that permitted by any of the first four noise-limit categories specified in subdivision (b), the allowable noise limit shall be increased in five dBA increments in each category to encompass the ambient noise level. If the ambient noise level exceeds the fifth noise level category, the maximum ambient noise level shall be the noise limit for that category.

6.68.090 Exemptions. The following activities shall be exempted from the provisions of this chapter:

e. Noise sources associated with construction, repair, remodeling, demolition, paving or grading of any real property, provided said activities do not take place between the hours of eight p.m. and six a.m. on weekdays and Friday commencing at eight p.m. through and including seven a.m. on Saturday; Saturdays commencing at eight p.m. through and including seven a.m. on the next following Sunday and on each Sunday after the hour of eight p.m. Provided, however, when an unforeseen or unavoidable condition occurs during a construction project and the nature of the project necessitates that work in process be continued until a specific phase is completed, the contractor or owner shall be allowed to continue work after eight p.m. and to operate machinery and equipment necessary until completion of the specific work in progress can be brought to conclusion under conditions which will not jeopardize inspection acceptance or create undue financial hardships for the contractor or owner;

6.68.120 Machinery, Equipment, Fans and Air Conditioning.

a. It is unlawful for any person to operate any mechanical equipment, pump, fan, air conditioning apparatus, stationary pumps, stationary cooling towers, stationary compressors, similar mechanical devices, or any combination thereof installed after July 1, 1976 in any manner so as to create any noise which would cause the maximum noise level to exceed:

1. Sixty dBA at any point at least one foot inside the property line of the affected residential property and three to five feet above ground level;
2. Fifty-five dBA in the center of a neighboring patio three to five feet above ground level;
3. Fifty-five dBA outside of the neighboring living area window nearest the equipment location. Measurements shall be taken with the microphone not more than three feet from the window opening but at least three feet from any other surface.

b. Equipment installed five years after July 1, 1976 must comply with a maximum limit of fifty-five dBA at any point at least one foot inside the property line of the affected residential property and three to five feet above ground level.

c. Equipment installed before December 17, 1970 must comply with a limit of sixty-five dBA maximum in sound level at any point at least one foot inside the affected property line and three to five feet above ground level by January 1, 1977. Equipment installed between December 16, 1970 and July 1, 1976 must comply with a limit of sixty-five dBA maximum sound level at any point at least one foot inside the property line of the affected residential property and three to five feet above ground level.

Federal Transit Administration (FTA). The City of Rancho Cordova has not identified quantifiable vibration limits that can be used to evaluate vibration levels generated by railroad trains. Although there are no local standards for the allowable vibration in a new residential development, the FTA has developed vibration impact assessment criteria for evaluating vibration impacts associated with transit projects.[1] The FTA has proposed vibration impact criteria, based on maximum overall levels for a single event. The impact criteria for vibration are shown in Table 5. Note that there are criteria for frequent events (more than 70 events of the same source per day), occasional events (30 to 70 vibration events of the same source per day), and infrequent events (less than 30 vibration events of the same source per day).

TABLE 5 Indoor Groundborne Vibration (GBV) Impact Criteria for General Vibration Assessment

Land Use Category	GBV Impact Levels (VdB re 1 µinch/sec, RMS)		
	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]
Category 1 Buildings where vibration would interfere with interior operations.	65 VdB[4]	65 VdB[4]	65 VdB[4]
Category 2 Residences and buildings where people normally sleep.	72 VdB	75 VdB	80 VdB
Category 3 Institutional land uses with primarily daytime use.	75 VdB	78 VdB	83 VdB

1. "Frequent Events" is defined as more than 70 vibration events of the same source per day. Most rapid transit projects fall into this category.
2. "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day. Most commuter trunk lines have this many operations.
3. "Infrequent Events" is defined as fewer than 30 vibration events of the same kind per day. This category includes most commuter rail branch lines.
4. This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. For equipment that is more sensitive, a Detailed Vibration Analysis must be performed.

Source: Transit Noise and Vibration Impact Assessment Manual, Federal Transit Administration, Office of Planning and Environment, U.S. Department of Transportation, FTA Report No. 0123, September 2018.

[1] Transit Noise and Vibration Impact Assessment Manual, Federal Transit Administration, Office of Planning and Environment, U.S. Department of Transportation, FTA Report No. 0123, September 2018.

Existing Noise and Vibration Environment

The project area includes the existing Bradshaw Terminal, owned by Kinder Morgan, and the south side of the Sacramento Regional Transit (SacRT) rail corridor to the east where the run-around track is proposed to be constructed. The area is bounded by Folsom Boulevard, SacRT, and UPRR tracks to the north, Bradshaw Road to the west, commercial uses to the east, and light industrial uses to the south. The primary sources of noise in the area are light-rail and conventional trains along the SacRT rail corridor and vehicular traffic along Folsom Boulevard and Bradshaw Road. Trains are a source of ground vibration near the tracks. Based on a review of the SacRT schedule, about 134 light-rail passenger trains travel along the rail line each weekday between 4:19 a.m. and 11:59 p.m. There are also four unscheduled freight trains per day that utilize the UPRR rail line[2].

Figures 1, 2 and 3 show the overall area and the two sub-areas, respectively, where noise monitoring was conducted. Area A corresponds to the area near the existing terminal and Area B corresponds to the locations near the proposed rail run-around track.

Noise Monitoring Survey

A noise monitoring survey was performed from Wednesday, January 12, 2022, through Wednesday, January 19, 2022. The survey included four long-term (LT) noise measurements and seven short-term (ST) noise measurements to quantify existing ambient noise levels. Long-term noise measurement data is provided in Appendix A.

Measurement position LT-1 was located in Area A, near the northeast corner of the proposed site, and about 90 feet from the centerline of the SacRT railroad tracks and about 65 feet from the center of the UPRR track. This site was selected to characterize the ambient noise levels in the vicinity of the VCA Sacramento Veterinary Referral center. The primary noise source at this location was trains traveling along the adjacent tracks and traffic along Folsom Boulevard. Trains typically generated maximum instantaneous noise levels of 70 to 76 dBA L_{max} at this location, with occasional trains generating maximum instantaneous noise levels as high as 91 dBA L_{max}. Trains sound their horns near road intersections and the higher noise levels are likely associated with closer soundings of the horn. Daytime hourly average noise levels, which included all train activity, ranged from 54 to 78 dBA L_{eq} during the weekdays and 52 to 68 dBA L_{eq} during Saturdays and Sundays. Nighttime hourly average noise levels during periods without train activity were as low as 47 dBA L_{eq}. The day-night average noise level at this location was calculated to range from 62 to 65 dBA L_{dn}.

Monitoring location LT-2 was in Area B, behind an existing noise barrier on Froom Circle, at the northwest corner of Park Royal Mobile Estates. This location is about 60 feet from the centerline

[2] Federal Railroad Administration – 'U.S. DOT Crossing Inventory Form' for the Union Pacific Railroad Company

of the SacRT railroad tracks and about 30 feet from the center of UPRR tracks. The centerline of Folsom Boulevard is about 140 feet away from this position. Traffic noise from Folsom Boulevard, along with occasional train passbys are the main contributors to the ambient noise environment in the area. Trains typically generated maximum instantaneous noise levels of 68 to 75 dBA L_{max} at this location, with occasional trains generating maximum instantaneous noise levels as high as 85 dBA L_{max}. Daytime hourly average noise levels, which included all train activity, ranged from 49 to 76 dBA L_{eq} during the weekdays and from 45 to 63 dBA L_{eq} on Saturday and Sunday. Nighttime hourly average noise levels during periods without train activity were as low as 41 dBA L_{eq}. The day-night average noise level at this location was calculated to range from 57 to 60 dBA L_{dn}.

Measurement location LT-3 was also in Area B, on a light pole adjacent to Folsom Boulevard between Tiffany Way and Rod Beaudry Drive. The centerline of Folsom Boulevard is about 40 feet away from the measurement location and the center of the SacRT railroad tracks is about 130 feet away. Traffic noise along Folsom Boulevard and train noise from the railroad tracks were the predominant noise sources at this location. Trains and traffic along Folsom Boulevard typically generated maximum instantaneous noise levels of 80 to 84 dBA L_{max} at this location, with occasional maximum instantaneous noise levels as high as 100 to 102 dBA L_{max}. Daytime hourly average noise levels, which included all train activity, ranged from 55 to 81 dBA L_{eq} during the weekdays and from 52 to 78 dBA L_{eq} during Saturday and Sunday. Nighttime hourly noise levels during periods without train activity were 50 dBA L_{eq}. The day-night average noise level at this location was calculated to range from 71 to 73 dBA L_{dn}.

Measurement LT-4 was conducted in Area A, on a light pole behind the homes on Londonderry Drive, at a similar setback from both the train tracks (130 feet) and Folsom Boulevard (40 feet) as LT-3. This measurement was located between Bradshaw Road and Horn Road. Trains and traffic along Folsom Boulevard typically generated maximum instantaneous noise levels of 82 to 85 dBA L_{max} at this location, with occasional maximum instantaneous noise levels as high as 100 to 102 dBA L_{max}. Daytime hourly average noise levels, which included all train activity, ranged from 60 to 81 dBA L_{eq} during the weekdays and from 56 to 78 dBA L_{eq} during Saturday and Sunday. Nighttime hourly noise levels during periods without train activity were 53 dBA L_{eq}. The day-night average noise level at this location was calculated to range from 73 to 74 dBA L_{dn}.

FIGURE 1 Noise Monitoring Locations - Area A and B (Source: Google Earth 2022)

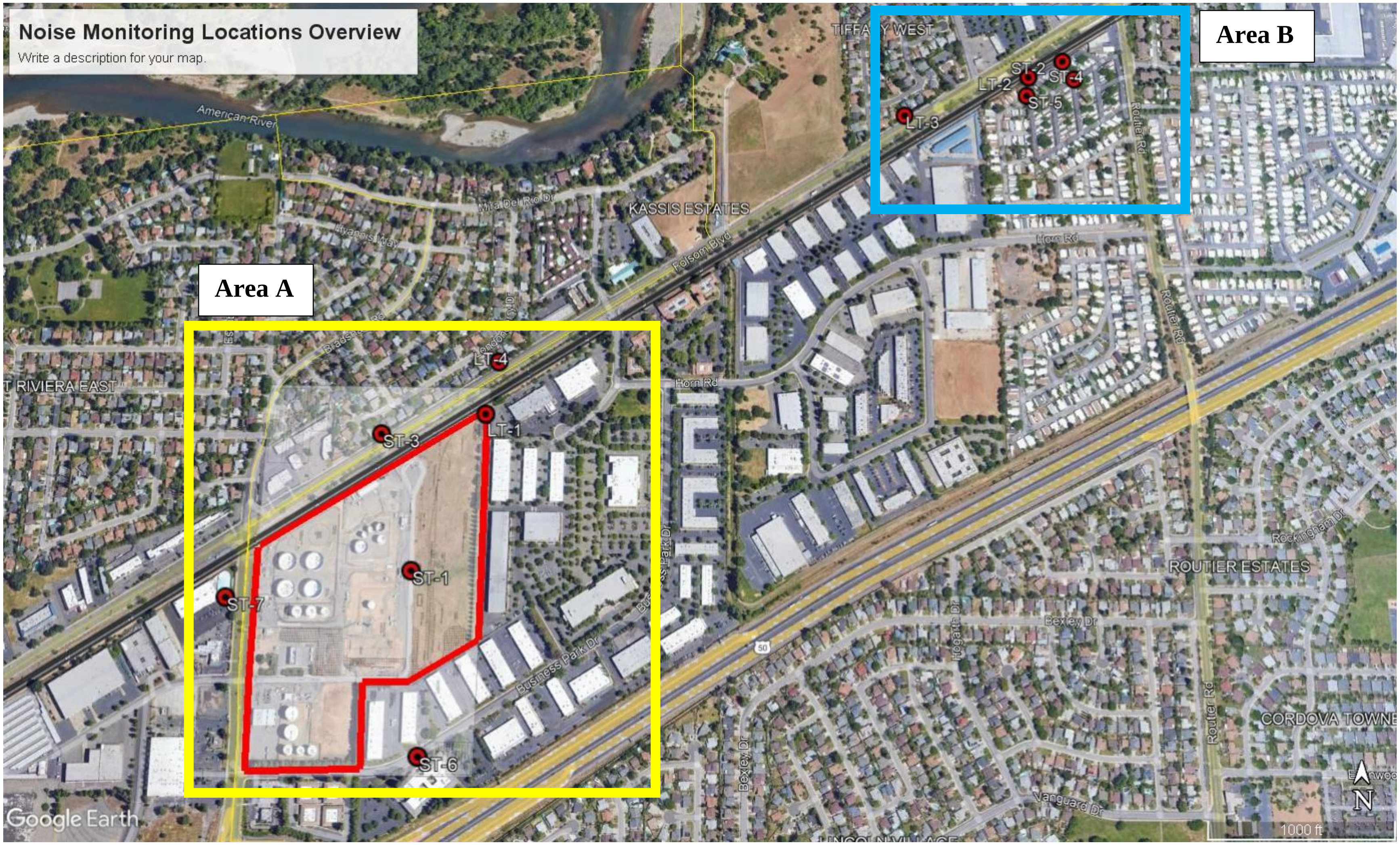


FIGURE 2 Noise Monitoring Locations at Area A (Source: Google Earth 2022)

FIGURE 3 Noise Monitoring Locations at Area B (Source: Google Earth 2022)

Seven short term noise measurements (ST-1 to ST-7) were conducted at the locations shown in Figures 1 through 3 to complete the noise survey. Table 6 summarizes the results of the short-term measurements.

TABLE 6 Summary of Short-Term Noise Measurement Data, January 12 and 19, 2022

ID	Location (Date, Time)	Measured Noise Levels, dBA					
		L_1	L_{10}	L_{50}	L_{90}	L_{eq}	
ST-1	Towards center of site on Gore Road (1/12/22, 9:00 a.m. to 9:10 a.m.)	84	71	60	57	71	Truck activities at Bradshaw Terminal
ST-2	On Froom Circle (Park Royal Estates), Behind existing noise barrier, ~75 ft away from railroad tracks, ~175 ft away from centerline of Folsom Boulevard (1/12/22, 9:50 a.m. to 10:00 a.m.)	61	53	49	45	51	Traffic noise from Folsom Boulevard and passing trains
ST-3	On Folsom Boulevard, ~35 ft away from centerline of road, ~130 ft from railroad tracks (1/12/22, 11:40 a.m. to 11:50 a.m.)	83	78	65	54	73	Traffic noise from Folsom Boulevard and passing trains
ST-4	On Ketcham Drive (Park Royal Estates), ~200 ft away from railroad tracks (1/12/22, 12:20 p.m. to 12:30 p.m.)	64	51	46	42	54	Passing trains and distant traffic noise from Folsom Boulevard
ST-5	Intersection between Froom Circle and Briarwood Mobile Home Park (Park Royal Estates), ~140 ft away from railroad tracks (1/12/22, 12:20 p.m. to 12:30 p.m.)	67	54	48	44	54	Traffic noise from Folsom Boulevard and passing trains
ST-6	In front of American River Bank on Business Park Drive, ~25 ft from centerline of road (1/19/22, 10:20 a.m. to 10:30 a.m.)	78	71	64	53	68	Traffic noise from Business Park Drive.
ST-7	In front of 'The Rink', ~90 ft away from centerline of Bradshaw Road (1/19/22, 10:50 a.m. to 11:00 a.m.)	71	66	59	53	62	Traffic noise from Bradshaw Dr, trains crossing at Bradshaw and Folsom Road intersection

Vibration Monitoring Survey

Observed and recorded vibration measurements of individual SacRT light-rail train passby's were conducted on January 12, 2022, between 10:27 a.m. and 11:58 a.m. at setbacks of 45 feet (V-1) and 90 feet (V-2) from the eastbound light-rail track (Figure 4). The instrumentation used to conduct the measurements included a Roland R-05 solid state recorder and seismic grade, low noise accelerometers firmly fixed to the ground. This system is capable of accurately measuring very low vibration levels.

FIGURE 4 Aerial Photo Showing Vibration Measurement Locations

A total of thirteen (13) individual light-rail passenger train passbys, including seven (7) eastbound and six (6) westbound passbys, were observed and recorded at each measurement setback. The two setbacks were used to develop a drop-off rate for ground vibration with distance. Vibration levels were measured in the vertical axis because ground vibration is typically most dominant on this axis. Train vibration levels ranged from approximately 57 to 77 VdB at a distance of 45 feet and 54 to 69 VdB at 90 feet from the eastbound tracks. Overall vibration levels measured during train passby events are summarized in Table 7. Frequency spectra (1/3rd octave band) vibration levels for each passby event are provided in Appendix B.

TABLE 7 Results of SacRT Light-Rail Vibration Measurements

Event	Overall Vibration Level (VdB re 1µinch/sec, RMS)	
	Position V-1	Position V-2
EB Light-rail (40 mph)	75 VdB	67 VdB
WB Light-rail (50 mph)	72 VdB	67 VdB
EB Light-rail (45 mph)	76 VdB	67 VdB
WB Light-rail (45 mph)	64 VdB	62 VdB
EB Light-rail (45 mph)	57 VdB	54 VdB
WB Light-rail (50 mph)	69 VdB	66 VdB
EB Light-rail (45 mph)	75 VdB	65 VdB
WB Light-rail (50 mph)	72 VdB	68 VdB
EB Light-rail (45 mph)	77 VdB	69 VdB
WB Light-rail (50 mph)	68 VdB	66 VdB
EB Light-rail (50 mph)	74 VdB	69 VdB
WB Light-rail (50 mph)	71 VdB	69 VdB
EB Light-rail (45 mph)	72 VdB	64 VdB

Notes: V-1: 45 feet from the center of the eastbound tracks and 60 feet from the center of the westbound tracks.
V-2: 90 feet from the center of the eastbound tracks and 105 feet from the center of the westbound tracks.
RMS – root-mean-square

NOISE IMPACTS AND MITIGATION MEASURES

This section describes the significance criteria used to evaluate project impacts under CEQA, provides a discussion of each project impact, and presents mitigation measures, where necessary, to provide a compatible project in relation to adjacent noise sources and land uses.

Significance Criteria

The following criteria were used to evaluate the significance of environmental noise resulting from the project:

1. **Temporary or Permanent Noise Increases in Excess of Established Standards.** A significant impact would be identified if project operations or construction would result in a substantial temporary or permanent increase in ambient noise levels at sensitive receivers

in excess of the local noise standards contained in the Rancho Cordova General Plan or Municipal Code, as follows:

- Operational Noise in Excess of Standards. A significant noise impact would be identified if the project operations would generate noise levels that would exceed applicable noise standards presented in the Rancho Cordova General Plan or Municipal Code.

- Permanent Noise Increase. A significant permanent noise increase would be identified if traffic generated by the project or project improvements/operations would substantially increase noise levels at sensitive receivers in the vicinity. The City of Rancho Cordova defines a substantial increase in Policy N-2.2.

- Temporary Noise Increase. A significant noise impact would be identified if temporary construction activities noise would cause a substantial increase in ambient noise levels at sensitive receptors. Large or complex projects involving substantial on-going noise-generating construction activities are considered significant when noise levels would exceed 80 dBA L_{eq} at residential land uses near the site or 90 dBA L_{eq} at commercial land uses near the site for more than 12 months within the allowable workdays and work hours.

2. **Generation of Excessive Groundborne Vibration due to Construction.** A significant impact would be identified if the construction of the project and train activities would generate vibration levels in excess of thresholds established by the Federal Transit Administration (FTA) as summarized below:

   - Groundborne vibration levels exceeding 0.3 in/sec PPV for buildings of conventional construction and 0.12 in/sec PPV for old buildings[3] susceptible to vibration damage.

   - Groundborne vibration levels exceeding 98 VdB for buildings of conventional construction and 90 VdB for old buildings susceptible to vibration damage. Vibration levels exceeding the 80 VdB vibration for residences and 83 VdB for institutional land uses with primarily daytime uses, would potentially result in human annoyance.

[3] Section 7.2 – Construction Vibration Assessment, Transit Noise and Vibration Impact Assessment Manual, Federal Transit Administration, Office of Planning and Environment, U.S. Department of Transportation, FTA Report No. 0123, September 2018.

Impact 1: Temporary or Permanent Noise Increases in Excess of Established Standards. Project operations and truck traffic would not generate noise levels that exceed the applicable noise thresholds or result in a substantial permanent noise level increase at existing noise-sensitive land uses in the project vicinity. Existing noise-sensitive land uses would be exposed to construction noise levels in excess of the temporary increase significance thresholds for a period of less than one year. **This is a less-than-significant impact.**

Operational Noise

Operational noise sources include rail noise, truck loading and circulation, and mechanical equipment operating at the terminal. Rail noise sources include rail activity at the terminal, the proposed run-around track, and the length of the UPRR track connecting the two. Figure 5 shows the location of the project site and the proposed run-around track.

Delivery and pickup of up to one train per day (with 22 railcars) is proposed via a new rail run-around on the SacRT right-of-way located approximately 14 feet from the center of the existing UPRR rail line. Railcars will be delivered from west to east and empty railcars would leave the terminal from east to west. These railcars are expected to travel at approximately 5-10 miles per hour. The following sequence of train operations are expected to occur over a period of 45 minutes to 1 hour for each delivery per day:

- Full rail cars dropped at the run-around
- Train engine taken to the terminal site
- Empty rail cars pulled out to the run-around
- Full rail cars taken to the terminal site
- Empty rail cars picked up from the run-around and hauled out of the area

It is anticipated that the rail deliveries and pickup operations will occur between 7 p.m. and 9 p.m., up to 5 times a week. The primary sources of noise anticipated would be switcher engine and railcar movements, idling locomotives, and horns sounded at grade crossings. Based on Report WCR 73-5[4], typical noise levels produced by switcher engine movements when transferring railcars to and from a run-around are about 76 to 80 dBA at 100 ft, while idling locomotives produce a noise level of about 65 to 71 dBA at 100 ft. Railcar impacts of single or multiple cars into parked cars or chain reaction impacts could produce maximum noise levels of up to 91 dBA at 100 ft.

[4] "Assessment of Noise Environments Around Railroad Operations", Wyle Laboratories, WCR 73-5, July 1973.

FIGURE 5 Location of the project site and run-around track (Source: Google Earth 2022)[5]

The closest residences along the proposed run-around track include residences at the mobile home park (Park Royal Estates and Briarwood Mobile Homes) and commercial properties to the south,

[5] Based on client provided project plans dated April 7, 2022

and residences along Black Coral Way to the north across Folsom Boulevard. Residences along Londonderry Drive to the north across Folsom Boulevard and the VCA Sacramento Veterinary Referral Center south of the existing UPRR tracks are the nearest receptors to the terminal. Table 8 shows the summary of noise levels anticipated from the sequence of operations mentioned above along with the calculated noise levels at the nearest receptors.

TABLE 8 Summary of Typical Maximum Noise Levels from Rail Activities

Noise Source	Noise Levels at 100 ft from Source (L_{max}, dBA)	Calculated Noise Levels (dBA)			
		Commercial Properties and Mobile Homes adjacent to Run-Around Track (At 30 feet)	Commercial VCA Veterinary Referral Center*	Residences along Londonderry Drive/ (At 200 ft)	Residences along Black Coral Way (At 200 ft)
Switcher engine movements	76 to 80	87 to 91	77 to 81	70 to 74	70 to 74
Idling locomotives	65 to 71	--**	50 to 56	59 to 65	59 to 65
Intermittent railcar impacts	91	101	76	85	85

* Switcher engine movements for the VCA center are about 85 feet away while noise from idling locomotives and intermittent railcar impacts are about 580 feet away.
** Idling locomotives are not expected at the run-around track.

Residences across Folsom Boulevard (on Londonderry Drive and Black Coral Way) and at the mobile home park would benefit from existing noise barriers that would reduce the calculated noise levels in Table 8 by at least 5 dB. Noise from switcher engine movements and railcar impacts would be intermittent and occur only a few times within one hour each evening with no anticipated nighttime events. Train horns are not expected during onsite rail activities.

Operational noise at the terminal site

Noise from train and truck activities at the terminal are assessed using the applicable thresholds established in Table N-1 and Policy N.2.2 from the City's General Plan.

For the VCA Veterinary Referral Center, hourly average noise levels calculated from the maximum train noise levels anticipated in Table 8 would be about 50 dBA L_{eq}. Existing ambient noise levels around the anticipated hours of train operations are measured to be 60 dBA L_{eq}.

Residences along Londonderry Drive would experience hourly average noise levels of about 48 dBA L_{eq} based on maximum train noise levels anticipated in Table 8. Existing ambient noise levels around the anticipated hours of train operations are measured to range from 60 to 65 dBA L_{eq} adjusted for the shielding from the existing noise barrier.

Truck activities (loading, offloading, staging and circulation) are expected to occur throughout the terminal, with new staging and turn around areas proposed towards the southern end. Trucks maneuvering at the different existing and proposed loading racks would generate a combination of engine, exhaust, tire noise, as well as intermittent sounds from truck fuel filling, back-up alarms and releases of compressed air associated with truck/trailer air-brakes. Short term noise measurements at the site next to the current truck filling station show noise levels ranging from 60 to 70 dBA at 50 feet for loading, 70 to 80 dBA at 50 feet for trucks passing by. Back up alarms and brake releases generate maximum noise levels typically in the range of 80 to 90 dBA at 5 feet.

Truck filling operations would take place towards the eastern portion of the terminal close to the proposed rail spurs, with trucks circulating throughout the site. For the purposes of modelling the worst-case scenario, noise from trucks is modeled from the staging and turnaround locations closest to corresponding residential or commercial properties.

Residences along Londonderry Drive are located about 500 feet from the nearest existing truck loading rack. Future proposed areas of truck activities would be positioned at a distance of more than 1,000 feet away from these residences. Commercial properties along Business Park Drive would be located about 200 feet from the closest proposed truck staging and turnaround areas. Table 9 shows the summary of noise levels anticipated from truck operations along with the calculated noise levels at the nearest receptors.

TABLE 9 Summary of typical maximum noise levels from truck activities

Noise source	Noise levels at 50 ft from source (L_{max}, dBA)	Calculated noise levels (dBA)	
		Commercial properties (At 200 ft)	Residences along Londonderry Dr (At 500 ft)
Truck Filling	60 to 70	48 to 58	40 to 50
Truck passing by	70 to 80	58 to 68	50 to 60
Back up alarms and brake releases	80 to 90*	48 to 58	40 to 50

* Measured at 5 feet

As discussed before, the closest residences across Folsom Boulevard (on Londonderry Drive) would benefit from the existing noise barrier which would provide a noise reduction of up to 5 dBA for sounds propagating due to truck activities from the site.

For residences and commercial properties located near the terminal, noise levels calculated from truck loading and circulation activities would be significantly below noise levels anticipated from rail activities at the terminal. Truck activities do not make a significant contribution to the total noise emanating from the terminal resulting from both train and truck noise sources.

Noise generating mechanical equipment included in the project would be limited to pump loading and offloading activities throughout the site. These would not make a significant contribution to total noise emanating from the terminal.

Noise levels from operations at the terminal will be less than the established 50 dBA hourly L_{eq} thresholds in Table N-1 from the City's General Plan and less than existing ambient noise levels ranging from 55 to 65 dBA L_{eq} during the operating hours. For an existing noise environment ranging from 60 to 65 dBA L_{dn} at the nearest residential and commercial receptors, a 3 dB L_{dn} increase in noise levels would be considered significant based Policy N.2.2. from the City's General Plan. Noise from train and truck activities at the terminal would be calculated to result in a noise increase of 1 dBA L_{dn} or less.

Noise thresholds established by the standards under Table N-1 and Policy N.2.2., along with existing ambient noise conditions in the area, are not expected to be exceeded by operations at the terminal. This is a **less-than-significant** impact.

Operational Noise at the Rail Run-Around

Noise generating activities accommodated by UPRR within the SacRT right-of-way, are assessed using the applicable thresholds established in Policy N.2.2 from the City's General Plan.

Noise propagating from the terminal, elaborated above, would not contribute to noise levels experienced at the residences along Black Coral Way. The main source of noise at this location would be noise from train activities at the run-around track. Table 8 shows a summary of noise levels anticipated from the sequence of train operations on the run-around track. Hourly average noise levels calculated from the maximum noise levels in Table 8 would be about 51 dBA L_{eq}. The existing ambient hourly noise level from traffic along Folsom Boulevard and through trains, during the proposed hours of operation, is about 63 dBA L_{eq} when adjusted for the acoustical shielding provided by the existing noise barrier. The existing daily average noise level at the vicinity of the residences ranges from 66 to 68 dBA L_{dn} when adjusted for the acoustical shielding provided by the existing noise barrier. Based on Policy N.2.2, for an existing noise environment with a daily average level of greater than 65 dB L_{dn}, a 1.5 dB L_{dn} increase in noise levels would be considered significant. Noise from train activities on the run-around track is calculated to result in a noise increase of less than 1 dBA L_{dn} for residences across Folsom Boulevard along Black Coral Way.

At the mobile home parks (Park Royal Estates, Briarwood Mobile Home Parks) located adjacent to the run-around track, maximum intermittent noise levels from rail activities are calculated to range from 82 to 96 dBA L_{max} (assuming shielding from the existing noise barrier). Existing maximum noise levels resulting from traffic and through trains range from 75 to 80 dBA L_{max} throughout the day. These new noise sources would be of a different character than the noise from existing trains and traffic in the area and therefore would be noticeable near the run-around track.

The hourly average noise level calculated from these maximum noise levels would be about 66 dBA L_{eq} during the hour of train operations. This would correspond to a daily average noise level increase of 1 dBA L_{dn}. The existing daily average noise level in the area is calculated to be 60 dBA L_{dn}. Based on Policy N.2.2, for an existing noise environment with a daily average level between 60 and 65 dBA L_{dn}, a 3 dB L_{dn} increase in noise levels would be considered significant. Therefore, a **less-than-significant** impact would result from rail activities anticipated along the proposed run-around.

Permanent Noise Increases from Project Traffic and Increased Train Activity Outside the Immediate Project Area

Noise generating activities from rail or truck traffic are assessed using the applicable thresholds established in Policy N.2.2 from the City's General Plan. The project's proposed increase in fuel throughput would result in 112 new truck loads which correspond to 224 new truck trips per day. The project's 3 to 5 employees would generate 10 daily non-truck trips. Based on the traffic study memo[6], noise levels for peak hour truck trips and light vehicle trips were modelled and compared to the existing ambient environment in the vicinity of the project. Projected noise level increases from increased truck trips and light vehicles around the project site would result in a noise level increase of less than 1 dBA L_{dn}. This increase is less than the most restrictive criterion established in Policy N.2.2 (+1.5 dBA L_{dn}).

Based on the U.S. DOT Crossing Inventory for the Rancho Cordova area, a total of 4 switching trains per day travel on the UPRR tracks near the terminal. A total of 134 SacRT light-rail trains travel on the SacRT train tracks adjacent to the UPRR tracks. With the construction of the new rail spurs and run-around tracks for the project, the UPRR tracks will accommodate one more train (with 22 railcars) up to 5 times a week between 7 p.m. to 9 p.m. for about 45 minutes to an hour. An addition of one train to the existing train movements (134 SacRT trains plus 4 switching trains) in the area would not result in an increase in noise levels above the measured ambient levels in the vicinity of the terminal.

[6] VMT and Trip Generation Memorandum, GHD – January 19, 2022

Permanent noise increases from project traffic and increased train activity would result in a **less-than-significant** impact.

Temporary Noise Increases from Project Construction

A significant noise impact would be identified if the project would generate a substantial temporary or permanent noise level increase over ambient noise levels at existing noise-sensitive receptors surrounding the project site and that would exceed applicable noise standards presented in the General Plan at existing noise-sensitive receptors surrounding the project site.

Action N.1.4.1 of the City of Rancho Cordova General Plan limits construction to weekdays between 7:00 a.m. and 7:00 p.m., and weekends between 8:00 a.m. to 6:00 p.m., when construction is conducted in proximity to residential uses. Noise limits identified by the Federal Transit Administration (FTA) are used to identify the potential for impacts due to substantial temporary construction noise. A significant noise impact would be identified if temporary construction activity would cause a substantial increase in ambient noise levels at sensitive receptors. Large or complex projects involving substantial on-going noise-generating construction activities are considered significant when noise levels would exceed 80 dBA L_{eq} at residential land uses near the site or 90 dBA L_{eq} at commercial land uses near the site for more than 12 months within the allowable workdays and work hours.

Noise impacts resulting from construction depend upon the noise generated by various pieces of construction equipment, the timing and duration of noise-generating activities, and the distance between construction noise sources and noise-sensitive areas. Construction noise impacts primarily result when construction activities occur during noise-sensitive times of the day (e.g., early morning, evening, or nighttime hours), the construction occurs in areas immediately adjoining noise-sensitive land uses, or when construction lasts over extended periods of time.

Project construction is anticipated to begin in 2022, with the facilities in operation by first quarter of 2023. Construction staging would occur within the Bradshaw Terminal and rail run-around boundaries. Minimal earth moving is anticipated at the terminal site, as the site is flat and underlain with suitable soils. Clearing and grubbing is anticipated at the Bradshaw Terminal rail footprint, and soils would be balanced onsite. Installation of the proposed above ground pipeline would include construction of concrete footings along the length of pipe. The hauling of excavated materials and construction materials would generate truck trips on local roadways as well. Pile driving is not anticipated in any phase of construction of the project.

Construction activities would be carried out in stages. During each stage of construction, there would be a different mix of equipment operating, and noise levels would vary by stage and vary within stages, based on the amount of equipment in operation and the location at which the equipment is operating. Typical construction noise levels at a distance of 50 feet are shown in Tables 10 and 11. Table 10 shows the average noise level ranges, by construction phase and Table 11 shows the maximum noise level ranges for different construction equipment. Most demolition and construction noise falls in the range of 80 to 90 dBA at 50 feet from the source. Construction-generated noise levels drop off/increase at a rate of about 6 dBA per doubling/halving of the distance between the source and receptor. Shielding by buildings or terrain can provide an additional 5 to 10 dBA noise reduction at distant receptors.

TABLE 10 Typical Ranges of Construction Noise Levels at 50 Feet, L_{eq} (dBA)

	Domestic Housing		Office Building, Hotel, Hospital, School, Public Works		Industrial Parking Garage, Religious Amusement & Recreations, Store, Service Station		Public Works Roads & Highways, Sewers, and Trenches	
	I	II	I	II	I	II	I	II
Ground Clearing	83	83	84	84	84	83	84	84
Excavation	88	75	89	79	89	71	88	78
Foundations	81	81	78	78	77	77	88	88
Erection	81	65	87	75	84	72	79	78
Finishing	88	72	89	75	89	74	84	84

I – All pertinent equipment present at site.
II – Minimum required equipment present at site.

Source: U.S.E.P.A., Legal Compilation on Noise, Vol. 1, p. 2-104, 1973.

TABLE 11 Construction Equipment 50-foot Noise Emission Limits

Equipment Category	L_{max} Level (dBA)1,2	Impact/Continuous
Arc Welder	73	Continuous
Auger Drill Rig	85	Continuous
Backhoe	80	Continuous
Ballast Equalizer[3]	82	Continuous
Ballast Tamper[3]	83	Continuous
Bar Bender	80	Continuous
Chain Saw	85	Continuous
Compressor (air)	80	Continuous
Concrete Mixer	85	Continuous
Concrete Pump	82	Continuous
Concrete Saw	90	Continuous
Concrete Vibrator	80	Continuous
Crane	85	Continuous
Dozer	85	Continuous
Excavator	85	Continuous
Front End Loader	80	Continuous
Generator	82	Continuous
Generator (25 KVA or less)	70	Continuous
Gradall	85	Continuous
Grader	85	Continuous
Grinder Saw	85	Continuous
Horizontal Boring Hydro Jack	80	Continuous
Hydra Break Ram	90	Impact

Equipment Category	L_{max} Level (dBA)1,2	Impact/Continuous
Impact Pile Driver	105	Impact
Jackhammer	85	Impact
Mounted Impact Hammer (hoe ram)	90	Impact
Paver	85	Continuous
Pneumatic Tools	85	Continuous
Pumps	77	Continuous
Rail Saw[3]	90	Continuous
Rock Drill	85	Continuous
Scraper	85	Continuous
Slurry Trenching Machine	82	Continuous
Soil Mix Drill Rig	80	Continuous
Street Sweeper	80	Continuous
Tie Cutter[3]	84	Continuous
Tie Handler[3]	80	Continuous
Tie Inserter[3]	85	Continuous
Tractor	84	Continuous
Truck	84	Continuous
Vibratory Compactor	80	Continuous
Vibratory Pile Driver	95	Continuous
All other equipment with engines larger than 5 HP	85	Continuous

Notes: [1] Measured at 50 feet from the construction equipment, with a "slow" (1 sec.) 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] Transit Noise and Vibration Impact Assessment Manual, Federal Transit Administration, Office of Planning and Environment, U.S. Department of Transportation, FTA Report No. 0123, September 2018., [4] Mitigation of Nighttime Construction Noise, Vibrations and Other Nuisances, National Cooperative Highway Research Program, 1999.

The proposed project involves construction of the following components within the Bradshaw Terminal limits:

- New rail spurs with a capacity to offload up to 22 railcars per day, dedicated for Biodiesel and Renewable diesel offloading. These rail spurs will be constructed into the terminal that connects the existing UPRR track located within the existing SacRT right-of-way immediately north of the terminal
- Two new ground storage tanks within the existing tank farm and secondary containment area consisting of an 80,000 BBL Renewable diesel and 15,000 BBL communal Biodiesel storage tank
- Two lane truck blending and loading rack with new rack pumps
- Installation of a new rail run-around on SacRT right-of-way for railcar delivery designed to accommodate 22 railcars.
- New interior road extension and truck turnaround constructed towards the southern portion of the terminal site to accommodate existing and proposed truck movement. In addition, a new asphalt paved truck staging area would be installed adjacent to the existing interior terminal road and proposed new truck loading rack.
- A modular office/control building (approx. 1,000 sq. feet) will be installed on the northern portion of the terminal site

Construction for the above components would include clearing and grubbing, grading, paving, tank installation, trenching/piping, and rail installation phases. Hourly average noise levels resulting from standard construction equipment used for these phases was calculated to range from 80 to 90 dBA L_{eq} at 50 feet using the Federal Highway Administration's (FHWA) Roadway Construction Noise Model (RCNM). Construction equipment would likely be spread throughout the site, but for the purposes of modelling the worst-case scenario, all equipment was assumed to be operating relatively in the same area around the south and southeastern portion of the terminal near the proposed new rail spurs and new road extension areas for truck circulation and staging. Noise propagation distances were estimated from this 'acoustic center' to the property lines of surrounding receptors. No shielding effects were assumed.

For the construction of the proposed rail run-around, a range of anticipated noise levels is presented to account for both the worst-case scenario when construction occurs closest to the adjacent properties at about 20 feet and the situation where construction proceeds linearly and would occur further away at a distance of about 300 feet from the same properties along the run-around.

Residential properties closest to the terminal (along Londonderry Dr) are located about 1,000 feet away and the nearest commercial properties are positioned about 500 feet away. At these distances, construction noise levels would range from 55 to 65 dBA L_{eq} at the nearest residences and from 60 to 70 dBA L_{eq} at the nearest commercial properties for construction noise emanating from the terminal.

Noise levels emanating from the construction of the proposed rail run-around would range from 88 to 98 dBA L_{eq} at a distance of 20 feet and from 65 to 75 dBA L_{eq} at a distance of 300 feet from the closest commercial properties, as the rail construction proceeds to completion adjacent to the UPRR tracks. For residences across Folsom Boulevard along Black Coral Way, noise levels from the construction of the run-around would range from 68 to 78 dBA L_{eq} at a distance of about 200 feet.

The following best management practices would reduce construction noise levels emanating from the site, limit construction hours and minimize disruption and annoyance:

- Construction activities shall be limited to the hours between 7:00 am and 7:00 pm, Monday through Friday, 8:00 am and 6:00 pm on weekends in accordance with the City's General Plan, unless permission is granted with a development permit or other planning approval.
- Construct solid plywood fences around construction sites adjacent to operational business, residences, or other noise-sensitive land uses.
- Equip all internal combustion engine-driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment.

- Prohibit unnecessary idling of internal combustion engines.
- Locate stationary noise-generating equipment such as air compressors or portable power generators as far as possible from sensitive receptors. Construct temporary noise barriers to screen stationary noise-generating equipment when located near adjoining sensitive land uses.
- Utilize "quiet" air compressors and other stationary noise sources where technology exists.
- Control noise from construction workers' radios to a point where they are not audible at existing residences bordering the project site.
- Notify all adjacent business, residences, and other noise-sensitive land uses of the construction schedule, in writing, and provide a written schedule of "noisy" construction activities to adjacent land uses and nearby residences.
- If complaints are received or excessive noise levels cannot be reduced using the measures above, erect a temporary noise control blanket barrier along surrounding building facades that face the construction sites.
- Designate a "disturbance coordinator" who would be responsible for responding to any complaints about construction noise. The disturbance coordinator will determine the cause of the noise complaint (e.g., bad muffler, etc.) and will require that reasonable measures be implemented to current the problem. Conspicuously post a telephone number for the disturbance coordinator at the construction site and include it in the notice sent to neighbors regarding the construction schedule.

With the implementation of these measures and recognizing that noise generated by construction activities would occur over a temporary period of less than one year, the impact would be **less-than-significant**.

Impact 2: **Exposure to Excessive Groundborne Vibration.** Construction related and project generated vibration levels would not exceed 0.3 in/sec PPV vibration damage threshold for conventional buildings or the 0.12 in/sec PPV threshold for old buildings at the Old Mills Winery building. The FTA train vibration annoyance thresholds would not be exceeded for operations along the proposed run-around. **This is a less-than-significant impact.**

Impact 2a – Vibration Impacts due to Construction

The City of Rancho Cordova does not specify a construction vibration limit. The Federal Transit Administration's (FTA) Noise and Vibration Impact Assessment Manual includes Construction Vibration Damage Criteria to be used in assessing construction vibration impacts (Table 12). The FTA manual also discusses vibration annoyance criteria as discussed above (Table 5).

TABLE 12 Vibration Damage Criteria

Building/Structural Category	PPV, in/sec	Approximately L_v[a]
I. Reinforced-concrete, steel or timber (no plaster)	0.5	102
II. Engineered concrete and masonry (no plaster)	0.3	98
III. Non-engineered timber and masonry buildings	0.2	94
IV. Buildings extremely susceptible to vibration damage	0.12	90

[a] RMS velocity in decibels, VdB re 1 μin/sec

Source: Transit Noise and Vibration Impact Assessment Manual, Federal Transit Administration, Office of Planning and Environment, U.S. Department of Transportation, FTA Report No. 0123, September 2018.

The 0.3 in/sec PPV vibration limit (or 98 VdB) would be applicable to the majority of buildings in the vicinity of the project. The 0.12 in/sec PPV (or 90 VdB) vibration limit would only apply to the vibration levels expected at the Old Mills Winery building located near the proposed rail run-around adjacent to the existing UPRR tracks.

The construction of the project may generate perceptible vibration when heavy equipment or impact tools (e.g., jackhammers, hoe rams) are used. Construction activities include clearing and grubbing, grading, paving, tank installation, trenching/piping, and rail installation phases. Pile driving is not anticipated for the proposed project. Vibration levels would vary depending on soil conditions, construction methods, and equipment used. Vibration levels are highest close to the source, and then attenuate with increasing distance at the rate $(D_{ref}/D)^{1.1}$, where D is the distance from the source in feet, and D_{ref} is the reference distance of 25 feet. Table 12 presents typical vibration levels that could be expected from construction equipment at 25 feet and summarizes the minimum distances needed from each equipment to meet the 0.12 in/sec PPV and the 0.3 in/sec PPV vibration threshold.

For a worst-case scenario, construction vibration levels (as shown in Table 13) are modeled under the assumption that each piece of equipment would operate along the nearest boundary of the site or proposed run-around. Vibration sensitive structures near project construction include the VCA Veterinary Referral Center (about 75 feet away), CalCap Studios located in the Old Mills Winery building (about 200 feet away) and the Briarwood Mobile Home Park residences (about 20 feet away).

TABLE 13 Vibration Levels for Construction Equipment at Various Distances

Equipment		PPV at 25 ft. (in/sec)	Minimum Distance to Meet Threshold (feet)	
			Old Mills Winery Building *0.12 in/sec PPV*	All Other Buildings *0.3 in/sec PPV*
Clam shovel drop		0.202	**40**	20
Hydromill (slurry wall)	in soil	0.003	<5	<5
	in rock	0.006	<5	<5
Vibratory Roller		0.210	**40**	20
Hoe Ram		0.089	20	10
Large bulldozer		0.089	20	10
Caisson drilling		0.089	20	10
Loaded trucks		0.076	20	10
Jackhammer		0.035	10	<5
Small bulldozer		0.003	<5	<5

Source: Transit Noise and Vibration Impact Assessment, United States Department of Transportation, Office of Planning and Environment, Federal Transit Administration, October 2018 as modified by Illingworth & Rodkin, Inc., March 2022.

Based on the calculated distances to meet the vibration damage thresholds for buildings in the vicinity of the project, vibration due to project construction would fall below the 0.12 in/sec PPV threshold for the Old Mills Winery building (at 200 feet) and at or below the 0.3 in/sec PPV threshold (at distances greater than 20 feet) for all other buildings.

The US Bureau of Mines has analyzed the effects of blast-induced vibration on buildings in USBM RI 8507[7], and these findings have been applied to vibrations emanating from construction equipment on buildings[8]. Figure 6 presents the damage probability, as reported in USBM RI 8507 and reproduced by Dowding, assuming a vibration level of 0.3 in/sec PPV. Based on the data summarized in Figure 6, there would be no observations of "threshold damage," "minor damage," or "major damage" at buildings of normal conventional construction when vibration levels were 0.3 in/sec PPV or less.

At these locations and in other surrounding areas where vibration would not be expected to cause structural damage, vibration levels may still be perceptible. However, as with any type of construction, this would be anticipated and would not be considered significant, given the intermittent and short duration of the phases that have the highest potential of producing vibration. By use of administrative controls, such as notifying neighbors of scheduled construction activities and scheduling construction activities with the highest potential to produce perceptible vibration during hours with the least potential to affect nearby residences, perceptible vibration can be kept to a minimum.

In summary, the construction of the project would generate vibration levels below the 0.12 in/sec PPV threshold at the 'historic' Old Mills Winery Building located about 200 feet away from the

[7] Siskind, D.E., M.S. Stagg, J.W. Kopp, and C.H. Dowding, Structure Response and Damage Produced by Ground Vibration form Surface Mine Blasting, RI 8507, Bureau of Mines Report of Investigations, U.S. Department of the Interior Bureau of Mines, Washington, D.C., 1980.

[8] Dowding, C.H., Construction Vibrations, Prentice Hall, Upper Saddle River, 1996.

proposed rail run-around. For all other conventional buildings in the vicinity of the terminal and the run-around, vibration levels would be 0.3 in/sec PPV or less. This is a **less-than-significant** impact.

Impact 2b - Vibration Impacts from Trains

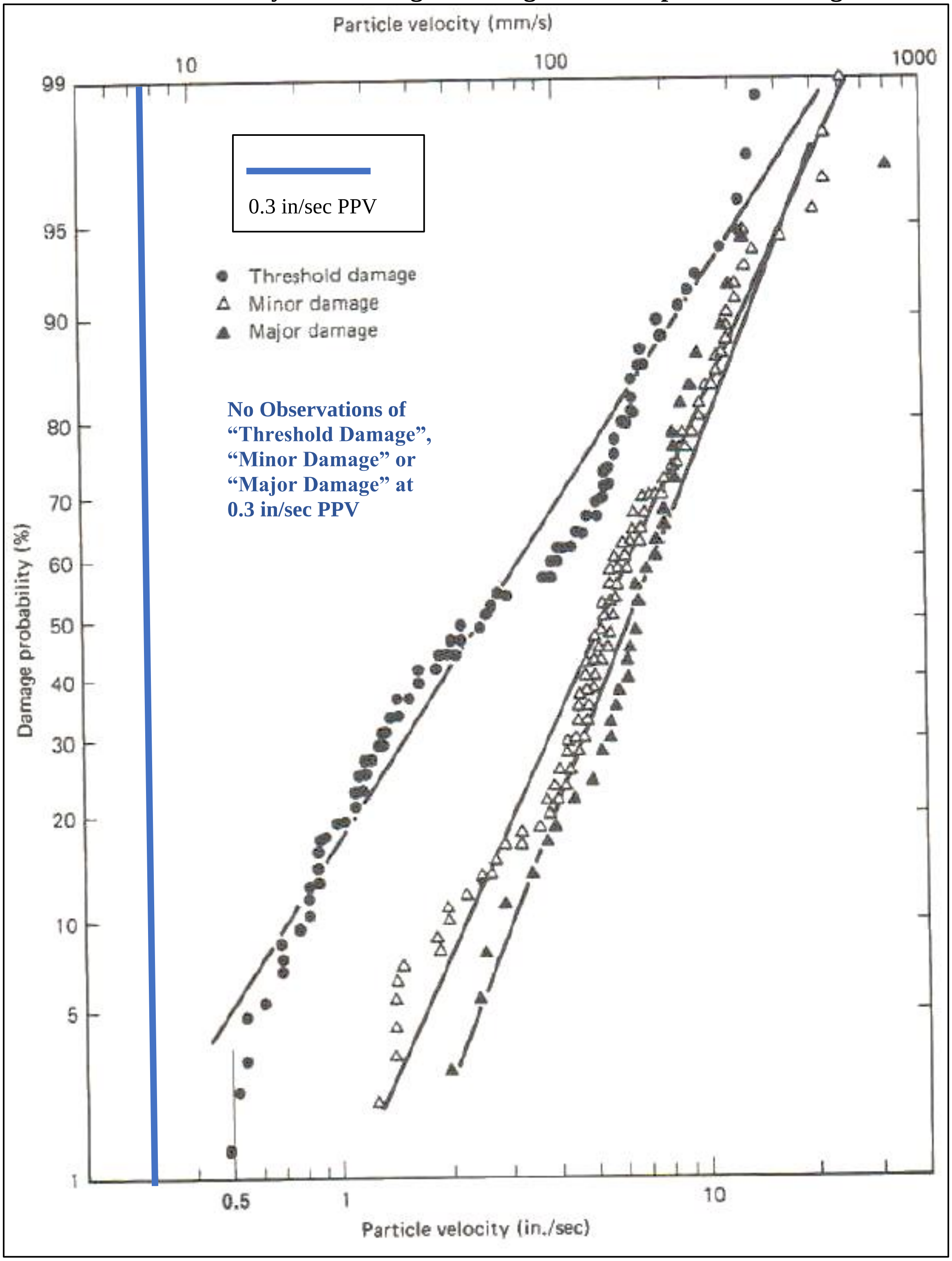
The project would install a new rail run-around on the SacRT right-of-way for railcar delivery purposes. This run-around would be designed to accommodate 22 railcars and would be located about 14 feet from the center of the existing UPRR rail line. Switching operations are expected to occur between the run-around and the Bradshaw Terminal rail spurs. Rail operations on the new spurs and the run-around have the potential to cause impacts on vibration-sensitive land uses in the vicinity of the project site. The VCA Sacramento Veterinary Referral center located about 75 feet from the center of the UPRR tracks, and the CalCap studios within the Old Mills Winery building located about 20 feet from the proposed rail run-around tracks constitute the nearest vibration-sensitive commercial properties. The Briarwood Mobile Homes, positioned about 20 feet away, are the nearest vibration sensitive residences next to the UPRR tracks at the proposed rail run-around.

Based on the General Vibration Assessment outlined in the Transit Noise and Vibration Impact Assessment Manual[9], freight trains moving on the spurs and rail run-around at speeds of 5 to 10 mph would be calculated to generate vibration levels of about 71 to 77 VdB at a distance of 20 feet. These calculated vibration levels fall below the established FTA annoyance thresholds of 80 VdB for Category 2 – Residences and buildings where people normally sleep and 83 VdB for Category 3 – Institutional land uses with primarily daytime for "Infrequent Events" (less than 30 per day) in Table 5. These levels also fall below the vibration damage criteria established in Table 12. Additionally, vibration levels measured for the existing SacRT light-rail trains at about 45 feet from the eastbound tracks are 77 VdB, which equal or exceed project-related operational vibration levels.

In conclusion, vibration from train operations at the terminal and the run-around, when compared with the established vibration damage and annoyance thresholds and the existing vibration environment in the area, would result in a **less-than-significant** impact.

[9] Transit Noise and Vibration Impact Assessment Manual, Federal Transit Administration, Office of Planning and Environment, U.S. Department of Transportation, FTA Report No. 0123, September 2018.

FIGURE 6 Probability of Cracking and Fatigue from Repetitive Loading



Source: Dowding, C.H., Construction Vibrations, Prentice Hall, Upper Saddle River, 1996 as modified by Illingworth & Rodkin, Inc., March 2022.

Appendix A – Long-Term Noise Data

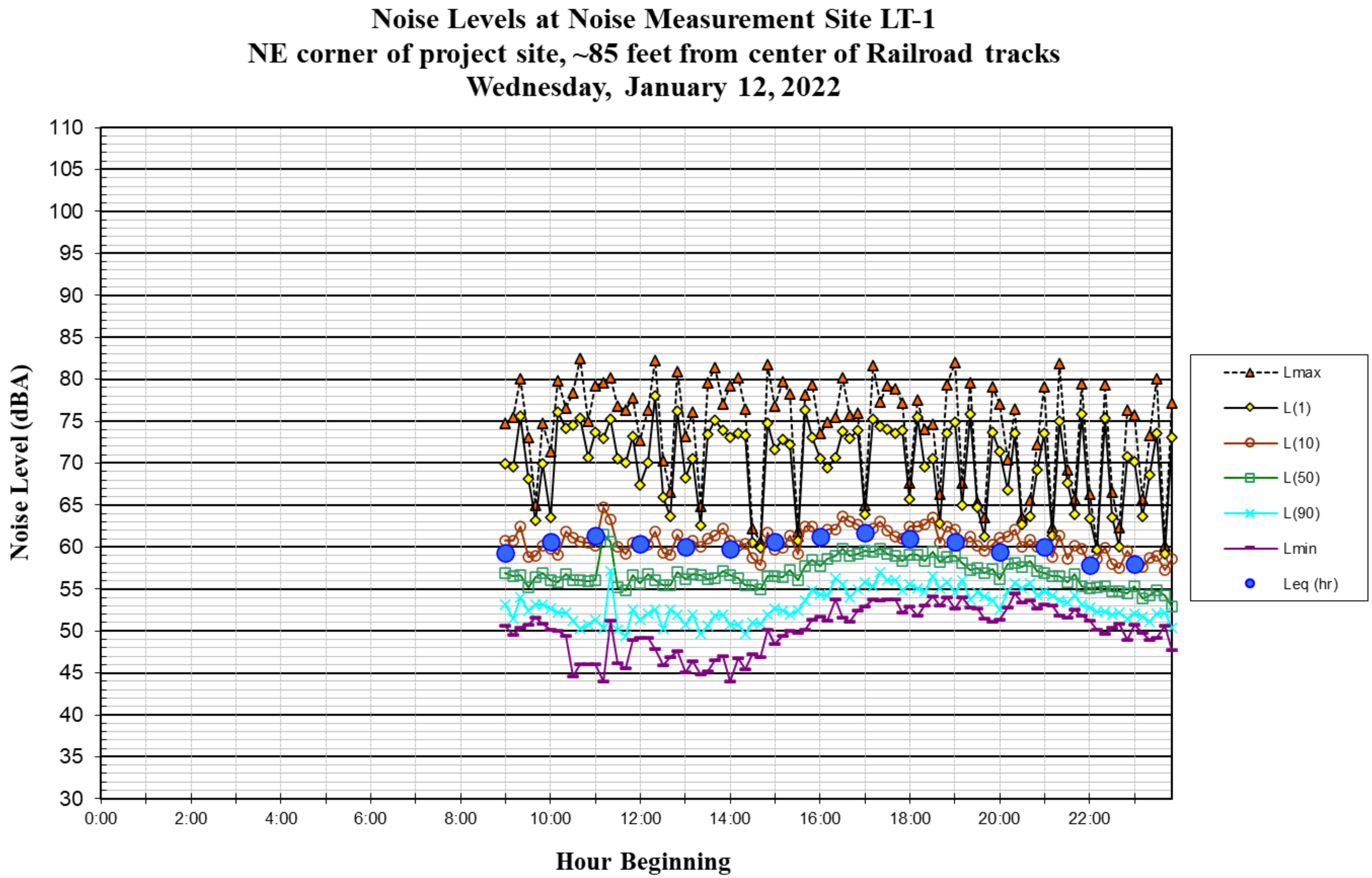
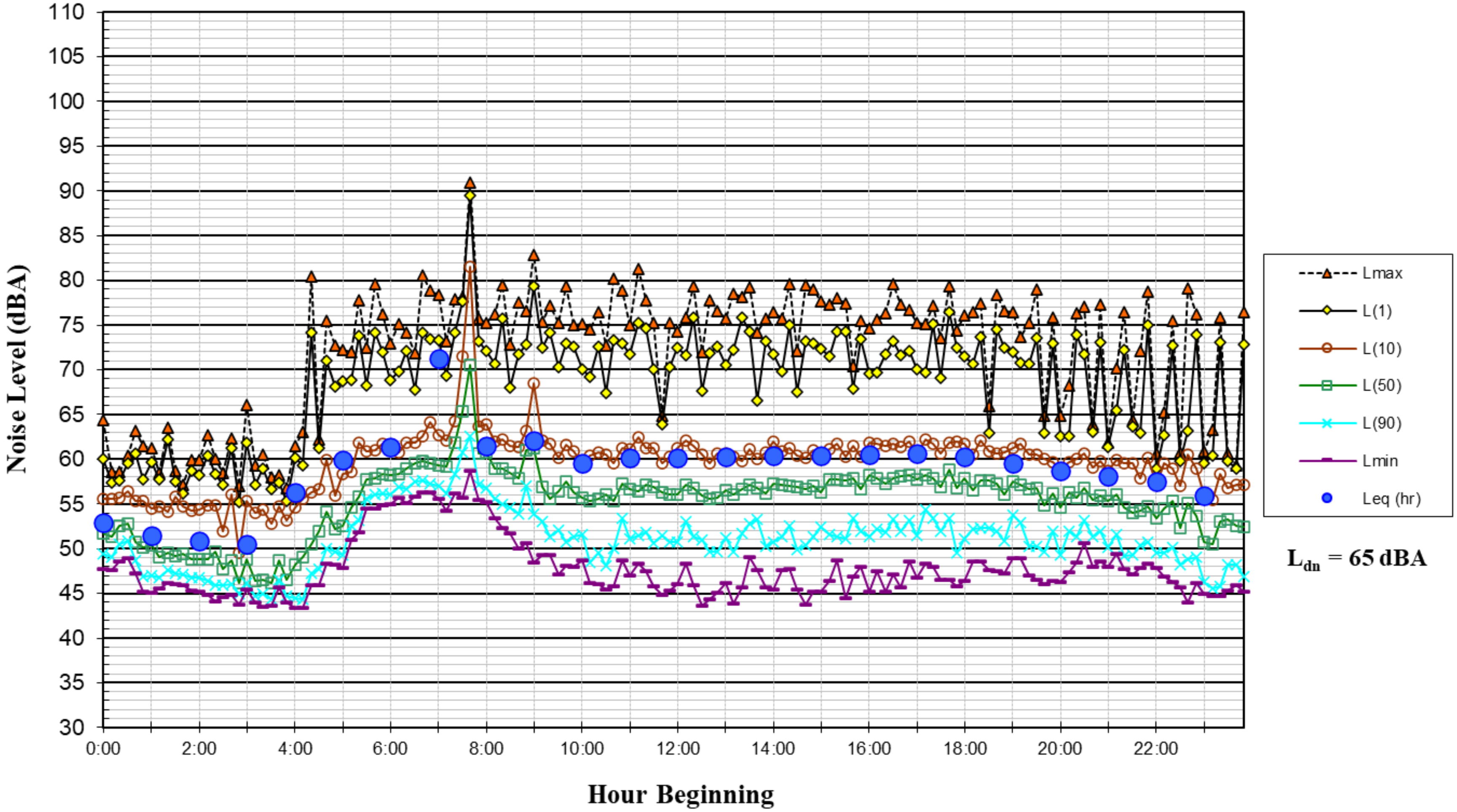

Noise Levels at Noise Measurement Site LT-1
NE corner of project site, ~85 feet from center of Railroad tracks
Wednesday, January 12, 2022
Noise Level (dBA)
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)

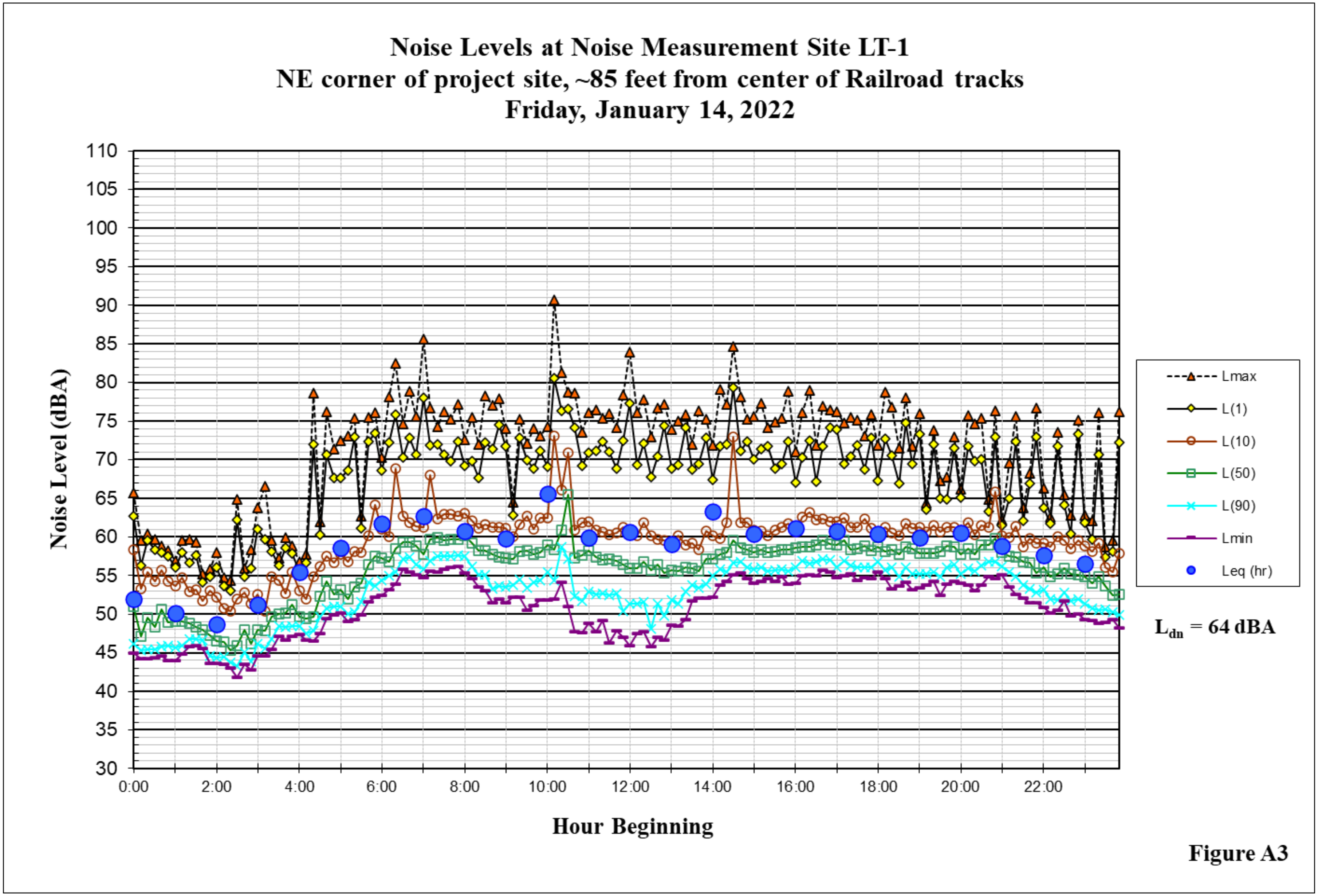
Figure A1

Noise Levels at Noise Measurement Site LT-1
NE corner of project site, ~85 feet from center of Railroad tracks
Thursday, January 13, 2022



L_{dn} = 65 dBA

Figure A2



Noise Levels at Noise Measurement Site LT-1
NE corner of project site, ~85 feet from center of Railroad tracks
Friday, January 14, 2022
Noise Level (dBA)
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)
L_{dn} = 64 dBA

Figure A3

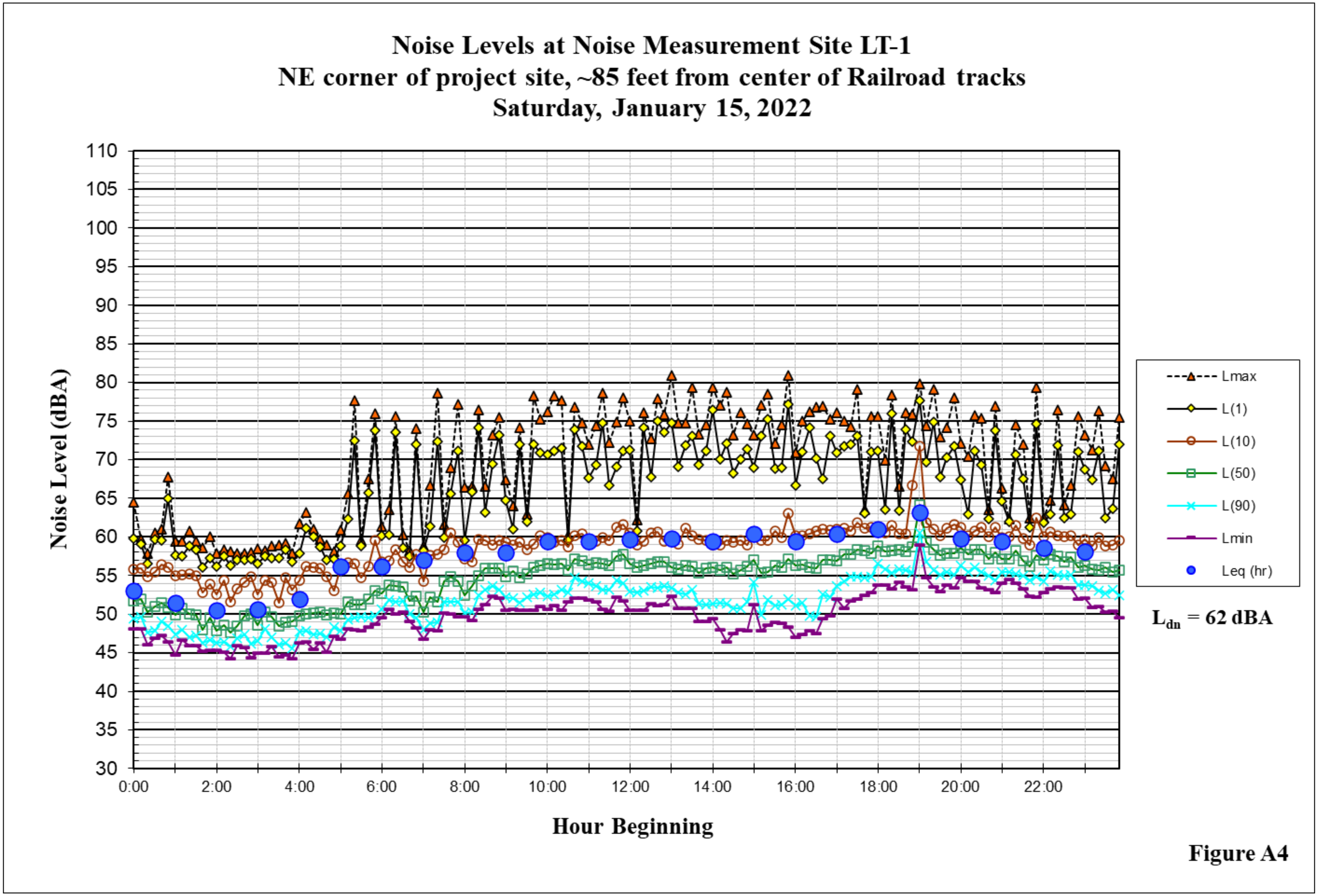
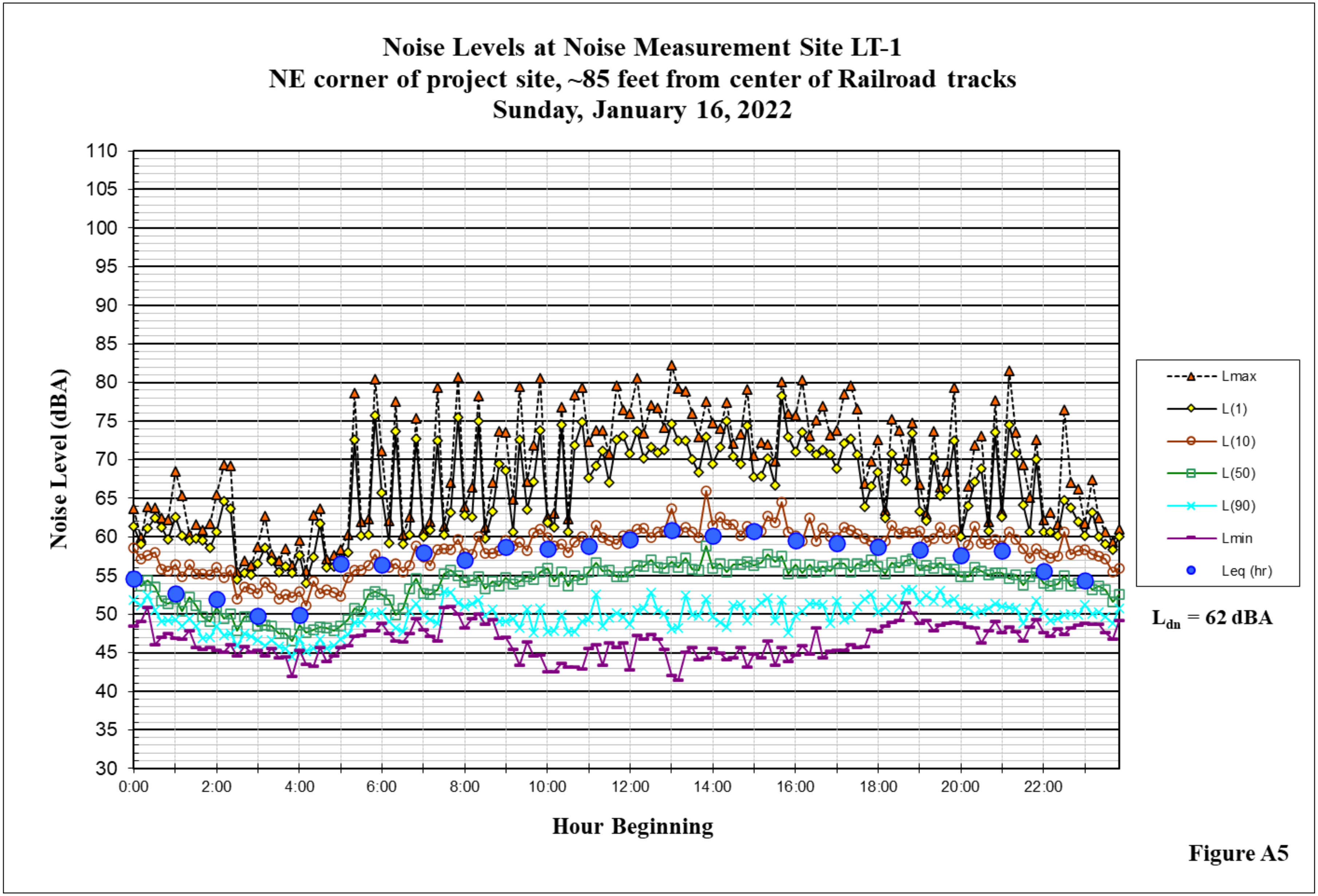
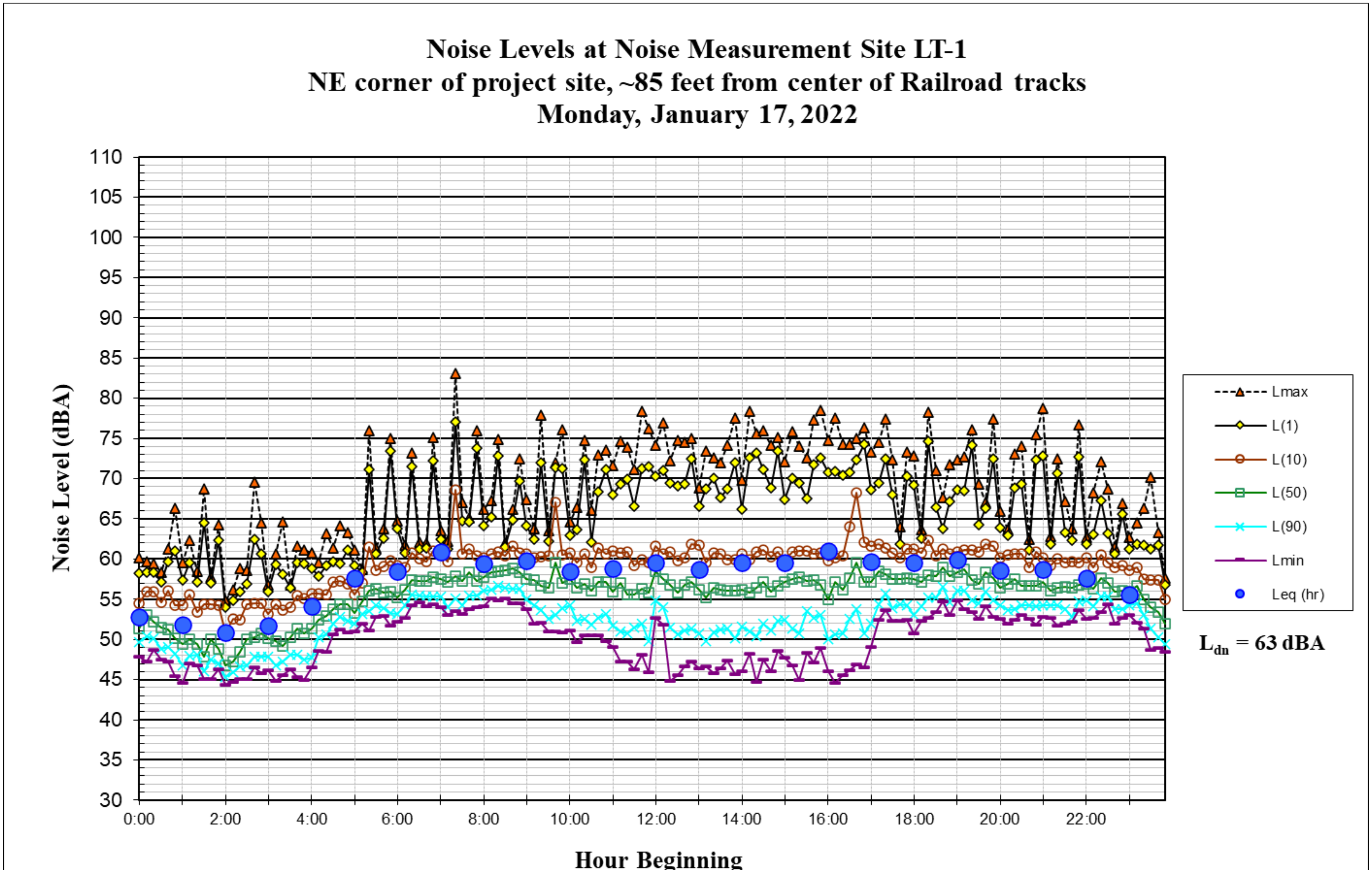

Noise Levels at Noise Measurement Site LT-1
NE corner of project site, ~85 feet from center of Railroad tracks
Saturday, January 15, 2022
Noise Level (dBA)
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)
L_{dn} = 62 dBA

Figure A4



Noise Levels at Noise Measurement Site LT-1
NE corner of project site, ~85 feet from center of Railroad tracks
Sunday, January 16, 2022
Noise Level (dBA)
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)
L_{dn} = 62 dBA

Figure A5



Noise Levels at Noise Measurement Site LT-1
NE corner of project site, ~85 feet from center of Railroad tracks
Monday, January 17, 2022
Noise Level (dBA)
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)
L_{dn} = 63 dBA

Figure A6

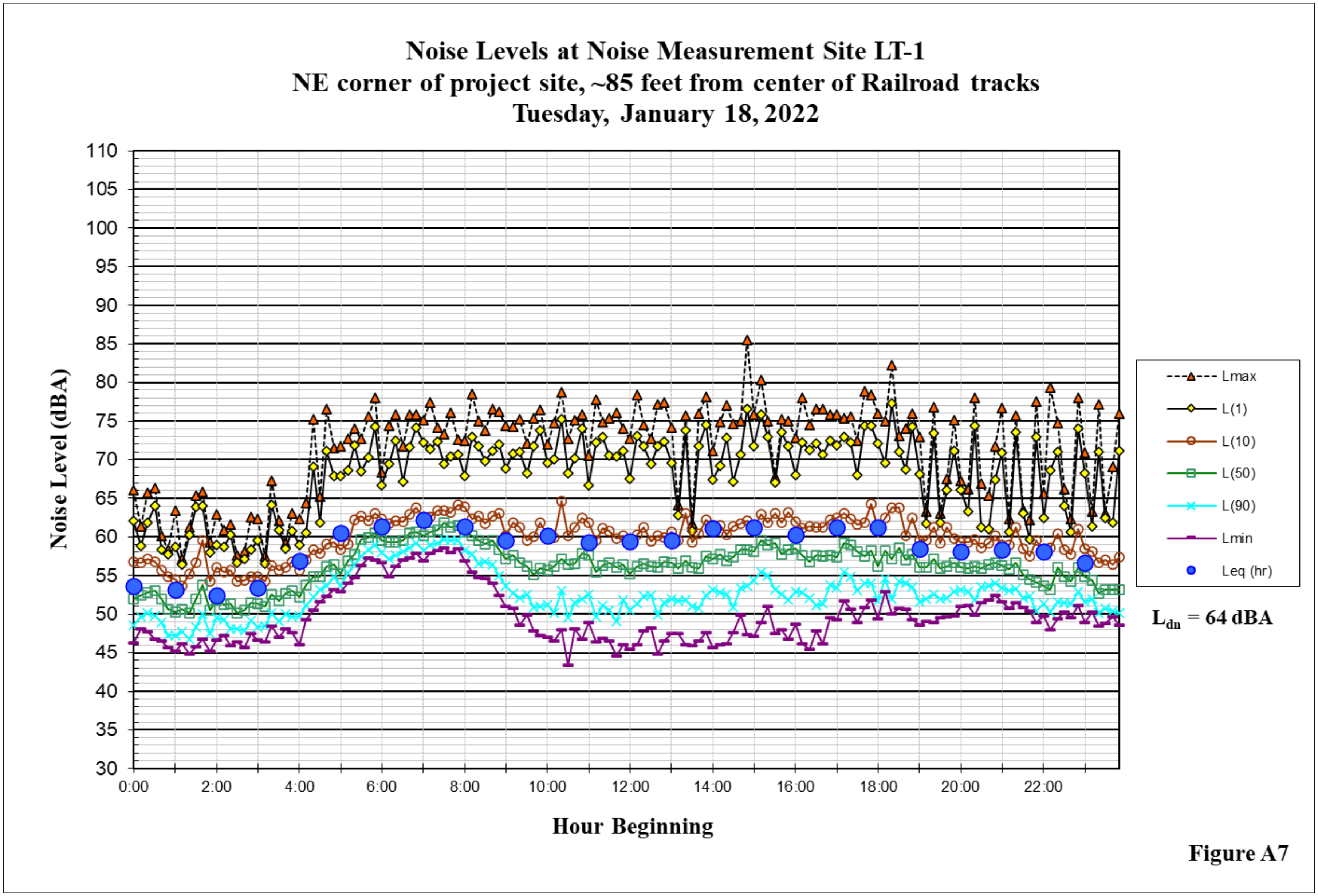
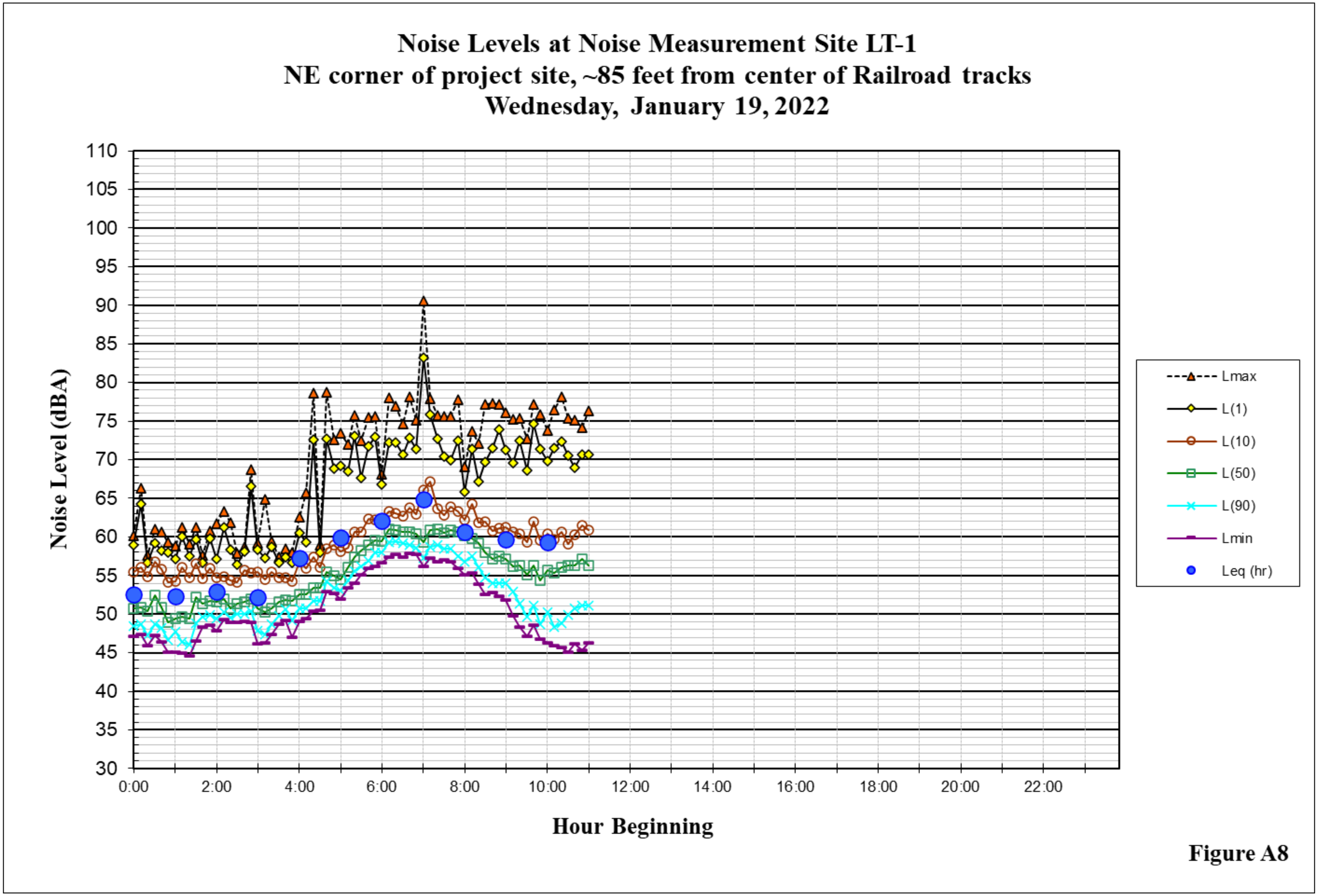

Noise Levels at Noise Measurement Site LT-1
NE corner of project site, ~85 feet from center of Railroad tracks
Tuesday, January 18, 2022
Noise Level (dBA)
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)
L_{dn} = 64 dBA

Figure A7



Noise Levels at Noise Measurement Site LT-1
NE corner of project site, ~85 feet from center of Railroad tracks
Wednesday, January 19, 2022
Noise Level (dBA)
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)
Figure A8

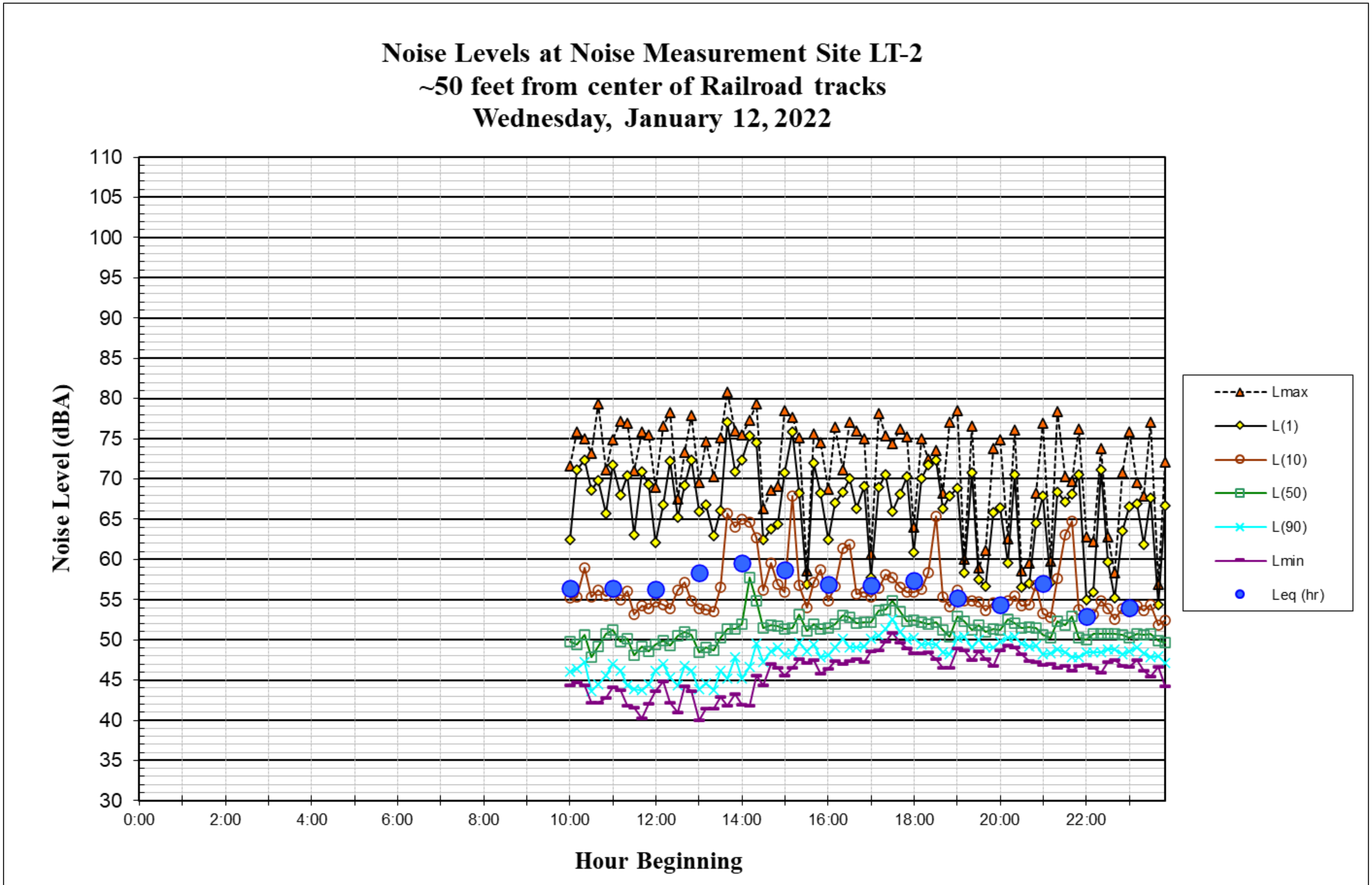

Noise Levels at Noise Measurement Site LT-2
~50 feet from center of Railroad tracks
Wednesday, January 12, 2022
Noise Level (dBA)
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)

Figure A9

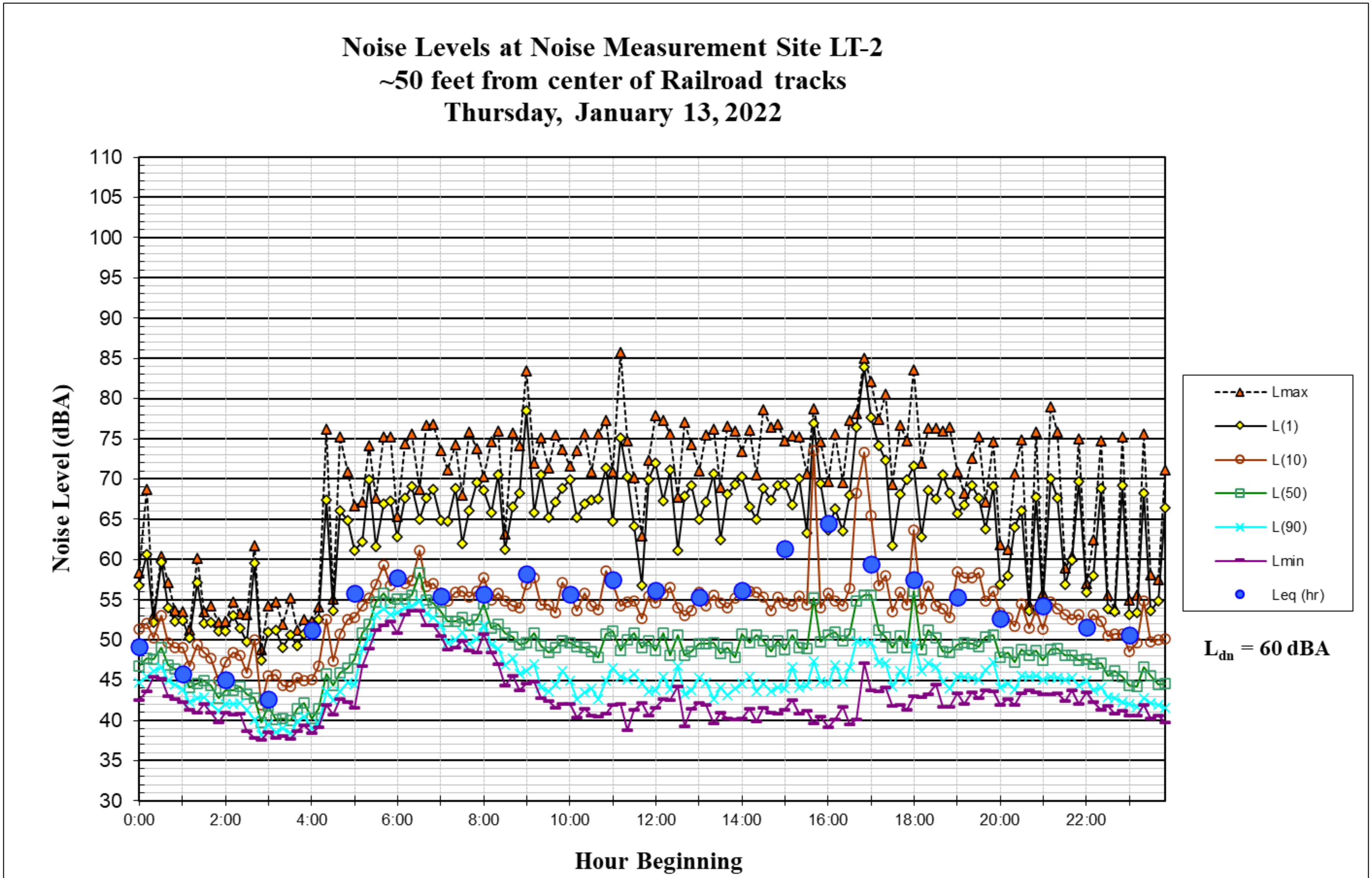

Noise Levels at Noise Measurement Site LT-2
~50 feet from center of Railroad tracks
Thursday, January 13, 2022
Noise Level (dBA)
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)
L_{dn} = 60 dBA

Figure A10

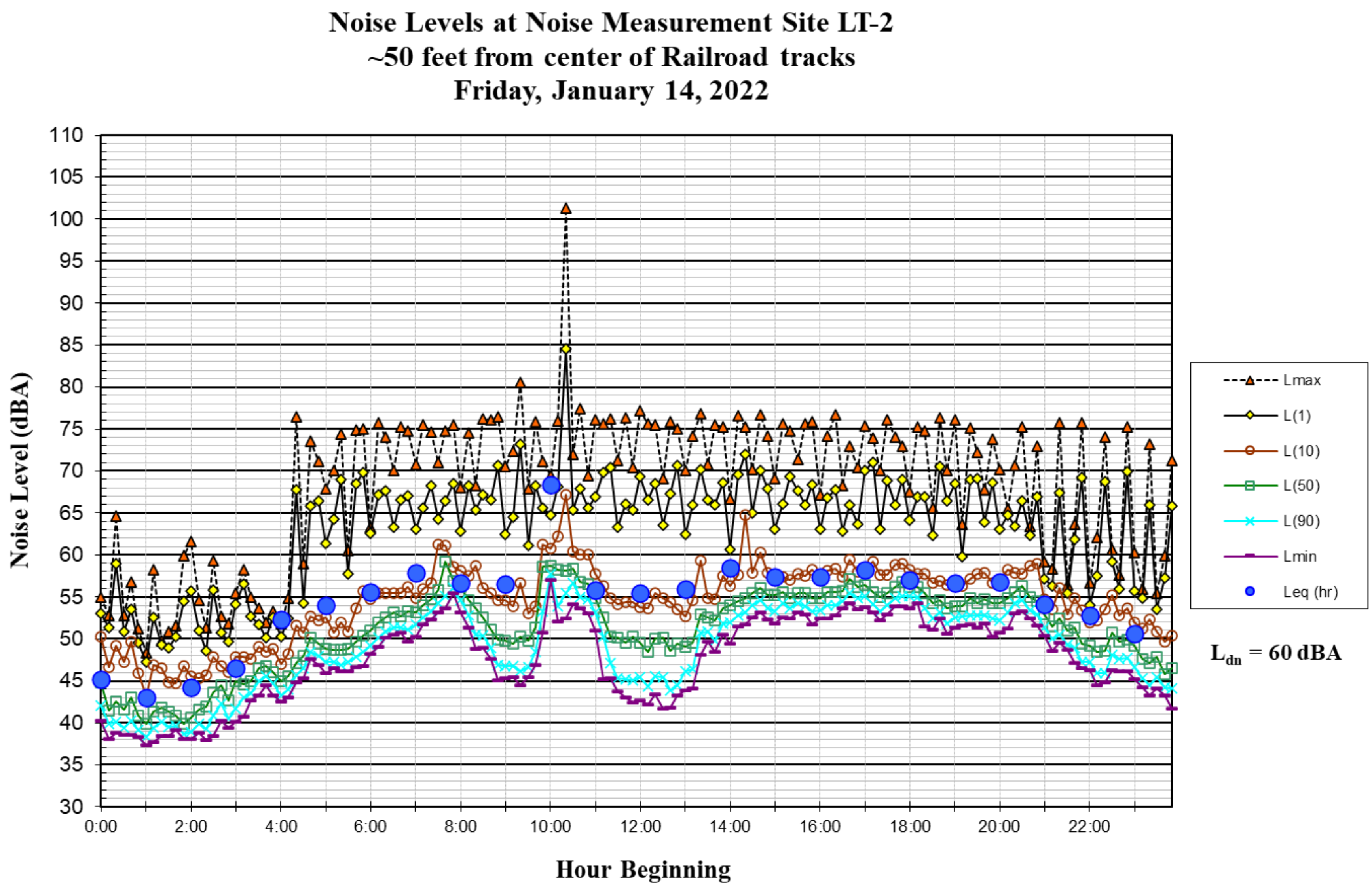

Noise Levels at Noise Measurement Site LT-2
~50 feet from center of Railroad tracks
Friday, January 14, 2022
Noise Level (dBA)
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)
L_{dn} = 60 dBA

Figure A11

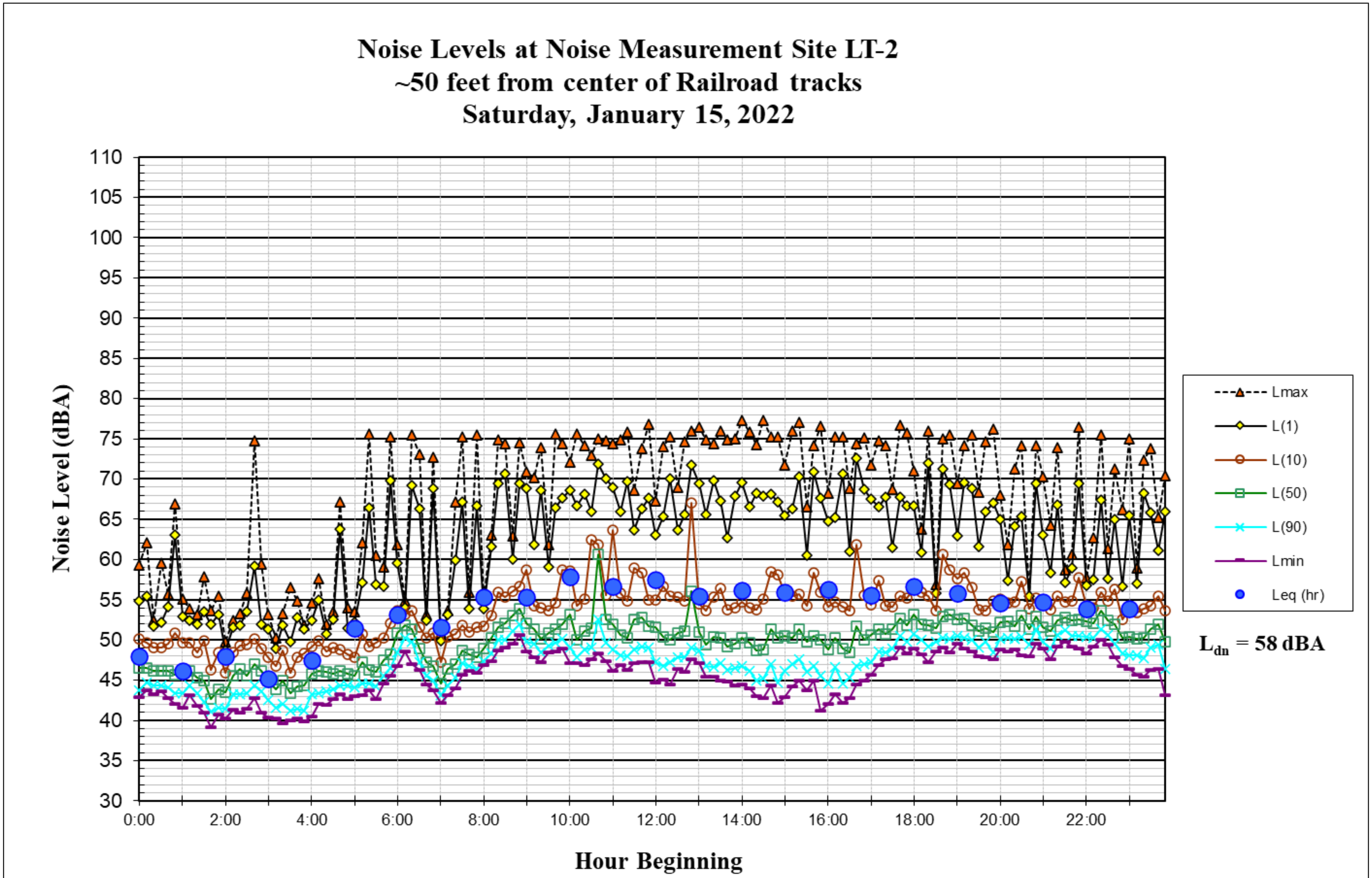
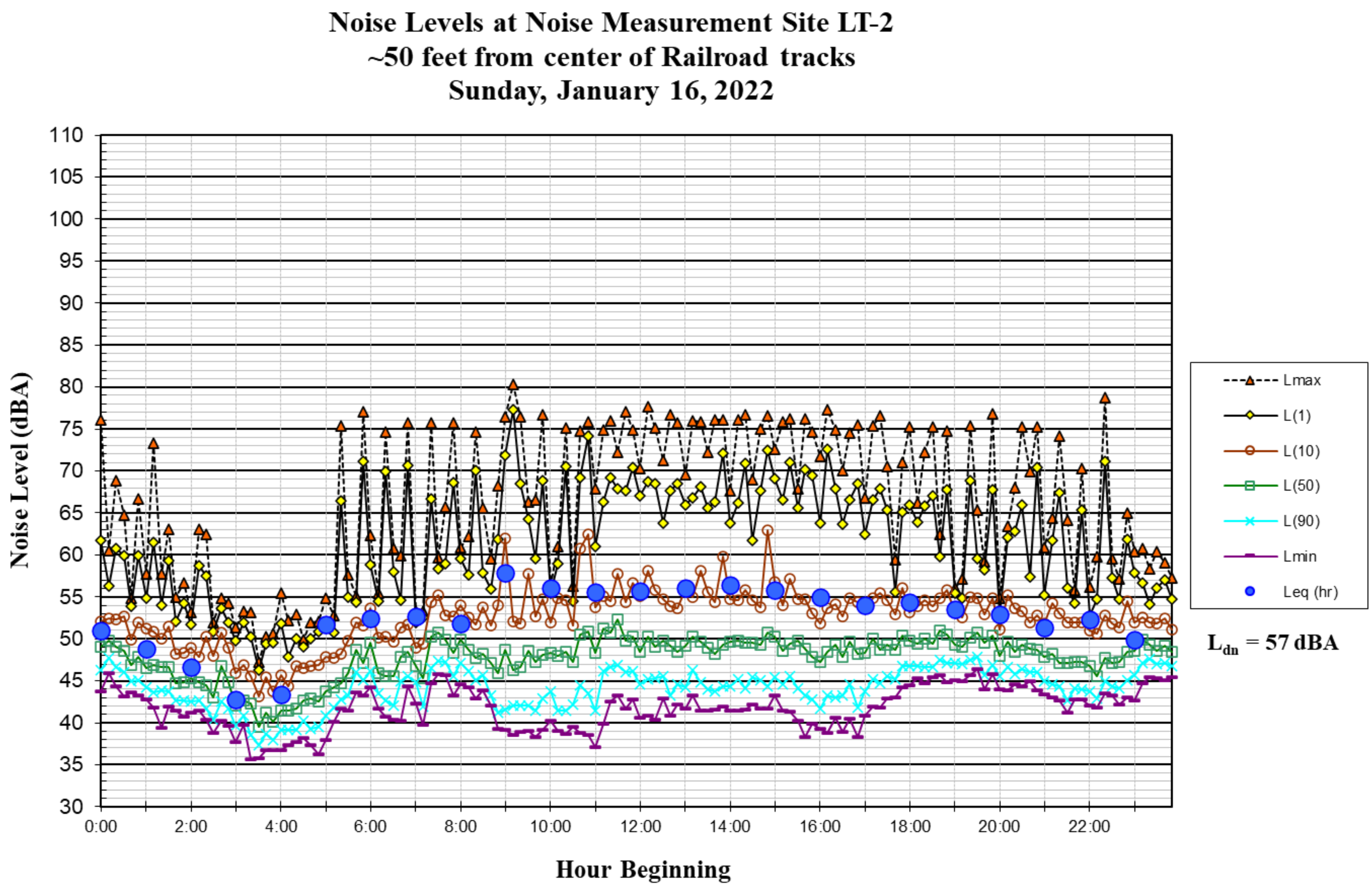
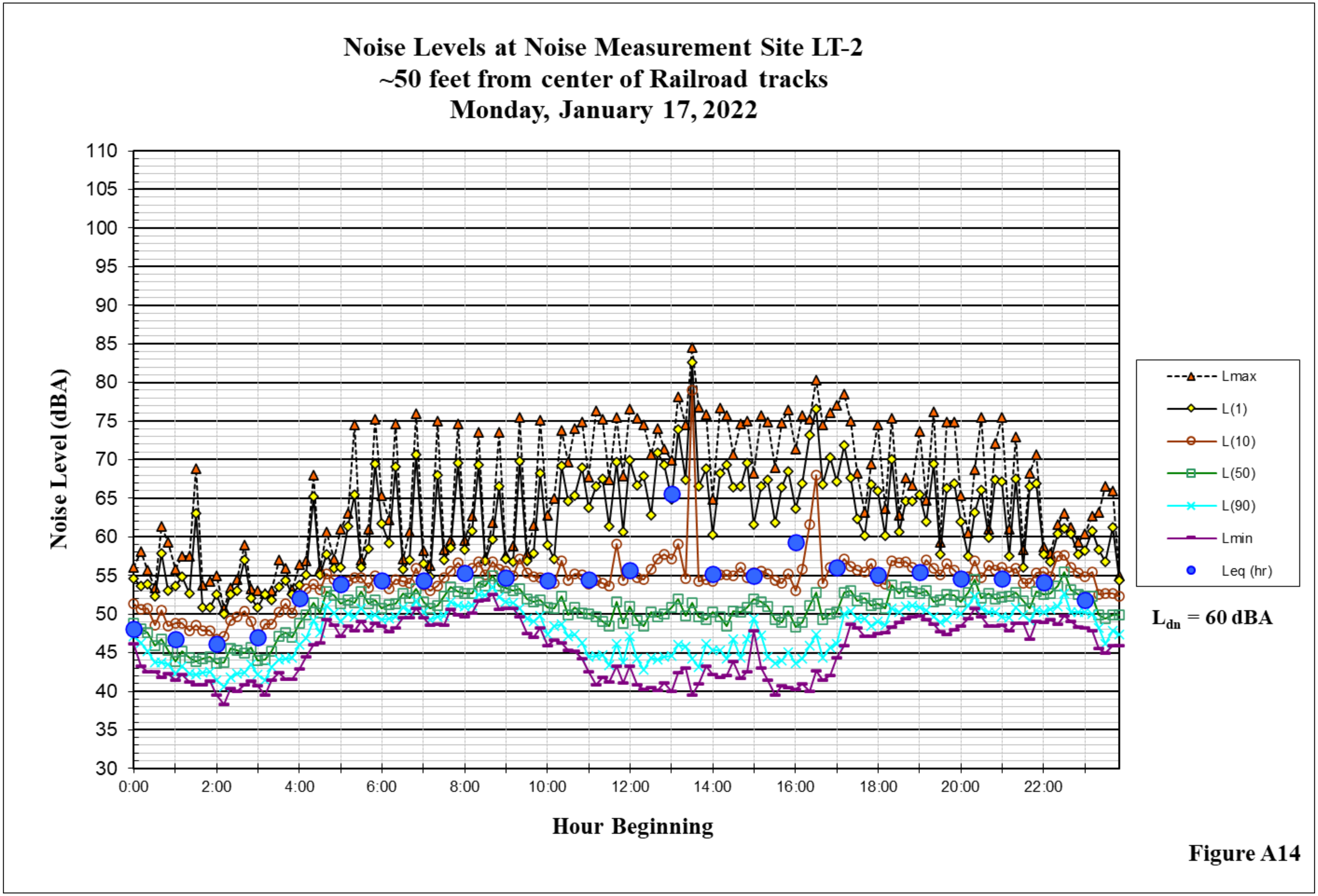

Noise Levels at Noise Measurement Site LT-2
~50 feet from center of Railroad tracks
Saturday, January 15, 2022
Noise Level (dBA)
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)
L_{dn} = 58 dBA

Figure A12



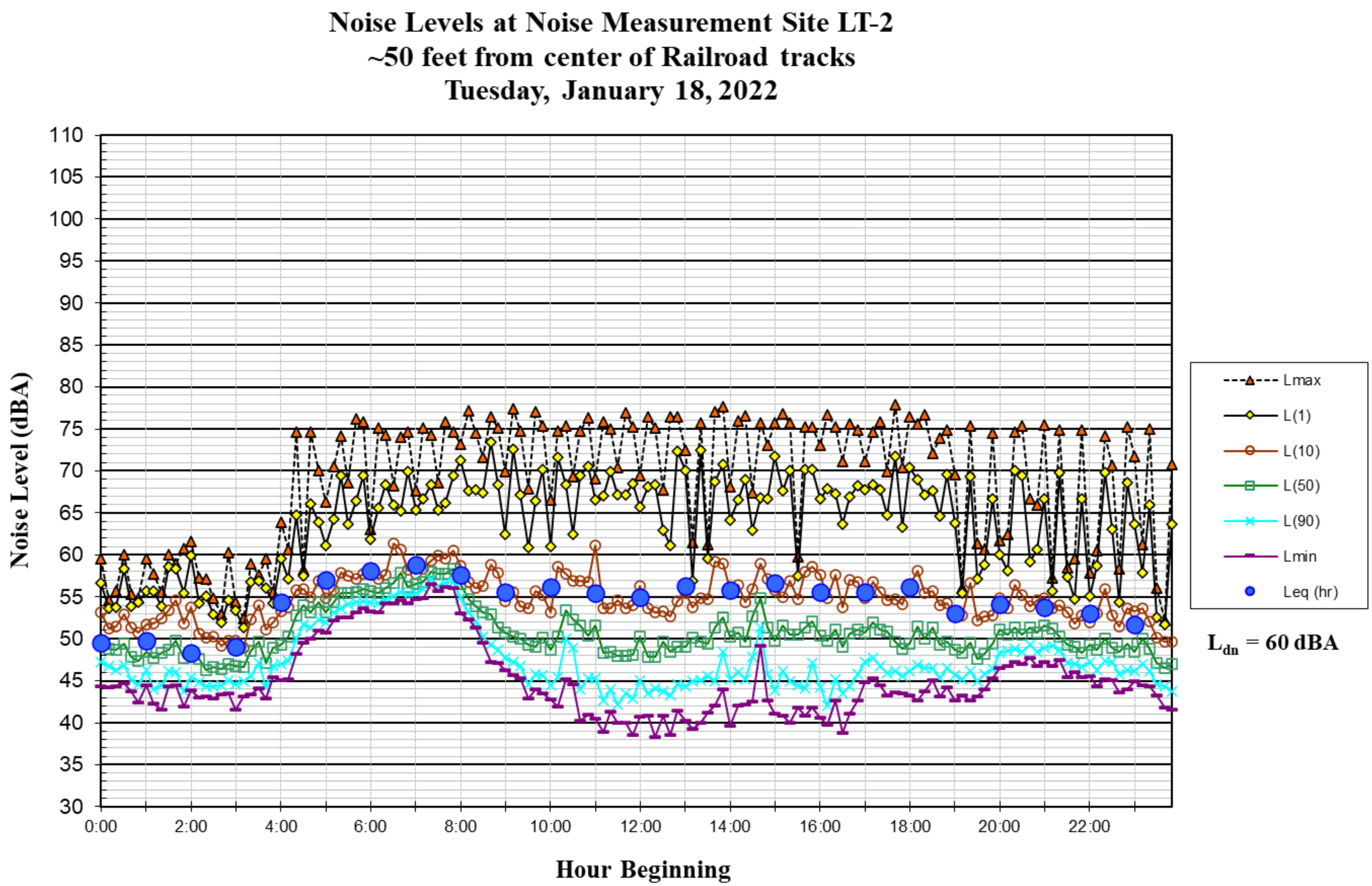
Noise Levels at Noise Measurement Site LT-2
~50 feet from center of Railroad tracks
Sunday, January 16, 2022
Noise Level (dBA)
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)
L_{dn} = 57 dBA

Figure A13



Noise Levels at Noise Measurement Site LT-2
~50 feet from center of Railroad tracks
Monday, January 17, 2022
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
Noise Level (dBA)
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)
L_{dn} = 60 dBA

Figure A14



Noise Levels at Noise Measurement Site LT-2
~50 feet from center of Railroad tracks
Tuesday, January 18, 2022
Noise Level (dBA)
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)
L_{dn} = 60 dBA

Figure A15

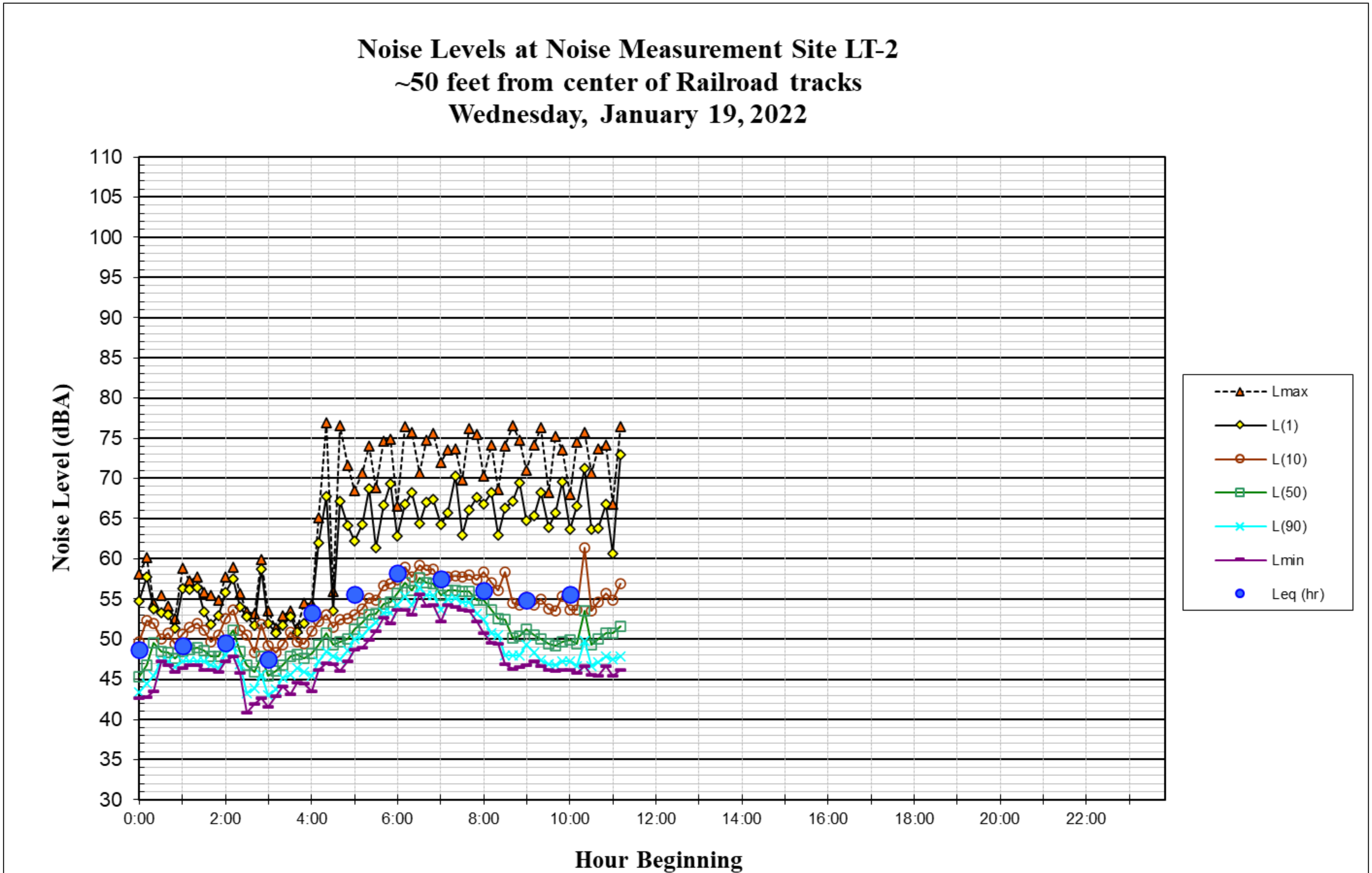
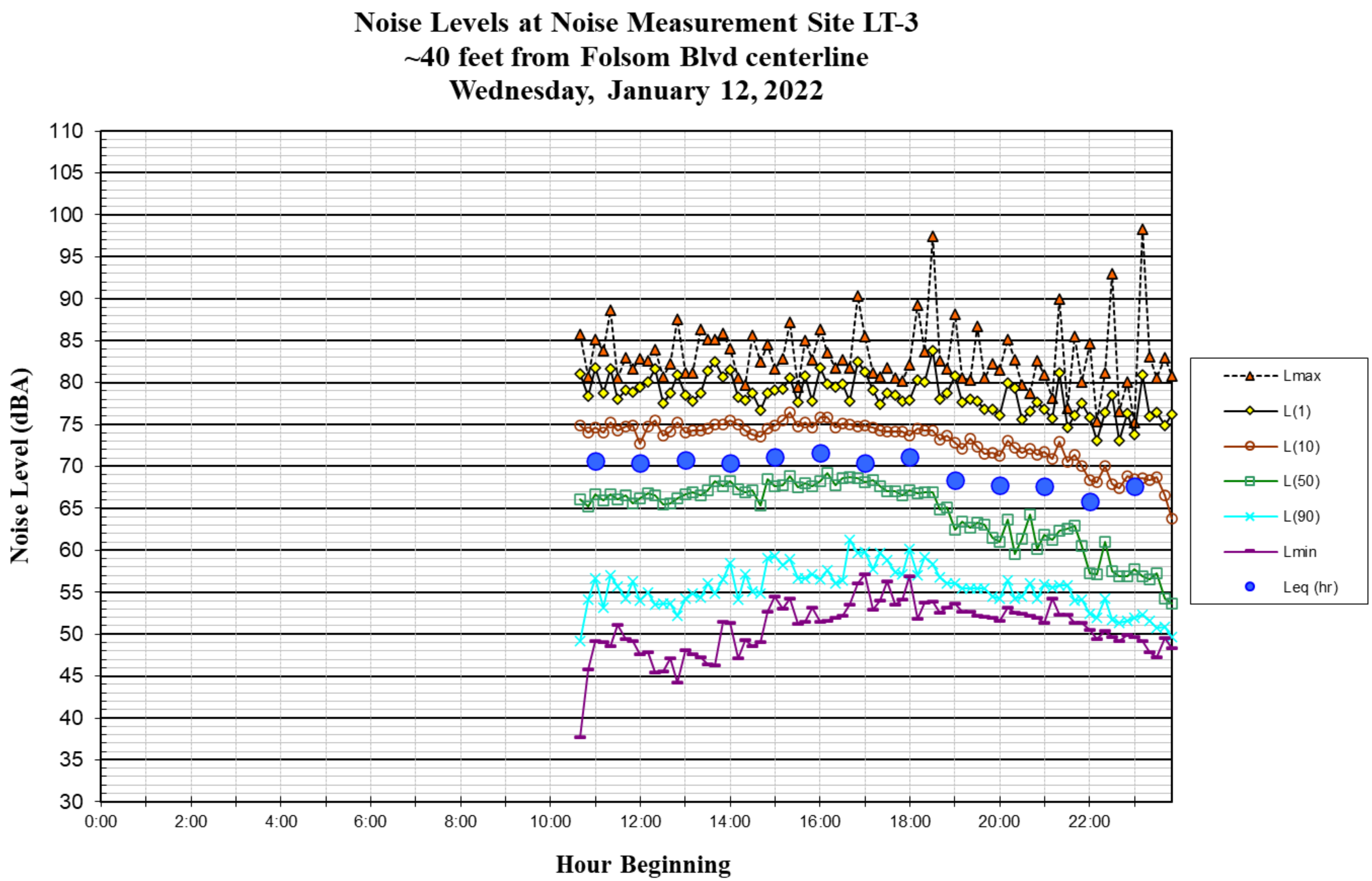
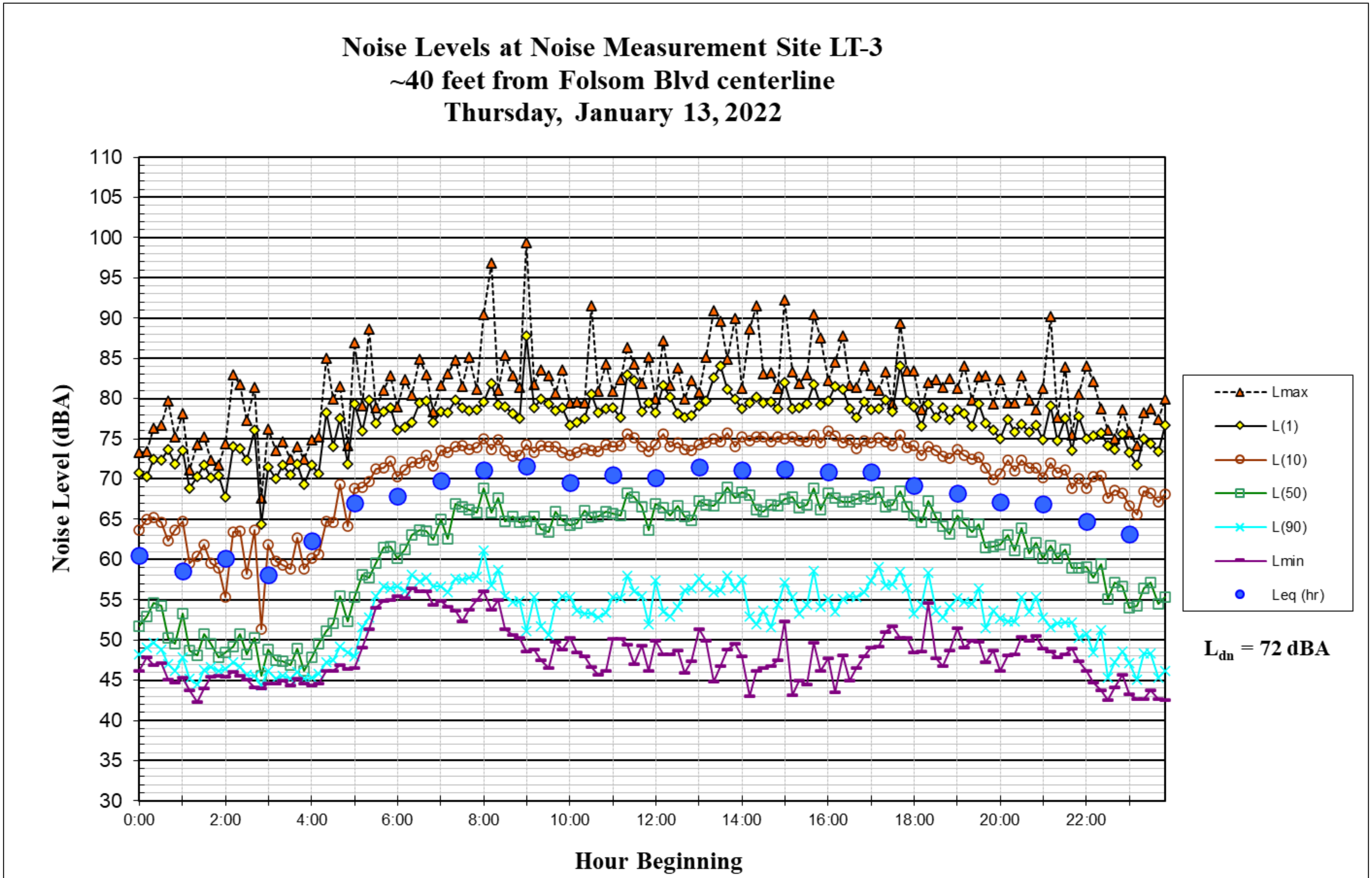

Noise Levels at Noise Measurement Site LT-2
~50 feet from center of Railroad tracks
Wednesday, January 19, 2022
Noise Level (dBA)
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)

Figure A16



Noise Levels at Noise Measurement Site LT-3
~40 feet from Folsom Blvd centerline
Wednesday, January 12, 2022
Noise Level (dBA)
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)

Figure A17



Noise Levels at Noise Measurement Site LT-3
~40 feet from Folsom Blvd centerline
Thursday, January 13, 2022
Noise Level (dBA)
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)
L_{dn} = 72 dBA

Figure A18

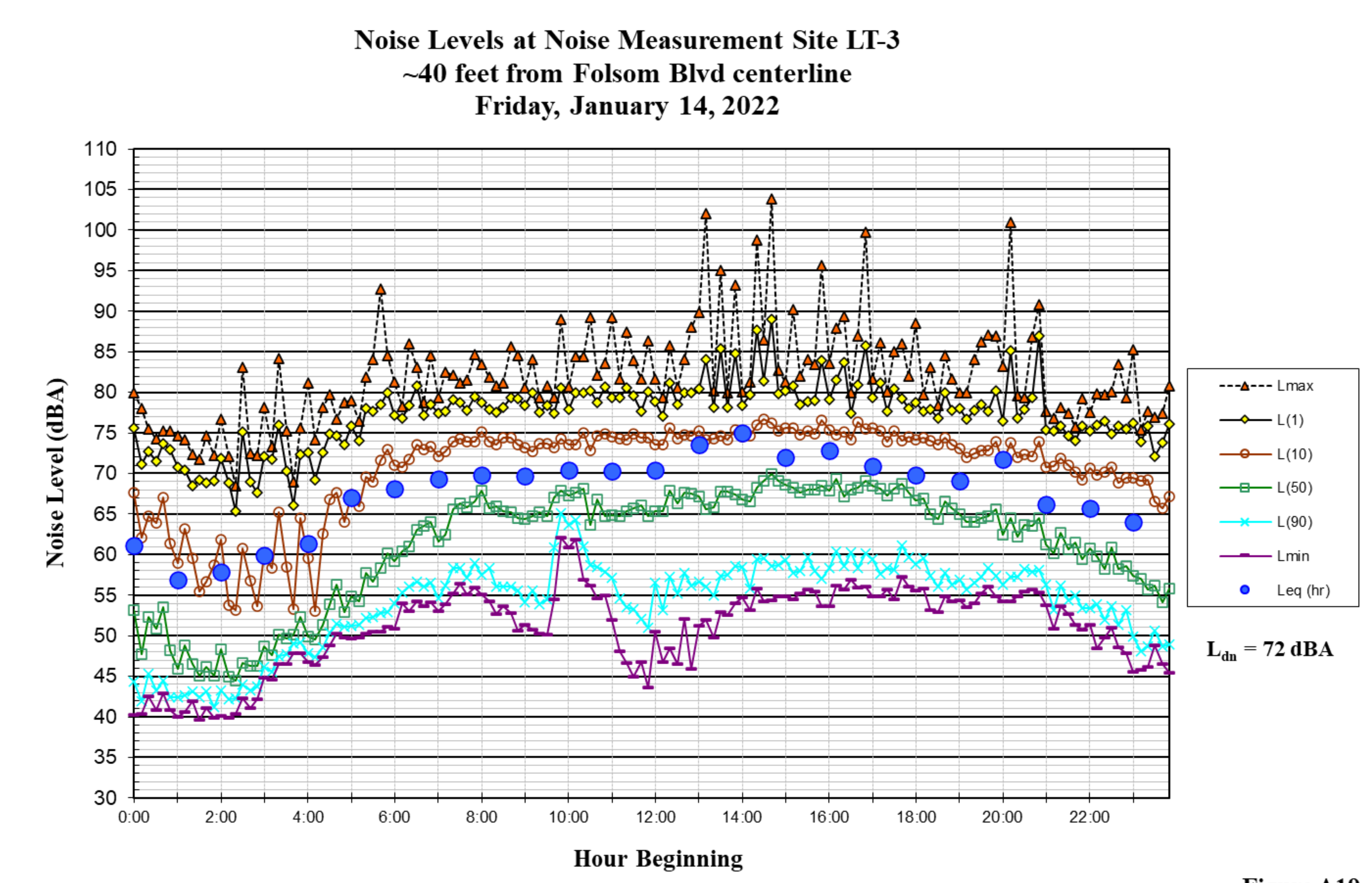
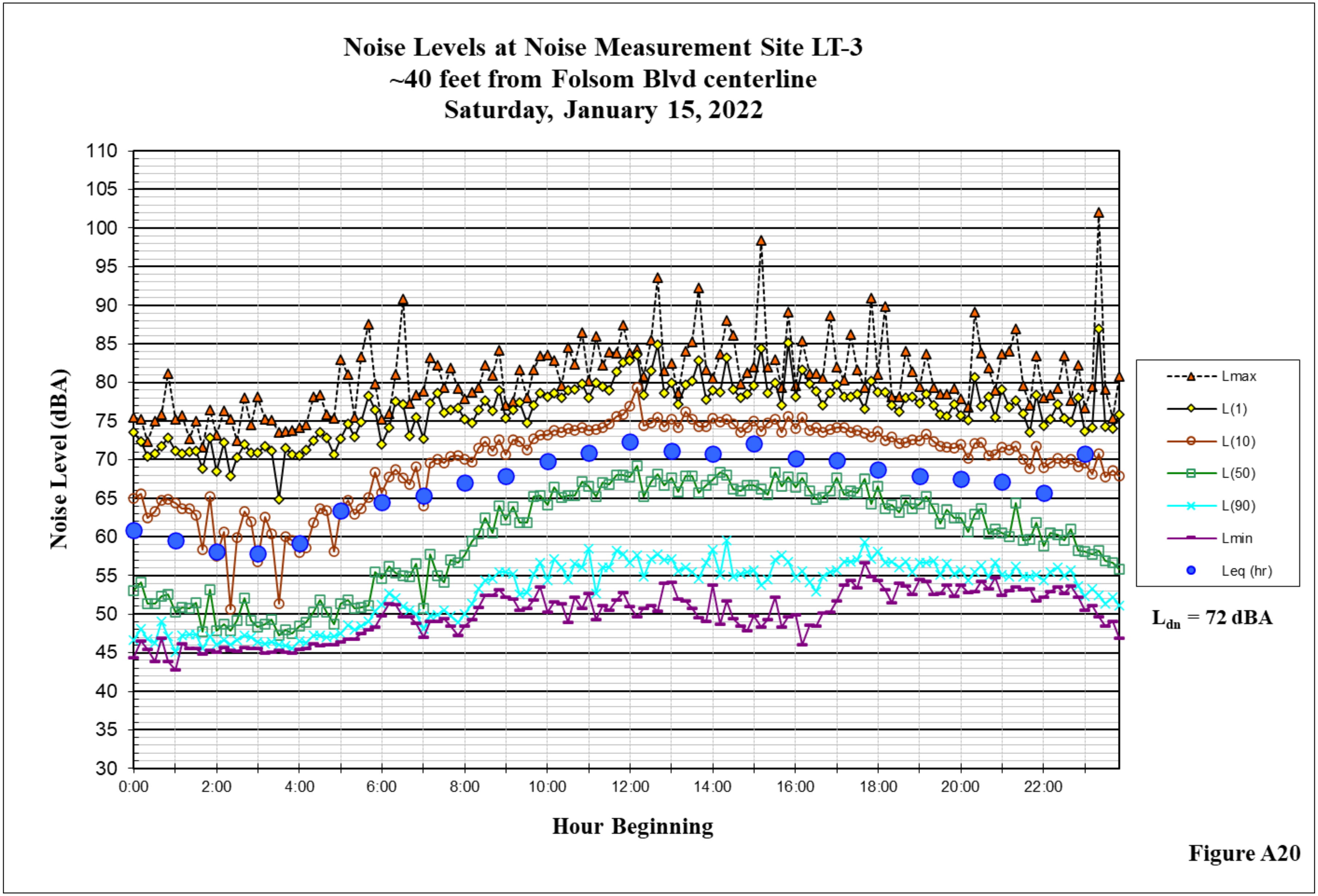
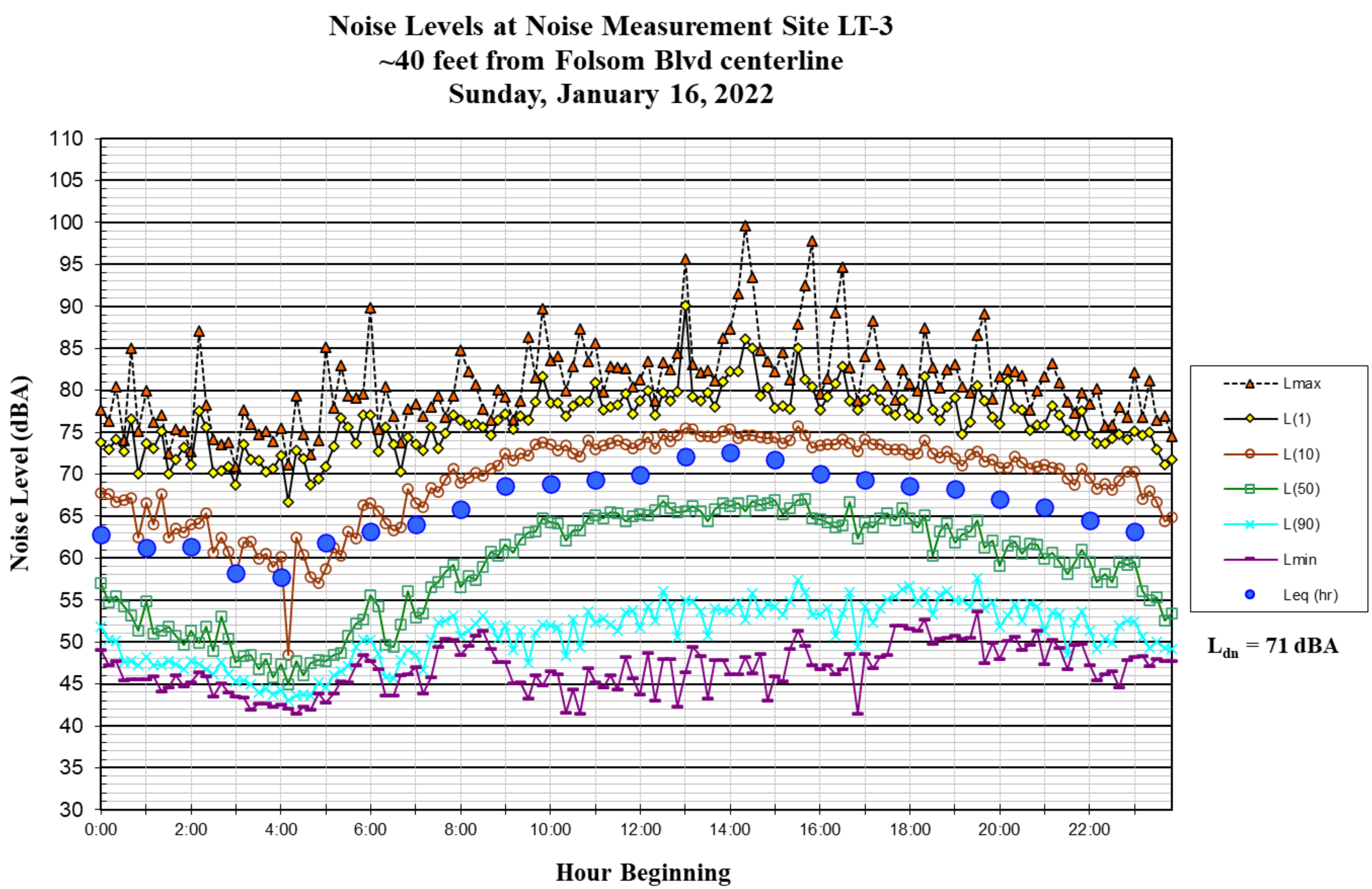

Noise Levels at Noise Measurement Site LT-3
~40 feet from Folsom Blvd centerline
Friday, January 14, 2022
Noise Level (dBA)
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)
Ldn = 72 dBA

Figure A19



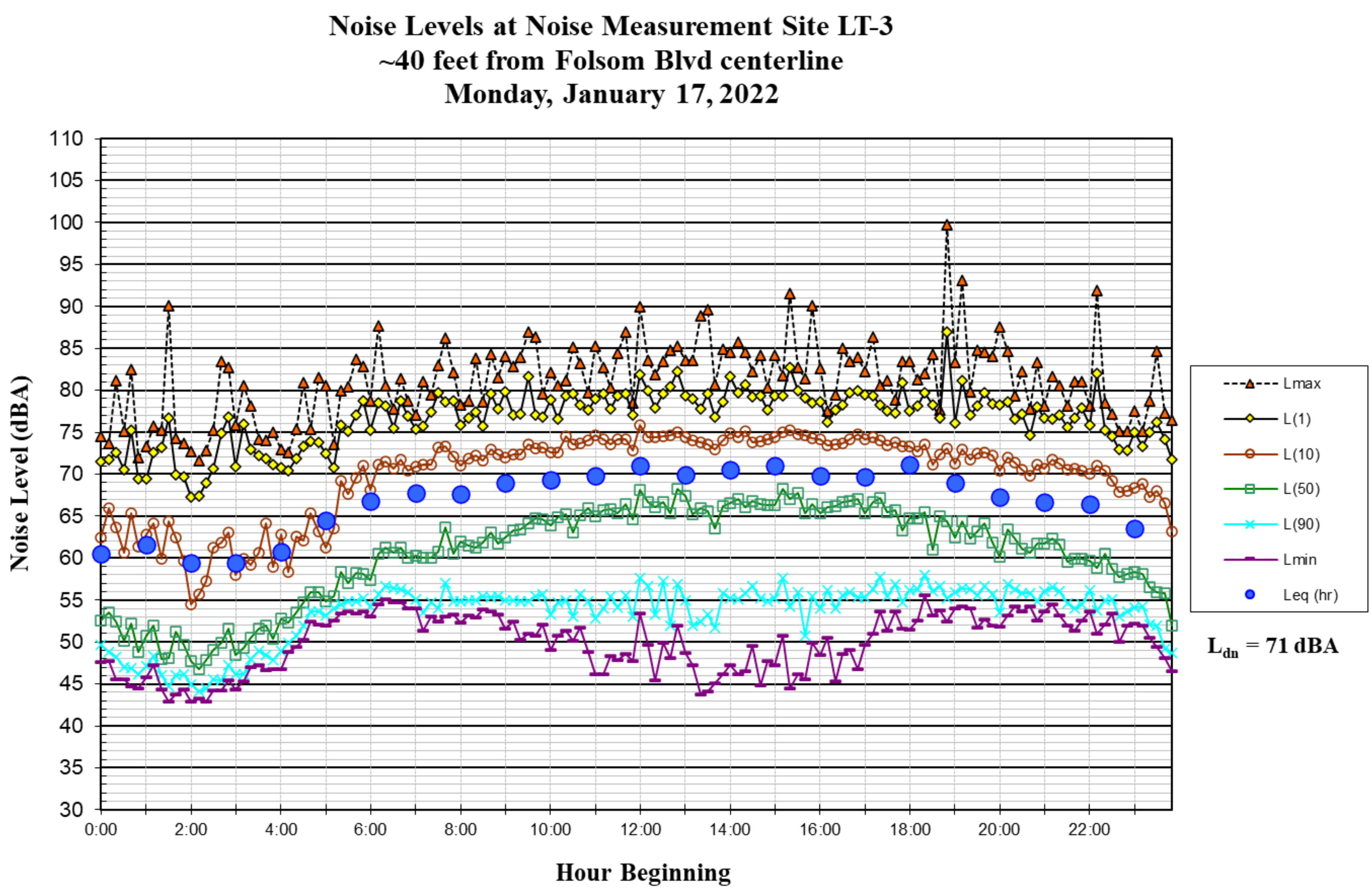
Noise Levels at Noise Measurement Site LT-3
~40 feet from Folsom Blvd centerline
Saturday, January 15, 2022
Noise Level (dBA)
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)
L_{dn} = 72 dBA

Figure A20



Noise Levels at Noise Measurement Site LT-3
~40 feet from Folsom Blvd centerline
Sunday, January 16, 2022
Noise Level (dBA)
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)
L_{dn} = 71 dBA

Figure A21



L_{dn} = 71 dBA

Figure A22

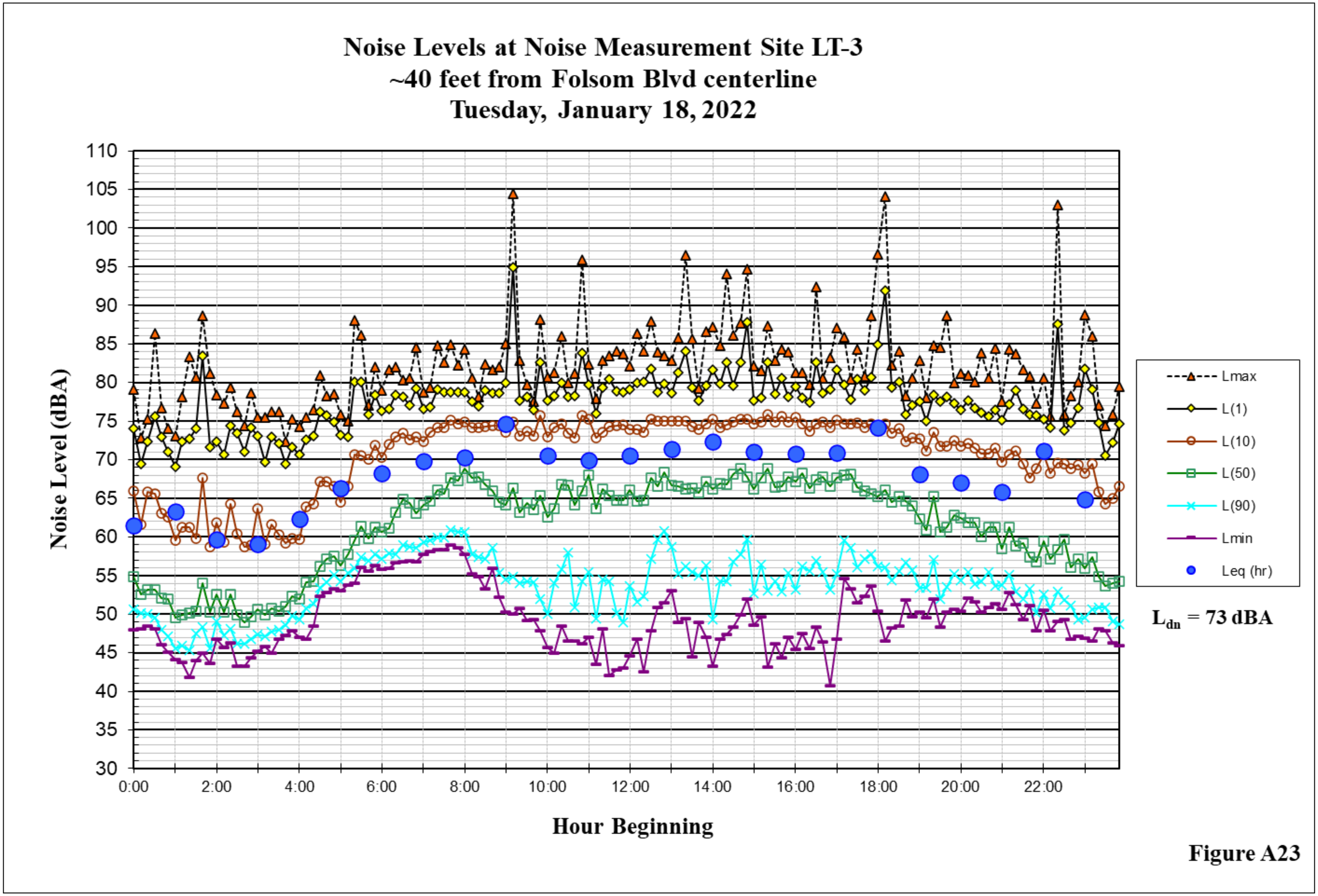
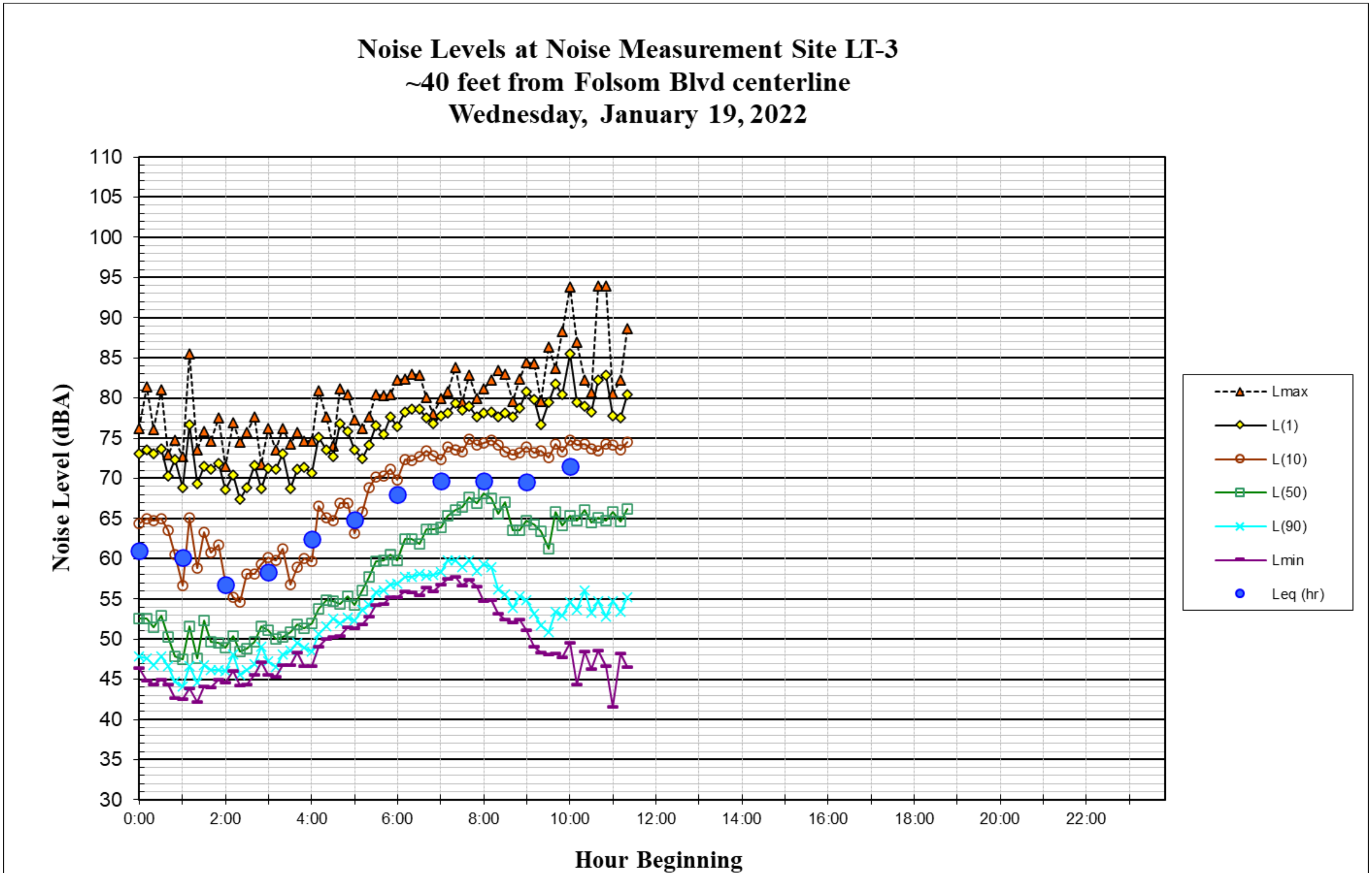
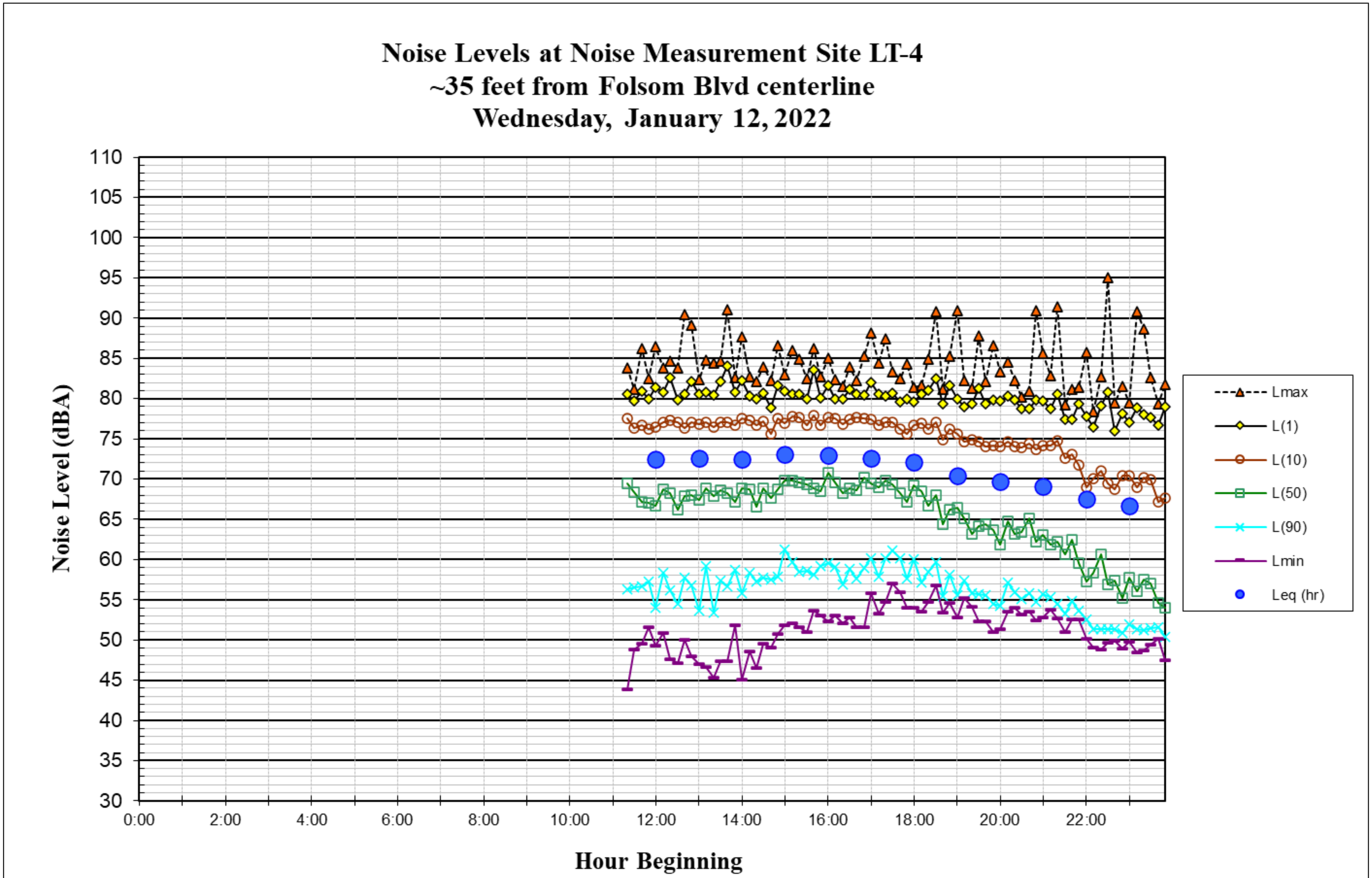

Noise Levels at Noise Measurement Site LT-3
~40 feet from Folsom Blvd centerline
Tuesday, January 18, 2022
Noise Level (dBA)
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)
L_{dn} = 73 dBA

Figure A23



Noise Levels at Noise Measurement Site LT-3
~40 feet from Folsom Blvd centerline
Wednesday, January 19, 2022
Noise Level (dBA)
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)

Figure A24



Noise Levels at Noise Measurement Site LT-4
~35 feet from Folsom Blvd centerline
Wednesday, January 12, 2022
Noise Level (dBA)
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)

Figure A25

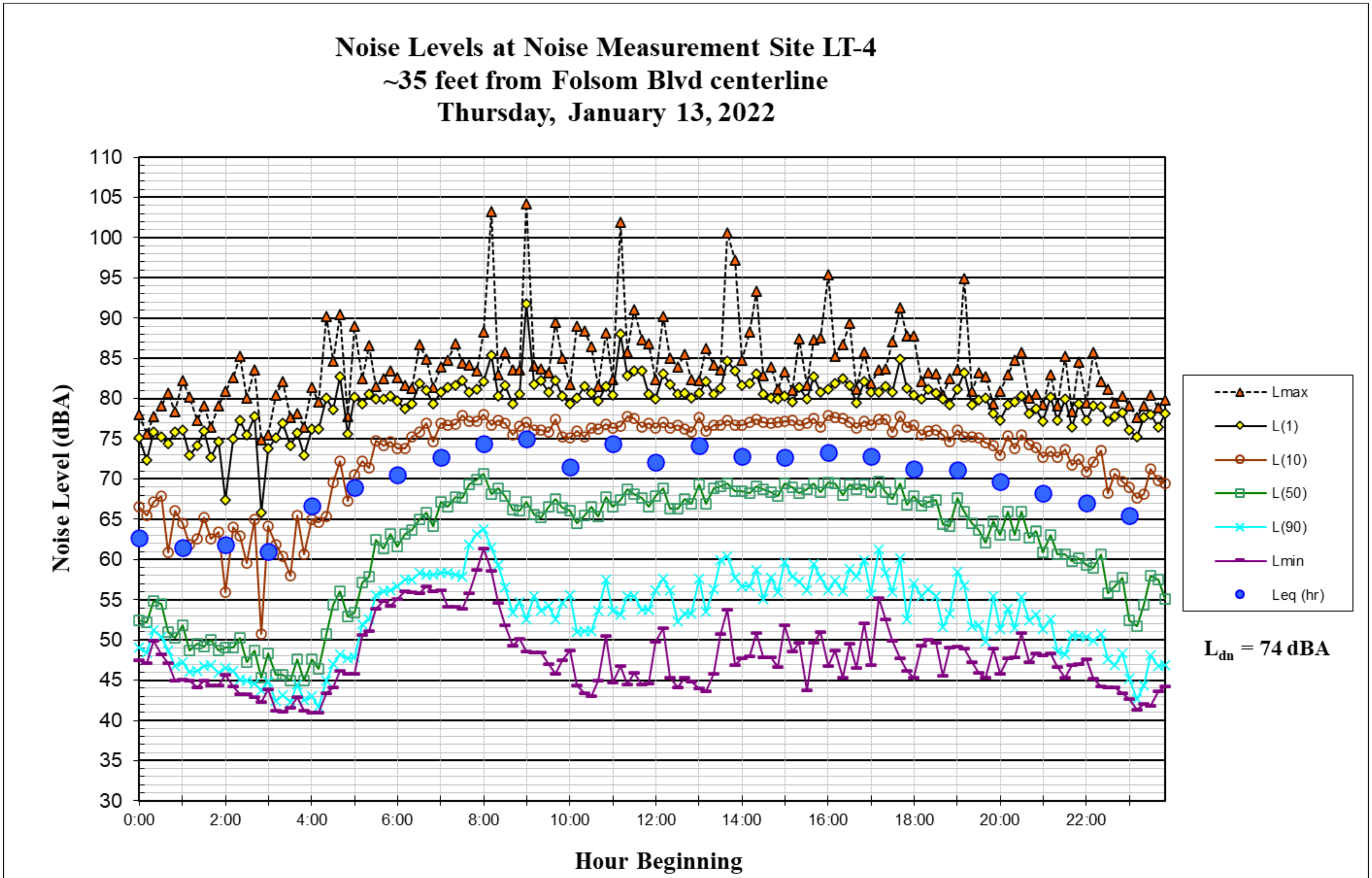
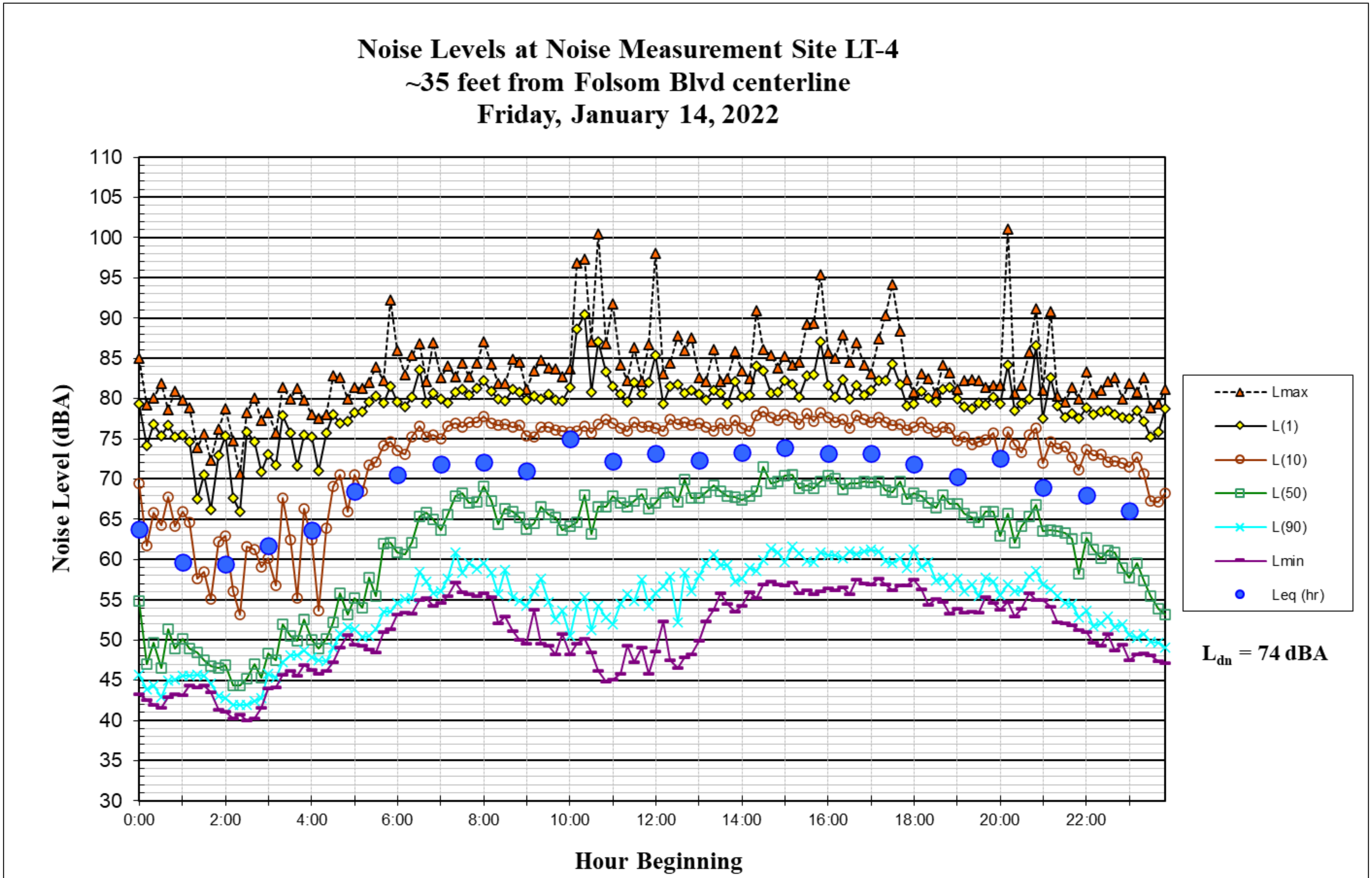
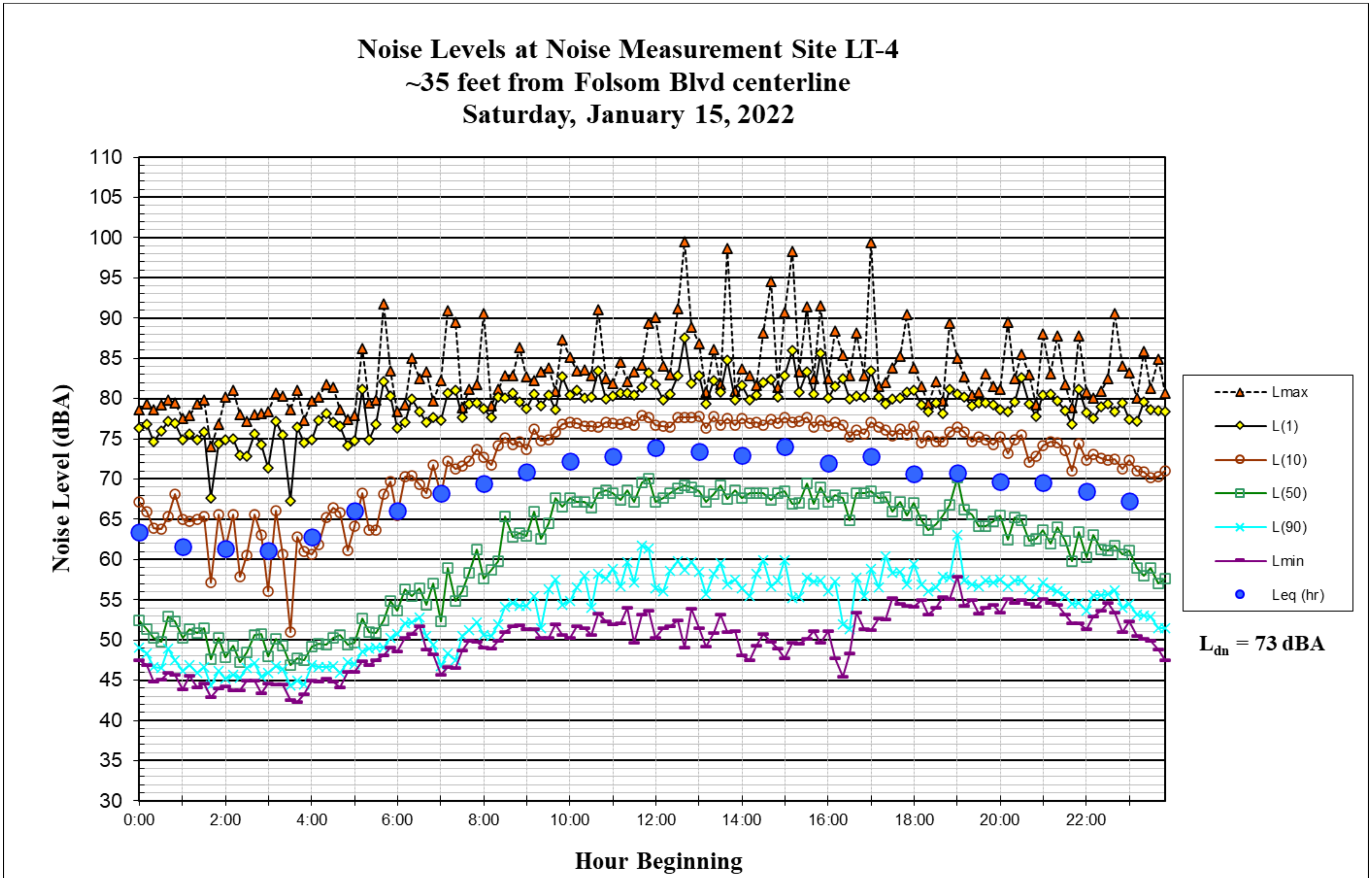

Noise Levels at Noise Measurement Site LT-4
~35 feet from Folsom Blvd centerline
Thursday, January 13, 2022
Noise Level (dBA)
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)
L_{dn} = 74 dBA

Figure A26



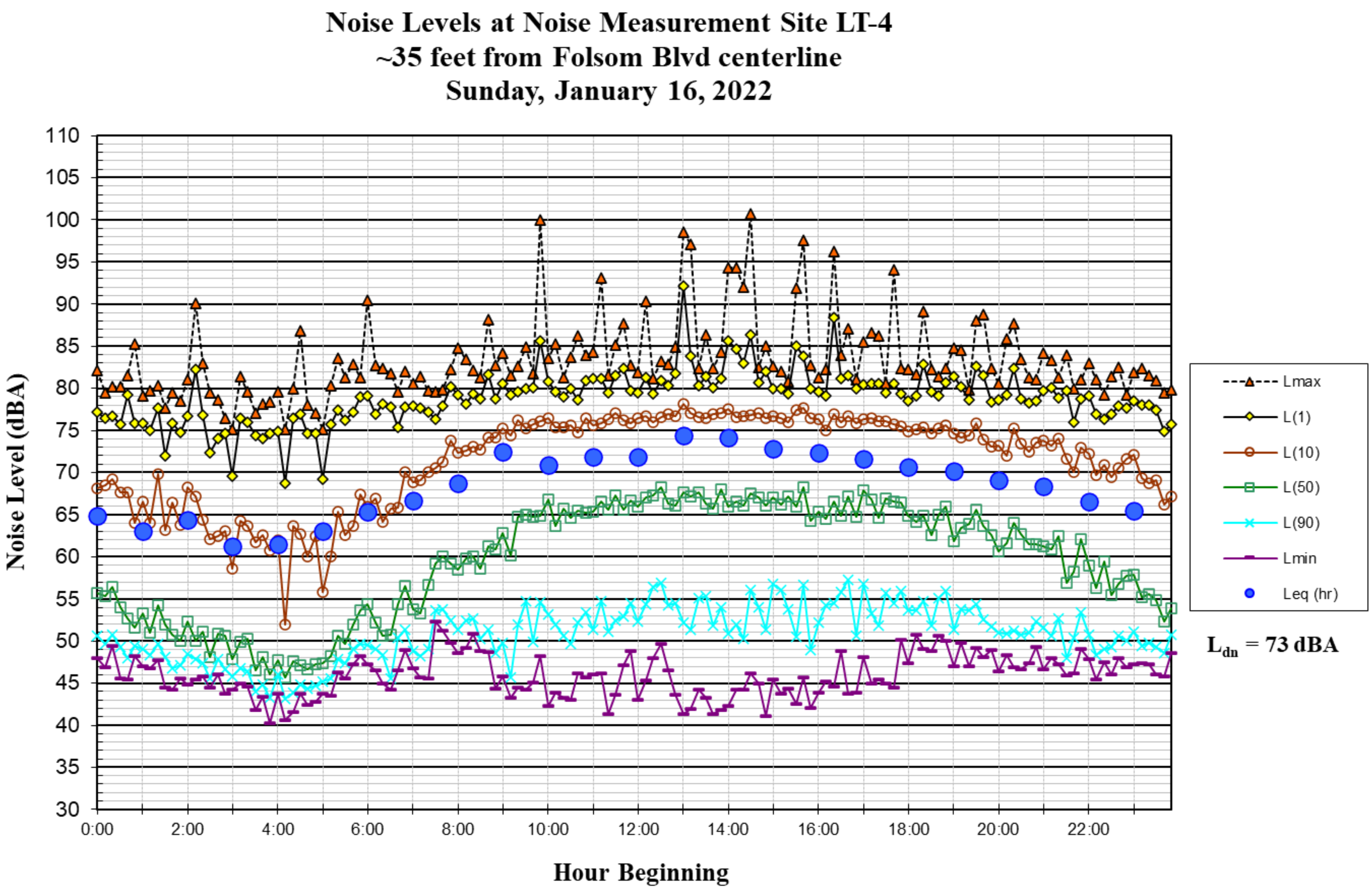
Noise Levels at Noise Measurement Site LT-4
~35 feet from Folsom Blvd centerline
Friday, January 14, 2022
Noise Level (dBA)
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)
L_{dn} = 74 dBA

Figure A27



Noise Levels at Noise Measurement Site LT-4
~35 feet from Folsom Blvd centerline
Saturday, January 15, 2022
Noise Level (dBA)
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)
L_{dn} = 73 dBA

Figure A28



Noise Levels at Noise Measurement Site LT-4
~35 feet from Folsom Blvd centerline
Sunday, January 16, 2022
Noise Level (dBA)
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)
L_{dn} = 73 dBA

Figure A29

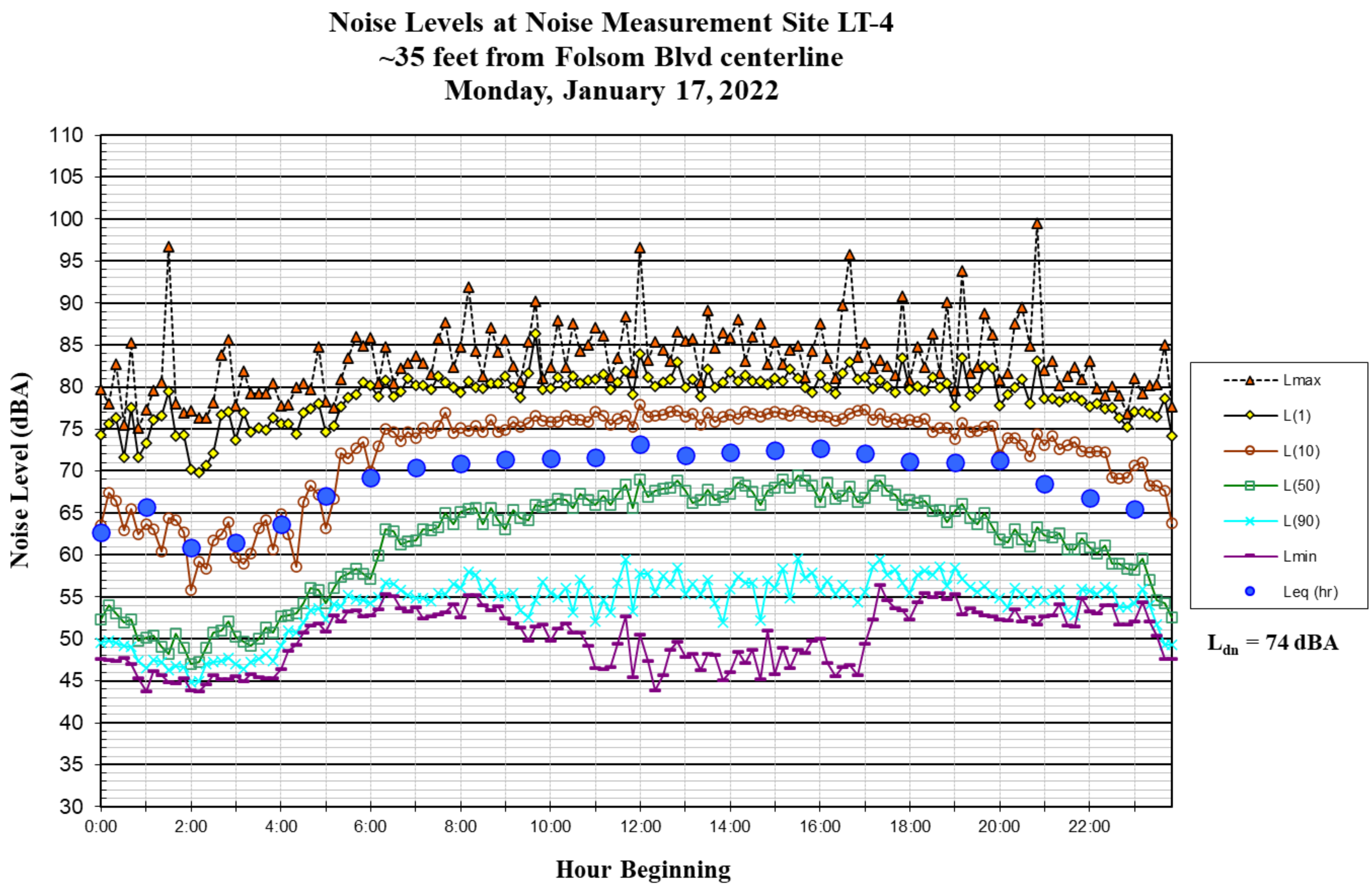

Noise Levels at Noise Measurement Site LT-4
~35 feet from Folsom Blvd centerline
Monday, January 17, 2022
Noise Level (dBA)
Hour Beginning
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)
L dn = 74 dBA

Figure A30

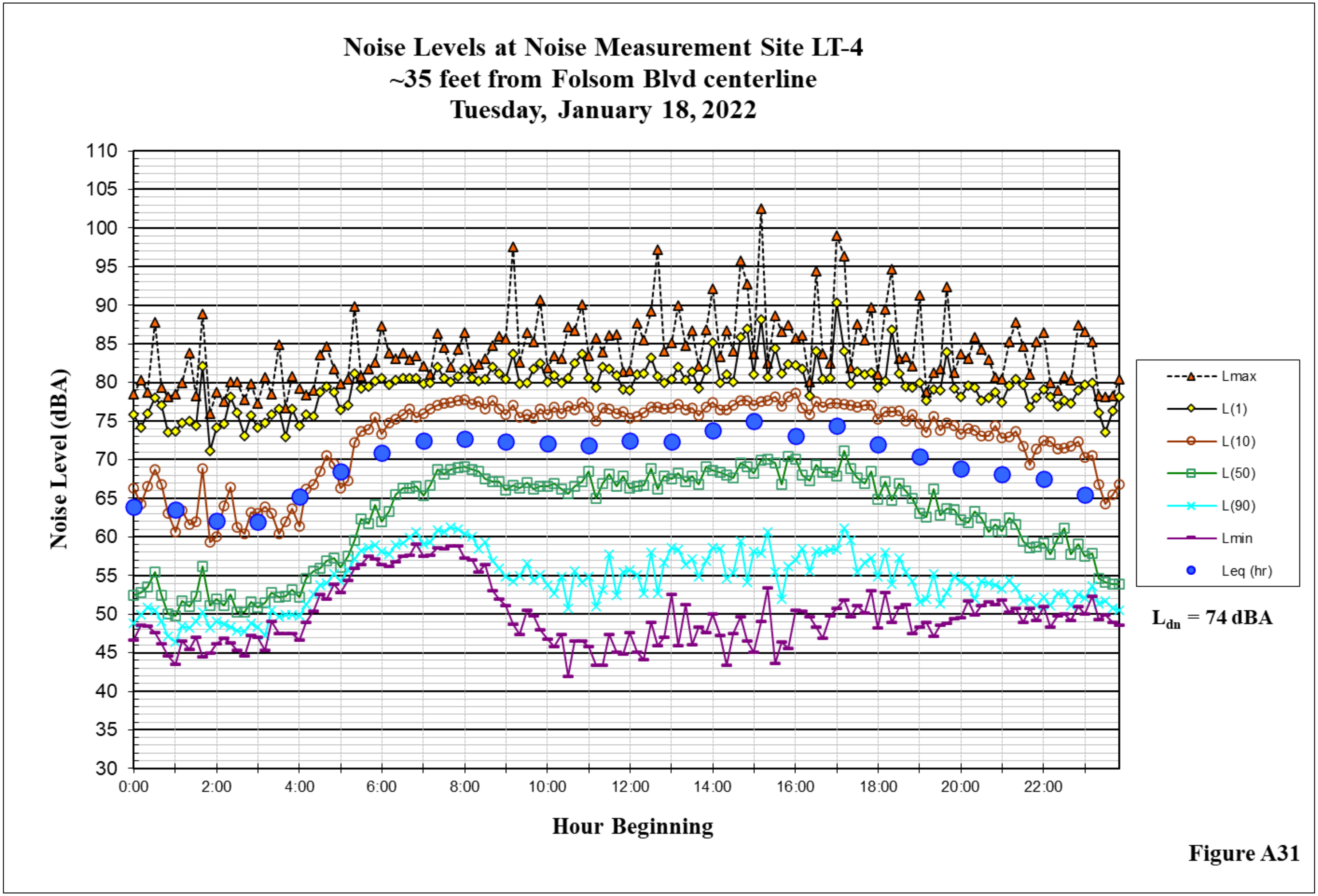
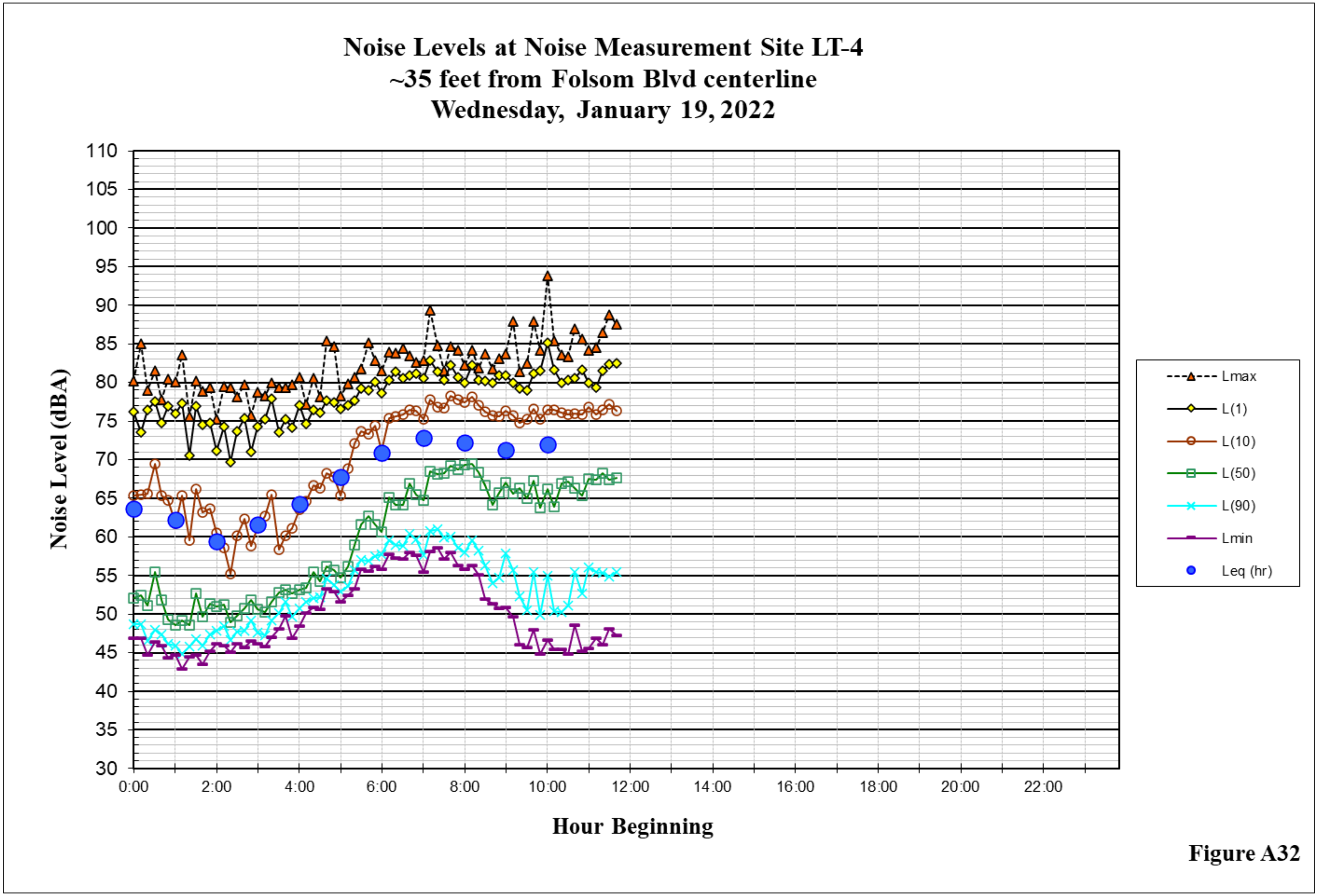

Noise Levels at Noise Measurement Site LT-4
~35 feet from Folsom Blvd centerline
Tuesday, January 18, 2022
Noise Level (dBA)
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)
L_{dn} = 74 dBA

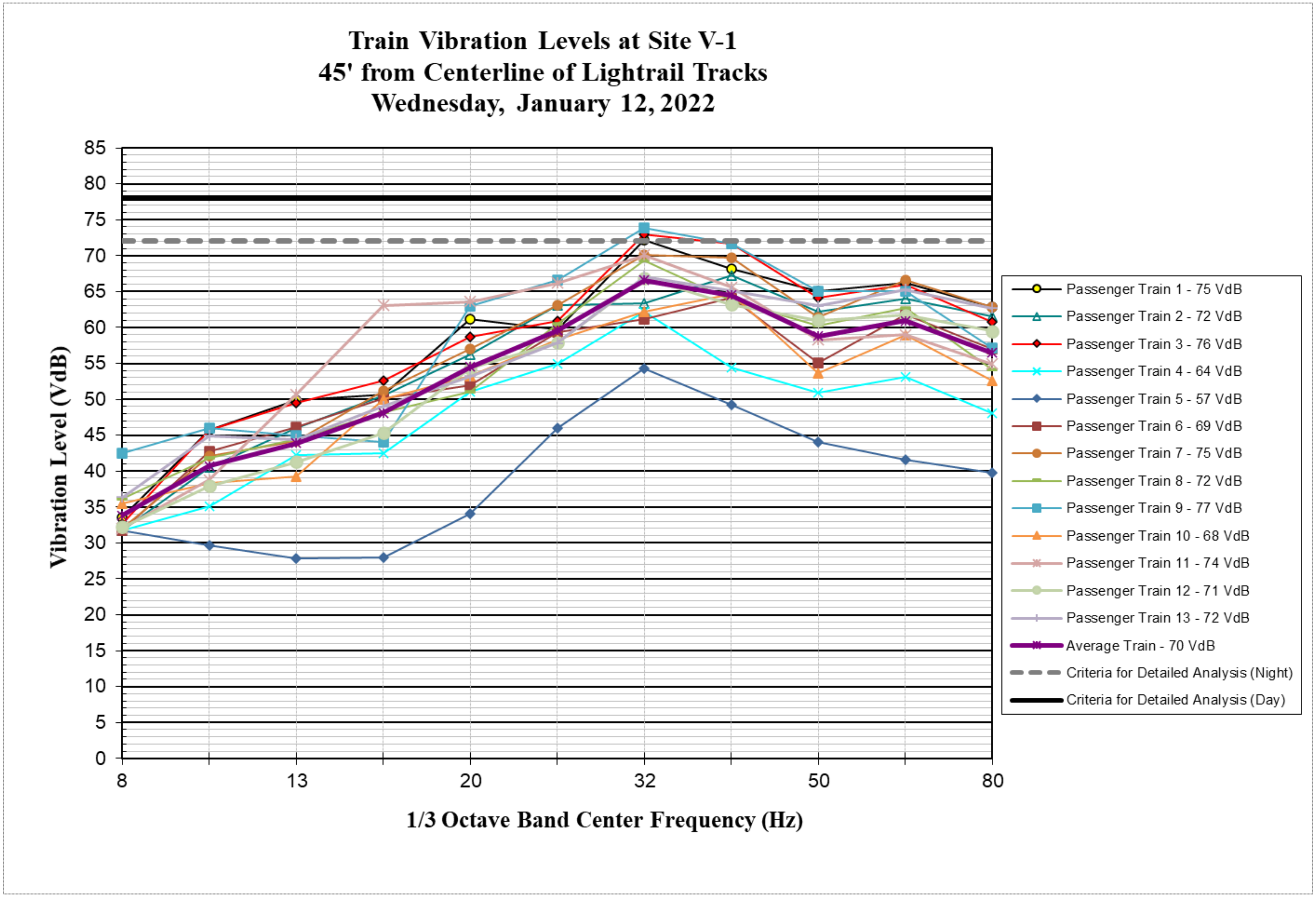
Figure A31



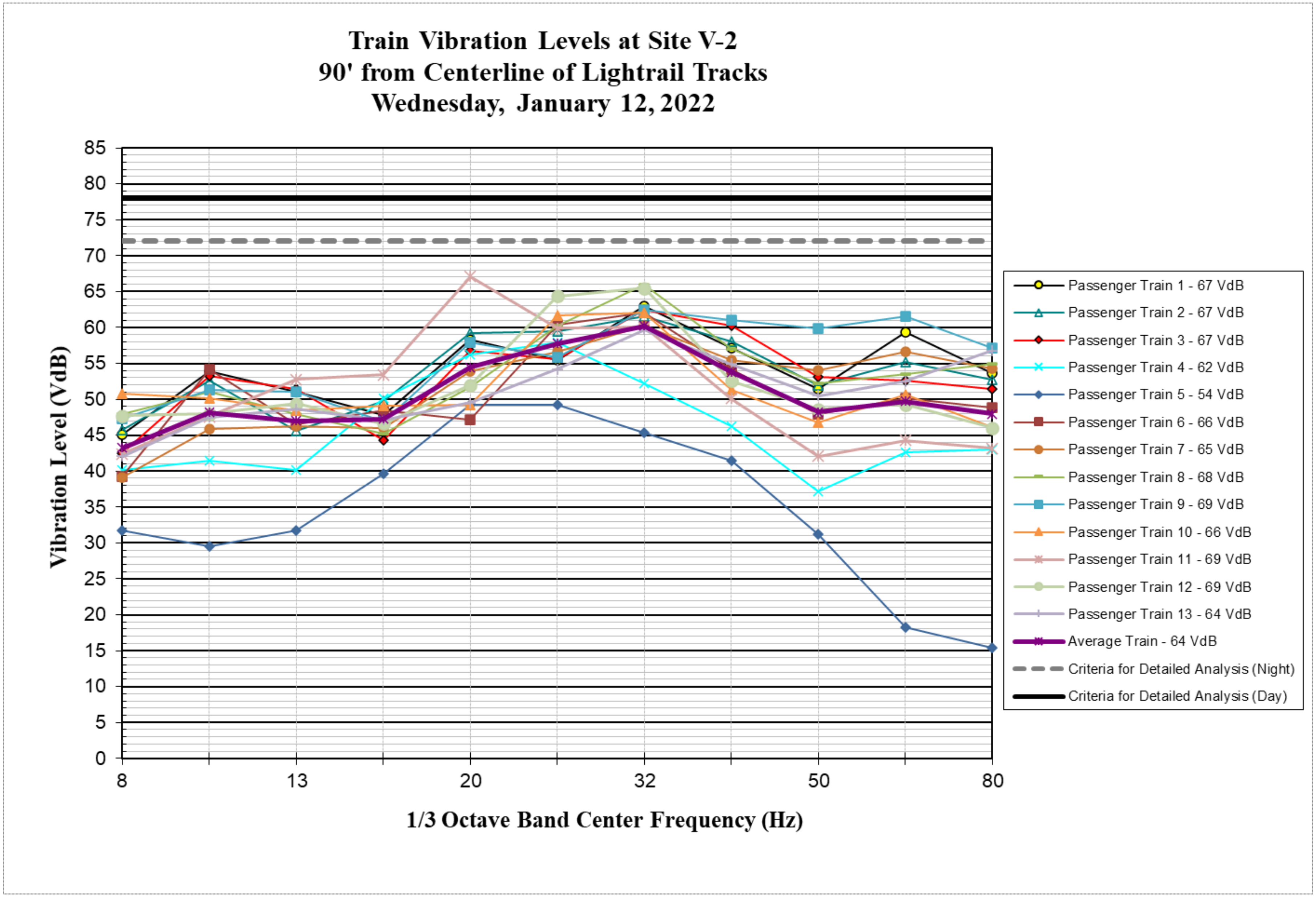
Noise Levels at Noise Measurement Site LT-4
~35 feet from Folsom Blvd centerline
Wednesday, January 19, 2022
Noise Level (dBA)
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)

Figure A32

Appendix B – 1/3rd Octave Band data for Train Vibration measurements



Train Vibration Levels at Site V-1
45' from Centerline of Lightrail Tracks
Wednesday, January 12, 2022
Vibration Level (VdB)
1/3 Octave Band Center Frequency (Hz)
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
8
13
20
32
50
80
Passenger Train 1 - 75 VdB
Passenger Train 2 - 72 VdB
Passenger Train 3 - 76 VdB
Passenger Train 4 - 64 VdB
Passenger Train 5 - 57 VdB
Passenger Train 6 - 69 VdB
Passenger Train 7 - 75 VdB
Passenger Train 8 - 72 VdB
Passenger Train 9 - 77 VdB
Passenger Train 10 - 68 VdB
Passenger Train 11 - 74 VdB
Passenger Train 12 - 71 VdB
Passenger Train 13 - 72 VdB
Average Train - 70 VdB
Criteria for Detailed Analysis (Night)
Criteria for Detailed Analysis (Day)



Train Vibration Levels at Site V-2
90' from Centerline of Lightrail Tracks
Wednesday, January 12, 2022
Vibration Level (VdB)
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
8
13
20
32
50
80
1/3 Octave Band Center Frequency (Hz)
Passenger Train 1 - 67 VdB
Passenger Train 2 - 67 VdB
Passenger Train 3 - 67 VdB
Passenger Train 4 - 62 VdB
Passenger Train 5 - 54 VdB
Passenger Train 6 - 66 VdB
Passenger Train 7 - 65 VdB
Passenger Train 8 - 68 VdB
Passenger Train 9 - 69 VdB
Passenger Train 10 - 66 VdB
Passenger Train 11 - 69 VdB
Passenger Train 12 - 69 VdB
Passenger Train 13 - 64 VdB
Average Train - 64 VdB
Criteria for Detailed Analysis (Night)
Criteria for Detailed Analysis (Day)

Memorandum

April 08, 2022

To	Roland Curry, Kinder Morgan Project Manager		
From	Kamesh Vedula, PE, TE Zach Stinger, EIT	**Tel**	+1 916 782 8688
Subject	VMT and Trip Generation Memorandum	**Project no.**	12555811

1. Introduction

Kinder Morgan operates the existing Bradshaw Terminal located in Sacramento, California. The terminal currently receives refined petroleum, Bio Diesel and blending products through pipelines and trucks for storage and distribution. The objective of this project is to increase the terminals renewable products throughput by designing and constructing new renewable and Bio Diesel railcar unloading system, storage tanks, and truck loading systems.

1.1 Project Description

The project involves the design of new rail spurs and unloading equipment on the east side of the terminal limits, with a capacity to offload up to 22 railcars per day. All 22 offloading spots will be capable of offloading Renewable Diesel. Two locations are capable of offloading both Renewable Diesel and B100 Bio Diesel. A 3rd location will be dedicated to offload Renewable Diesel but includes a connection for B100 Bio Diesel to offload any out of place Bio railcars. Renewable Diesel will be discharged to a new 80,000-barrel (BBL) storage tank (70,000 BBL working cap), while B100 Bio Diesel will be stored at either the existing 5,000 BBL B-7 tank, or a new 15,000 BBL tank. The new storage tanks will be installed at the northwest side of the terminal within an existing containment area. The Bradshaw Terminal expansion will also involve construction of a new truck rack capable of loading up to 20,000 BBLs/day of renewable, California Air Resources Board (CARB), and B100 Bio Diesel through two bays

1.2 Bradshaw Terminal Components

The project will include two rail spurs dedicated for Bio Diesel and RD offloading. The spurs will have a total of 22 railcar offloading locations. A culvert would be installed under the proposed rail spurs to maintain existing west to east drainage on the site. Piping systems (with pumps, valves, meters, instruments, etc.) will be included to transfer the product from railcars to the storage tank, and to a new 2-lane truck loading rack.

Local operations will require 3-5 new employees at the site to manage operations and maintain project facilities. A modular office/control building will be installed on the northern portion of the terminal site to locate employees closer to rail operations. It is anticipated that the control building would be approximately 1,000 square feet.

1.3 Truck-Blending and Loading Racks

The project will also include a new two-lane truck blending and loading rack, with option of red dye injection. The truck rack will be capable of blending B100 Bio Diesel with CARB or Renewable Diesel. Both new truck lanes will be capable of blending up to 20 percent Bio Diesel with either 80 percent CARB or Renewable Diesel (B5, B10, & B20).

New rack pumps will be installed and be capable of providing up to 10,000 BBLs/day of product throughput to each truck loading lane (total of 20,000 BBLs/day for two lanes).

One lane will be dedicated to a single customer (customer-dedicated lane) while the second lane will be used for communal load outs (communal lane). Customer dedicated lane will have the option of receiving product from either the customer dedicated tank or the communal storage tank. A new piping system will be required from existing pumps to new truck rack.

1.3.1 Interior Traffic Circulation Improvements

The project would include interior traffic circulation improvements to accommodate existing and new truck trips and to provide access to the proposed new truck loading rack to prevent trucks from backing up and blocking public roads. A new interior road extension and truck turnaround would be constructed on the southern portion of the terminal site to accommodate existing and proposed truck movement. A new asphalt paved truck staging area would be installed adjacent to the existing interior terminal road and the proposed new truck loading rack. New asphalt approach and exits would be installed at the proposed truck loading rack.

1.4 Construction

Construction of the project improvements is anticipated to begin in Spring 2022, with the facilities in operation by first quarter 2023.

1.5 Operation

Site operations, including receipt and unloading of rail cars, and truck loading, would occur during site operational hours. The site currently operates 24/7. The rail system will be able to offload up to 20,000 BPD of product during one shift, 5 Days/Week.

2. Trip Generation

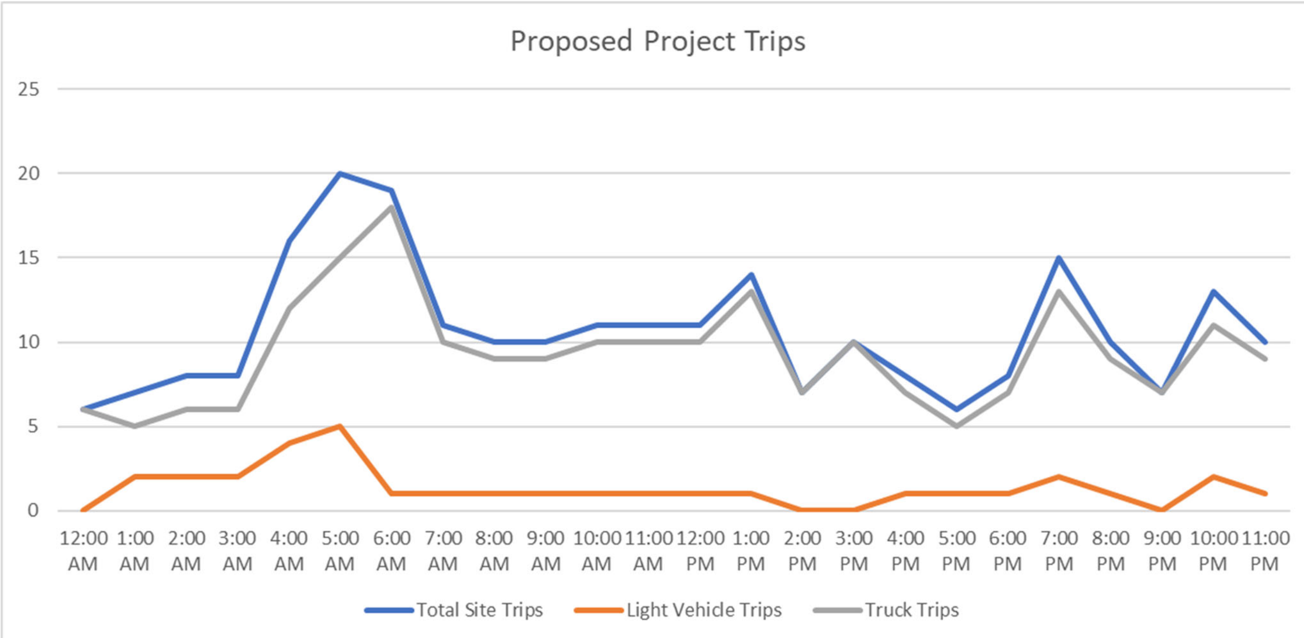
The project would result in on-road trips from new onsite employees, and from third-party truck (carrier) trips.

Third-party carriers access the project site, circulate onsite to the truck loading racks, load their trucks, and then exit the site to deliver fuel to their customers. All ingress and egress from the Bradshaw Terminal occur at the terminal entrance at the intersection of Bradshaw Road and Gore Road. The project's proposed increase in fuel throughput would result in 112 new truck loads (180 BBL per truck capacity), for 224 new truck trips per day. Third-party truck deliveries are anticipated for customers within the Sacramento Region.

The project's 3-5 new employees would generate 10 daily non-truck trips. Using the existing truck to non-truck trip ratios, total non-truck trip generation under the proposed project would total of 32 trips per day. Based on this data, if the only non-truck trips are the new employees, there would be 234 new trips. If the non-truck trips grew by the existing trip ratio, there would be 256 new trips.

The below figure presents the hourly proposed project trips.

Figure 3.1: Hourly Proposed Project Trips



3. VMT Analysis

The following sections present the policy the City of Rancho Cordova uses to screen the VMT requirements for new projects.

3.1 Projects Exempt for Non-VMT Reasons

There are some non-VMT related CEQA principles that can be applied to certain projects to eliminate the need for VMT analysis. These include the following:

- *The project is exempt from CEQA*
- *The decision required for the project is not discretionary*
- *The project was already analyzed in a prior certified EIR*
- *The City's discretionary approval does not involve transportation issues, such as design review*

The City will consider whether a project meets these or other non-VMT CEQA principles on a case-by-case basis.

3.2 VMT Screening

The requirements to prepare a CEQA transportation VMT analysis apply to all land development projects, except for those that meet at least one of the following VMT-related criteria in the numbered list below. Projects may be screened out of VMT impacts using project size, VMT efficiency maps, transit availability, and provision of affordable housing. A project that meets at least one of the VMT screening criteria below would have a less than significant VMT impact due to project characteristics and/or location.

***1. Residential Located in a VMT Efficient Area:** The project is a residential project located in a VMT "efficient area" (in an area with 15% or more below the base year regional average household VMT/capita) based on location-based screening maps prepared by the City using the focused version of SACOG's SACSIM19 regional model.*

2. Office/Business Professional Employment Project Located in a VMT Efficient Area: *The project is an office/business-professional project located in a VMT "efficient area" (15% or more below the base year city-wide average VMT/employee) based on the location-based screening maps prepared by the City using its focused version of SACOG's SACSIM19 regional model.*

3. Industrial Project Located in a VMT Efficient Area: *The project is an industrial project located in "VMT efficient area" (at or below the base year city-wide average VMT/employee) based on the adopted location-based screening map by the City using its focused version of SACOG's SACSIM19 regional model.*

4. Proximity to Transit: *A residential, retail, and office/business professional projects, as well as projects that are a mix of these uses, that are located within ½ mile of an existing or planned major transit stop (or along a high quality transit corridor).*

5. Small Project: *The project is a small project defined as generating less than 237 daily unadjusted trips ends using the latest ITE trip generation rates/procedures or a project-specific trip generation analysis reviewed and accepted by the City*

6. Local-Serving Retail Project: *A retail (or recreational) project is local-serving if it is consistent with the land uses listed in Appendix A and has a gross floor area no more than the following:*

- *125,000 square feet, if located within the City's Infill Area*
- *200,000 square feet, if located within the City's Growth Area*

A retail project may also be defined as local-serving if a market study demonstrates that it is based on the size of its market area. Adding retail square footage (even if it is less than the gross floor area listed above) to an existing "regional" retail shopping area is not screened out. Hotels and motels are not considered local serving retail.

7. Locally Serving Public/Quasi-Public Facility: *The project is a locally serving public facility if it serves the surrounding community or is a public facility that is a passive use (such as communication and utility buildings, water sanitation, and waste management). Local and regional public/quasi-public facilities are listed in Appendix A.*

8. Affordable Housing: *The project is affordable based on the City's criteria for affordable housing. Only the portion of the project that meets the City's criteria is screened out. For example, if the project is 100 units with 10 affordable housing units, transportation VMT analysis would not be necessary for the 10 affordable units but would be necessary for the remaining 90 units (unless they meet one of the other screening criteria). For purposes of applying the small project screening criteria, the applicant would only include the trip generation for the nonaffordable housing portion of the project (since the affordable housing portion is screened out).*

9. Mixed Use Project Screening Considerations: *The project's individual land uses should be compared to the screening criteria above. It is possible for some of the mixed-use project's land uses to be screened out and some to require further analysis. For purposes of applying the small project screening criteria, the applicant would only include the trip generation for portions of the project that are not screened out based on other screening criteria. For example, if a project includes residential and retail, and the retail component was screened out because it is locally serving; only the trip generation of the residential portion would be used to determine if the project meets the definition of a small project.*

10. Redevelopment Project Screening Considerations: *The project is a redevelopment project that demonstrates that the proposed project's total project VMT is less than the existing land use's total VMT. Exception: If a project replaces affordable housing (either deed restricted or other types of affordable housing) with a smaller number of moderate-income or high-income residential units, the project is not screened out and must analyze VMT impacts.*

County staff determined that the Project will be screened out of VMT analysis requirements based on criteria 3, Industrial Project Located in a VMT Efficient Area.