APPENDIX H

Noise Modeling Results

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Traffic Noise Modeling Calculations - Summary

Project:	12070 - Santa Cr	uz GP Update		Traffic Noi	se Levels at Dis	tance to Roadwa	ay Centerline P	resented in Ar	alysis Sheets
Number	Name	Segment Description and Location From	То	Baseline PM	Plus Project 2040 PM	∆ Baseline PM – Plus Project 2040 PM	Baseline PM	Cumulative + Project	Δ Baseline PM - – Cumulative + Project
Summ	ary of Net Changes								
1	Soquel Drive	Capitola Drive	Trout Gulch Road	63.3	65.8	2.5	63.3	63.0	-0.3
2	Soquel Ave	7th Avenue	Paul Sweet Road	65.3	65.4	0.2	65.3	64.5	-0.8
3	Capitola Road	17th Ave	Chanticleer	61.7	61.7	0.0	61.7	61.4	-0.3
4	Soquel Drive	State Park Drive	Rio Del Mar Blvd	60.7	61.1	0.3	60.7	60.0	-0.7
5	Portola Drive	41st	30th	60.3	60.3	0.0	60.3	59.8	-0.4
6	Green Valley Road	North of Airport Blvd		63.7	63.8	0.0	63.7	63.7	-0.1
*All modeling a	ssumes average pavement, level ro	badways (less than 1.5% grade), constant traffic flow and do	es not account for shielding of any type or finite roa	adway adjustments. A	II levels are reported	as A-weighted noise lev	els.		

Project:	12070 - Santa Cruz	GP Update																
	Noise Level Des	criptor: Ldn						Inpu	ıt							Output		
	Traffic K-	Book		Dista Direc Cente	nce to tional													
		Segment Description and Location		Hour	Speed	(fe	et) ₄		Traffic D	Distributi	on Chara	cteristics	S	Ldn,	Dist	ance to C	Contour, (feet) ₃
Number	Name	From	То	Volume	(mph)	Near	Far	% Auto	% Med	% Hvy	% Day	% Eve	% Night	(dBA) _{5,6,7}	70 dBA	65 dBA	60 dBA	55 dBA
Base	line PM Conditions																	
1	Soquel Drive	Capitola Drive	Trout Gulch Road	1,718	35	100	100	97.0%	2.0%	1.0%	80.0%		20.0%	63.3	36	77	166	358
2	Soquel Ave	7th Avenue	Paul Sweet Road	2,707	35	100	100	97.0%	2.0%	1.0%	80.0%		20.0%	65.3	48	104	225	485
3	Capitola Road	17th Ave	Chanticleer	1,747	30	100	100	97.0%	2.0%	1.0%	80.0%		20.0%	61.7	28	60	130	280
4	Soquel Drive	State Park Drive	Rio Del Mar Blvd	2,027	25	100	100	97.0%	2.0%	1.0%	80.0%		20.0%	60.7	24	52	112	241
5	Portola Drive	41st	30th	1,247	30	100	100	97.0%	2.0%	1.0%	80.0%		20.0%	60.3	22	48	104	224
6	Green Valley Road	North of Airport Blvd		1,898	35	100	100	97.0%	2.0%	1.0%	80.0%		20.0%	63.7	38	82	1/8	383
*All modeling	assumes average pavement, leve	el roadways (less than 1.5% grade), constant traffic	flow and does not account for shielding of a	ny type or finite	roadway adju	ustments. All	levels are re	eported as A-v	veighted noi	se levels.								

Indext tavel Description and Location Intercent to the part of	Project:	12070 - Santa Cruz G	P Update																
Noise Level Descriptor: idn Site Confidence: Soft Traffic Music: S			-						Inpu	ıt							Output		
</th <th></th> <th>Noise Level Desc</th> <th>riptor: Ldn</th> <th></th>		Noise Level Desc	riptor: Ldn																
Distance to build in protionand location Segment Description and location Peak Segment Description and location Peak Segment Description and location Nume Traffic (Feal) Traffic (Feal) Traffic (Feal) Nume Nume Nume Nume For Nume		Site Cond	litions: Soft																
Image: branching in the state of t		Traffic	Input: Peak				Dista	nce to											
Product Centerine Turne Total Description and Location Description State Nume No		Traffic K-F	Factor: 10				Direc	tional											
Segment Description and Location Hours Speed (neph Name Filts Ust number Units Ust number Units Ust number Units Name Filts Name Raw % Auto % Med % Hay % Day % Day </th <th></th> <th></th> <th></th> <th></th> <th>Peak</th> <th></th> <th>Cente</th> <th>erline,</th> <th></th>					Peak		Cente	erline,											
Number Name Form To Volume (mph) Near Far % Auto, % Med % Hot (dBA) _{56.2} 70 dBA 65 dB 60 dBA 55 dB Plus Project 2040 PM Conditions To ut Gulch Road 3,066 35 100 100 97.0% 2.0% 1.0% 80.0% 20.0% 65.8 53 114 245 52 2 Soquel Drive Th Avenue Paul Sweet Road 2,800 100 100 97.0% 2.0% 1.0% 80.0% 20.0% 65.8 53 114 245 52 3 Capitola Road 17/14 Not 1.00 100 97.0% 2.0% 1.0% 80.0% 20.0% 61.7 28 60 103 28 100 100 97.0% 2.0% 1.0% 80.0% 20.0% 61.7 28 54 18 70 28 78 78 78 78 78 78 78 78 78 78		S	Segment Description and Location		Hour	Speed	(fe	et) ₄		Traffic D	Distributi	on Chara	cteristics	1	Ldn,	Dist	ance to C	Contour, (feet)₃
Project 2040 PM Conditions Instruction Instruc	Number	Name	From	То	Volume	(mph)	Near	Far	% Auto	% Med	% Hvy	% Day	% Eve	% Night	(dBA) _{5,6,7}	70 dBA	65 dBA	60 dBA	55 dBA
1 Soquel Drive Capitola Drive Trout Gulch Road 2,869 35 100 100 97.0% 2.0% 1.0% 80.0% 20.0% 65.8 53 114 245 52 2 Soquel Ave 7th Avenue Paul Sweet Road 2,809 35 100 100 97.0% 2.0% 1.0% 80.0% 20.0% 65.4 50 107 231 49 3 Capitola Road 1.7th Ave Chanitoleer 1.741 30 100 100 97.0% 2.0% 1.0% 80.0% 20.0% 65.1 25 55 118 25 5 Portola Drive 41s t 30.th 1.261 30 100 100 97.0% 2.0% 1.0% 80.0% 20.0% 63.8 38 83 178 38 6 Green Valley Road North of Airport Blvd 1,906 35 100 100 97.0% 2.0% 1.0% 80.0% 20.0% 63.8 38 83 178 38 6 Green Valley Road North of Airport Blvd </th <th>Plus</th> <th>Project 2040 PM Cond</th> <th>litions</th> <th></th>	Plus	Project 2040 PM Cond	litions																
2 Soquel Ave 7th Avenue Paul Sweet Road 2,809 35 100 100 97.0% 2.0% 1.0% 80.0% 20.0% 61.4 50 100 20 80 30 Capitola Road 17th Ave Chanticleer 1,741 30 100 97.0% 2.0% 1.0% 80.0% 20.0% 61.1 25 55 118 25 5 Portola Drive 41st 30th 1,261 30 100 97.0% 2.0% 1.0% 80.0% 20.0% 63.8 38 83 178 38 6 Green Valley Road North of Airport Blvd 1,906 35 100 100 97.0% 2.0% 1.0% 80.0% 20.0% 63.8 38 83 178 38 6 Green Valley Road North of Airport Blvd 1,906 35 100 100 97.0% 2.0% 1.0% 80.0% 20.0% 63.8 38 38 178 38 7 1,906 35 1,906 35 100 100 97.0%	1	Soquel Drive	Capitola Drive	Trout Gulch Road	3,066	35	100	100	97.0%	2.0%	1.0%	80.0%		20.0%	65.8	53	114	245	527
3 Capitola Road 17th Ave Chanticleer 1,741 30 100 97.0% 2.0% 1.0% 80.0% 20.0% 61.7 28 60 130 28 4 Soquel Drive State Park Drive 81st 30th 1,261 30 100 97.0% 2.0% 1.0% 80.0% 20.0% 61.3 23 49 105 22 6 Green Valley Road North of Airport Blvd 1,261 30 100 97.0% 2.0% 1.0% 80.0% 20.0% 63.8 38 83 178 38 6 Green Valley Road North of Airport Blvd 1,906 35 100 100 97.0% 2.0% 1.0% 80.0% 20.0% 63.8 38 83 178 38 7 Source State Park Drive North of Airport Blvd 1,906 35 100 100 97.0% 2.0% 1.0% 80.0% 20.0% 63.8 38 83 178 38 7 1,906 35 100 100 97.0% 2.0%	2	Soquel Ave	7th Avenue	Paul Sweet Road	2,809	35	100	100	97.0%	2.0%	1.0%	80.0%		20.0%	65.4	50	107	231	497
4 Soquel Drive State Park Drive Rio Del Mar Bivd 2,795 25 100 100 97.0% 2.0% 1.0% 80.0% 20.0% 60.3 23 49 105 22 5 Portola Drive 41st 30th 1,261 30 100 100 97.0% 2.0% 1.0% 80.0% 20.0% 60.3 23 49 105 22 6 Green Valley Road North of Airport Blvd 1,906 35 100 100 97.0% 2.0% 1.0% 80.0% 20.0% 63.8 38 83 178 38 7 Second Valley Road North of Airport Blvd 1,906 35 100 100 97.0% 2.0% 1.0% 80.0% 20.0% 63.8 38 83 178 38 7 Second Valley Road North of Airport Blvd North of Airport Blvd 1.906 1.0% 1.0% 80.0% 2.0% 1.0% 80.0% 2.0% 1.0% 80.0% 80.0% 1.0% 1.0% 1.0% 1.0% 1.0% 1.0% 1.0% <th>3</th> <th>Capitola Road</th> <th>17th Ave</th> <th>Chanticleer</th> <th>1,741</th> <th>30</th> <th>100</th> <th>100</th> <th>97.0%</th> <th>2.0%</th> <th>1.0%</th> <th>80.0%</th> <th></th> <th>20.0%</th> <th>61.7</th> <th>28</th> <th>60</th> <th>130</th> <th>280</th>	3	Capitola Road	17th Ave	Chanticleer	1,741	30	100	100	97.0%	2.0%	1.0%	80.0%		20.0%	61.7	28	60	130	280
5 Portola Drive 41st 30th 1,261 30 100 97.0% 2.0% 1.0% 80.0% 20.0% 60.3 23 49 105 22 6 Green Valley Road North of Airport Blvd 1,906 35 100 100 97.0% 2.0% 1.0% 80.0% 20.0% 60.3 23 49 105 22 6 Green Valley Road North of Airport Blvd 1,906 35 100 100 97.0% 2.0% 1.0% 80.0% 20.0% 63.8 38 33 178 38 7 <	4	Soquel Drive	State Park Drive	Rio Del Mar Blvd	2,195	25	100	100	97.0%	2.0%	1.0%	80.0%		20.0%	61.1	25	55	118	254
6 Green Valley Road North of Airport Blvd 1,906 35 100 97.0% 2.0% 1.0% 80.0% 20.0% 63.8 38 83 178 38 6 Green Valley Road North of Airport Blvd 1,906 35 100 100 97.0% 2.0% 1.0% 80.0% 20.0% 63.8 38 83 178 38 7 A	5	Portola Drive	41st	30th	1,261	30	100	100	97.0%	2.0%	1.0%	80.0%		20.0%	60.3	23	49	105	226
**M modeling assumes average pavement, level roadway (less than 15% grade), constant traffic flow and does not account for shielding of any type or finite roadway adjustments. All levels are reported as A weighted noise levels.	6	Green Valley Road	North of Airport Blvd		1,906	35	100	100	97.0%	2.0%	1.0%	80.0%		20.0%	63.8	38	83	178	384
*All modeling assumes average pavement, level roadways (less than 1.5% grade), constant traffic flow and does not account for shielding of any type or finite roadway adjustments. All levels are reported as A weighted noise levels.																			
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	*All modeling	g assumes average pavement, level	roadways (less than 1.5% grade), constant traffic	flow and does not account for shielding of ar	iy type or finite	roadway adju	stments. All	levels are re	ported as A-v	veighted noi	se levels.								

Project :	12070 - Santa Cruz (GP Update																
-		-						Inpu	ıt							Output		
	Noise Level Des	criptor: Ldn																
	Site Cond	ditions: Soft																
	Traffic	c Input: Peak				Dista	nce to											
	Traffic K-	Factor: 10				Direc	tional											
				Peak		Cente	erline,											
		Segment Description and Location		Hour	Speed	(fe	et) ₄		Traffic D	Distributi	on Chara	cteristics	i	Ldn,	Dist	ance to C	ontour, (feet)₃
Number	Name	From	То	Volume	(mph)	Near	Far	% Auto	% Med	% Hvy	% Day	% Eve	% Night	(dBA) _{5,6,7}	70 dBA	65 dBA	60 dBA	55 dBA
Base	line PM Conditions																	
1	Soquel Drive	Capitola Drive	Trout Gulch Road	1,718	35	100	100	97.0%	2.0%	1.0%	80.0%		20.0%	63.3	36	77	166	358
2	Soquel Ave	7th Avenue	Paul Sweet Road	2,707	35	100	100	97.0%	2.0%	1.0%	80.0%		20.0%	65.3	48	104	225	485
3	Capitola Road	17th Ave	Chanticleer	1,747	30	100	100	97.0%	2.0%	1.0%	80.0%		20.0%	61.7	28	60	130	280
4	Soquel Drive	State Park Drive	Rio Del Mar Blvd	2,027	25	100	100	97.0%	2.0%	1.0%	80.0%		20.0%	60.7	24	52	112	241
5	Portola Drive	41st	30th	1,247	30	100	100	97.0%	2.0%	1.0%	80.0%		20.0%	60.3	22	48	104	224
6	Green Valley Road	North of Airport Blvd		1,898	35	100	100	97.0%	2.0%	1.0%	80.0%		20.0%	63.7	38	82	178	383
*All modelin	g assumes average pavement, leve	l roadways (less than 1.5% grade), constant traffic	flow and does not account for shielding of a	ny type or finite	roadway adju	istments. All	levels are re	eported as A-v	veighted noi	se levels.								

Project:	12070 - Santa Cruz G	GP Update																
								Inpu	ıt							Output		
	Noise Level Desc	criptor: Ldn																
	Site Cond	litions: Soft																
	Traffic	: Input: Peak				Dista	nce to											
	Traffic K-	Factor: 10				Direc	tional											
				Peak		Cente	erline,											
	9	Segment Description and Location		Hour	Speed	(fe	et) ₄		Traffic D	Distributi	on Chara	cteristics		Ldn,	Dist	ance to C	Contour, (feet) ₃
Number	Name	From	То	Volume	(mph)	Near	Far	% Auto	% Med	% Hvy	% Day	% Eve	% Night	(dBA) _{5,6,7}	70 dBA	65 dBA	. 60 dBA	. 55 dBA
Cum	ulative + Project Cond	litions																
1	Soquel Drive	Capitola Drive	Trout Gulch Road	1,594	35	100	100	97.0%	2.0%	1.0%	80.0%		20.0%	63.0	34	73	158	341
2	Soquel Ave	7th Avenue	Paul Sweet Road	2,276	35	100	100	97.0%	2.0%	1.0%	80.0%		20.0%	64.5	43	93	201	432
3	Capitola Road	17th Ave	Chanticleer	1,639	30	100	100	97.0%	2.0%	1.0%	80.0%		20.0%	61.4	27	58	125	269
4	Soquel Drive	State Park Drive	Rio Del Mar Blvd	1,735	25	100	100	97.0%	2.0%	1.0%	80.0%		20.0%	60.0	22	47	101	217
5	Portola Drive	41st	30th	1,125	30	100	100	97.0%	2.0%	1.0%	80.0%		20.0%	59.8	21	45	97	209
6	Green Valley Road	North of Airport Blvd		1,869	35	100	100	97.0%	2.0%	1.0%	80.0%		20.0%	63.7	38	82	176	379
*All modeling	g assumes average pavement, level	l roadways (less than 1.5% grade), constant traffi	flow and does not account for shielding of a	ny type or finite	roadway adju	istments. All	levels are re	eported as A-v	veighted noi	ise levels.								

Traffic Noise Modeling Calculations - References

<u>Citation</u>	<u>Reference</u>
1	Caltrans Technical Noise Supplement. 2009 (November). Table (5-11), Pg 5-60.
2	Caltrans Technical Noise Supplement. 2009 (November). Equation (5-26), Pg 5-60.
3	Caltrans Technical Noise Supplement. 2009 (November). Equation (2-16), Pg 2-32.
4	Caltrans Technical Noise Supplement. 2009 (November). Equation (5-11), Pg 5-47, 48.
5	Caltrans Technical Noise Supplement. 2009 (November). Equation (2-26), Pg 2-55, 56.
6	Caltrans Technical Noise Supplement. 2009 (November). Equation (2-27), Pg 2-57.
7	Caltrans Technical Noise Supplement. 2009 (November). Pg 2-53.
8	Caltrans Technical Noise Supplement. 2009 (November). Equation (5-7), Pg 5-45.
9	Caltrans Technical Noise Supplement. 2009 (November). Equation (5-8), Pg 5-45.
10	Caltrans Technical Noise Supplement. 2009 (November). Equation (5-9), Pg 5-45.
11	Caltrans Technical Noise Supplement. 2009 (November). Equation (5-13), Pg 5-49.
12	Caltrans Technical Noise Supplement. 2009 (November). Equation (5-14), Pg 5-49.
13	Federal Highway Administration Traffic Noise Model Technical Manual. Report No. FHWA-PD-96-010. 1998 (January). Equation (16), Pg 67
14	Federal Highway Administration Traffic Noise Model Technical Manual. Report No. FHWA-PD-96-010. 1998 (January). Equation (20), Pg 69
15	Federal Highway Administration Traffic Noise Model Technical Manual. Report No. FHWA-PD-96-010. 1998 (January). Equation (18), Pg 69