

Appendix H: Construction

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**Appendix H1:
Construction - Traffic**

Level of Service Comparison Table - 2016 Construction Conditions without the Proposed Actions

Signalized Intersection	Node	Approach	AM				Midday				PM			
			Movt.	V/C Ratio	Delay Sec/Veh	LOS	Movt.	V/C Ratio	Delay Sec/Veh	LOS	Movt.	V/C Ratio	Delay Sec/Veh	LOS
10th Avenue @ 29th Street	9914	WB	TR	0.75	33.0	C	TR	0.97	56.7	E	TR	1.17	433.1	F
		NB	LT	0.65	10.5	B	LT	0.72	11.5	B	LT	0.44	8.3	A
INTERSECTION					16.1	B			22.5	C			150.2	F
10th Avenue @ 30th Street	9061	EB	LT	2.01	770.0	F	LT	2.88	1178.0	F	LT	2.89	1149.0	F
		NB	T	0.58	9.6	A	T	0.66	10.6	B	T	0.41	8.0	A
			R	0.83	29.6	C	R	1.55	442.6	F	R	1.30	269.2	F
INTERSECTION					238.5	F			443.8	F			486.7	F
10th Avenue @ 31st Street	9933	WB	R	1.25	344.0	F	R	2.20	853.5	F	R	2.37	849.1	F
		NB	T	0.68	10.9	B	T	0.79	12.9	B	T	0.89	17.9	B
INTERSECTION					82.9	F			197.5	F			288.0	F
10th Avenue @ 33rd Street	9077	WB	TR	0.97	57.7	E	TR	1.00	64.4	E	TR	0.96	53.7	D
		NB	LT	0.75	13.1	B	LT	1.06	152.2	F	LT	1.06	149.1	F
INTERSECTION					22.4	C			135.5	F			130.7	F
10th Avenue @ 34th Street	9076	EB	LT	1.62	874.2	F	LT	1.73	927.8	F	LT	1.96	1077.0	F
		WB	T	0.62	28.7	C	T	0.53	26.7	C	T	0.69	30.7	C
			R	0.69	41.3	D	R	1.26	473.4	F	R	2.28	867.1	F
		NB	LTR	0.92	18.5	B	LTR	1.08	108.9	F	LTR	1.37	227.5	F
INTERSECTION					105.4	F			197.0	F			352.6	F
10th Avenue @ 35th Street	9075	WB	TR	1.55	455.3	F	TR	1.35	376.7	F	TR	1.08	253.8	F
		NB	LT	0.87	15.7	B	LT	0.99	27.8	C	LT	0.87	14.6	B
INTERSECTION					95.9	F			76.4	E			40.8	D
10th Avenue @ 36th Street	9074	EB	LT	0.58	27.9	C	LT	0.41	132.0	F	LT	0.38	24.3	C
		NB	TR	0.91	17.5	B	TR	1.04	88.7	F	TR	1.30	204.5	F
INTERSECTION					19.0	B			92.5	F			189.3	F
10th Avenue @ 37th Street	9073	WB	TR	0.59	27.3	C	TR	0.57	27.1	C	TR	0.68	30.3	C
		NB	LT	0.91	19.3	B	LT	0.94	22.2	C	LT	1.66	369.2	F
INTERSECTION					20.4	C			22.8	C			325.4	F

			AM				Midday				PM				
Signalized Intersection	Node	Approach	Movt.	V/C Ratio	Delay Sec/Veh	LOS	Movt.	V/C Ratio	Delay Sec/Veh	LOS	Movt.	V/C Ratio	Delay Sec/Veh	LOS	
11th Avenue @ 26th Street	9924	EB	TR	1.08	399.8	F	TR	0.91	64.3	E	TR	1.10	397.8	F	
		SB	LT	0.56	5.1	A	LT	0.57	5.1	A	LT	0.53	4.7	A	
INTERSECTION						81.0	F				15.3	B	81.6		F
11th Avenue @ 27th Street	63721	WB	LT	0.44	26.4	C	LT	0.51	27.9	C	LT	0.58	30.2	C	
		SB	TR	0.95	28.5	C	TR	0.94	27.0	C	TR	0.84	17.6	B	
INTERSECTION						28.2	C				27.1	C	19.5		B
11th Avenue @ 28th Street	9916	EB	TR	0.47	24.2	C	TR	0.36	21.8	C	TR	0.24	19.8	B	
		SB	LT	0.86	20.4	C	LT	0.87	21.1	C	LT	0.78	17.0	B	
INTERSECTION						20.8	C				21.2	C	17.2		B
11th Avenue @ 29th Street	9912	WB	LT	0.84	36.5	D	LT	0.90	43.5	D	LT	1.02	137.1	F	
		SB	TR	0.56	16.5	B	TR	0.56	16.5	B	TR	0.50	15.6	B	
INTERSECTION						21.2	C				22.8	C	49.4		D
11th Avenue @ 30th Street	9909	EB	TR	1.08	317.4	F	TR	1.24	375.3	F	TR	0.99	60.6	E	
		SB	LT	1.08	134.4	F	LT	1.16	166.5	F	LT	1.07	127.1	F	
INTERSECTION						174.1	F				215.3	F	113.6		F
11th Avenue @ 31st Street	61131	WB	L	0.18	25.8	C	L	0.59	35.3	D	L	0.43	30.4	C	
		SB	T	0.63	7.1	A	T	0.57	6.5	A	T	0.53	6.1	A	
INTERSECTION						7.7	A				9.3	A	7.9		A
11th Avenue @ 32nd Street	61132	SB	LT	0.65	7.3	A	LT	0.62	6.9	A	LT	0.58	6.5	A	
INTERSECTION						7.3	A				6.9	A	6.5		A
11th Avenue @ 33rd Street	9907	WB	L	0.61	36.4	D	L	1.11	294.5	F	L	0.69	42.2	D	
			LT	0.61	32.3	C	LT	1.03	177.9	F	LT	0.78	38.8	D	
		SB	TR	1.04	89.9	F	TR	0.97	24.5	C	TR	0.94	19.5	B	
INTERSECTION						74.2	E				79.8	E	25.5		C
11th Avenue @ 34th Street	9904	EB	L	0.47	24.0	C	L	0.51	27.2	C	L	0.46	25.9	C	
			TR	0.90	61.8	E	TR	0.88	59.7	E	TR	0.80	48.8	D	
		WB	L	0.79	45.4	D	L	0.59	26.3	C	L	0.77	42.0	D	
			TR	1.30	569.8	F	TR	1.37	537.0	F	TR	1.92	880.9	F	
		SB	LTR	1.41	268.7	F	LTR	1.48	296.5	F	LTR	1.42	266.6	F	
INTERSECTION						264.4	F				289.4	F	337.4		F

			AM				Midday				PM					
Signalized Intersection	Node	Approach	Movt.	V/C Ratio	Delay Sec/Veh	LOS	Movt.	V/C Ratio	Delay Sec/Veh	LOS	Movt.	V/C Ratio	Delay Sec/Veh	LOS		
11th Avenue @ 35th Street	9901	WB	L	0.50	22.4	C	L	0.66	28.3	C	L	0.86	46.4	D		
			R	0.47	21.9	C	R	0.33	19.3	B	R	0.20	16.9	B		
		NB	T	0.08	14.5	B	T	0.09	14.6	B	T	0.16	12.8	B		
			T	0.60	17.1	B	T	0.57	19.6	B	T	0.55	19.2	B		
INTERSECTION						17.8	B				20.4	C			22.2	C
11th Avenue @ 36th Street	9898	NB	TR	0.15	6.4	A	TR	0.14	6.4	A	TR	0.15	3.0	A		
			DefL	0.68	12.5	B	LT	0.56	9.7	A	LT	0.57	9.8	A		
		T	0.55	4.9	A											
INTERSECTION						6.4	A				9.2	A			8.6	A
11th Avenue @ 37th Street	9034	EB	LR	0.10	27.1	C	LR	0.16	28.2	C	LR	0.11	27.2	C		
			WB	L	0.75	53.1	D	L	0.81	60.1	E	L	0.77	53.9	D	
		NB	R	0.67	49.0	D	R	0.49	38.5	D	R	0.38	34.0	C		
			T	0.08	6.1	A	T	0.08	6.1	A	T	0.12	2.9	A		
SB	T	0.59	5.2	A	T	0.53	9.4	A	T	0.53	9.4	A				
	INTERSECTION						11.7	B				15.2	B			13.4
12th Avenue @ 29th Street	9875	WB	LR	1.89	1008.0	F	LR	1.59	804.1	F	LR	2.40	1244.0	F		
			NB	T	0.61	9.1	A	T	0.60	10.4	B	T	0.76	3.8	A	
		SB	T	1.15	115.6	F	T	1.13	109.8	F	T	1.08	87.6	F		
INTERSECTION						133.2	F				118.2	F			136.3	F
12th Avenue @ 30th Street	9874	NB	TR	1.02	67.2	E	TR	1.08	90.8	F	TR	1.28	171.7	F		
			SB	L	1.26	381.6	F	L	1.33	372.3	F	L	1.36	438.7	F	
		T	1.21	147.8	F	TR	1.20	142.9	F	TR	1.17	127.0	F			
INTERSECTION						117.1	F				128.9	F			163.0	F
12th Avenue @ 34th Street	9872	WB	L	0.48	60.6	E	L	0.48	44.1	D	L	0.43	58.0	E		
			LR	0.46	59.7	E	LR	0.49	44.3	D	LR	0.49	60.2	E		
			R	0.60	42.1	D	R	0.50	29.8	C	R	0.61	50.5	D		
		NB	T	1.20	207.0	F	T	1.12	173.7	F	T	1.30	231.3	F		
			R	0.20	19.0	B	R	0.26	18.3	B	R	0.14	7.0	A		
		SB	L	0.61	63.5	E	L	0.72	62.0	E	L	1.13	635.7	F		
T	1.34	377.4	F	T	1.18	328.2	F	T	1.17	298.5	F					
INTERSECTION						262.9	F				215.5	F			258.0	F

			AM				Midday				PM			
Signalized Intersection	Node	Approach	Movt.	V/C Ratio	Delay Sec/Veh	LOS	Movt.	V/C Ratio	Delay Sec/Veh	LOS	Movt.	V/C Ratio	Delay Sec/Veh	LOS
12th Avenue @ 37th Street	9871	EB	LR	0.12	52.6	D	LR	0.14	43.1	D	LR	0.25	60.5	E
			R	0.13	53.2	D	R	0.14	43.6	D	R	0.25	61.9	E
		NB	L	0.10	63.7	E	L	0.20	50.4	D	L	0.30	72.6	E
			T	0.95	37.8	D	T	0.82	21.4	C	T	0.90	7.2	A
			TR	1.14	142.0	F	TR	1.08	117.6	F	TR	0.94	28.7	C
INTERSECTION					89.8	F			69.3	E			17.5	B

			AM				MD				PM			
Unsignalized Intersection	Node	Approach	Movt.	V/C Ratio	Delay Sec/Veh	LOS	Movt.	V/C Ratio	Delay Sec/Veh	LOS	Movt.	V/C Ratio	Delay Sec/Veh	LOS
12th Avenue @ 33rd Street	9873	WB	R	0.61	28.7	D	R	0.67	28.8	D	R	1.06	105.1	D
INTERSECTION														

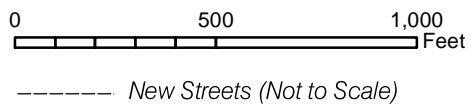
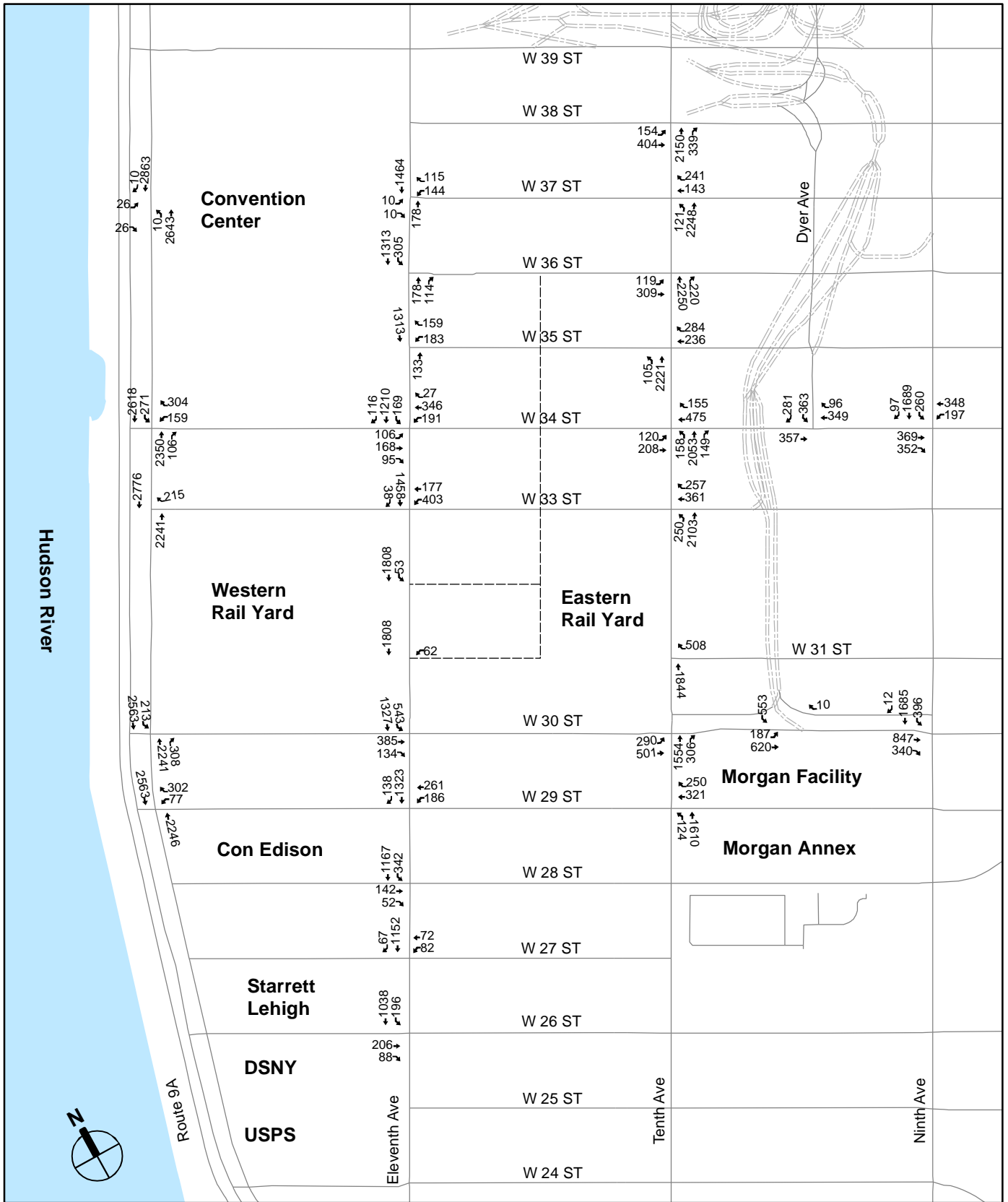
Level of Service Comparison Table - 2016 Construction Conditions with the Proposed Actions

Intersection	Node	Approach	AM				Midday				PM			
			Movt.	V/C Ratio	Delay Sec/Veh	LOS	Movt.	V/C Ratio	Delay Sec/Veh	LOS	Movt.	V/C Ratio	Delay Sec/Veh	LOS
10th Avenue @ 29th Street	9914	WB	TR	0.75	33.0	C	TR	0.97	56.7	E	TR	1.17	433.1	F
		NB	LT	0.65	10.5	B	LT	0.72	11.6	B	LT	0.44	8.3	A
INTERSECTION					16.1	B			22.6	C			149.9	F
10th Avenue @ 30th Street	9061	EB	LT	2.05	790.9	F	LT	2.94	1205.0	F	LT	3.02	1208.0	F
		NB	T	0.59	9.7	A	T	0.66	10.6	B	T	0.41	8.0	A
			R	0.83	29.9	C	R	1.55	442.6	F	R	1.31	273.1	F
INTERSECTION					246.8	F			456.2	F			519.9	F
10th Avenue @ 31st Street	9933	WB	R	1.25	345.0	F	R	2.20	853.5	F	R	2.46	888.7	F
		NB	T	0.69	11.0	B	T	0.80	13.1	B	T	0.91	18.8	B
INTERSECTION					82.7	F			196.5	F			305.8	F
10th Avenue @ 33rd Street	9077	WB	TR	1.11	490.5	F	TR	1.16	507.2	F	TR	1.18	513.3	F
		NB	LT	0.74	13.0	B	LT	1.06	147.3	F	LT	1.05	144.4	F
INTERSECTION					112.2	F			215.4	F			214.3	F
10th Avenue @ 34th Street	9076	EB	LT	1.71	927.9	F	LT	1.73	927.8	F	LT	2.14	1171.0	F
		WB	T	0.63	28.9	C	T	0.54	26.7	C	T	0.69	30.8	C
			R	0.71	42.3	D	R	1.26	473.4	F	R	2.30	876.7	F
			NB	LTR	1.01	75.8	E	LTR	1.20	159.1	F	LTR	1.58	325.9
INTERSECTION					149.5	F			229.3	F			424.7	F
10th Avenue @ 35th Street	9075	WB	TR	1.60	477.7	F	TR	1.35	376.7	F	TR	1.09	255.9	F
		NB	LT	0.88	15.9	B	LT	0.99	27.8	C	LT	0.90	15.9	B
INTERSECTION					101.6	F			76.4	E			41.6	D
10th Avenue @ 36th Street	9074	EB	LT	0.58	27.9	C	LT	0.41	132.0	F	LT	0.39	24.4	C
		NB	TR	0.91	17.5	B	TR	1.04	88.7	F	TR	1.38	239.9	F
INTERSECTION					19.1	B			92.5	F			222.2	F
10th Avenue @ 37th Street	9073	WB	TR	0.59	27.3	C	TR	0.57	27.1	C	TR	0.68	30.3	C
		NB	LT	0.91	19.3	B	LT	0.94	22.2	C	LT	1.71	391.5	F
INTERSECTION					20.4	C			22.8	C			346.0	F
11th Avenue @ 26th Street	9924	EB	TR	1.08	399.8	F	TR	0.91	64.3	E	TR	1.10	397.8	F
		SB	LT	0.57	5.1	A	LT	0.58	5.2	A	LT	0.54	4.8	A
INTERSECTION					80.7	F			15.4	B			81.1	F

			AM				Midday				PM					
Intersection	Node	Approach	Movt.	V/C Ratio	Delay Sec/Veh	LOS	Movt.	V/C Ratio	Delay Sec/Veh	LOS	Movt.	V/C Ratio	Delay Sec/Veh	LOS		
11th Avenue @ 27th Street	63721	WB	LT	0.44	26.4	C	LT	0.51	27.9	C	LT	0.58	30.2	C		
		SB	TR	0.96	30.6	C	TR	0.95	27.5	C	TR	0.85	17.9	B		
INTERSECTION						30.1	C				27.5	C			19.8	B
11th Avenue @ 28th Street	9916	EB	TR	0.47	24.2	C	TR	0.36	21.8	C	TR	0.24	19.8	B		
		SB	LT	0.86	20.9	C	LT	0.88	21.3	C	LT	0.78	17.2	B		
INTERSECTION						21.3	C				21.4	C			17.3	B
11th Avenue @ 29th Street	9912	WB	LT	0.85	36.9	D	LT	0.90	43.5	D	LT	1.02	137.1	F		
		SB	TR	0.57	16.6	B	TR	0.57	16.5	B	TR	0.51	15.7	B		
INTERSECTION						21.3	C				22.8	C			49.1	D
11th Avenue @ 30th Street	9909	EB	TR	1.10	326.6	F	TR	1.27	389.0	F	TR	0.99	60.6	E		
		SB	LT	1.10	141.8	F	LT	1.17	173.0	F	LT	1.08	130.0	F		
INTERSECTION						181.9	F				223.5	F			116.0	F
11th Avenue @ 31st Street	61131	WB	L	0.18	25.8	C	L	0.59	35.3	D	L	0.43	30.4	C		
		SB	T	0.64	7.2	A	T	0.58	6.5	A	T	0.53	6.1	A		
INTERSECTION						7.8	A				9.3	A			7.9	A
11th Avenue @ 32nd Street	61132	SB	LT	0.66	7.3	A	LT	0.63	7.0	A	LT	0.58	6.5	A		
		INTERSECTION						7.3	A				7.0	A		
11th Avenue @ 33rd Street	9907	WB	L	0.50	29.2	C	L	1.12	284.8	F	L	0.57	31.1	C		
		SB	T	1.01	79.4	E	T	0.93	18.9	B	T	0.90	16.4	B		
INTERSECTION						68.2	E				81.7	F			19.4	B
11th Avenue @ 34th Street	9904	EB	L	0.51	27.6	C	L	0.50	27.3	C	L	0.45	25.7	C		
			TR	0.91	64.0	E	TR	0.89	61.3	E	TR	0.80	48.8	D		
		WB	L	0.76	42.7	D	L	0.58	25.5	C	L	0.75	40.5	D		
			TR	1.78	740.7	F	TR	1.96	782.0	F	TR	2.66	1150.0	F		
		SB	LTR	1.45	283.1	F	LTR	1.51	309.4	F	LTR	1.46	287.4	F		
INTERSECTION						331.8	F				378.5	F			478.5	F
11th Avenue @ 35th Street	9901	WB	L	0.50	22.4	C	L	0.66	28.3	C	L	0.88	49.3	D		
			R	0.47	21.9	C	R	0.33	19.3	B	R	0.21	16.9	B		
		NB	T	0.08	14.5	B	T	0.09	14.6	B	T	0.16	12.8	B		
			SB	T	0.60	17.2	B	T	0.57	19.6	B	T	0.55	19.3	B	
INTERSECTION						17.9	B				20.4	C			22.7	C

			AM				Midday				PM			
Intersection	Node	Approach	Movt.	V/C Ratio	Delay Sec/Veh	LOS	Movt.	V/C Ratio	Delay Sec/Veh	LOS	Movt.	V/C Ratio	Delay Sec/Veh	LOS
11th Avenue @ 36th Street	9898	NB SB	TR	0.15	6.4	A	TR	0.14	6.4	A	TR	0.16	3.0	A
			DefL	0.69	12.6	B	LT	0.56	9.7	A	LT	0.57	9.9	A
			T	0.56	5.0	A								
INTERSECTION					6.4	A			9.2	A			8.7	A
11th Avenue @ 37th Street	9034	EB WB NB SB	LR	0.10	27.1	C	LR	0.16	28.2	C	LR	0.11	27.2	C
			L	0.75	53.1	D	L	0.81	60.1	E	L	0.77	53.9	D
			R	0.67	49.0	D	R	0.49	38.5	D	R	0.38	34.0	C
			T	0.08	6.1	A	T	0.08	6.1	A	T	0.12	2.9	A
			T	0.60	5.2	A	T	0.53	9.4	A	T	0.53	9.4	A
INTERSECTION					11.7	B			15.2	B			13.4	B
12th Avenue @ 29th Street	9875	WB NB SB	LR	1.92	1023.0	F	LR	1.60	809.6	F	LR	2.42	1253.0	F
			T	0.61	9.1	A	T	0.60	10.4	B	T	0.76	3.8	A
			T	1.15	115.6	F	T	1.13	109.8	F	T	1.08	87.9	F
INTERSECTION					134.8	F			118.9	F			138.6	F
12th Avenue @ 30th Street	9874	NB SB	TR	1.02	68.9	E	TR	1.08	91.6	F	TR	1.28	171.9	F
			L	1.28	393.8	F	L	1.36	385.5	F	L	1.36	438.7	F
			TR	1.21	147.8	F	TR	1.20	142.9	F	TR	1.17	127.6	F
INTERSECTION					118.4	F			130.0	F			163.3	F
12th Avenue @ 34th Street	9872	WB NB SB	L	0.67	70.5	E	L	0.65	50.6	D	L	0.54	62.0	E
			LR	0.71	72.7	E	LR	0.67	51.4	D	LR	1.01	157.1	F
			R	0.80	53.6	D	R	0.78	41.9	D	R	1.04	253.5	F
			T	1.10	168.1	F	T	0.98	46.2	D	T	1.18	179.3	F
			R	0.19	18.8	B	R	0.25	18.1	B	R	0.13	7.0	A
			L	0.61	63.7	E	L	0.72	62.2	E	L	1.13	635.7	F
T	1.34	377.6	F	T	1.18	328.4	F	T	1.17	298.5	F			
INTERSECTION					244.8	F			165.2	F			242.8	F

			AM				Midday				PM					
Intersection	Node	Approach	Movt.	V/C Ratio	Delay Sec/Veh	LOS	Movt.	V/C Ratio	Delay Sec/Veh	LOS	Movt.	V/C Ratio	Delay Sec/Veh	LOS		
12th Avenue @ 37th Street	9871	EB	LR	0.13	52.8	D	LR	0.13	42.9	D	LR	0.24	60.1	E		
			R	0.12	52.9	D	R	0.15	43.9	D	R	0.26	62.4	E		
		NB	L	0.10	63.7	E	L	0.20	50.4	D	L	0.30	72.6	E		
			T	0.96	39.8	D	T	0.82	21.5	C	T	0.91	7.5	A		
			TR	1.14	142.5	F	TR	1.08	118.1	F	TR	0.94	28.7	C		
INTERSECTION						90.9	F				69.5	E			17.6	B

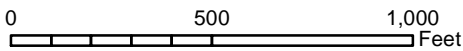
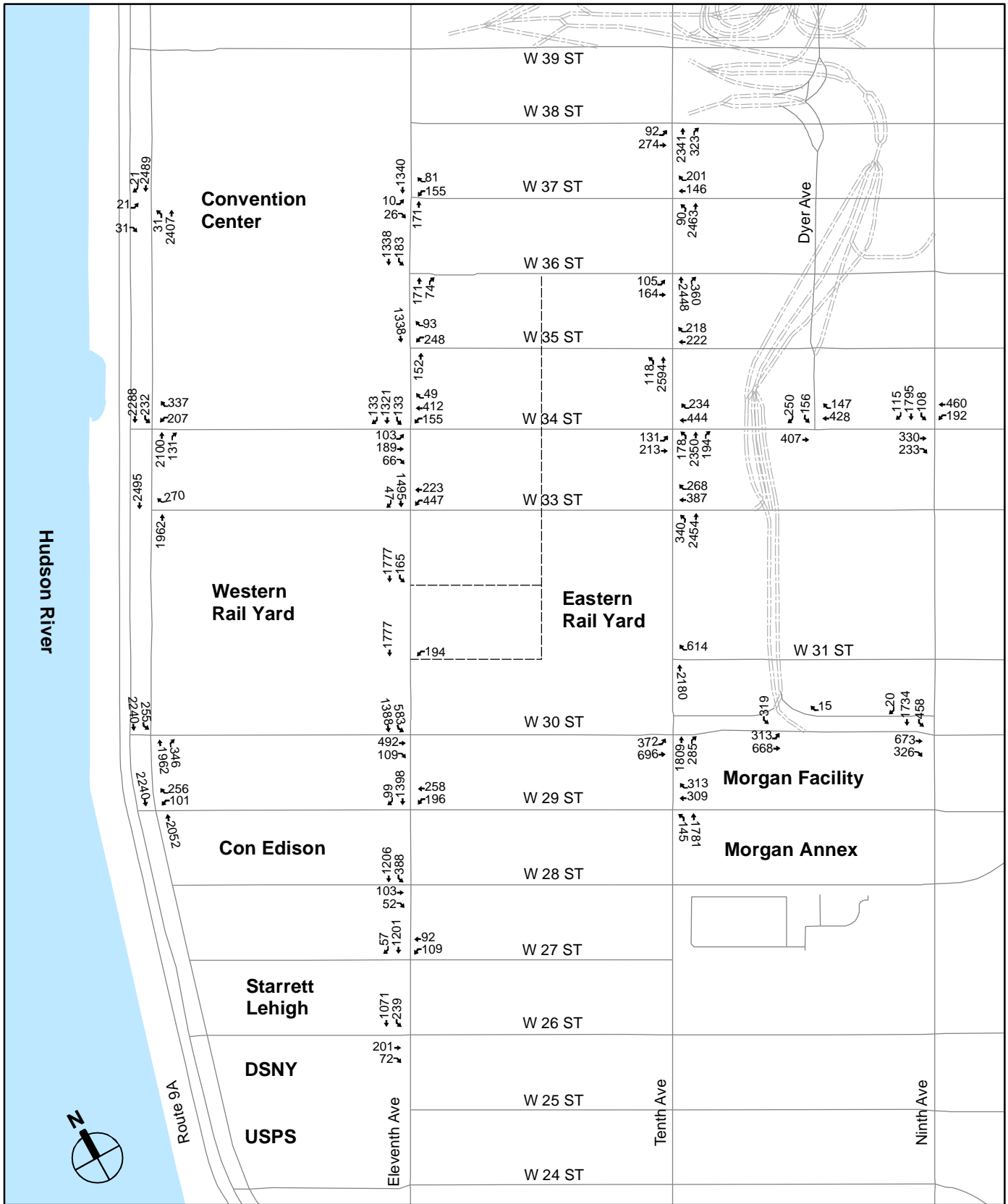


2016 No Build Traffic Volumes
Construction Conditions
(Weekday AM Peak Hour)

WESTERN **RAIL YARD**

This figure is new to the FEIS

Figure H-1



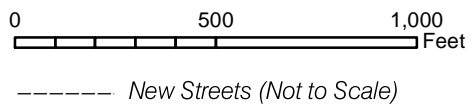
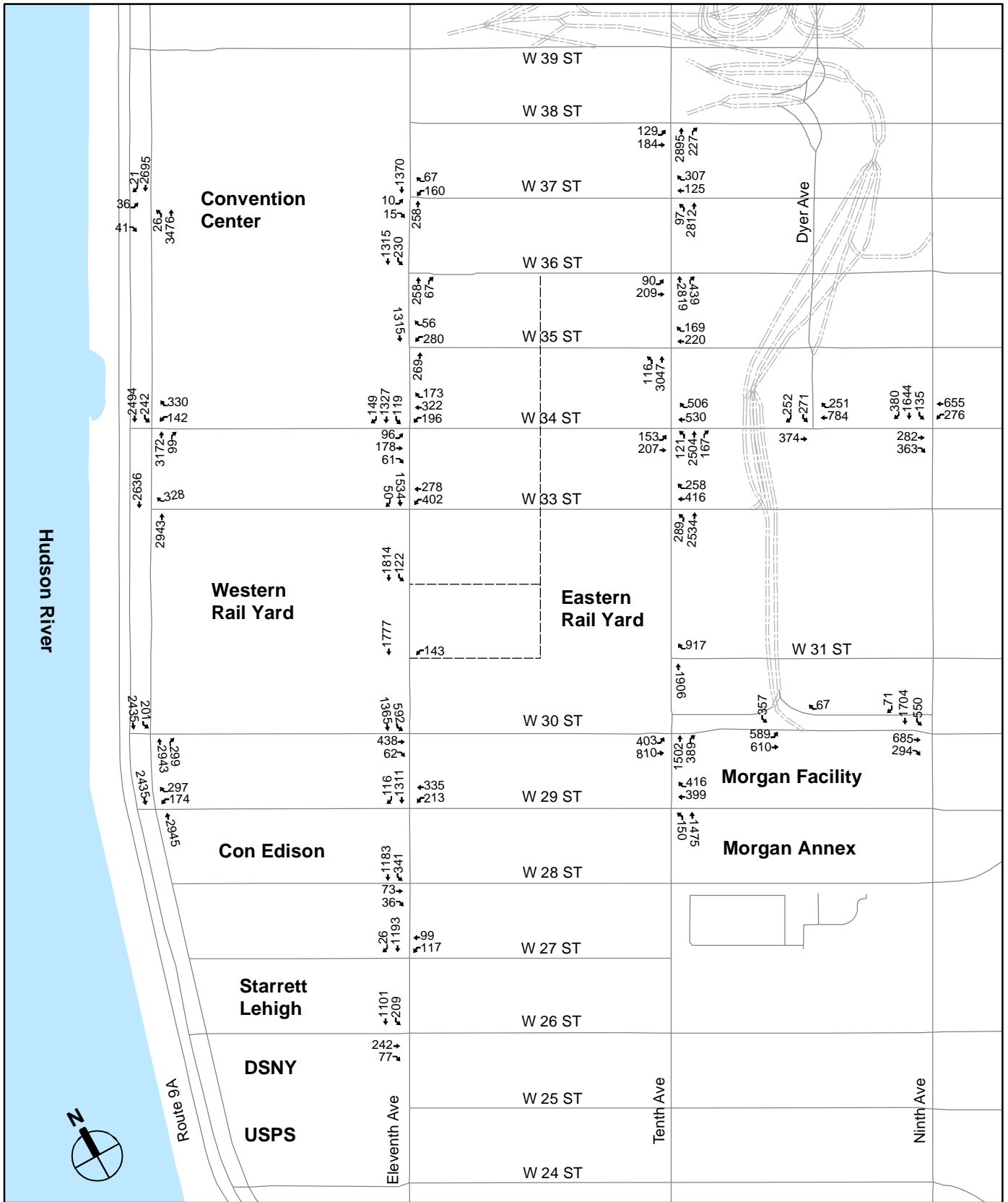
----- New Streets (Not to Scale)

**2016 No Build Traffic Volumes
Construction Conditions
(Weekday Midday Peak Hour)**

WESTERN RAIL YARD

This figure is new to the FEIS

Figure H-2

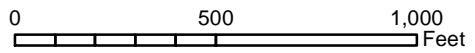
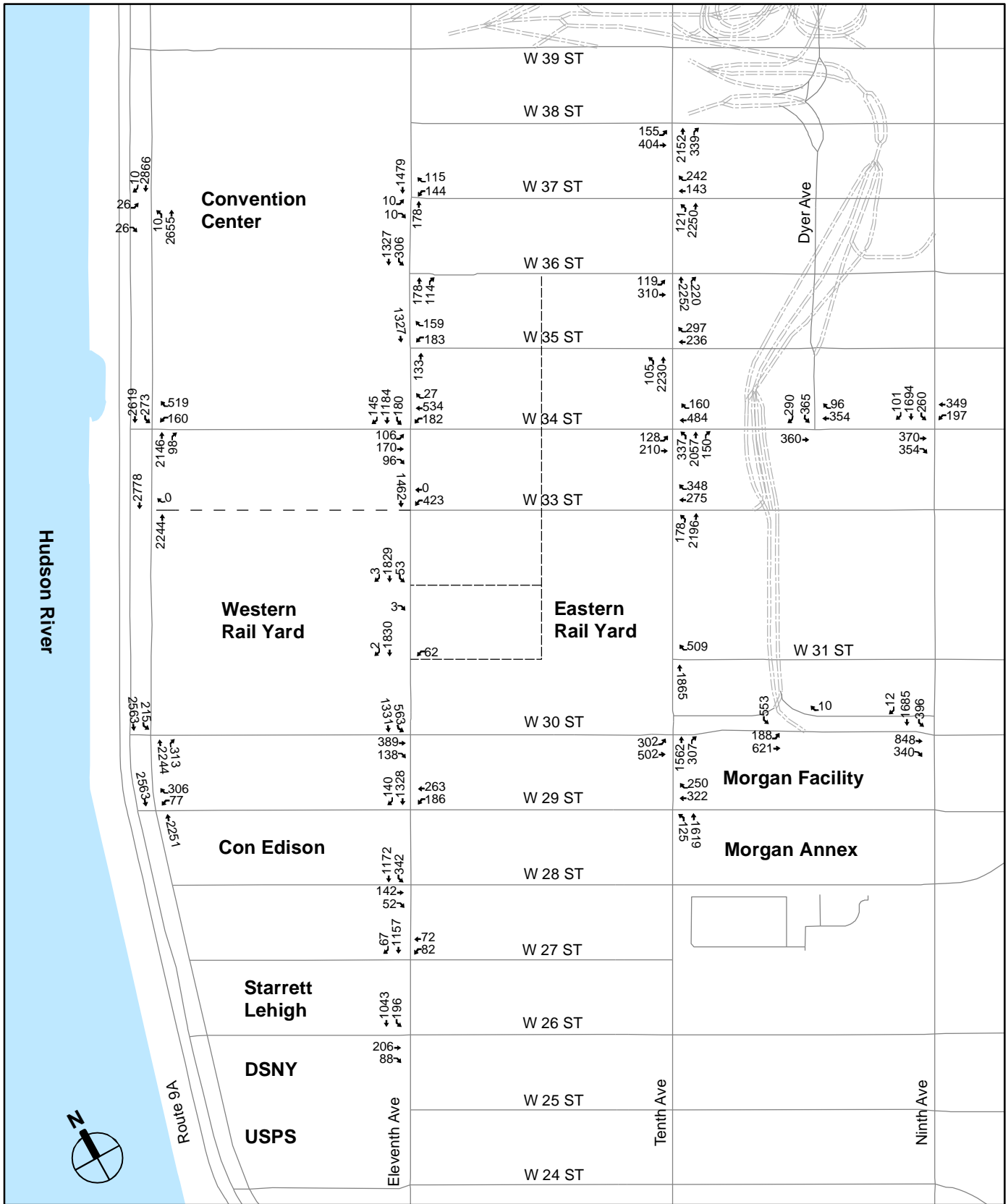


2016 No Build Traffic Volumes
Construction Conditions
(Weekday PM Peak Hour)

WESTERN **RAIL YARD**

This figure is new to the FEIS

Figure H-3



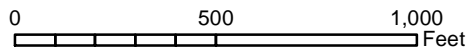
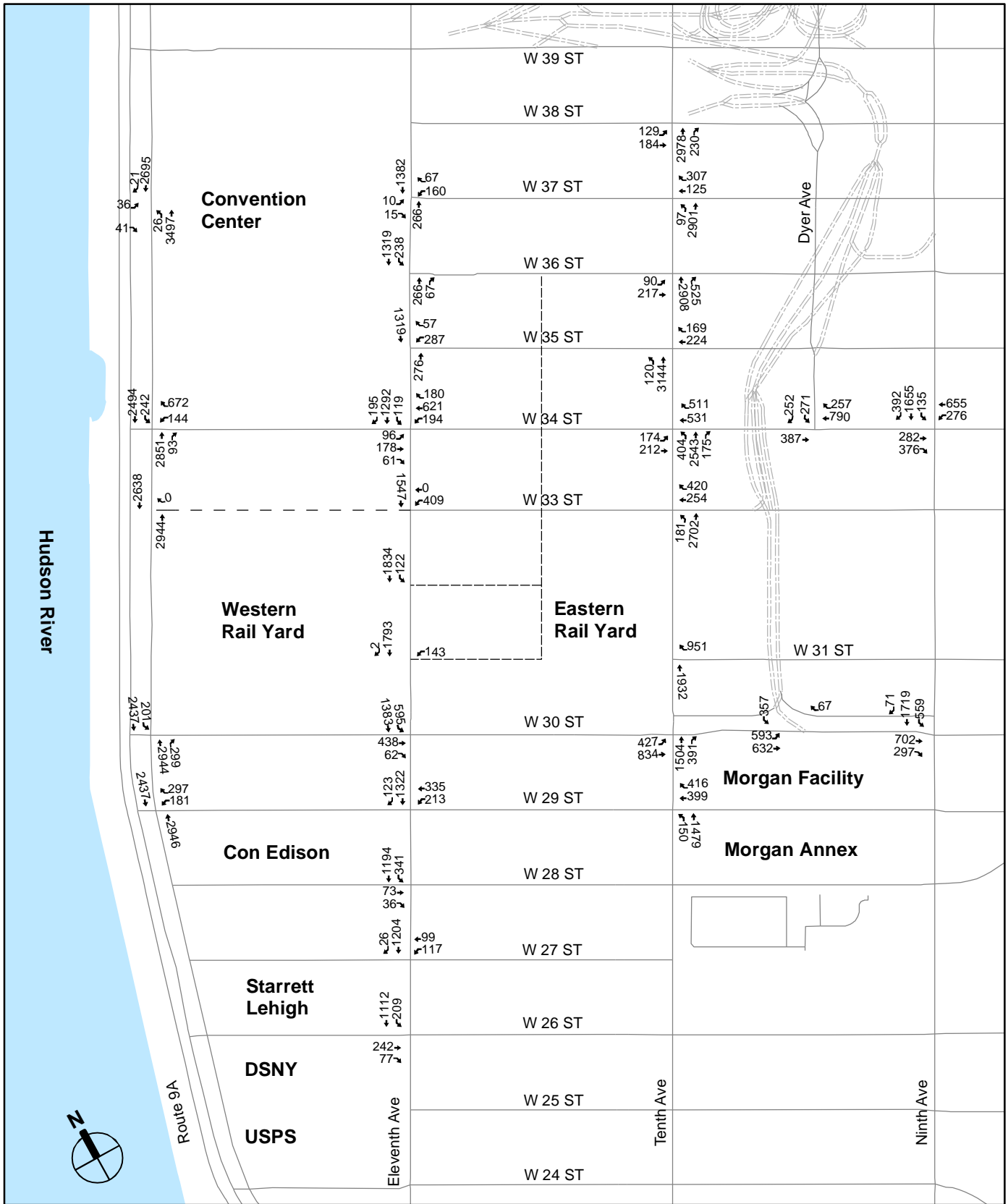
----- New Streets (Not to Scale)
 - - - - Closed to Traffic during Construction

2016 Build Traffic Volumes
 Construction Conditions
 (Weekday AM Peak Hour)

WESTERN RAIL YARD

This figure is new to the FEIS

Figure H-4



----- New Streets (Not to Scale)
 - - - - Closed to Traffic during Construction

2016 Build Traffic Volumes
 Construction Conditions
 (Weekday PM Peak Hour)

WESTERN RAIL YARD

This figure is new to the FEIS

Figure H-6

**Appendix H2:
Construction – Air Quality**

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Development Site Construction

1. Construction Emissions

Emission tables

2. Stationary Source Analysis example

Receptor locations

4. Cumulative Analysis example

Receptor locations

CONSTRUCTION EMISSIONS

WESTERN RAIL YARDS
AIR QUALITY CONSTRUCTION ANALYSIS

CO Summary Table

Year	Location 1	Location 2	Location 3	Location 4	Location 5	Location 6	All Locations
2010	4.190	4.190	0.000	0.000	0.000	0.000	8.380
2011	7.141	7.139	0.000	0.000	0.000	0.000	14.280
2012	1.193	4.370	5.952	5.939	0.000	2.806	20.261
2013	0.000	19.074	5.785	5.771	0.000	20.686	51.316
2014	0.016	15.952	0.013	2.334	0.001	36.583	54.899
2015	37.463	22.117	0.013	5.584	11.375	25.720	102.273
2016	32.830	19.403	1.571	2.909	24.019	4.958	85.690
2017	10.625	8.432	18.682	13.427	12.574	0.000	63.739
2018	2.690	2.689	3.230	2.687	2.662	0.000	13.958
2019	0.000	0.000	0.013	0.000	0.000	0.000	0.013
2020	0.000	0.000	0.013	0.000	0.000	0.000	0.013
2021	0.000	0.000	0.013	0.000	0.000	0.000	0.013
2022	0.000	0.000	0.013	0.000	0.000	0.000	0.013
2023	0.000	0.000	0.000	0.000	0.000	0.000	0.013
Maximum Yearly Value	37.463	22.1171	18.682	13.427	24.0189	36.583	102.273
Year	2015	2015	2017	2017	2016	2014	2015
Highest month from highest year - 2010-2016	3.123	2.107	0.000	0.000	2.002	3.341	9.384
Highest month from highest year 2017 - 2023	0.000	0.000	1.558	1.194	0.000	0.000	
Highest Monthly Value from highest year	3.123	2.107	1.558	1.194	0.000	3.341	9.384
Highest Monthly Value - from all years	3.124	2.107	1.558	1.194	2.003	3.341	9.384
Month and Year Highest Monthly Value occurs in	10/1/2015	7/1/2015	8/1/2017	12/1/2016	1/1/2010	4/1/2014	4/1/2015

WESTERN RAIL YARDS
AIR QUALITY CONSTRUCTION ANALYSIS

PM_{2.5} Summary Table (Tons)

Year	Location 1	Location 2	Location 3	Location 4	Location 5	Location 6	All Locations
2010	0.147	0.147	0.000	0.000	0.000	0.000	0.294
2011	0.312	0.312	0.000	0.000	0.000	0.000	0.624
2012	0.064	0.071	0.248	0.247	0.000	0.074	0.705
2013	0.000	0.043	0.291	0.291	0.000	0.298	0.923
2014	0.001	0.038	0.001	0.009	0.000	0.086	0.134
2015	0.083	0.053	0.001	0.020	0.132	0.062	0.351
2016	0.075	0.046	0.004	0.011	0.050	0.015	0.202
2017	0.030	0.021	0.042	0.024	0.029	0.000	0.147
2018	0.007	0.007	0.011	0.005	0.007	0.000	0.037
2019	0.000	0.000	0.001	0.000	0.000	0.000	0.001
2020	0.000	0.000	0.001	0.000	0.000	0.000	0.001
2021	0.000	0.000	0.001	0.000	0.000	0.000	0.001
2022	0.000	0.000	0.001	0.000	0.000	0.000	0.001
2023	0.000	0.000	0.000	0.000	0.000	0.000	0.001
Maximum Yearly Value	0.312	0.3120	0.291	0.291	0.1320	0.298	0.923
Year	2011	2011	2013	2013	2015	2013	2013
Highest month from highest year - 2010-2016	0.026	0.026	0.027	0.027	0.020	0.028	0.085
Highest month from highest year 2017 - 2023	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Highest Monthly Value from highest year	0.026	0.026	0.027	0.027	0.020	0.028	0.085
Highest Monthly Value - from all years	0.027	0.027	0.027	0.027	0.020	0.028	0.085
Month and Year Highest Monthly Value occurs in	12/1/2011	9/1/2011	8/1/2013	6/1/2013	10/1/2015	10/1/2013	10/1/2013

WESTERN RAIL YARDS
AIR QUALITY CONSTRUCTION ANALYSIS

PM₁₀ Summary Table

Year	Location 1	Location 2	Location 3	Location 4	Location 5	Location 6	All Locations
2010	0.491	0.491	0.000	0.000	0.000	0.000	0.982
2011	1.140	1.140	0.000	0.000	0.000	0.000	2.279
2012	0.272	0.280	0.870	0.862	0.000	0.399	2.683
2013	0.000	0.051	1.051	1.042	0.000	1.492	3.637
2014	0.001	0.047	0.008	0.011	0.001	0.102	0.170
2015	0.096	0.057	0.008	0.027	0.700	0.083	0.971
2016	0.092	0.048	0.013	0.017	0.061	0.019	0.252
2017	0.040	0.021	0.060	0.024	0.042	0.000	0.187
2018	0.008	0.007	0.024	0.005	0.010	0.000	0.055
2019	0.000	0.000	0.008	0.000	0.000	0.000	0.008
2020	0.000	0.000	0.008	0.000	0.000	0.000	0.008
2021	0.000	0.000	0.008	0.000	0.000	0.000	0.008
2022	0.000	0.000	0.008	0.000	0.000	0.000	0.008
2023	0.000	0.000	0.000	0.000	0.000	0.000	0.008
Maximum Yearly Value	1.140	1.1395	1.051	1.042	0.7000	1.492	3.637
Year	2011	2011	2013	2013	2015	2013	2013
Highest month from highest year - 2010-2016	0.095	0.095	0.096	0.095	0.101	0.136	0.331
Highest month from highest year 2017 - 2023	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Highest Monthly Value from highest year	0.095	0.095	0.096	0.095	0.101	0.136	0.331
Highest Monthly Value - from all years	0.095	0.095	0.096	0.095	0.101	0.136	0.331
Month and Year Highest Monthly Value occurs in	1/1/2011	1/1/2011	8/1/2013	6/1/2013	10/1/2015	10/1/2013	8/1/2013

WESTERN RAIL YARDS
AIR QUALITY CONSTRUCTION ANALYSIS

NOx Summary Table

Year	Location 1	Location 2	Location 3	Location 4	Location 5	Location 6	All Locations
2010	10.966	10.966	0.000	0.000	0.000	0.000	21.933
2011	20.978	20.948	0.000	0.000	0.000	0.000	41.926
2012	3.514	3.730	16.278	16.260	0.000	0.484	40.266
2013	0.000	1.401	18.393	18.371	0.000	3.372	41.536
2014	0.064	1.424	0.020	0.329	0.001	3.075	4.913
2015	2.002	1.872	0.020	0.718	0.573	2.397	7.583
2016	2.041	1.574	0.090	0.519	1.030	0.852	6.106
2017	1.342	0.790	0.806	0.451	0.803	0.000	4.192
2018	0.255	0.253	0.449	0.187	0.241	0.000	1.385
2019	0.000	0.000	0.020	0.000	0.000	0.000	0.020
2020	0.000	0.000	0.020	0.000	0.000	0.000	0.020
2021	0.000	0.000	0.020	0.000	0.000	0.000	0.020
2022	0.000	0.000	0.020	0.000	0.000	0.000	0.020
2023	0.000	0.000	0.000	0.000	0.000	0.000	0.020
Maximum Yearly Value	20.978	20.9479	18.393	18.371	1.0299	3.372	41.926
Year	2011	2011	2013	2013	2016	2013	2011
Highest month from highest year - 2010-2016	1.756	1.756	1.692	1.689	0.089	0.328	3.511
Highest month from highest year 2017 - 2023	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Highest Monthly Value from highest year	1.756	1.756	1.692	1.689	0.000	0.328	3.511
Highest Monthly Value - from all years	1.835	1.835	1.692	1.689	0.101	0.330	3.834
Month and Year Highest Monthly Value occurs in	12/1/2011	9/1/2011	8/1/2013	6/1/2013	1/1/2010	4/1/2013	9/1/2011

WESTERN RAIL YARDS
AIR QUALITY CONSTRUCTION ANALYSIS

PM_{2.5} Summary Table (Tons)

Year	Location 1	Location 2	Location 3	Location 4	Location 5	Location 6	All Locations
2010	0.117	0.117	0.000	0.000	0.000	0.000	0.233
2011	0.254	0.254	0.000	0.000	0.000	0.000	0.508
2012	0.055	0.059	0.199	0.199	0.000	0.071	0.582
2013	0.000	0.026	0.236	0.235	0.000	0.276	0.773
2014	0.001	0.023	0.001	0.004	0.000	0.049	0.077
2015	0.050	0.032	0.001	0.010	0.121	0.037	0.250
2016	0.045	0.028	0.003	0.007	0.029	0.009	0.122
2017	0.020	0.013	0.025	0.016	0.018	0.000	0.092
2018	0.004	0.004	0.008	0.003	0.004	0.000	0.024
2019	0.000	0.000	0.001	0.000	0.000	0.000	0.001
2020	0.000	0.000	0.001	0.000	0.000	0.000	0.001
2021	0.000	0.000	0.001	0.000	0.000	0.000	0.001
2022	0.000	0.000	0.001	0.000	0.000	0.000	0.001
2023	0.000	0.000	0.000	0.000	0.000	0.000	0.001
Maximum Yearly Value	0.254	0.2538	0.236	0.235	0.1210	0.276	0.773
Year	2011	2011	2013	2013	2015	2013	2013
Highest month from highest year - 2010-2016	0.021	0.021	0.022	0.022	0.018	0.025	0.071
Highest month from highest year 2017 - 2023	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Highest Monthly Value from highest year	0.021	0.021	0.022	0.022	0.018	0.025	0.071
Highest Monthly Value - from all years	0.022	0.022	0.022	0.022	0.018	0.025	0.071
Month and Year Highest Monthly Value occurs in	12/1/2011	9/1/2011	8/1/2013	6/1/2013	10/1/2015	10/1/2013	10/1/2013

STATIONARY SOURCE ANALYSIS EXAMPLE

PM and NO₂ Analyses Receptor Locations



Image © 2008 Sanborn
© 2008 Tele Atlas
Image © 2008 DigitalGlobe

CO Analysis Receptor Locations



Image © 2008 Sanborn
© 2008 Tele Atlas
Image © 2008 DigitalGlobe

CUMULATIVE ANALYSIS

WESTERN RAIL YARDS CUMULATIVE CONSTRUCTION EMISSIONS
IN 2011, THE HIGHEST YEAR OF WRY NO_x EMISSIONS

ERY

Modeling Period	Time period	Hours	Highest ER		Area	ER for AERMOD	
			NO _x	NO _x		NO _x	NO ₂
			ton	g/sec	m ²	g/sec-m ²	g/sec-m ²
Annual	year	8760	22.865	0.65776	35,297	1.863E-05	7.268E-06

Note:

Conversion factor for NO₂/NO_x of 0.39 was applied as consistent with P.Wan et al, Atmospheric Transformation of Vehicular Emissions from Nearby Tunnel Portals, AWMA 1996.

ARC NO_x

Location	2011 Highest Annual ER	Working Hours per Year	Average ER per Year	Source Area	Annual ER per Area	
					NO _x	NO ₂
	ton/year	hr	g/sec	m ²	g/sec-m ²	g/sec-m ²
12th Avenue Manhattan	6.0348	8760	0.0007	8960	7.6887E-08	2.92171E-08

Note: Use 0.38 for NO₂/NO_x conversion factor consistent with the DEIS analysis.

N7 Station

Modeling Period	Time period	Hours	Highest ER		Area	ER for AERMOD
			ton	g/sec		
24 Hour	quarter	2160	9.31	1.09	10,050	4.217E-05

Note:

Conversion factor for NO₂/NO_x of 0.39 was applied as consistent with P.Wan et al, Atmospheric Transformation of Vehicular Emissions from Nearby Tunnel Portals, AWMA 1996.

**WESTERN RAIL YARDS CUMULATIVE CONSTRUCTION EMISSIONS
IN 2013, THE HIGHEST YEAR OF WRY PM₁₀ EMISSIONS**

ERY

Modeling Period	Time period	Hours	Highest ER		Area	ER for AERMOD
			ton	g/sec		
24 Hour	month	720	0.050	0.01750	12,590	1.390E-06

ARC PM10

Location	September 2013 Highest Monthly ER	Working Hours per Month	Working Hours per Year	Average ER per Day	Source Area	Daily ER per Area
	ton/month	hr	hr	g/sec	m2	g/sec-m2
12th Avenue Manhattan	0.0116	720	8760	0.1294	8960	1.4446E-05

N7 Station

Modeling Period	Time period	Hours	Highest ER		Area	ER for AERMOD
			ton	g/sec		
24 Hour	quarter	2160	0.24	0.03	10,050	2.739E-06

**Appendix H3:
Construction – Noise**

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- 1. Total noise results for weekday conditions**
- 2. Total noise results for nighttime conditions**
- 3. Total noise results for weekend conditions**
- 4. Construction Equipment Noise Emission Levels**

Figure 1 - Weekdays–Receptor R1

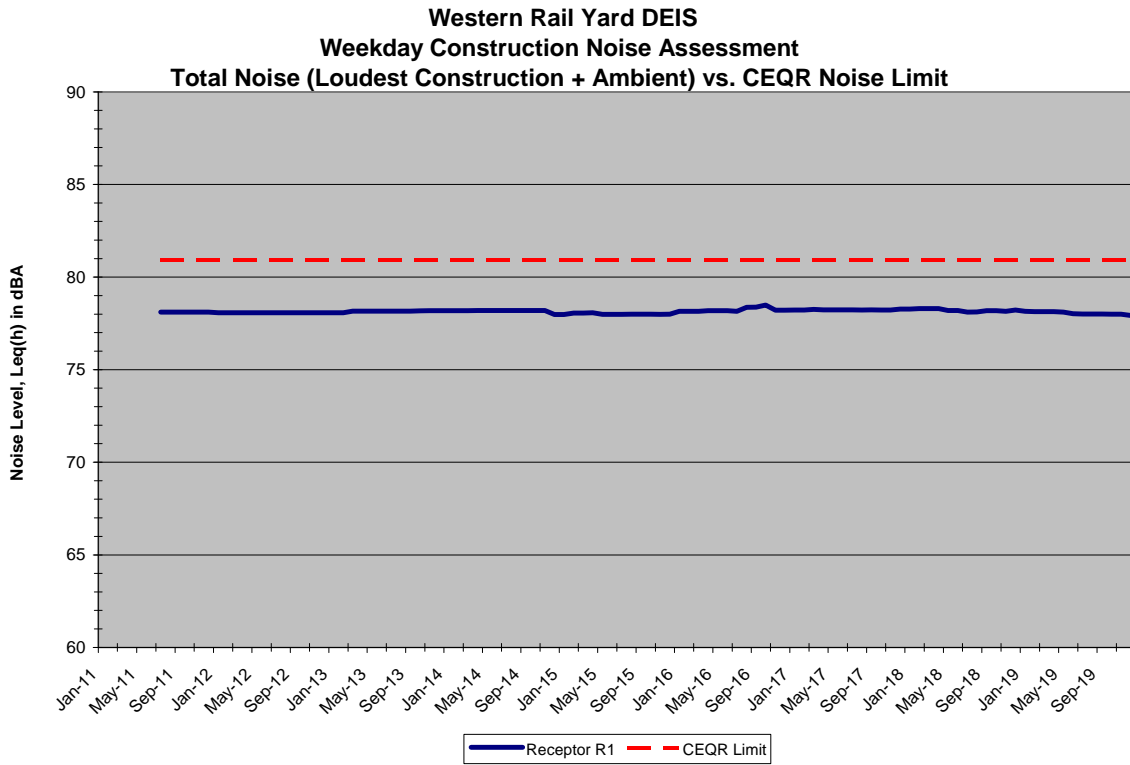
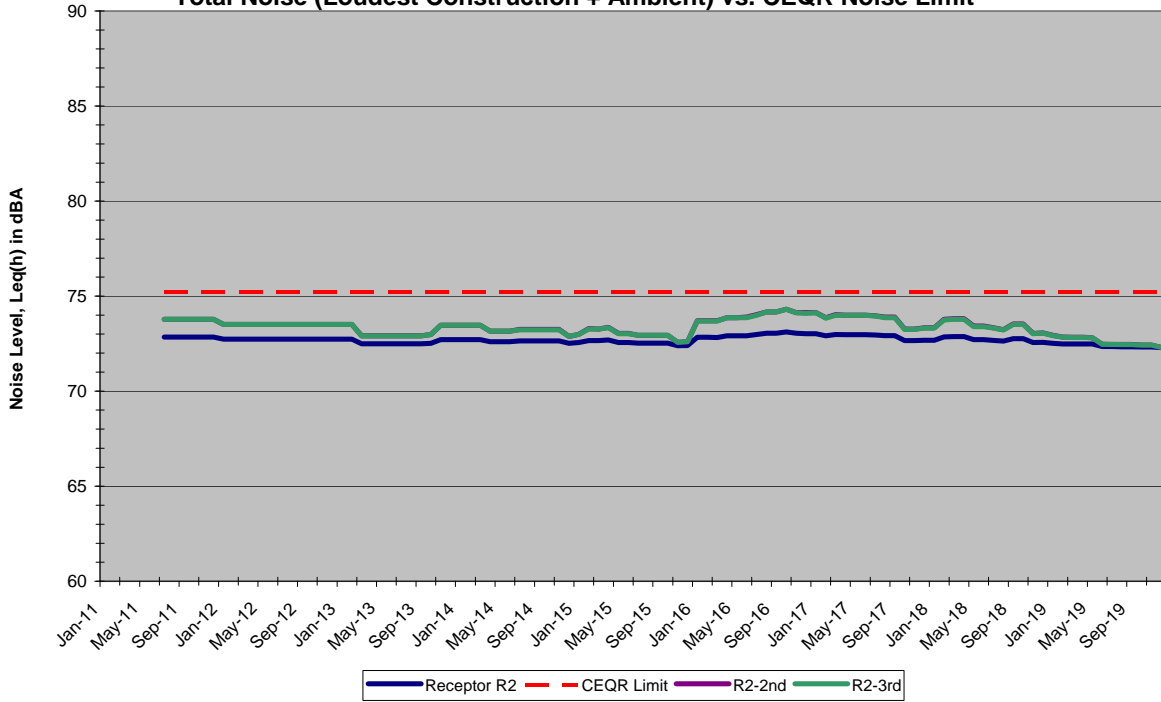


Figure 2 - Weekdays–Receptor R2

Western Rail Yard DEIS
Weekday Construction Noise Assessment
Total Noise (Loudest Construction + Ambient) vs. CEQR Noise Limit



* Does not include the effects of noise fencing per NYC Noise Code Regulations

Figure 3 - Weekdays–Receptor R3

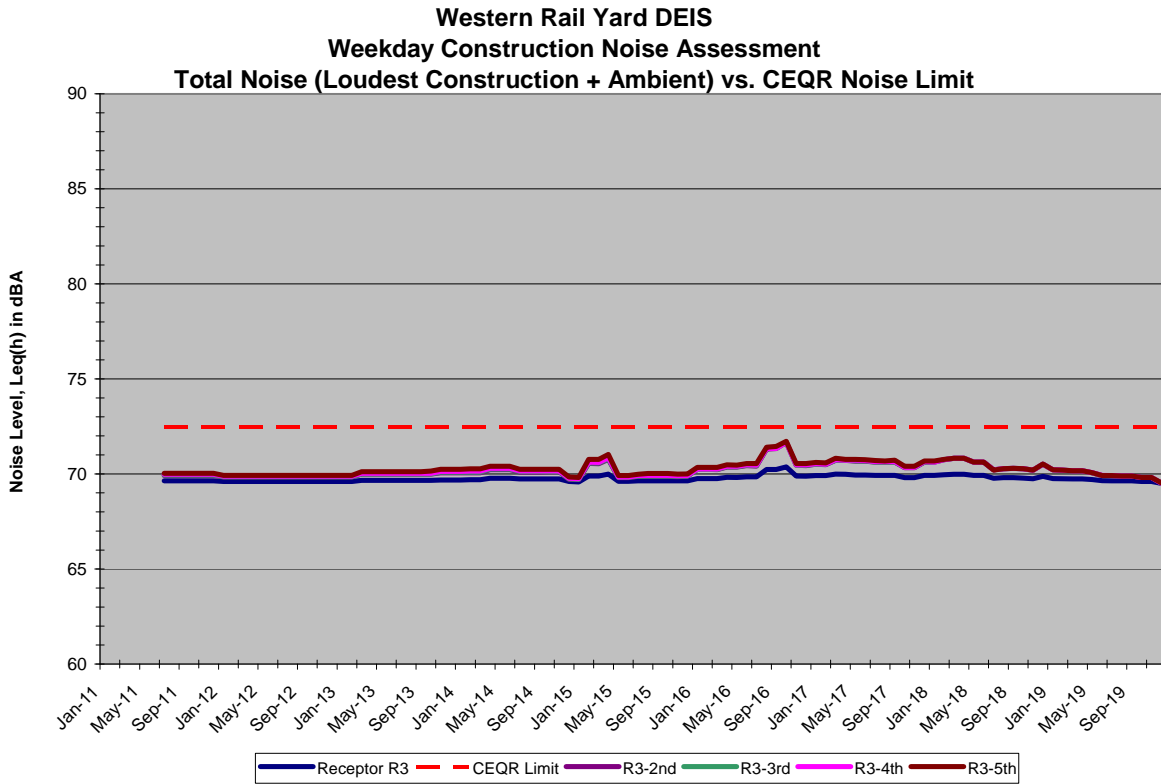
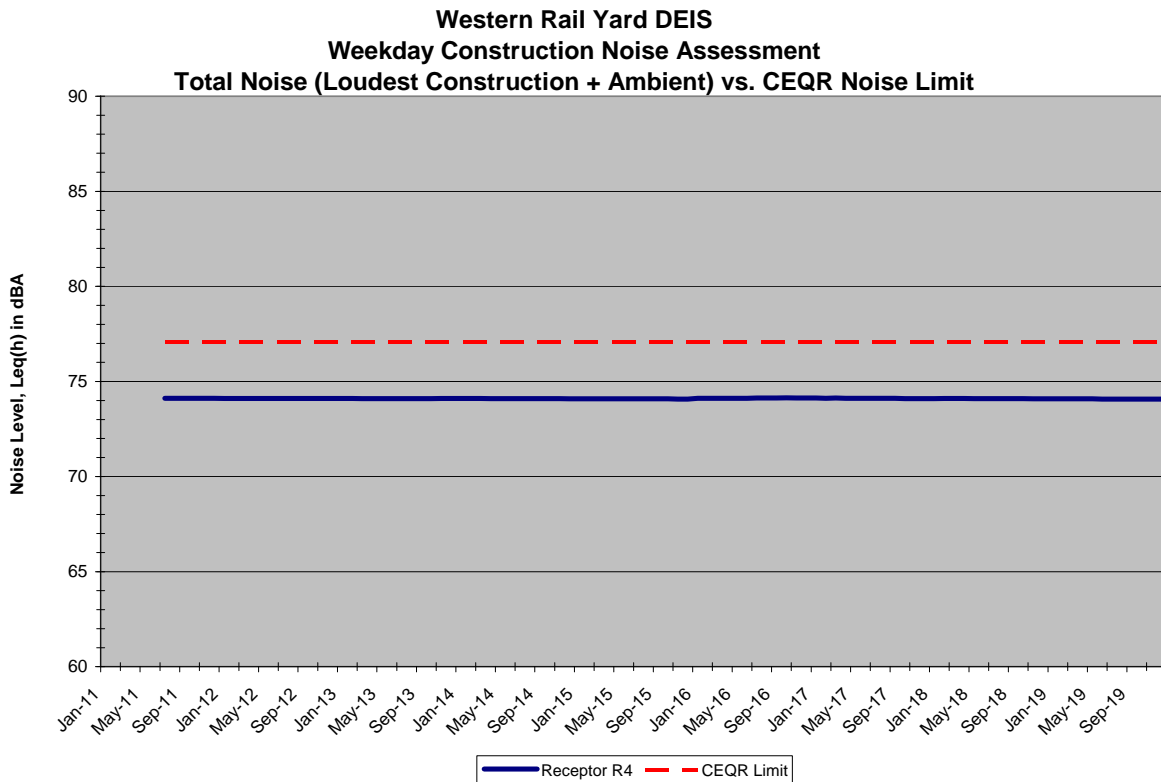


Figure 4 - Weekdays–Receptor R4



* Does not include the effects of noise fencing per NYC Noise Code Regulations

Figure 5 -Weekdays–Receptor R5

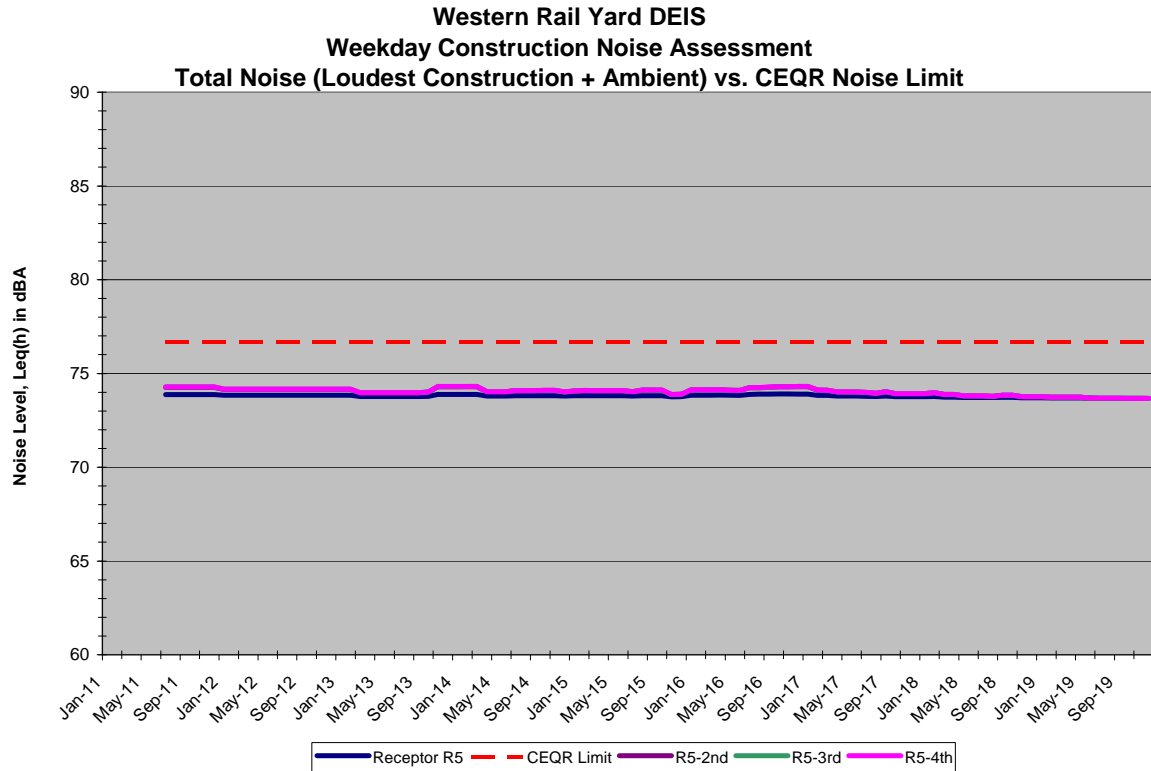
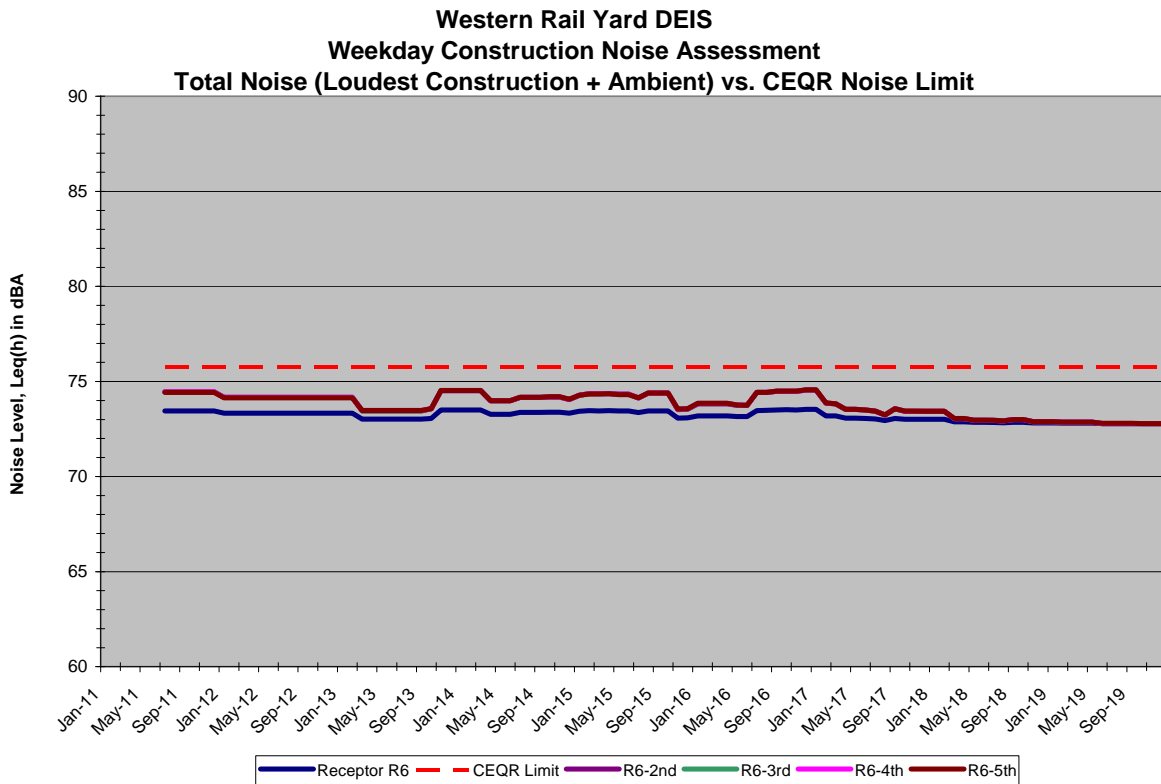


Figure 6 - Weekdays–Receptor R6



* Does not include the effects of noise fencing per NYC Noise Code Regulations

Figure 7 - Weekdays–Receptor R7

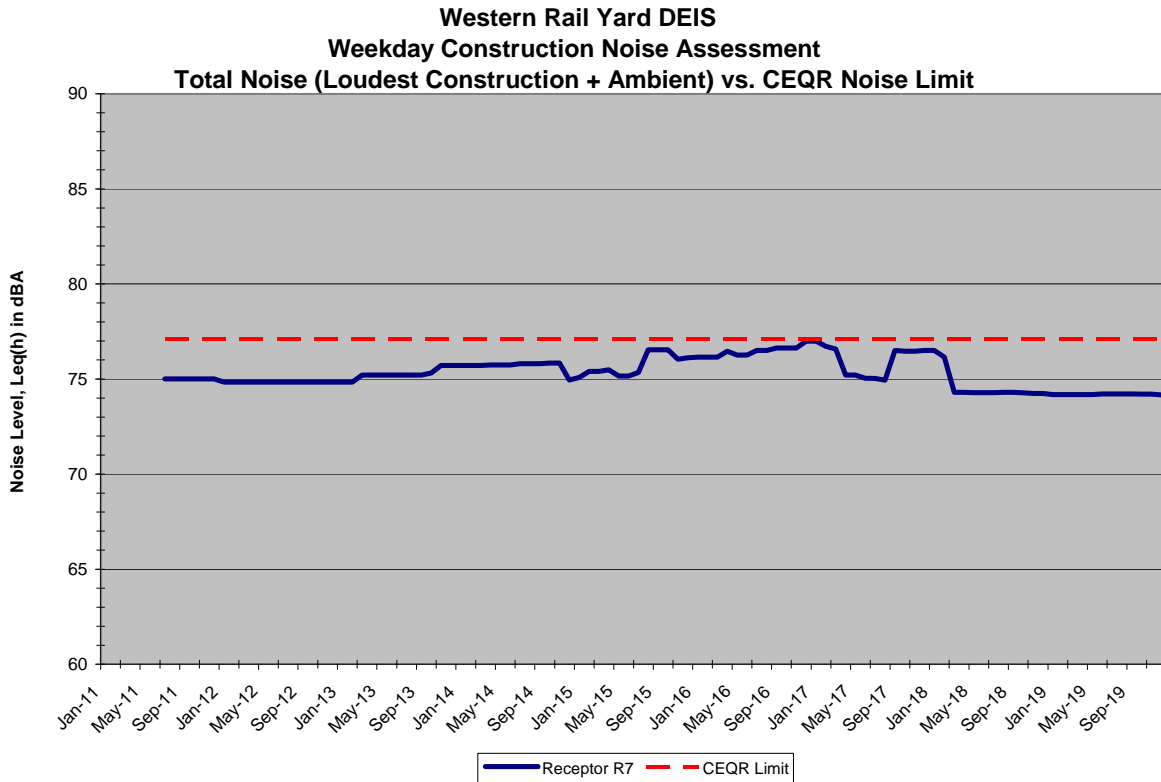
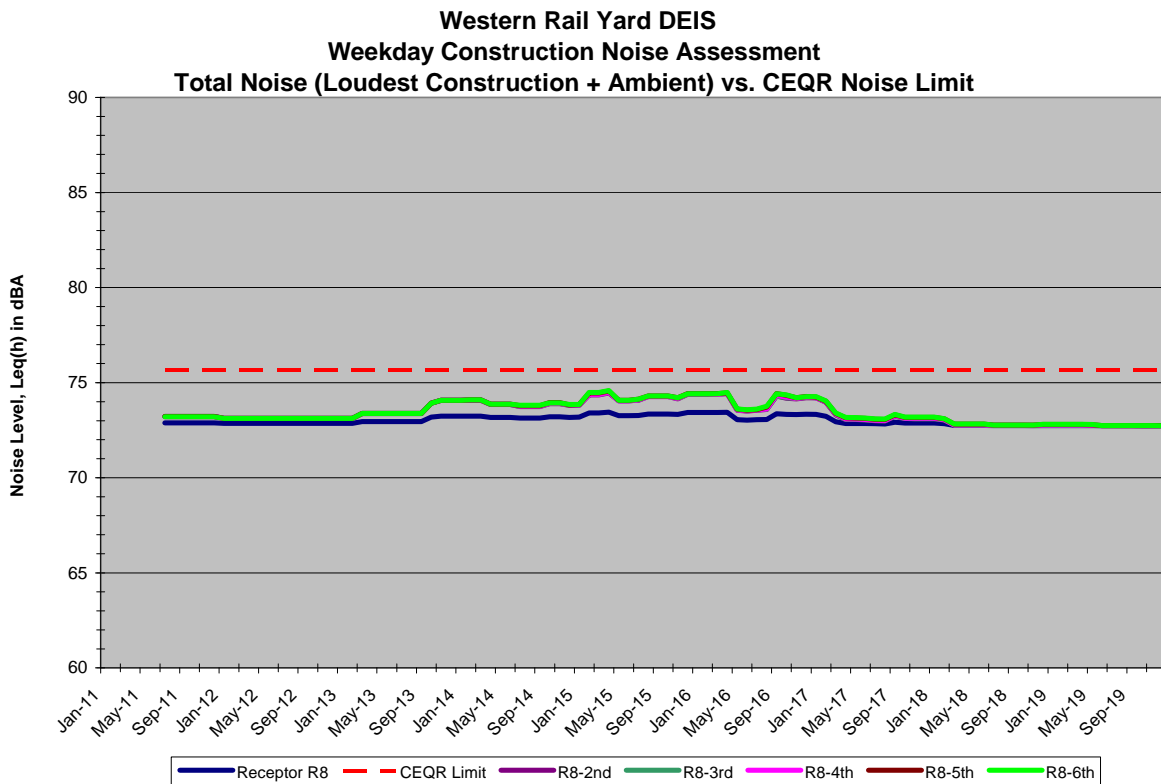


Figure 8 - Weekdays–Receptor R8



* Does not include the effects of noise fencing per NYC Noise Code Regulations

Figure 9 - Weekdays–Receptor R9

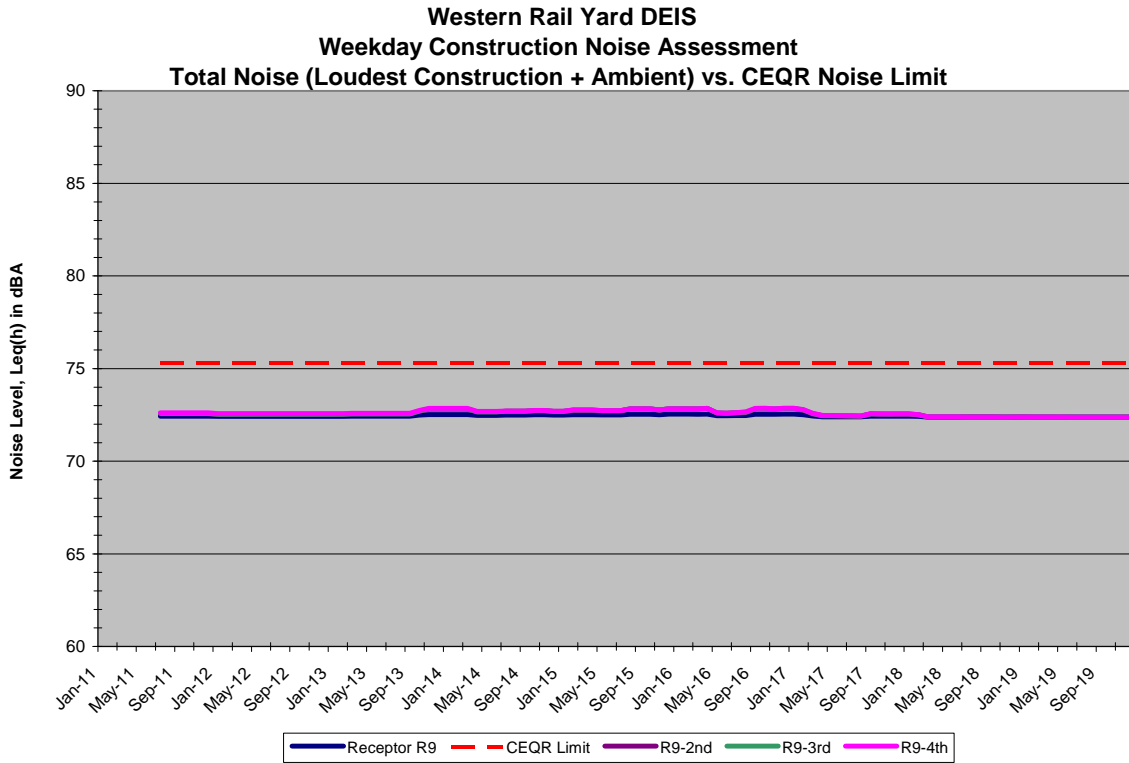
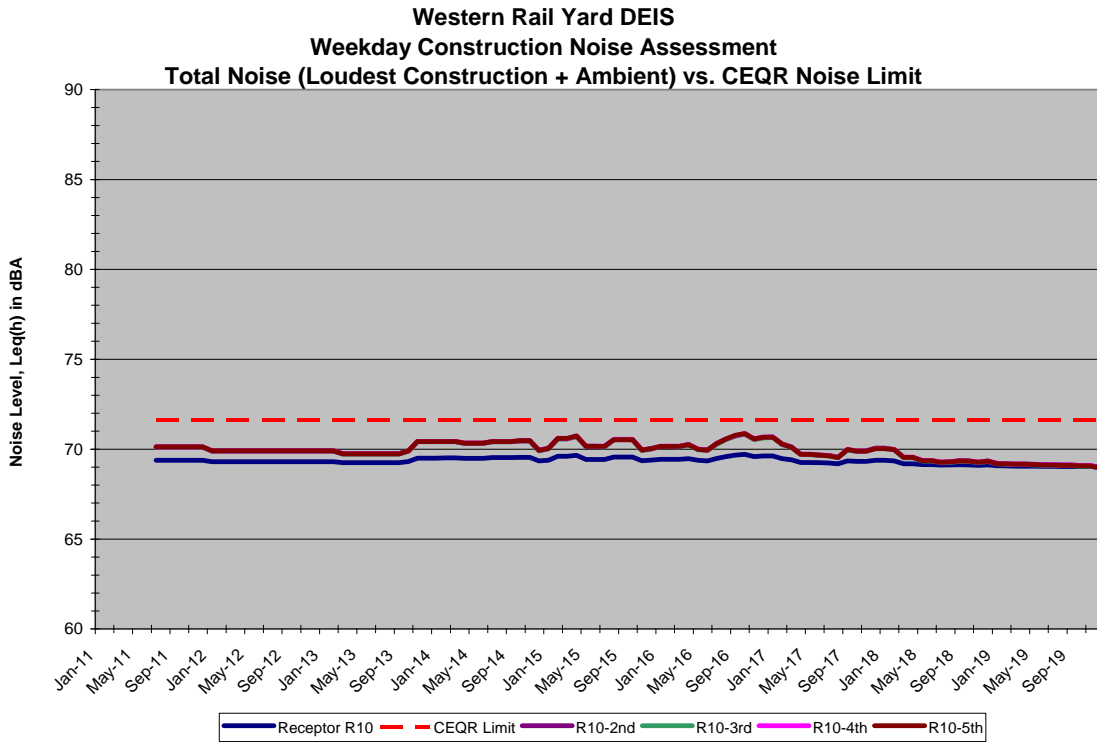


Figure 10 - Weekdays–Receptor R10



* Does not include the effects of noise fencing per NYC Noise Code Regulations

Figure 11 - Weekdays–Receptor R11

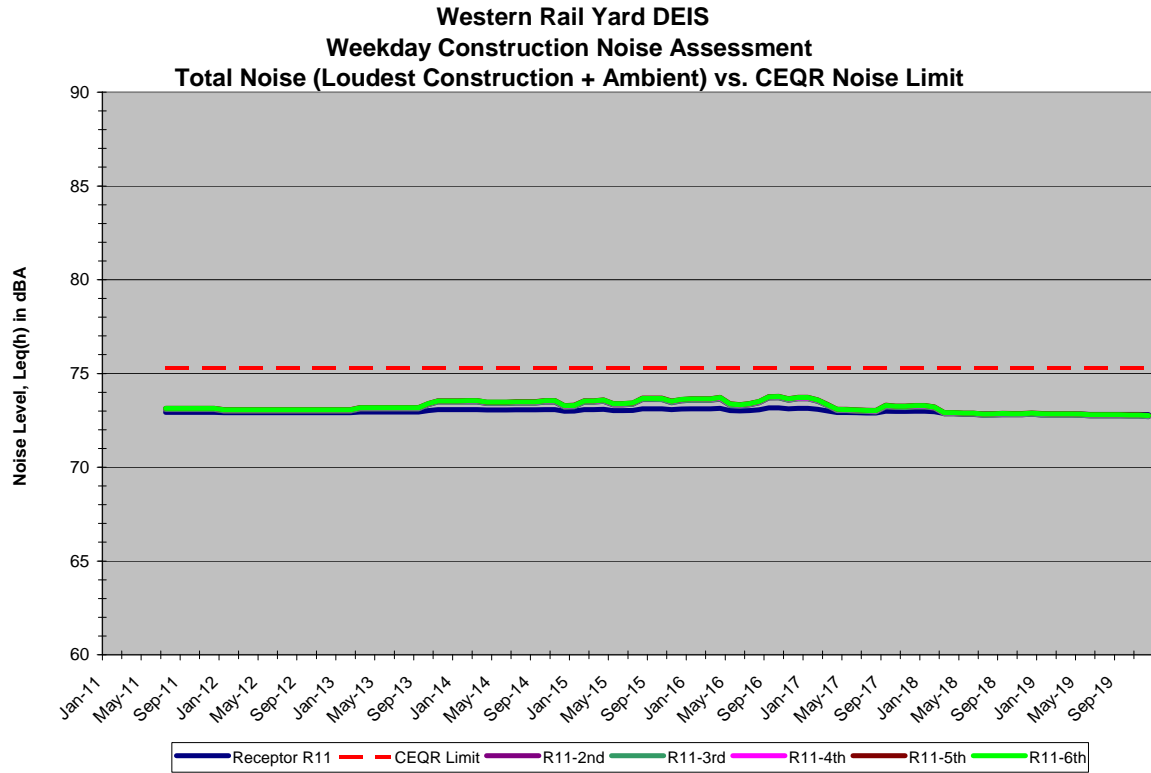
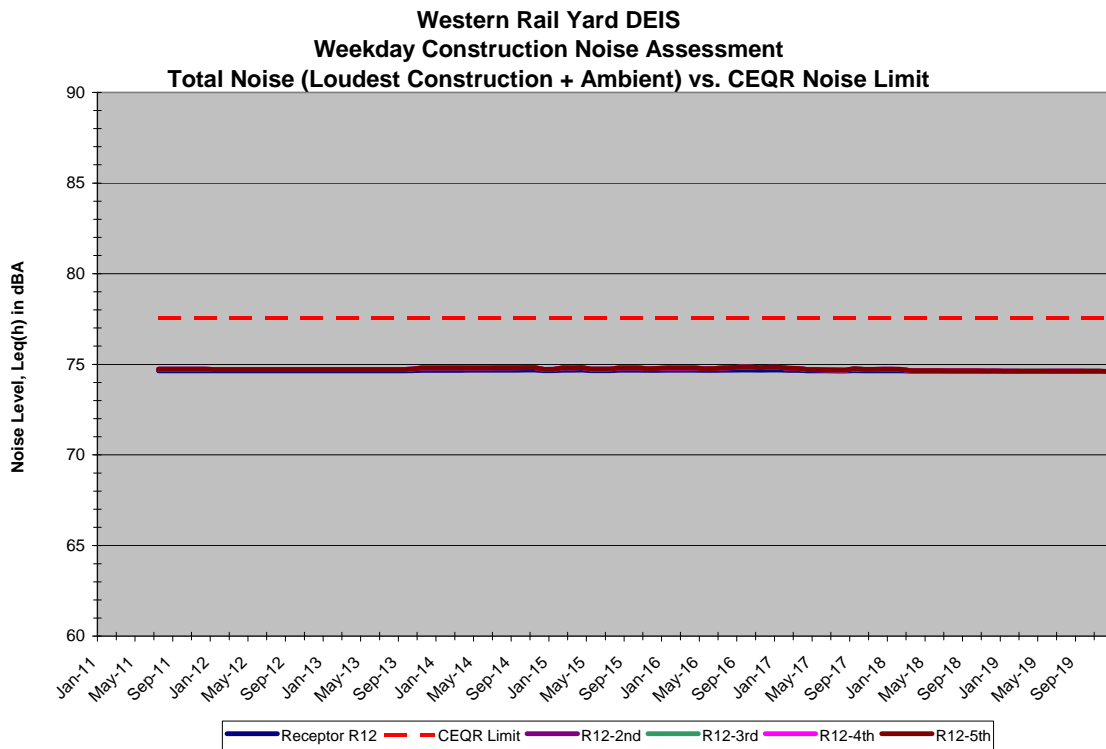


Figure 12 - Weekdays–Receptor R12



* Does not include the effects of noise fencing per NYC Noise Code Regulations

Figure 13 - Weekdays–Receptor R13

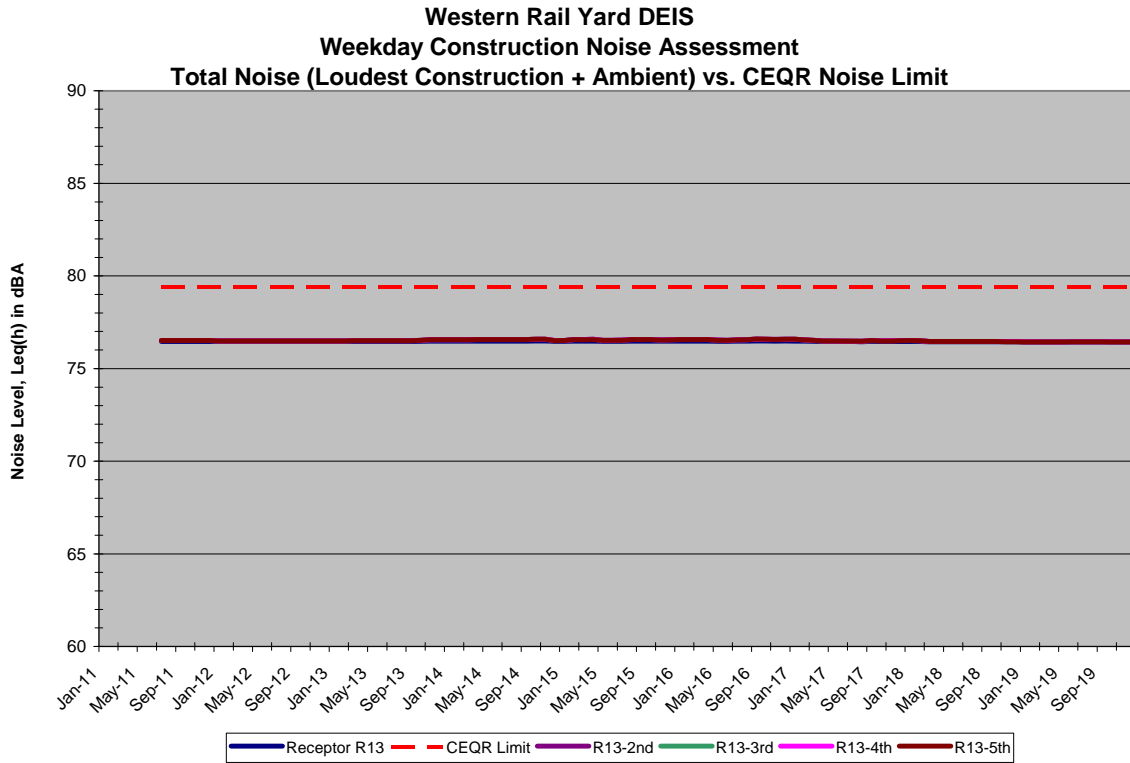
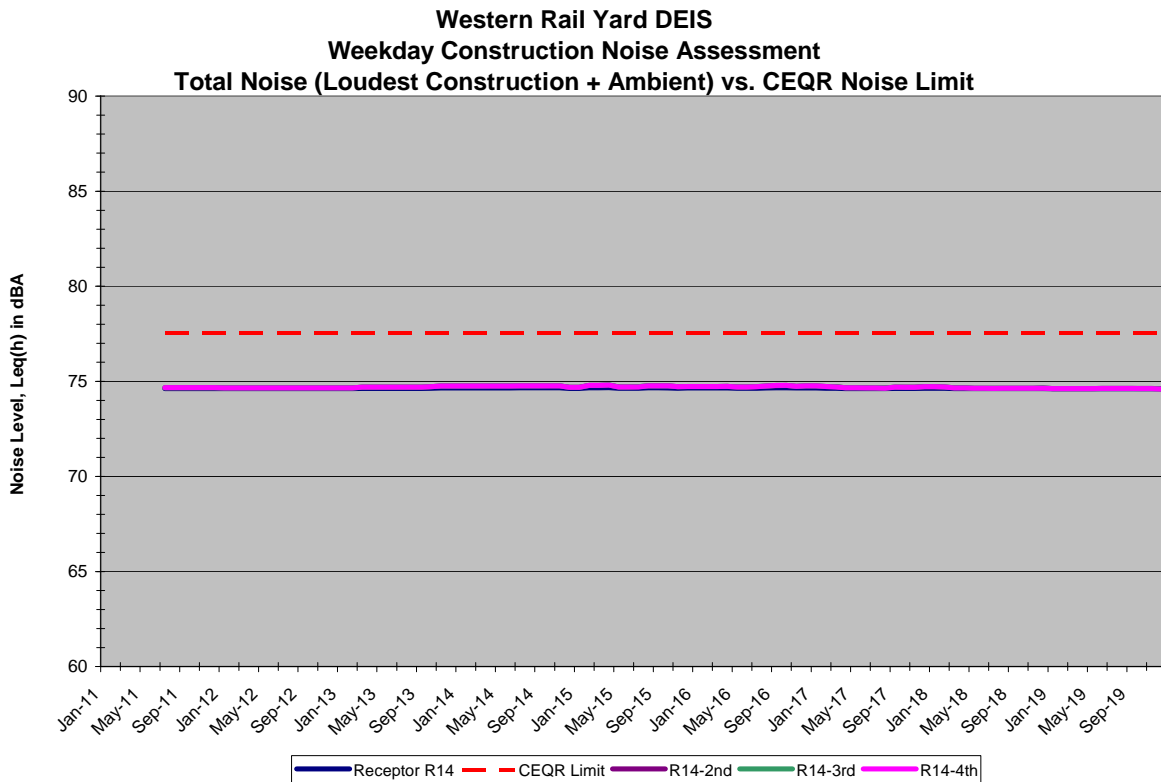


Figure 14 - Weekdays–Receptor R14



* Does not include the effects of noise fencing per NYC Noise Code Regulations

Figure 15 - Weekdays-Receptor R15

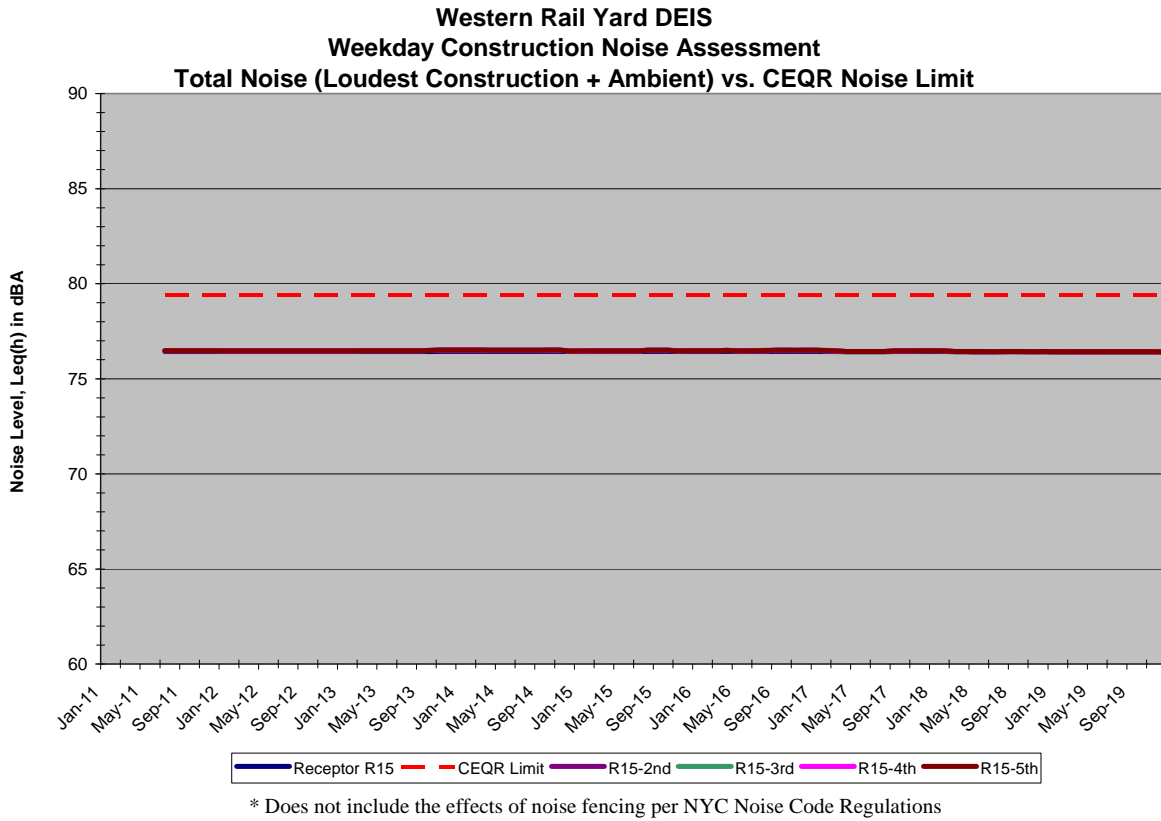


Figure 16 - Evenings–Receptor R1

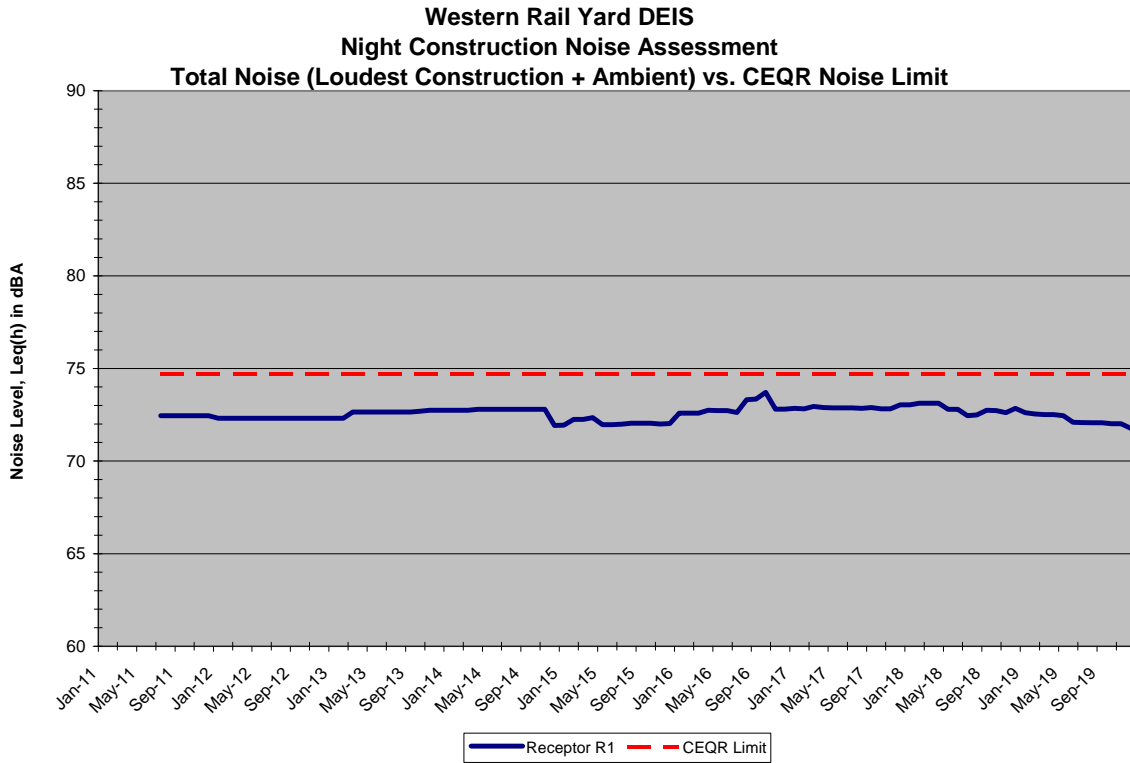
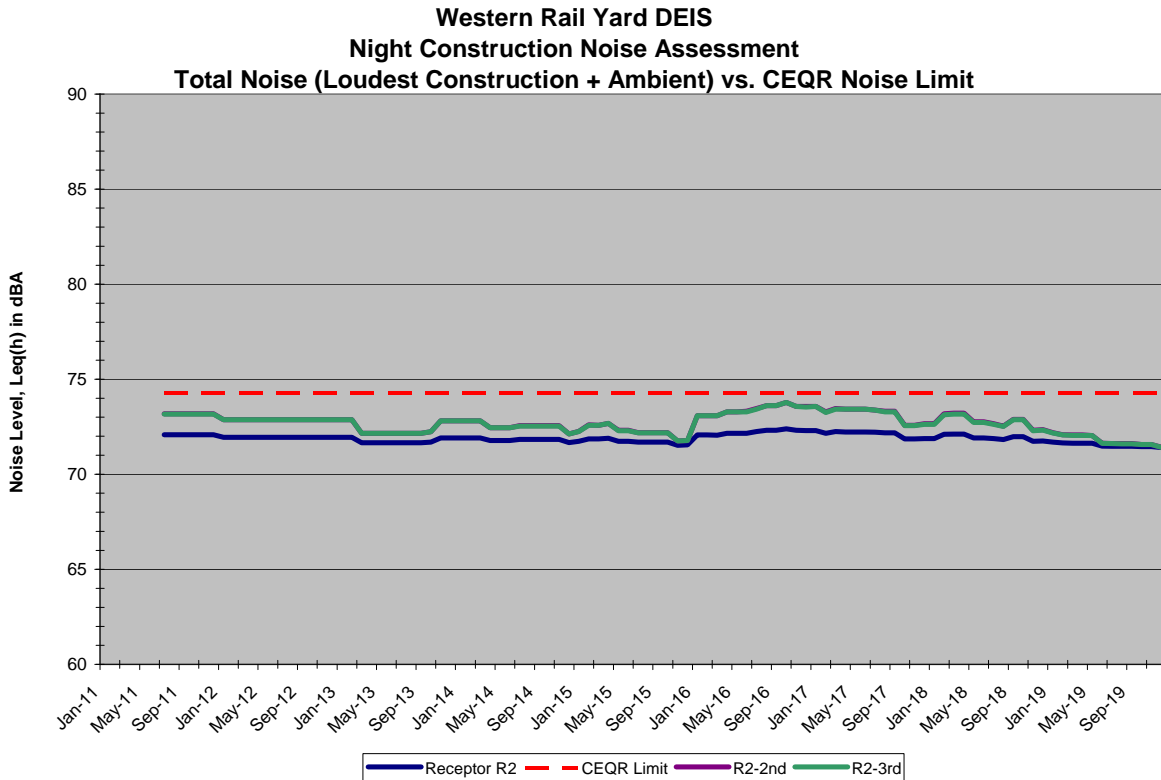


Figure 17 - Evenings–Receptor R2



* Does not include the effects of noise fencing per NYC Noise Code Regulations

Figure 18 - Evenings–Receptor R3

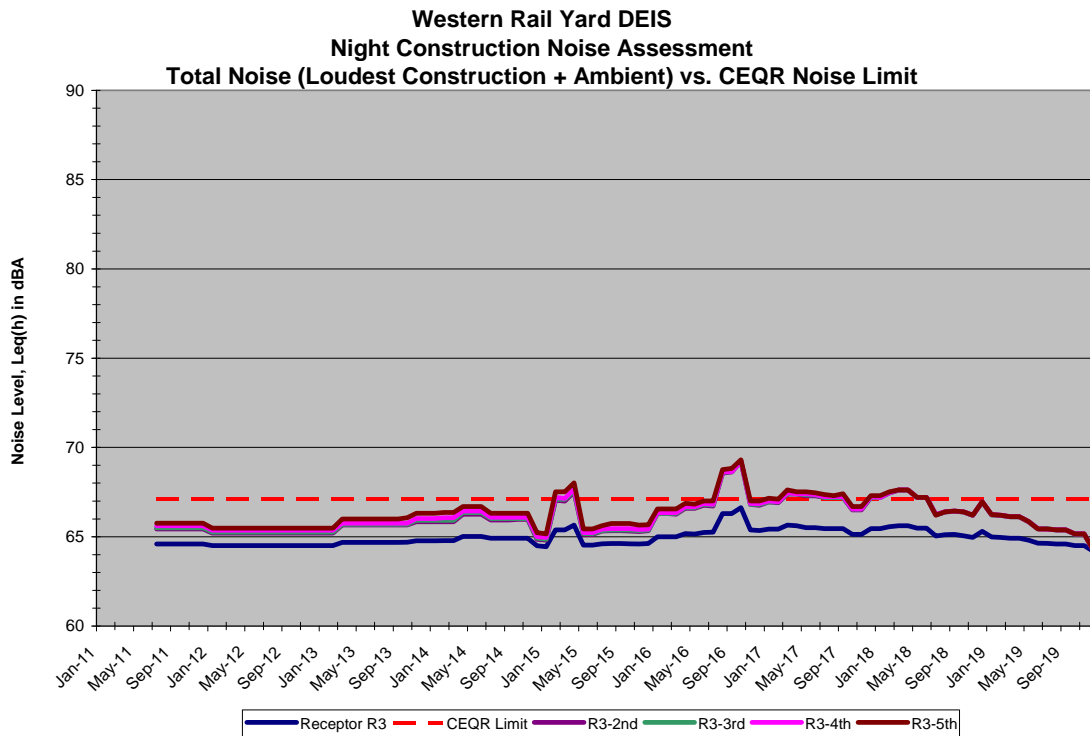
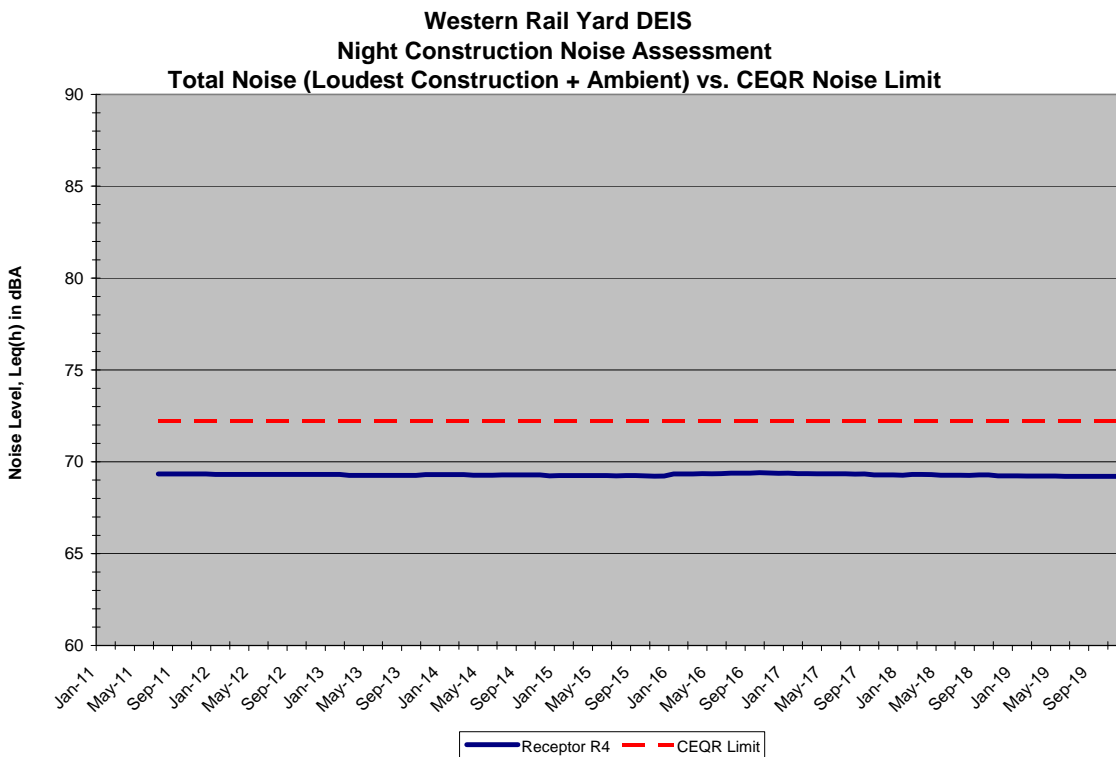


Figure 19 - Evenings–Receptor R4



* Does not include the effects of noise fencing per NYC Noise Code Regulations

Figure 20 - Evenings–Receptor R5

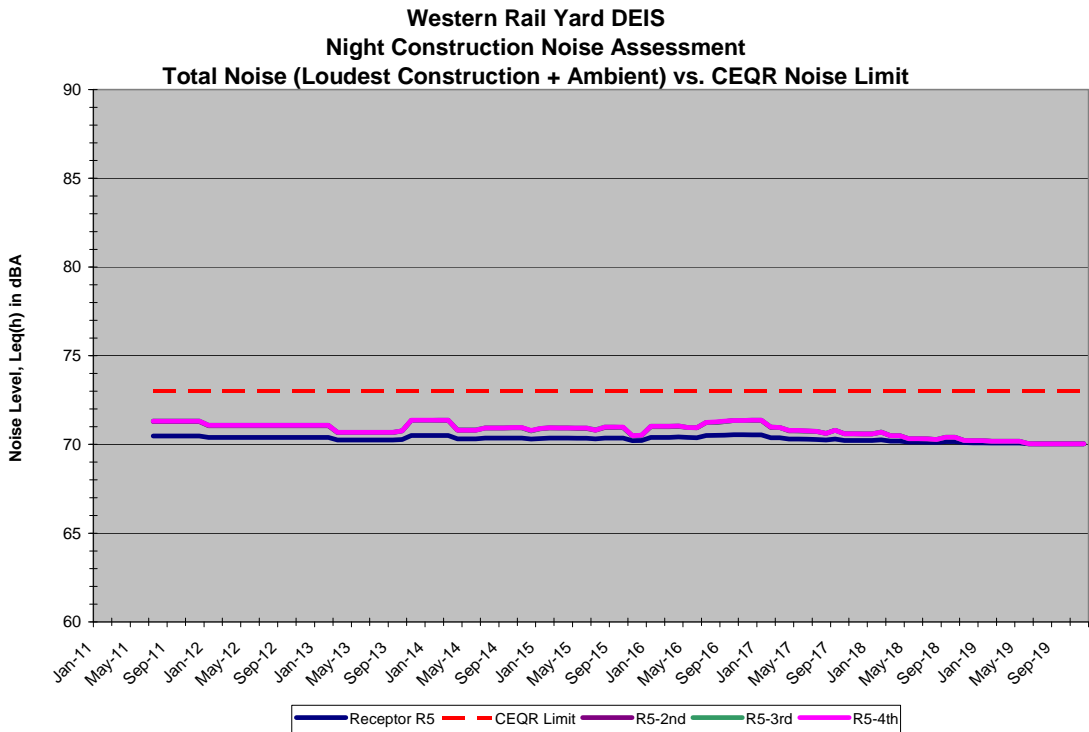
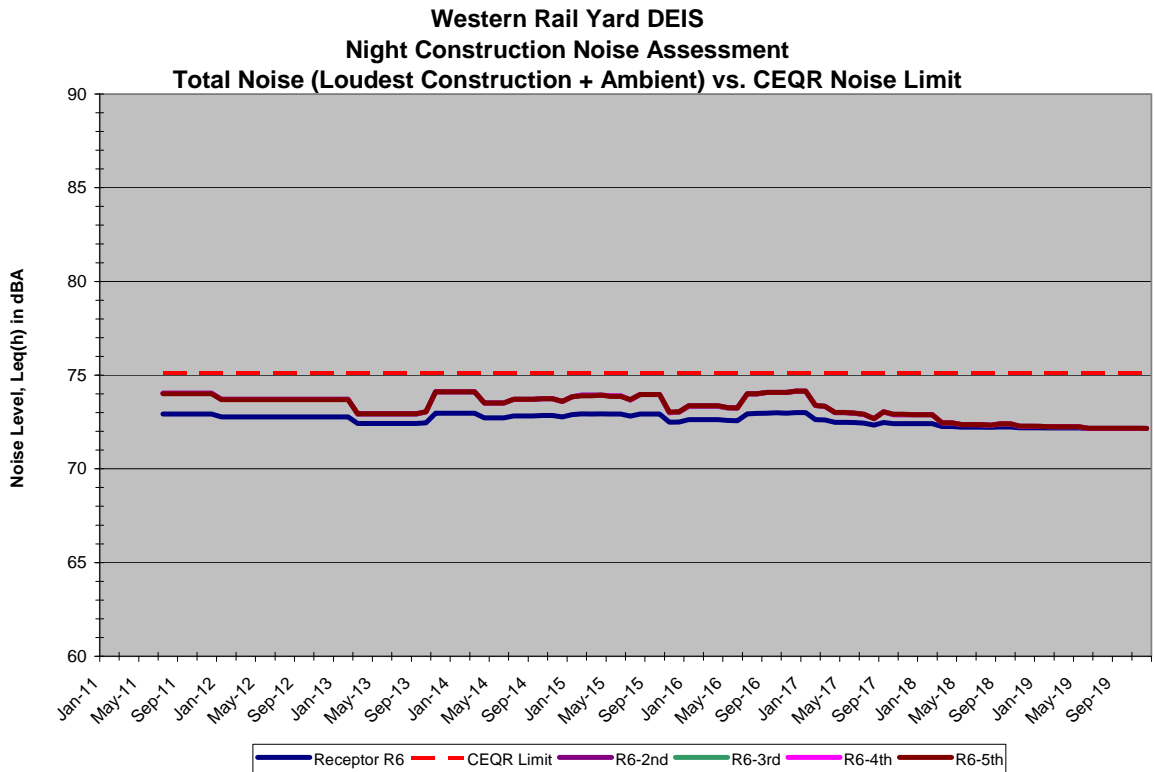


Figure 21 - Evenings–Receptor R6



* Does not include the effects of noise fencing per NYC Noise Code Regulations

Figure 22 - Evenings–Receptor R7

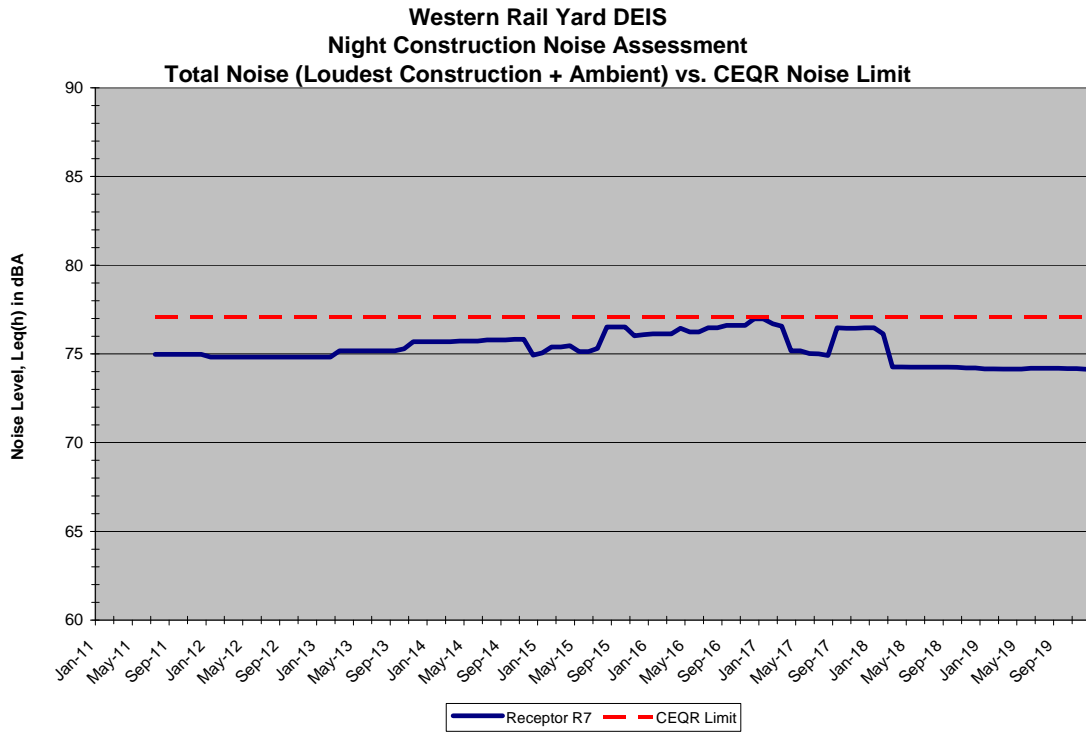
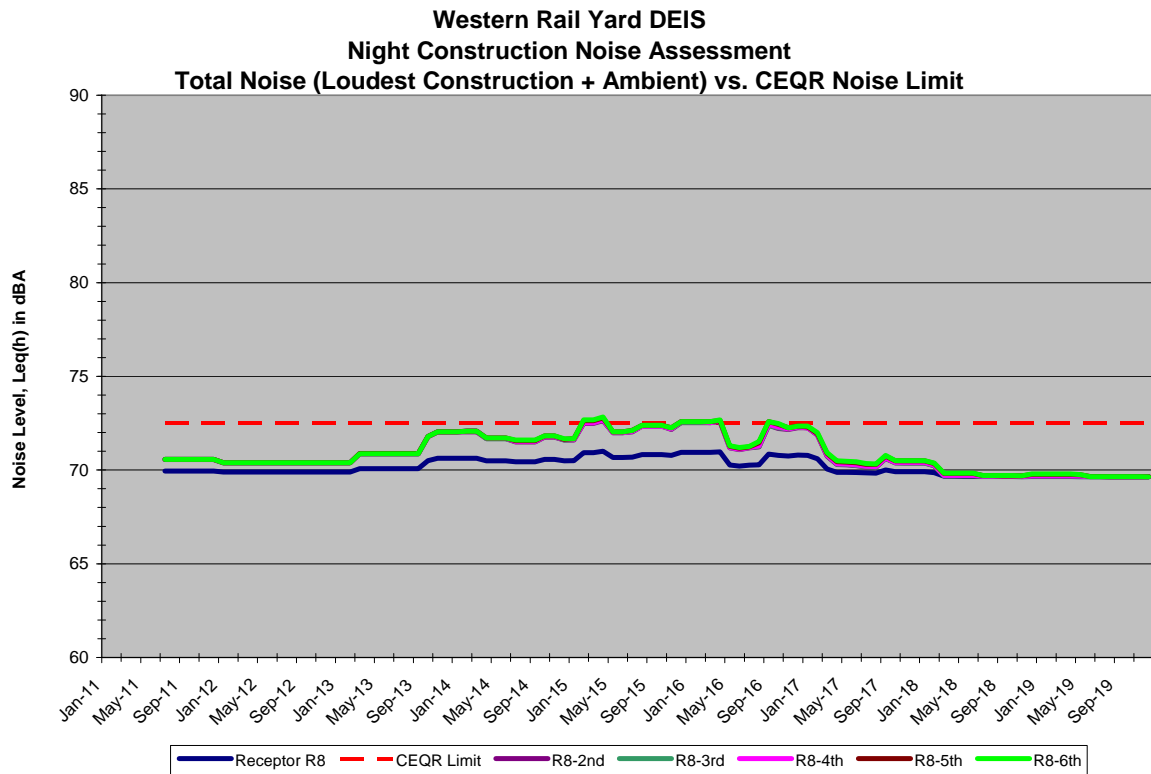


Figure 23 - Evenings–Receptor R8



* Does not include the effects of noise fencing per NYC Noise Code Regulations

Figure 24 - Evenings–Receptor R9

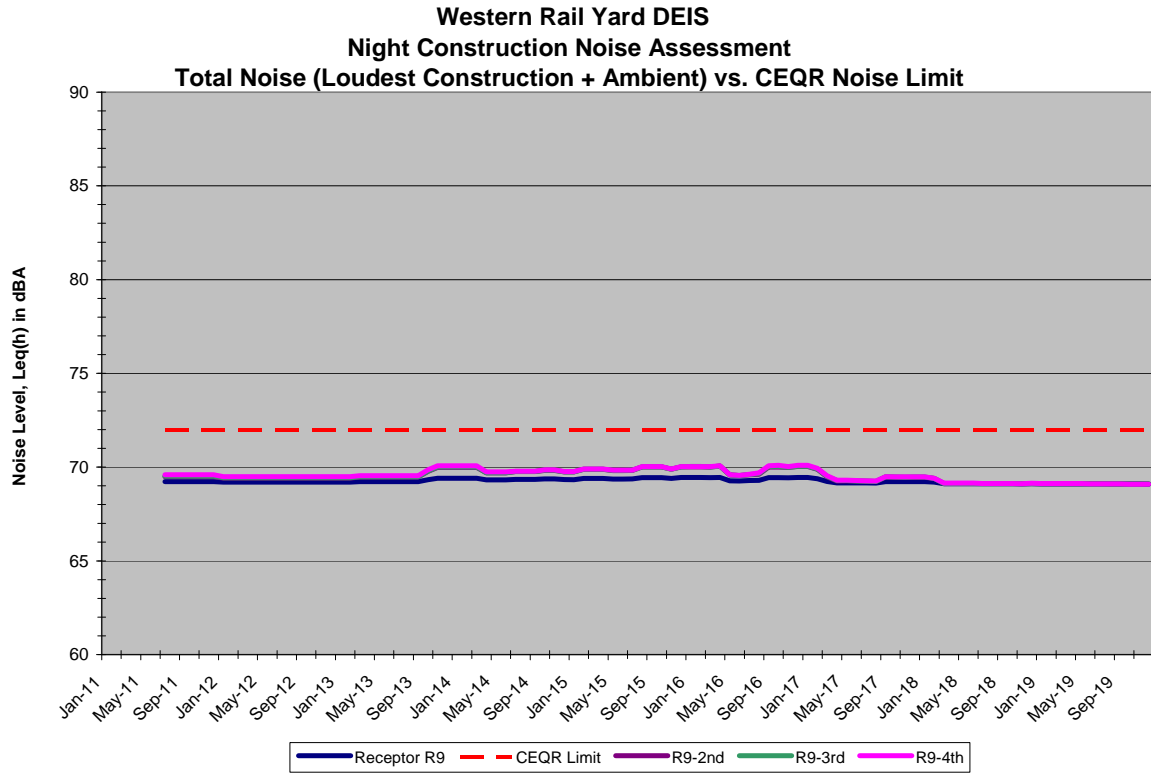
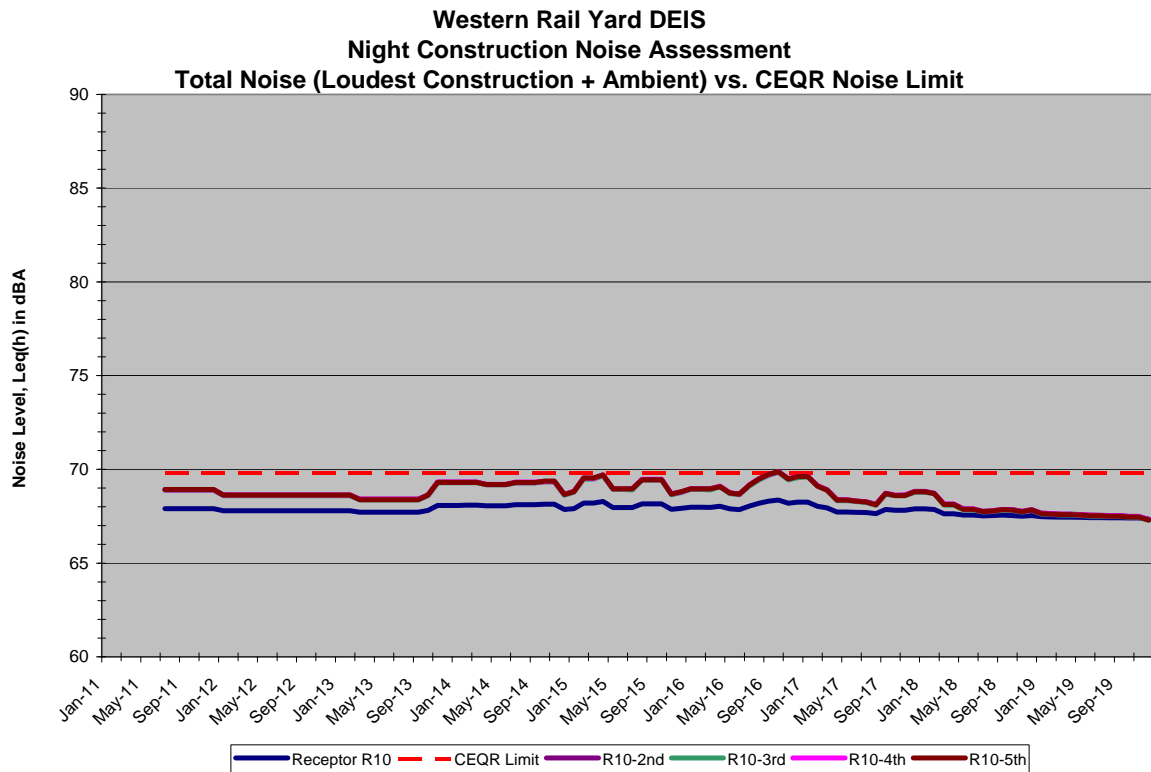


Figure 25 - Evenings–Receptor R10



* Does not include the effects of noise fencing per NYC Noise Code Regulations

Figure 26 -Evenings–Receptor R11

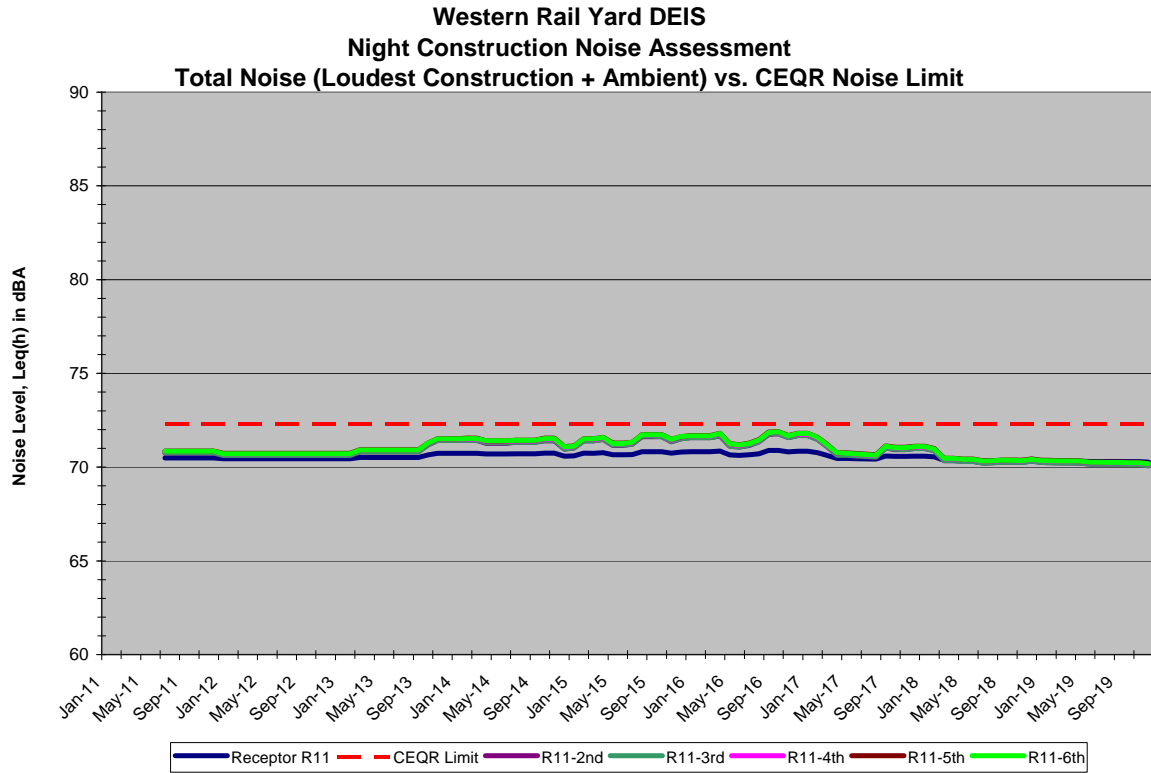
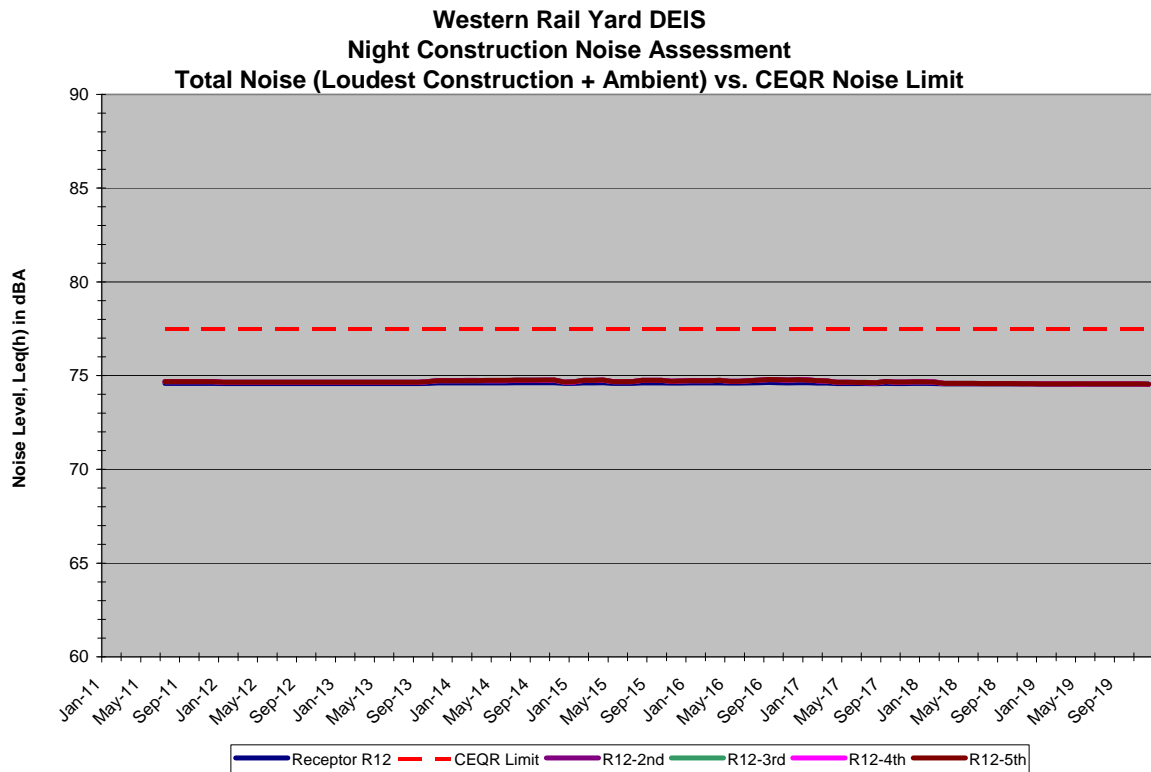


Figure 27 - Evenings–Receptor R12



* Does not include the effects of noise fencing per NYC Noise Code Regulations

Figure 28 - Evenings–Receptor R13

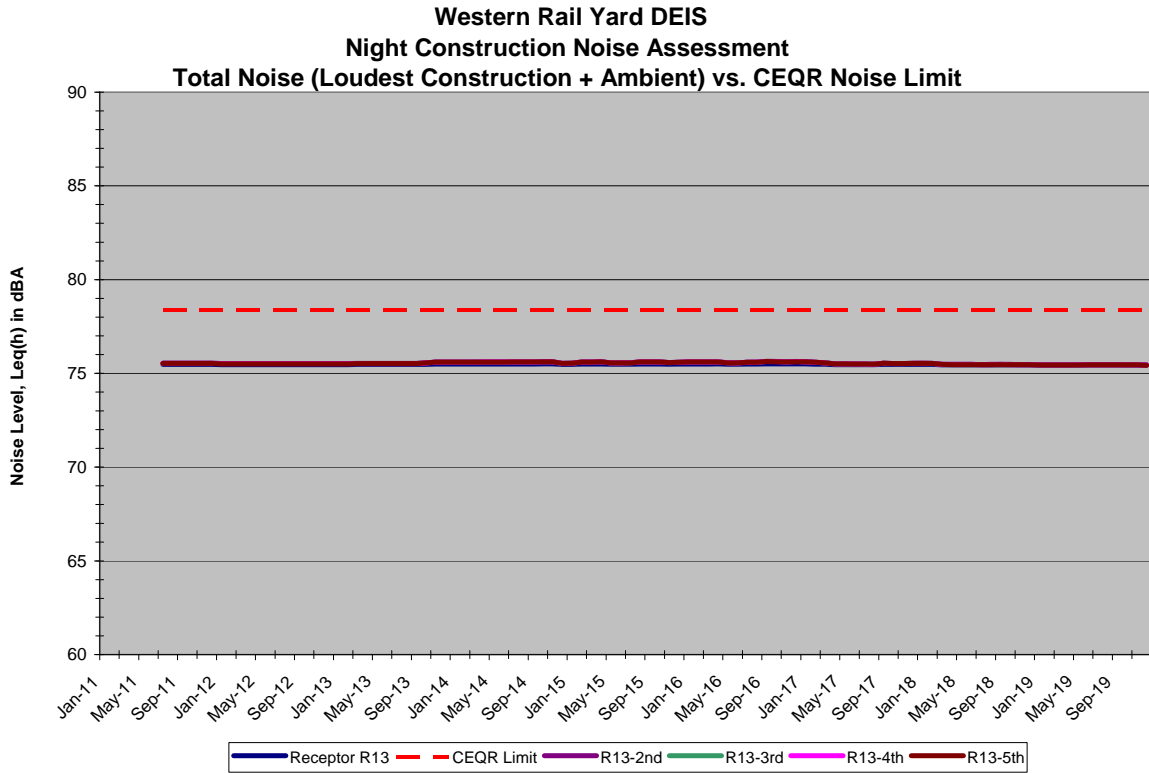
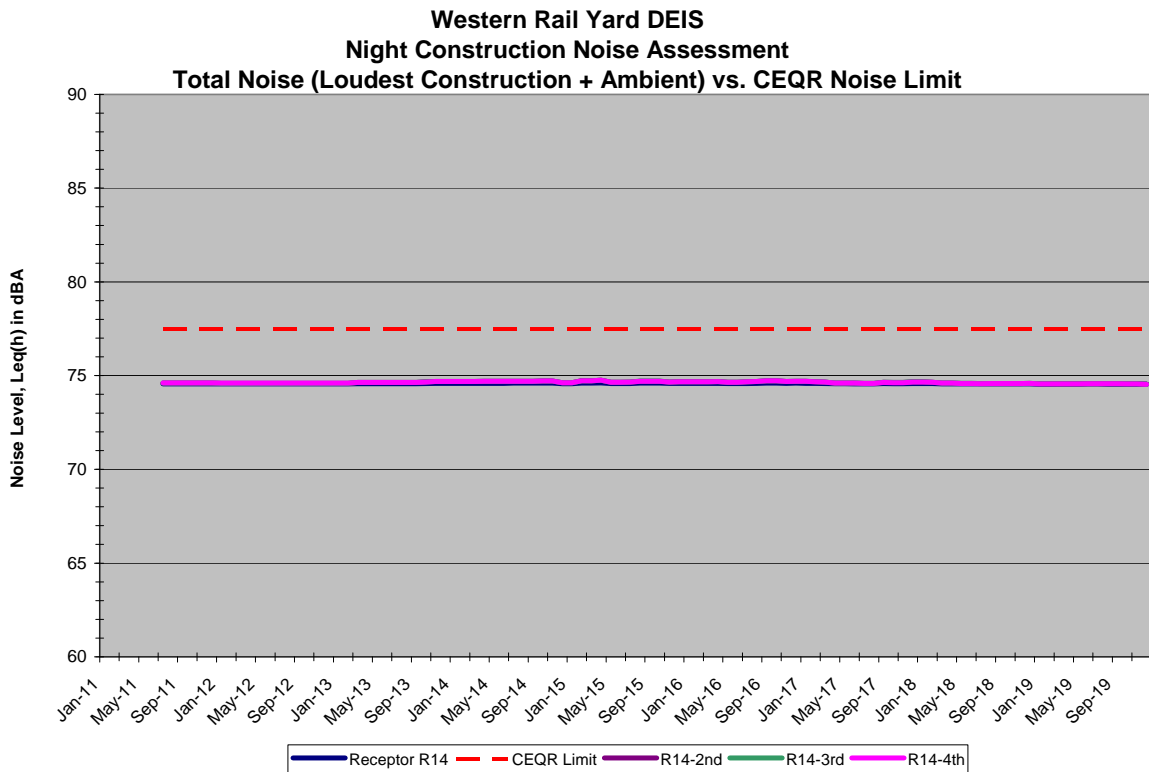
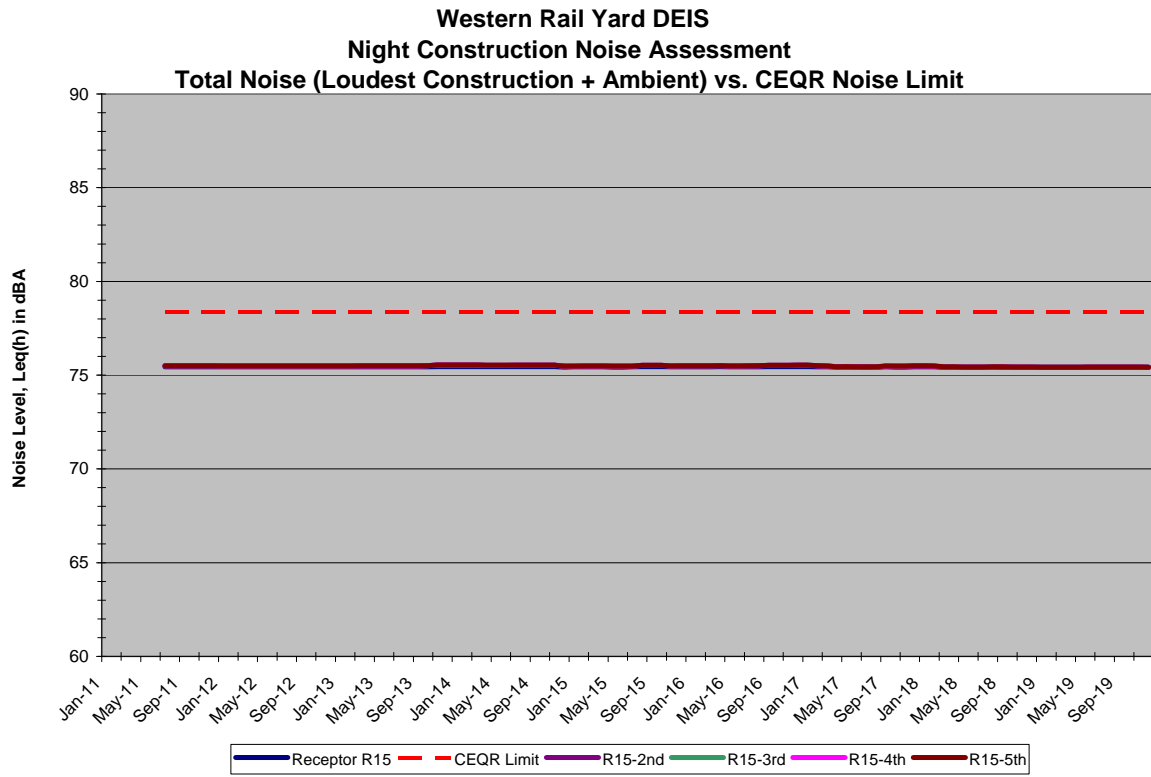


Figure 29 - Evenings–Receptor R14



* Does not include the effects of noise fencing per NYC Noise Code Regulations

Figure 30 - Evenings–Receptor R15



* Does not include the effects of noise fencing per NYC Noise Code Regulations

Figure 31 - Weekend-Receiver R1

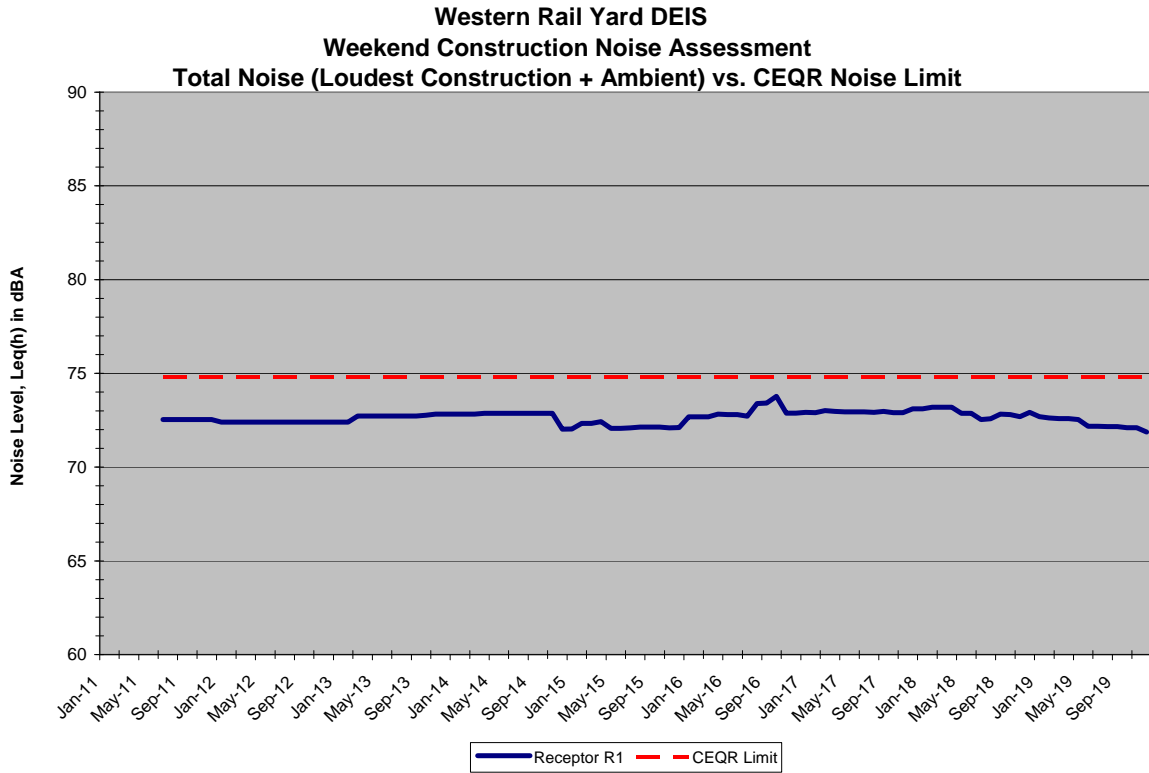
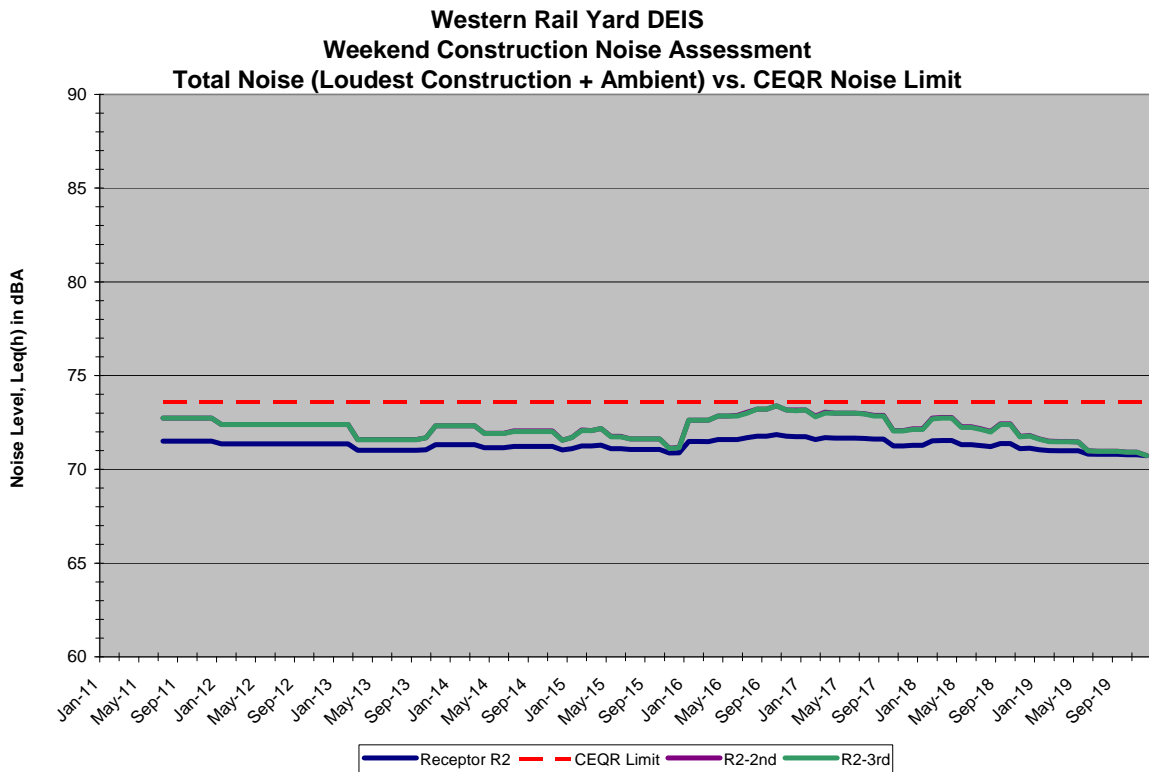


Figure 32 - Weekend-Receiver R2



* Does not include the effects of noise fencing per NYC Noise Code Regulations

Figure 33 - Weekend-Receptor R3

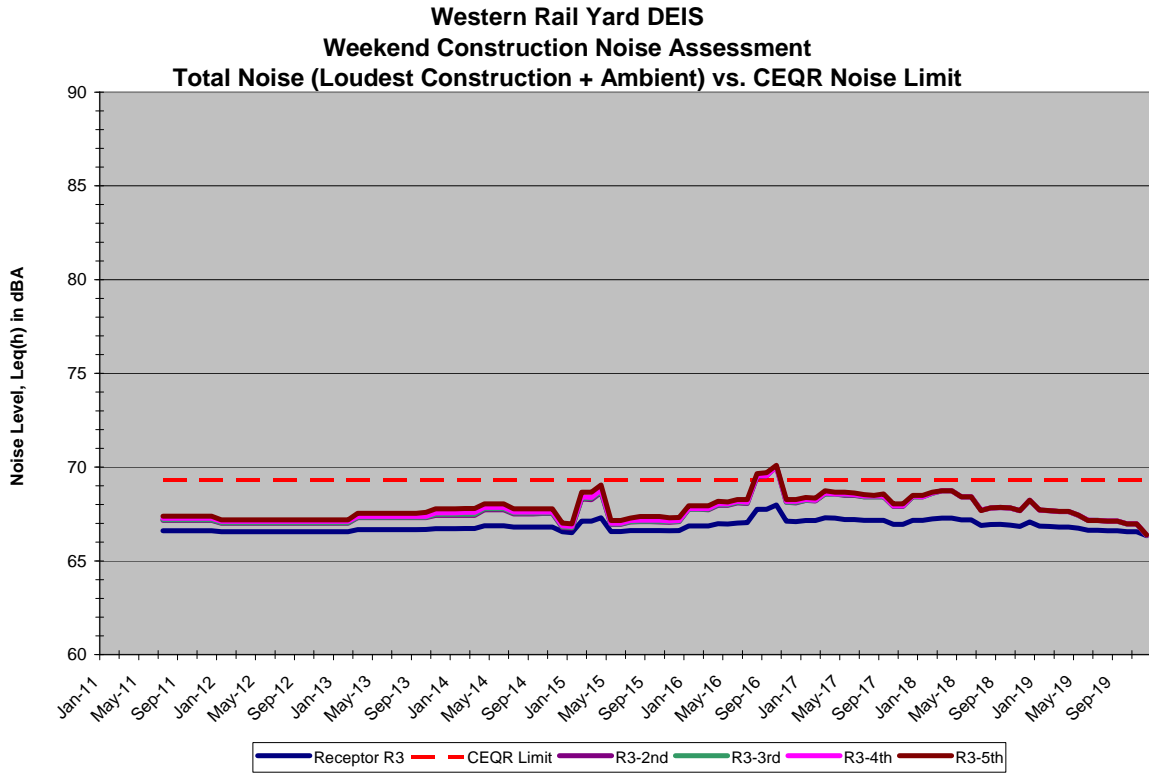
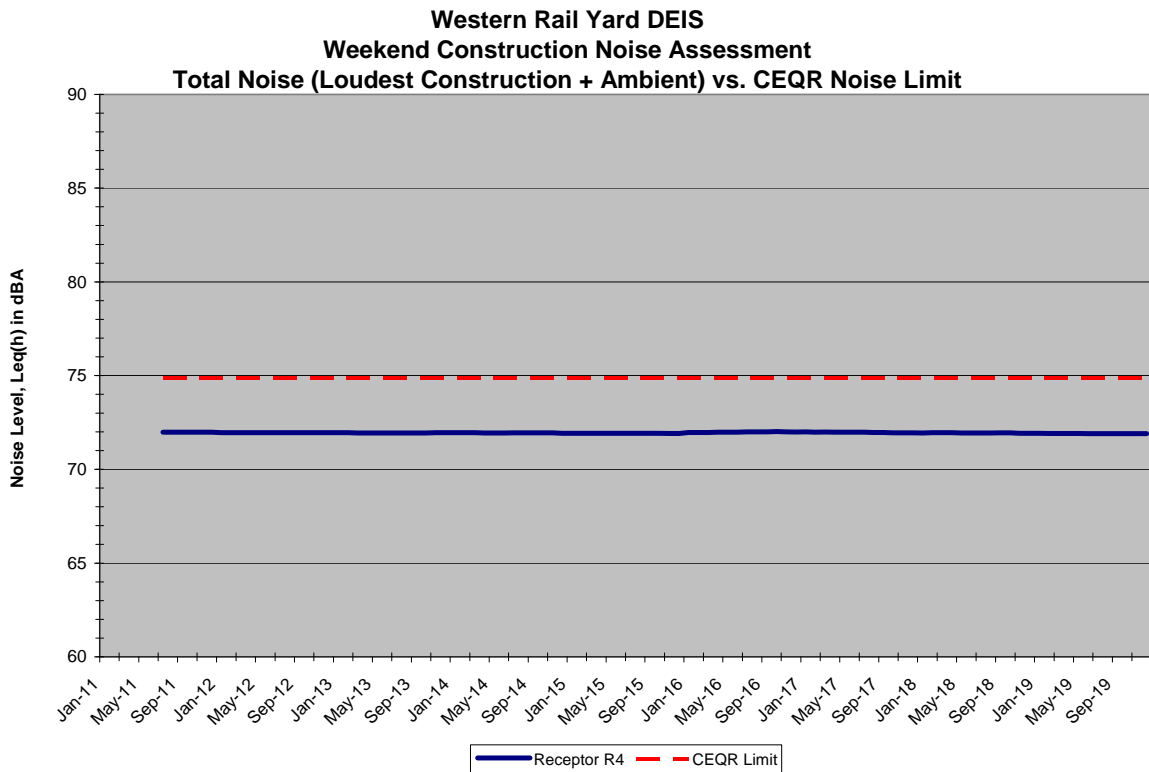


Figure 34 - Weekend-Receptor R4



* Does not include the effects of noise fencing per NYC Noise Code Regulations

Figure 35 - Weekend-Receptor R5

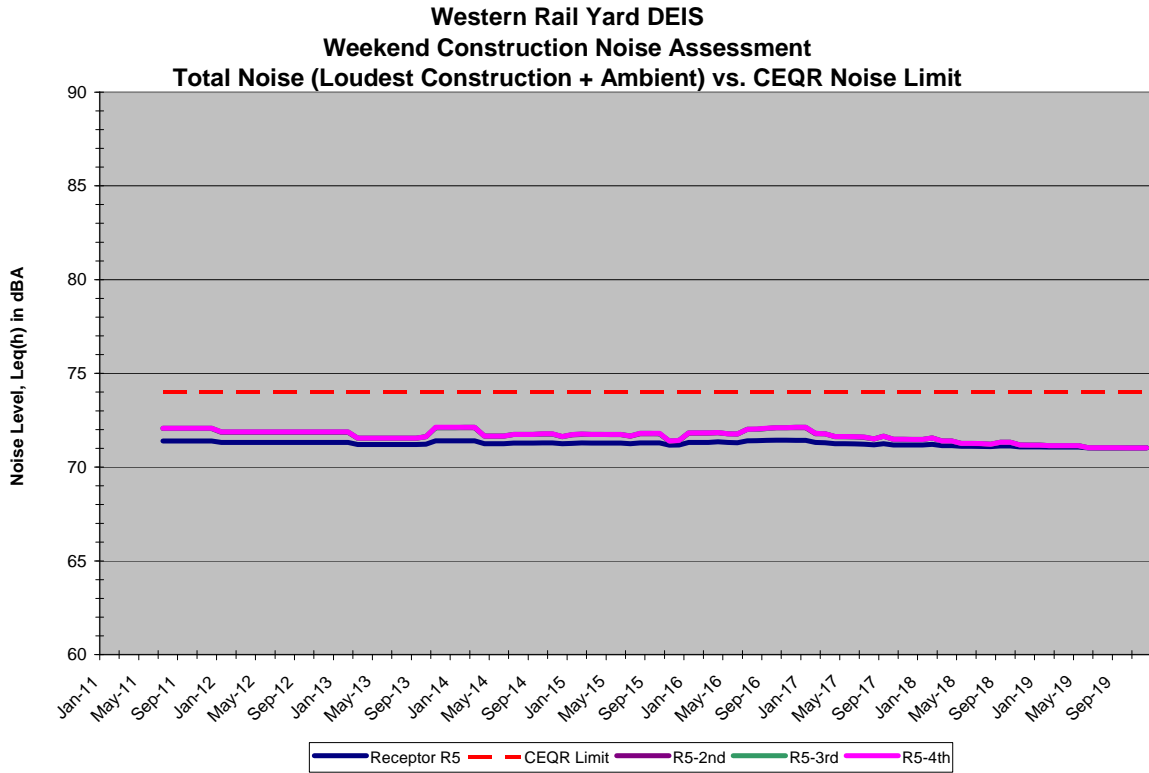
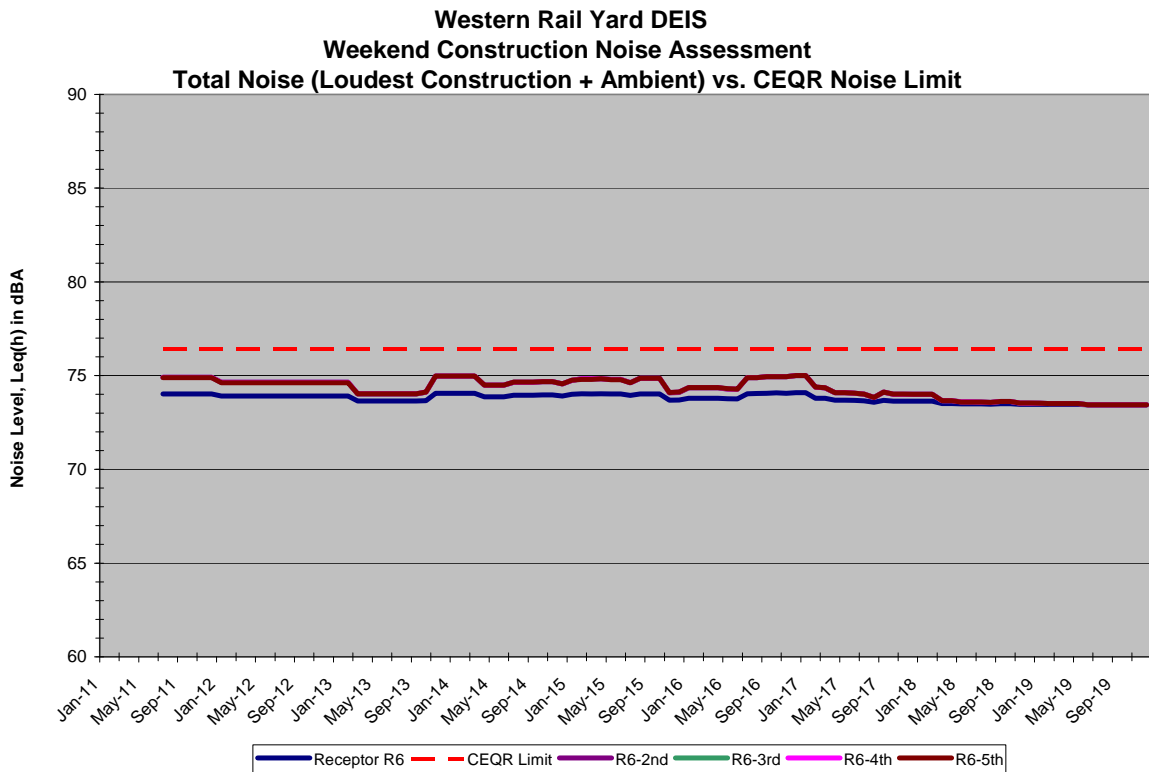


Figure 36 - Weekend-Receptor R6



* Does not include the effects of noise fencing per NYC Noise Code Regulations

Figure 37 - Weekend-Receptor R7

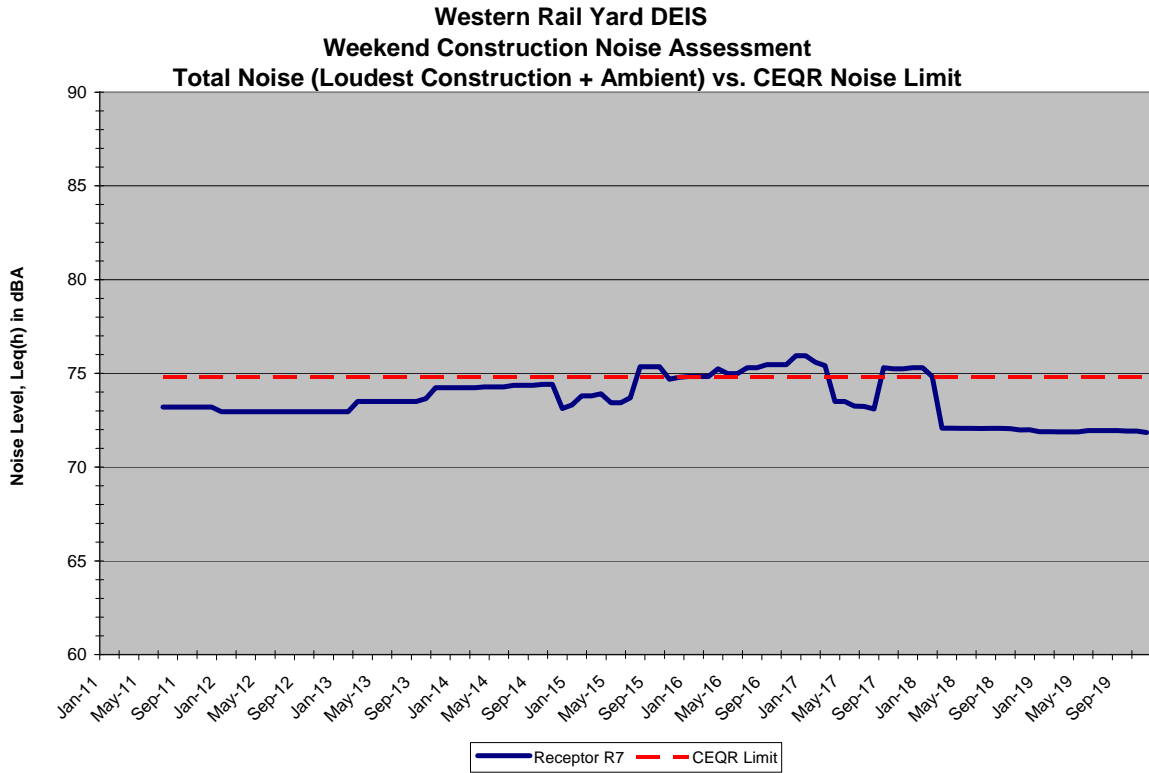
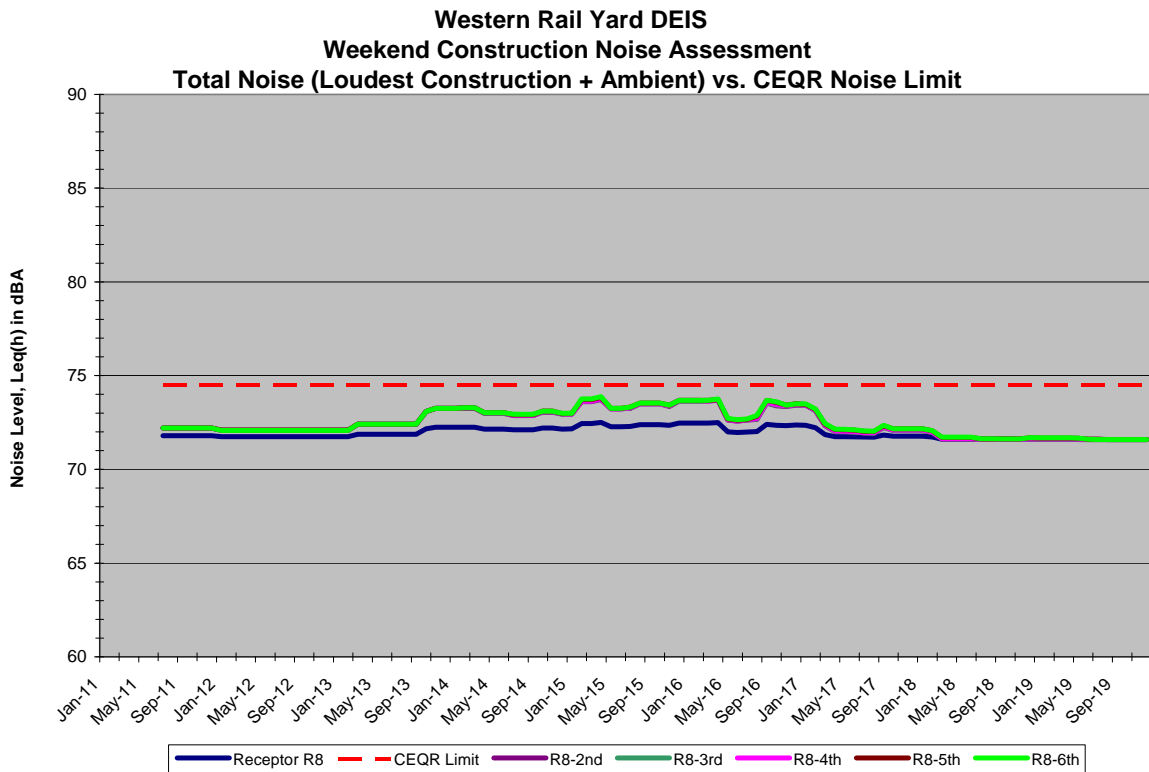


Figure 38 - Weekend-Receptor R8



* Does not include the effects of noise fencing per NYC Noise Code Regulations

Figure 39 - Weekend-Receiver R9

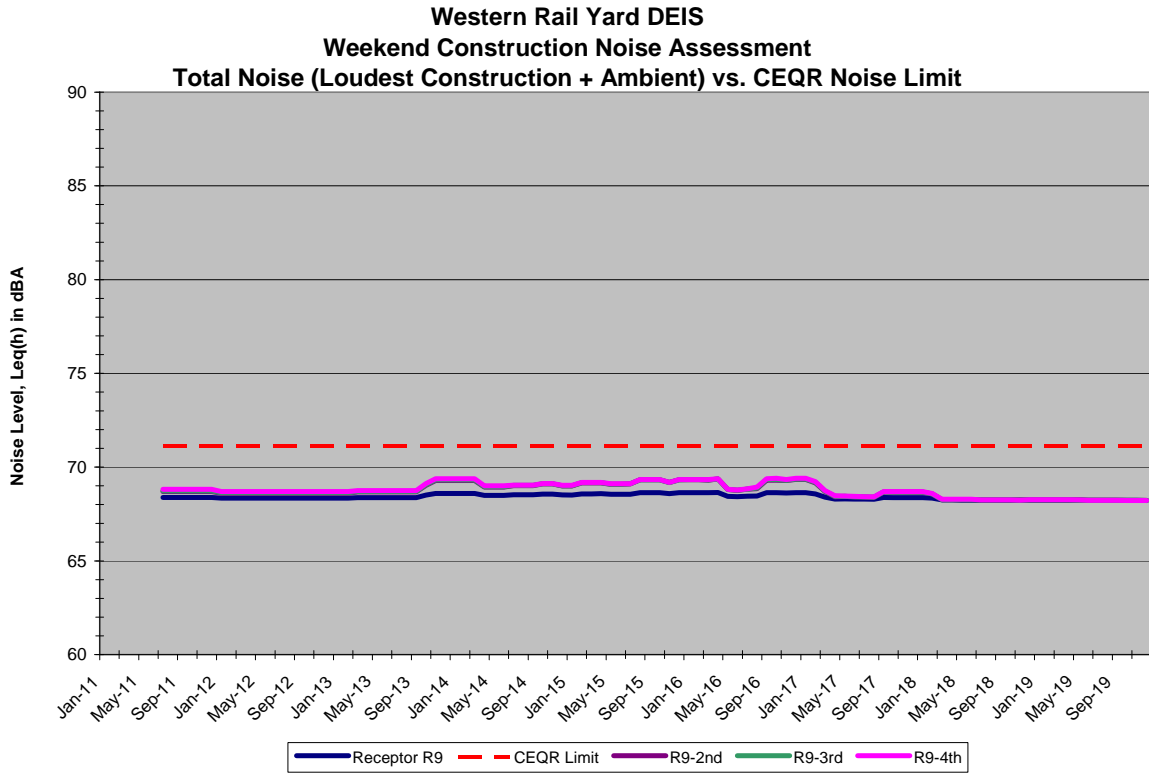
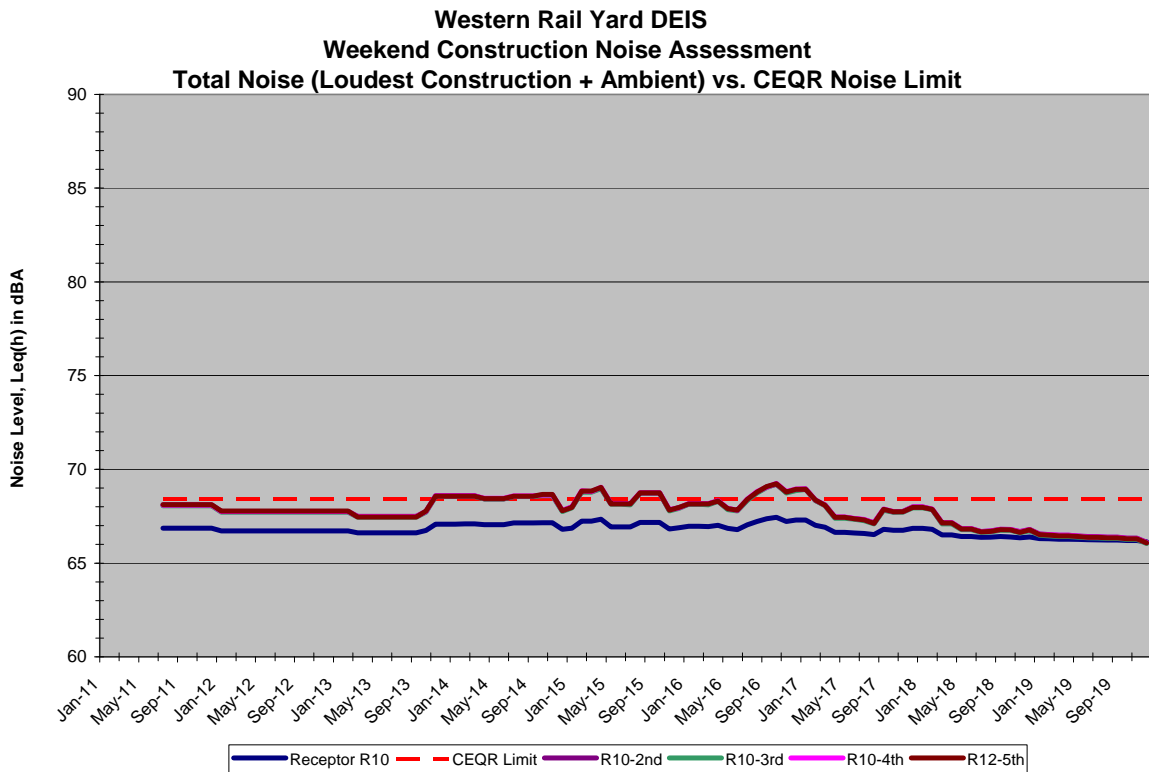


Figure 40 -Weekend-Receiver R10



* Does not include the effects of noise fencing per NYC Noise Code Regulations

Figure 41 -Weekend–Receptor R11

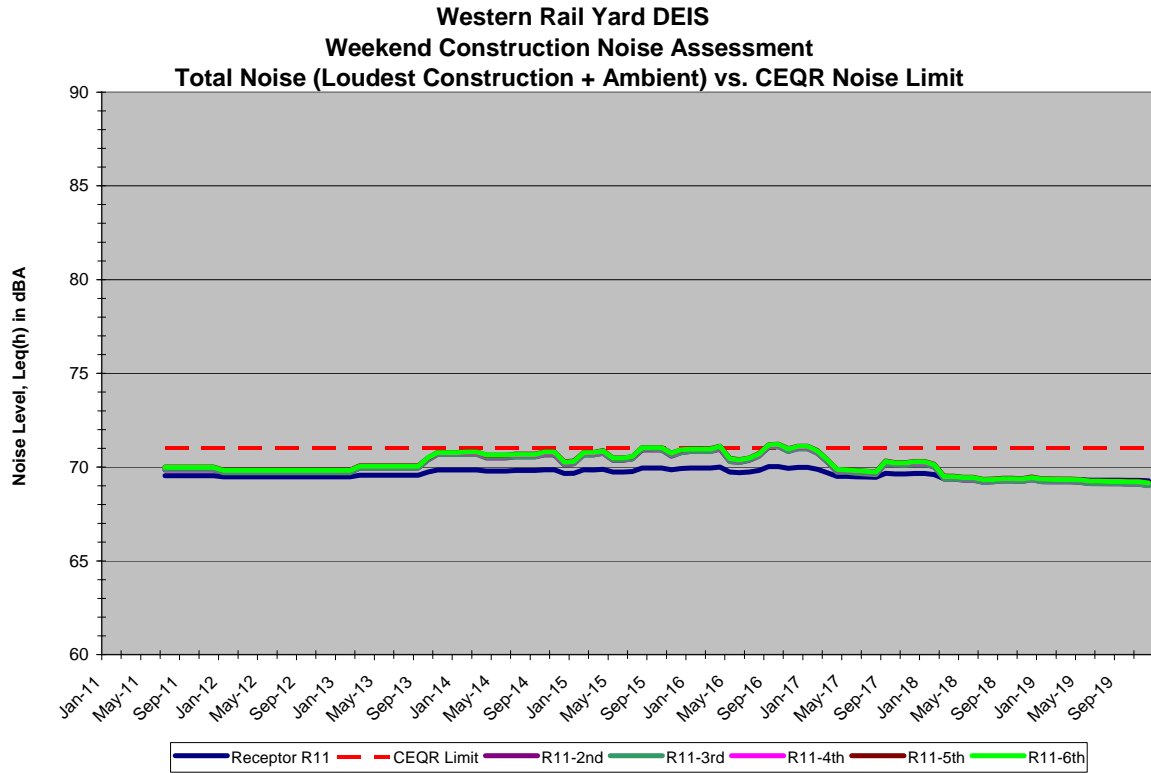
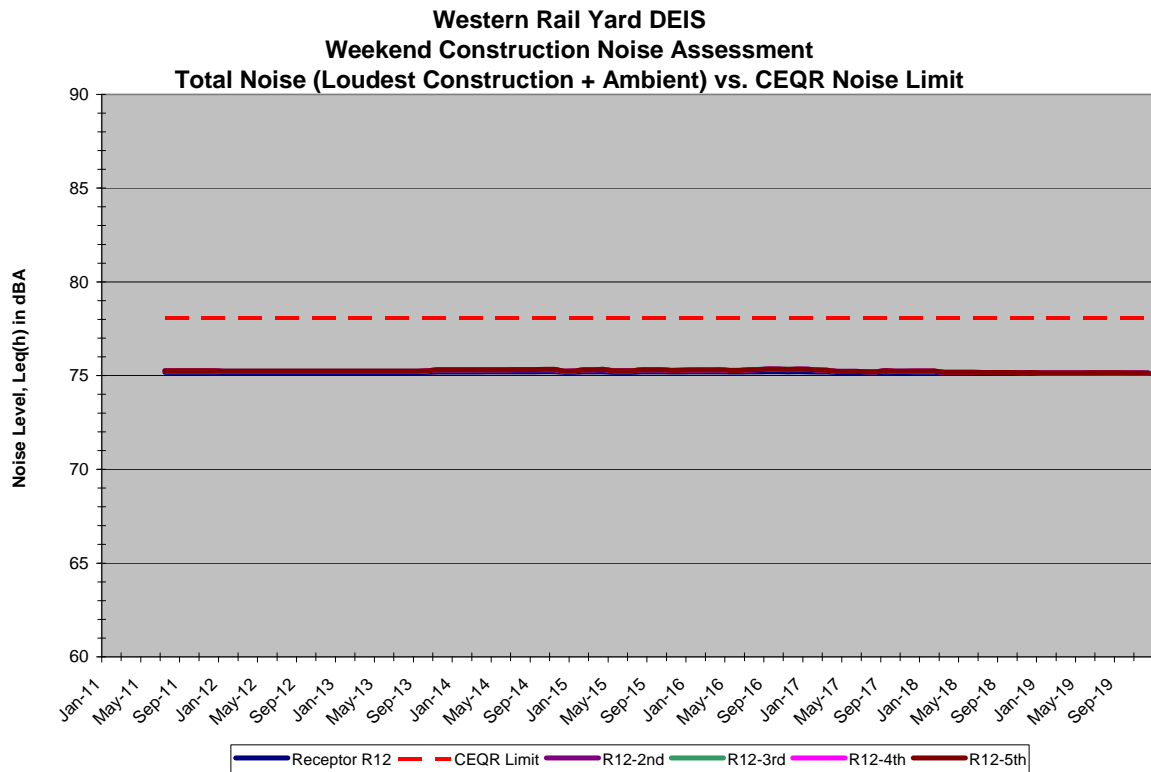


Figure 42 - Weekend–Receptor R12



* Does not include the effects of noise fencing per NYC Noise Code Regulations

Figure 43 - Weekend-Receptor R13

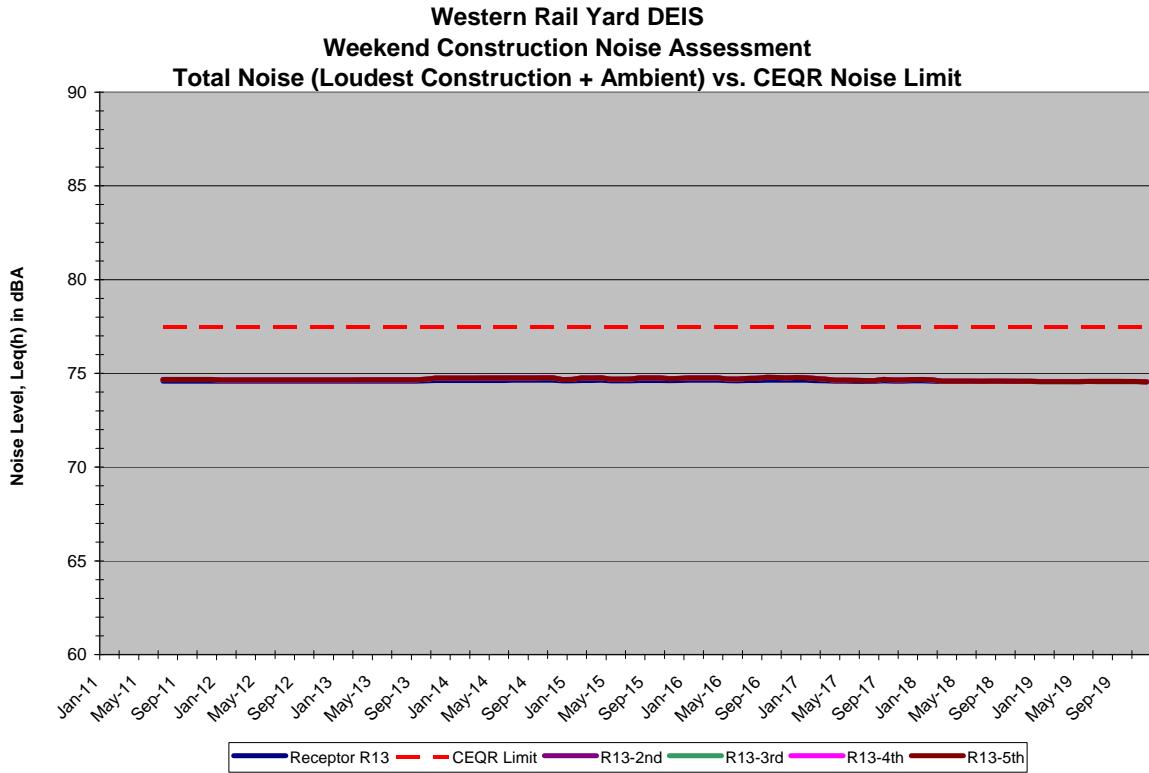
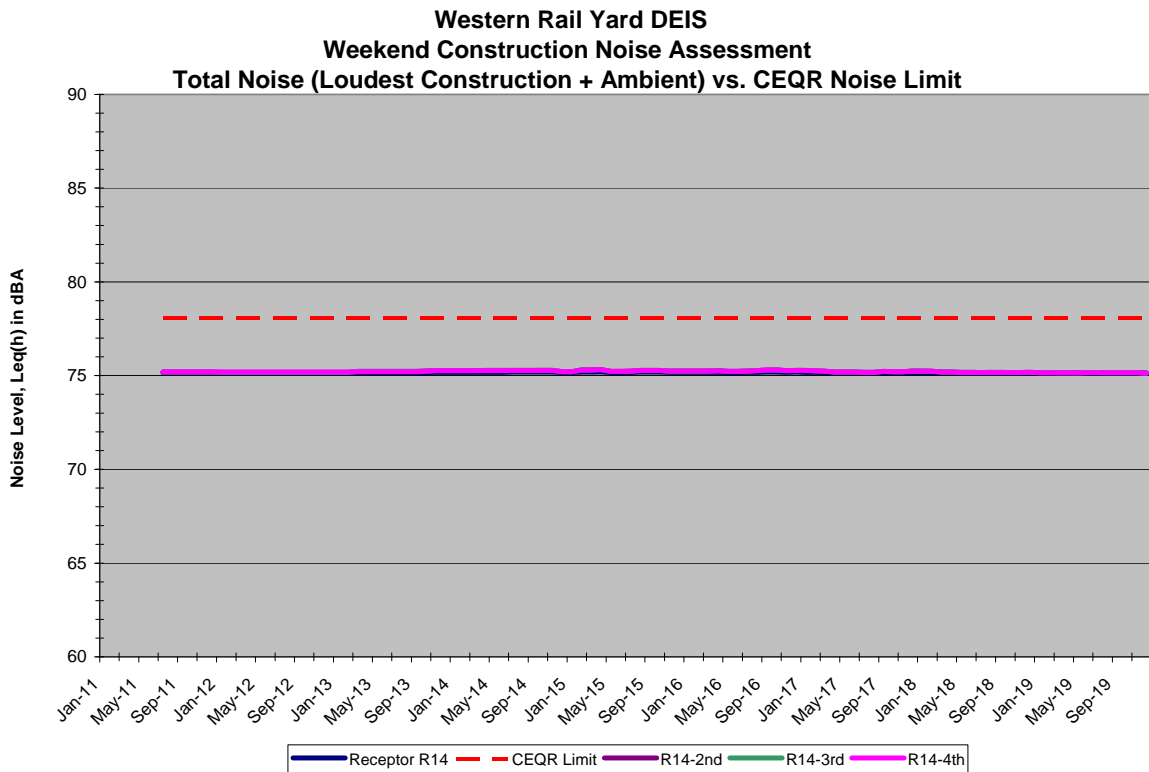


Figure 44 - Weekend-Receptor R14



* Does not include the effects of noise fencing per NYC Noise Code Regulations

Figure 45 - Weekend-Receptor R15

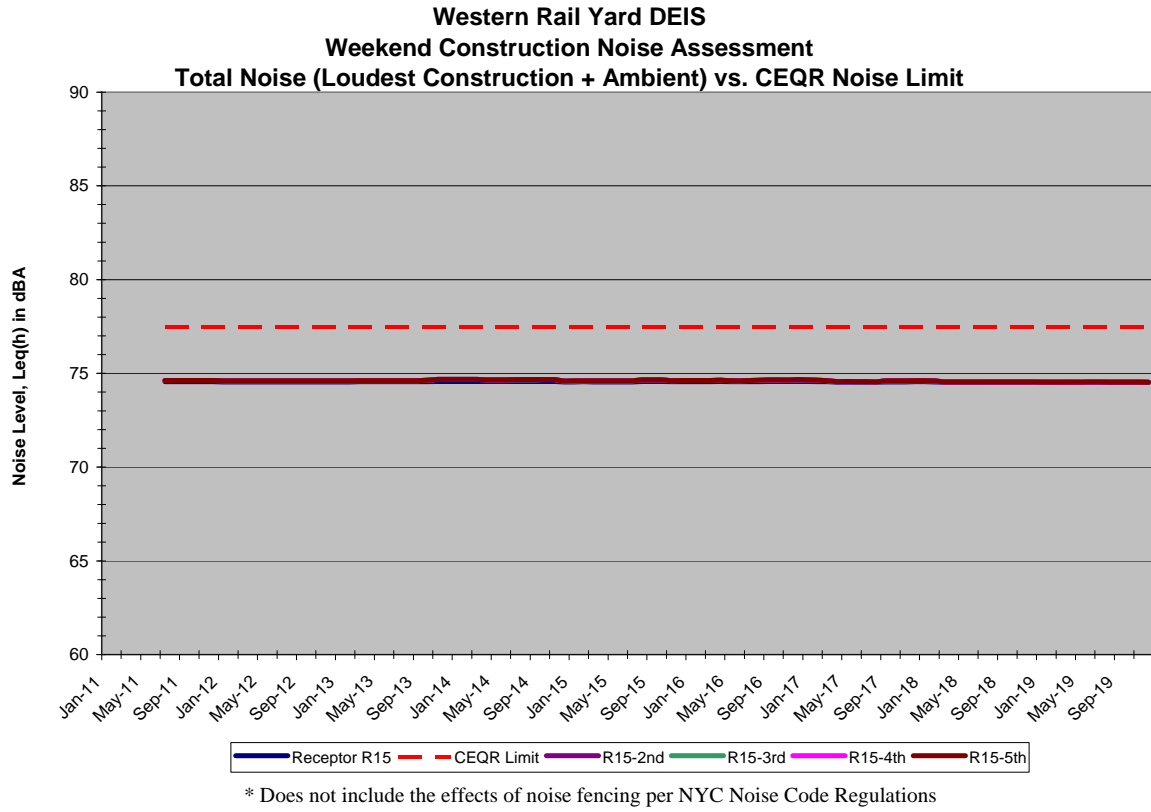


Table H3-1
Construction Equipment Noise Emission Levels (dBA)

Equipment List	DEP & FTA Typical Noise Level at 50 feet ¹
Asphalt Paver	85
Asphalt Roller	85
Backhoe/Loader	80
Compressors	80
Concrete Pump	82
Concrete Trucks	85
Cranes	85
Cranes (Tower Cranes)	85
Delivery Trucks	84
Drill Rigs	84
Dump Trucks	84
Excavator	85
Excavator with Ram Hoe	90
Fuel Truck	84
Generators	82
Hoist	85
Impact Wrenches	85
Jack Hammer	85
Mortar Mixer	80
Power Trowel	85
Powder Actuated Device	85
Pump (Spray On Fire Proof)	82
Pump (Water)	77
Rebar Bender	80
Rivet Buster	85
Rock Drill	85
Saw (Chain Saw)	85
Saw (Concrete Saw)	90
Saw (Masonry Bench)	85
Saw (Circular & Cut off)	76
Saw (Table Saw)	76
Sledge Hammers	85
Street Cleaner	80
Tractor Trailer	84
Vibratory Plate Compactor	80
Welding Machines	73
Notes:	
1 Sources: Citywide Construction Noise Mitigation, Chapter 28, Department of Environmental Protection of New York City, 2007. Transit Noise and Vibration Impact Assessment, FTA, May 2006	