Appendix F

Noise Calculations

Thousand Palms Flood Control Project Construction Noise Calculations

Assumptions: Useage Per Hour from construction schedule - 8 hrs/day (essentially non-stop use). FHWA noise levels.

Construction Equipment - Reach 4	Lmax Ref dBA	Useage Per Hour	Along Levee	Distance to Receptor	Equip Leq(h)
Reach 4 Channel - Excavate Channel	@ 50 ft	(%)	quantity	feet	dBA
Pickup Truck	75	100	1	300	59.4
Dump Truck	76	100	1	300	60.4
Scraper	84	100	5	300	75.4
Loader (Front End Loader)	79	100	2	300	66.4
Water Truck/Pull (Flatbed Truck)	84	100	1	300	68.4
		Total Quantity of Equipment:	10		
		Peak Unmitigated Composite Leq(h):	76.8	Threshold:	Ambient (52 dBA @ Washington/Ave38) + 15 dB = 67

Construction Equipment - Reach 3	Lmax Ref dBA	Useage Per Hour	Along Levee	Distance to Receptor	Equip Leq(h)
Reach 3 Channel - Excavate Channel	@ 50 ft	(%)	quantity	feet	dBA
Pickup Truck	75	100	1	330	58.6
Dump Truck	76	100	4	330	65.6
Scraper	84	100	4	330	73.6
Loader (Front End Loader)	79	100	4	330	68.6
Water Truck/Pull (Flatbed Truck)	84	50	1	330	64.6
		Total Quantity of Equipment:	14		
		Peak Unmitigated Composite Leq(h):	75.8	Threshold:	Ambient (56 dBA @ Xavier College Prep HS) + 15 dB = 71

Construction Equip - Reach 2, 3, or 4	Lmax Ref dBA	Useage Per Hour	Along Levee	Distance to Receptor	Equip Leq(h)
Soil Cement Lining	@ 50 ft	(%)	quantity	feet	dBA
Pickup Truck	75	100	1	300	59.4
Dump Truck	76	100	26	300	74.6

Compactor (ground)	83	100	2	300	70.4
Grader	85	100	1	300	69.4
Dozer	82	100	1	300	66.4
Water Truck/Pull (Flatbed Truck)	84	100	1	300	68.4
		Total Quantity of Equipment:	32		
		Peak Unmitigated Composite Leq(h):	77.8	Threshold:	Ambient (52 dBA @ Washington/Ave38) + 15 dB = 67 Ambient (56 dBA @ Xavier College Prep HS) + 15 dB = 71

* Reach 1 would essentially be the same, but slightly less with less grader and water pull activity. 92.8 Leq(h)

Construction Equipment - Reach 2	Lmax Ref dBA	Useage Per Hour	Along Levee	Distance to Receptor	Equip Leq(h)
Reach 2 Levee - Excavate Soil Cement Trench	@ 50 ft	(%)	quantity	feet	dBA
Pickup Truck	75	100	1	175	64.1
Scraper	84	100	2	175	76.1
Loader (Front End Loader)	79	100	1	175	68.1
Water Truck/Pull (Flatbed Truck)	84	50	1	175	70.1
		Total Quantity of Equipment:	5		
		Peak Unmitigated Composite Leq(h):	77.8	Threshold:	Assume ambient similar to other areas (< 52 dBA) + 15 dB = < 67

Construction Equipment - Reach 1	Lmax Ref dBA	Useage Per Hour	Along Levee	Distance to Receptor	Equip Leq(h)
Reach 1 Levee - Excavate Soil Cement Trench	@ 50 ft	(%)	quantity	feet	dBA
Pickup Truck	75	100	1	275	60.2
Scraper	84	100	2	275	72.2
Loader (Front End Loader)	79	50	1	275	61.2
Water Truck/Pull (Flatbed Truck)	84	50	1	275	66.2
		Total Quantity of Equipment:	5		
		Peak Unmitigated Composite Leq(h):	73.6	Threshold:	Assume ambient similar to other areas (< 52 dBA) + 15 dB = < 67

Construction Equipment - Ave 38	Lmax Ref dBA	Useage Per Hour	Along Levee	Distance to Receptor	Equip Leq(h)
Pave Ave 38	@ 50 ft	(%)	quantity	feet	dBA
Pickup Truck	75	100	2	300	62.4
Medium Truck (Dump Truck)	76	100	4	300	66.5
Concrete Truck (Mixer)	79	100	1	300	63.4
Compactor (Ground)	83	50	1	300	64.4
Paver	77	100	1	300	61.4
Water Truck/Pull (Flatbed Truck)	84	25	1	300	62.4
		Total Quantity of Equipment:	10		
		Peak Unmitigated Composite Leq(h):	71.6	Threshold:	Ambient (52 dBA @ Washington/Ave38) + 15 dB = 67

Construction Equipment - WSC	Lmax Ref dBA	Useage Per Hour	Along Levee	Distance to Receptor	Equip Leq(h)
WSC Excavation (Del WebBasin)	@ 50 ft	(%)	quantity	feet	dBA
Pickup Truck	75	100	2	50	78.0
Medium Truck & Dump Truck	76	100	3	50	80.8
Excavator	81	50	1	50	78.0
Backhoe	78	50	1	50	75.0
Loader	79	50	1	50	76.0
Dozer	82	25	1	50	76.0
Water Truck/Pull (Flatbed Truck)	84	50	1	50	81.0
		Total Quantity of Equipment:	10		
		Peak Unmitigated Composite Leq(h):	86.8	Threshold:	Ambient (52 dBA @ Washington/Ave38) + 15 dB = 67

California Vehicle Noise Calculation: Operations Traffic Mix (Trucks + Autos)

Project Name:	Thousand Palms Flood Control Project
	Reference Energy Mean Emission Levels (REMEL) for California Vehicle Noise,
Model Description:	Caltrans Technical Noise Supplement (11/09): Figure 5-9
Model Assumptions:	no shielding, no barrier, no traffic flow adjustment (result : highest noise); uniform vehicle class mix
Scenarios:	Leq(h) from hour vph; CNEL from ADT vpd-distributed per time fractions

			Vehicle Distribution Fractions				Number of Hours: (hrs)		
			HD Tks	MD Tks	Autos		7am-7pm	7pm-10pm	10pm-7am
Distance: >15m Ref:	15.0	(m)	100.0	0.0	0.0	Fraction	12	3	9
Drop-off (alpha 0.5=soft, 0=hard):	0.00	(alpha)	78.7	71.3	59.4	REMEL (dBA)	Backgd Traffic: (%)		
Speed:	25	(mph)	paved local roads				7am-7pm	7pm-10pm	10pm-7am
	40	(kph)					100.0	0.0	0.01

SEGMENT/CONDITION	Autos Count (vpd)	Peak (vph)	Av Day Hr (vph)	Av Eve Hr (vph)	Av Nite Hr (vph)	Leq(h) Peak (dBA)	Leq(h) Av Day Hr (dBA)	Leq(h) Av Eve Hr (dBA)	Leq(h) Av Nite Hr (dBA)	CNEL (dBA)	*65 Contour XX CNEL (ft)*	*60 Contour YY CNEL (ft)*	*55 Contour ZZ CNEL (ft)*
Washington St.	100	10.0	8.3	0.0	0.0	59.43	58.63	24.66	19.88	55.6	*11.7*	*25.2*	*54.2*
Cook St. (W of Xavier HS) [& Other Roads]	400	40.0	33.3	0.0	0.0	65.45	64.65	30.68	25.90	61.6	*29.4*	*63.4*	*136.6*
Speed:	15	(mph)	unpaved										
	24	(kph)											

SEGMENT/CONDITION	Autos Count (vpd)	Peak (vph)	Av Day Hr (vph)	Av Eve Hr (vph)	Av Nite Hr (vph)	Leq(h) Peak (dBA)	Leq(h) Av Day Hr (dBA)	Leq(h) Av Eve Hr (dBA)	Leq(h) Av Nite Hr (dBA)	CNEL (dBA)	*65 Contour XX CNEL (ft)*	*60 Contour YY CNEL (ft)*	*55 Contour ZZ CNEL (ft)*
Shadow Valley Dr. (E of Xavier HS)	800	80.0	66.7	0.0	0.0	68.46	69.88	35.90	31.13	66.9	*65.6*	*141.4*	*304.7*

Source: Thousand Palms Traffic Data for Scott.xls