

Draft

Attachment 1 Air Quality and Greenhouse Modeling Results

Air Quality and Climate Technical Report

Shasta Lake Water Resources Investigation, California

Prepared by:

**U. S. Department of the Interior
Bureau of Reclamation
Mid-Pacific Region**



**U.S. Department of the Interior
Bureau of Reclamation**

June 2013

Construction Calculations

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1.Component Summary						
Construction Activity	CP1	CP2	CP3	CP4	CP5	
UPRR Doney Creek Bridge	yes	yes	yes	yes	yes	
Left Wing Dam	yes	yes	yes	yes	yes	
Main Concrete Dam	yes	yes	yes	yes	yes	
Outlet Works	yes	yes	yes	yes	yes	
Pit River Bridge Pier 3 and 4	yes	yes	yes	yes	yes	
Powerplant and Penstocks	yes	yes	yes	yes	yes	
Railroad Realignment	yes	yes	yes	yes	yes	
Right Wing Dam	yes	yes	yes	yes	yes	
Sacramento River UPRR 2nd Crossing	yes	yes	yes	yes	yes	
Spillway	yes	yes	yes	yes	yes	
TCD Mods	yes	yes	yes	yes	yes	
Visitor Center Replacement	yes	yes	yes	yes	yes	
Vehicular Bridges	yes	yes	yes	yes	yes	
Reservoir Clearing	yes	yes	yes	yes	yes	
Dikes	yes	yes	yes	yes	yes	
Buildings/Facilities	yes	yes	yes	yes	yes	
Roads	yes	yes	yes	yes	yes	
Utilities	yes	yes	yes	yes	yes	
Gravel Augmentation	no	no	no	yes	yes	
Restore Riparian and Floodplain Habitat	no	no	no	yes	yes	
Recreation Facilities Enhancement	no	no	no	no	yes	
Shoreline Enhancement & Tributary Aquatic Habitat Enhancement	no	no	no	no	yes	
Schedule by CP						
CP1-6.5 ft Raise	Start	End	Total Days	weeks	work days	
Construction Activity	1/4/2016	7/2/2021	2,006	287	1,433	
UPRR Doney Creek Bridge-6.5 ft Raise	1/15/2016	11/9/2017				
Left Wing Dam- 6.5 ft Raise	8/8/2016	6/19/2017				
Main Concrete Dam-6.5 ft Raise	8/9/2016	11/20/2018				
Outlet Works-6.5 ft Raise	4/23/2019	4/30/2020				
Pit River Bridge Pier 3 and 4-6.5 ft Raise	5/2/2016	2/1/2017				
Powerplant and Penstocks-6.5 ft Raise	10/20/2017	1/2/2018				
Railroad Realignment-6.5 ft Raise	8/3/2016	8/8/2017				
Right Wing Dam-6.5 ft Raise	8/9/2016	5/25/2018				
Sacramento River UPRR 2nd Crossing-6.5 ft Raise	1/4/2016	12/22/2017				
Spillway-6.5 ft Raise	1/3/2017	5/9/2019				
TCD Mods-6.5 ft Raise	10/17/2017	3/15/2019				
Visitor Center Replacement-6.5 ft Raise	5/15/2020	7/2/2021				
Vehicular Bridges-6.5 ft Raise	5/2/2016	11/1/2017				
Reservoir Clearing-6.5 ft Raise	5/14/2018	7/10/2018				
Dikes-6.5 ft Raise	2/5/2016	8/12/2016				
Buildings/Facilities-6.5 ft Raise	5/2/2016	1/4/2018				
Roads-6.5 ft Raise	10/14/2016	2/8/2018				
Utilities-6.5 ft Raise	1/4/2016	9/12/2017				

CP2-12.5 ft Raise	Start	End	Total Days	weeks	work days
Construction Activity	1/4/2016	7/14/2021	2,018	288	1441
UPRR Doney Creek Bridge - 12.5 ft raise	1/15/2016	11/9/2017			
Left Wing Dam - 12.5 ft raise	8/8/2016	10/25/2017			
Main Concrete Dam - 12.5 ft raise	8/9/2016	4/17/2019			
Outlet Works - 12.5 ft raise	4/23/2019	4/30/2020			
Pit River Bridge Pier 3 and 4 Prot - 12.5 ft raise	5/2/2016	5/9/2017			
Powerplant and Penstocks - 12.5 ft raise	10/20/2017	1/2/2018			
Railroad Realignment - 12.5 ft raise	8/3/2016	8/8/2017			
Right Wing Dam - 12.5 ft raise	8/9/2016	4/22/2019			
Sacramento River UPRR 2nd Crossing - 12.5 ft raise	1/4/2016	12/22/2017			
Spillway - 12.5 ft raise	1/3/2017	4/3/2019			
TCD Mods - 12.5 ft raise	10/17/2017	3/17/2019			
Visitor Center Replacement - 12.5 ft raise	5/15/2020	7/14/2021			
Vehicular Bridges - 12.5 ft raise	5/2/2016	11/1/2017			
Reservoir Clearing - 12.5 ft raise	5/14/2018	1/25/2019			
Dikes - 12.5 ft raise	2/5/2016	9/9/2016			
Buildings/Facilities - Recreation - 12.5 ft raise	5/2/2016	3/21/2018			
Roads - 12.5 ft raise	10/14/2016	9/19/2018			
Utilities - 12.5 ft raise	1/4/2016	10/5/2017			
CP3-18.5 ft Raise	Start	End	Total Days	weeks	work days
Construction Activity	1/4/2016	7/14/2021	2,018	288	1441
UPRR Doney Creek Bridge - 18.5 ft raise	1/15/2016	11/9/2017			
Left Wing Dam - 18.5 ft raise	8/8/2016	3/23/2018			
Main Concrete Dam - 18.5 ft raise	8/9/2016	4/22/2019			
Outlet Works - 18.5 ft raise	4/23/2019	4/30/2020			
Pit River Bridge Pier 3 and 4 Prot - 18.5 ft raise	5/2/2016	9/6/2017			
Powerplant and Penstocks - 18.5 ft raise	10/20/2017	1/2/2018			
Railroad Realignment - 18.5 ft raise	8/3/2016	8/8/2017			
Right Wing Dam - 18.5 ft raise	8/9/2016	4/22/2019			
Sacramento River UPRR 2nd Crossing - 18.5 ft raise	1/4/2016	12/22/2017			
Spillway - 18.5 ft raise	1/3/2017	4/22/2019			
TCD Mods - 18.5 ft raise	10/17/2017	3/18/2019			
Visitor Center Replacement - 18.5 ft raise	5/15/2020	7/14/2021			
Vehicular Bridges - 18.5 ft raise	5/2/2016	10/12/2018			
Reservoir Clearing - 18.5 ft raise	5/14/2018	1/25/2019			
Dikes - 18.5 ft raise	2/5/2016	1/30/2017			
Buildings/Facilities - Recreation - 18.5 ft raise	5/2/2016	6/11/2018			
Roads - 18.5 ft raise	10/14/2016	8/23/2019			
Utilities - 18.5 ft raise	1/4/2016	2/2/2018			

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CP4-18.5 ft Raise	Start	End	Total Days	weeks	work days
Construction Activity	1/4/2016	7/14/2021	2018	288	1441
UPRR Doney Creek Bridge - 18.5 ft raise	1/15/2016	11/9/2017			
Left Wing Dam - 18.5 ft raise	8/8/2016	3/23/2018			
Main Concrete Dam - 18.5 ft raise	8/9/2016	4/22/2019			
Outlet Works - 18.5 ft raise	4/23/2019	4/30/2020			
Pit River Bridge Pier 3 and 4 Prot - 18.5 ft raise	5/2/2016	9/6/2017			
Powerplant and Penstocks - 18.5 ft raise	10/20/2017	1/2/2018			
Railroad Realignment - 18.5 ft raise	8/3/2016	8/8/2017			
Right Wing Dam - 18.5 ft raise	8/9/2016	4/22/2019			
Sacramento River UPRR 2nd Crossing - 18.5 ft raise	1/4/2016	12/22/2017			
Spillway - 18.5 ft raise	1/3/2017	4/22/2019			
TCD Mods - 18.5 ft raise	10/17/2017	3/18/2019			
Visitor Center Replacement - 18.5 ft raise	5/15/2020	7/14/2021			
Vehicular Bridges - 18.5 ft raise	5/2/2016	10/12/2018			
Reservoir Clearing - 18.5 ft raise	5/14/2018	1/25/2019			
Dikes - 18.5 ft raise	2/5/2016	1/30/2017			
Buildings/Facilities - Recreation - 18.5 ft raise	5/2/2016	6/11/2018			
Roads - 18.5 ft raise	10/14/2016	8/23/2019			
Utilities - 18.5 ft raise	1/4/2016	2/2/2018			
Gravel Augmentation - 18.5 ft raise ¹	6/9/2016	7/14/2021			
Restore Riparian and Floodplain Habitat - 18.5 ft raise	6/9/2016	7/18/2016			
CP5-18.5 ft Raise	Start	End	Total Days	weeks	work days
Construction Activity	1/4/2016	7/14/2021	2018	288	1441
UPRR Doney Creek Bridge - 18.5 ft raise	1/15/2016	11/9/2017			
Left Wing Dam - 18.5 ft raise	8/8/2016	3/23/2018			
Main Concrete Dam - 18.5 ft raise	8/9/2016	4/22/2019			
Outlet Works - 18.5 ft raise	4/23/2019	4/30/2020			
Pit River Bridge Pier 3 and 4 Prot - 18.5 ft raise	5/2/2016	9/6/2017			
Powerplant and Penstocks - 18.5 ft raise	10/20/2017	1/2/2018			
Railroad Realignment - 18.5 ft raise	8/3/2016	8/8/2017			
Right Wing Dam - 18.5 ft raise	8/9/2016	4/22/2019			
Sacramento River UPRR 2nd Crossing - 18.5 ft raise	1/4/2016	12/22/2017			
Spillway - 18.5 ft raise	1/3/2017	4/22/2019			
TCD Mods - 18.5 ft raise	10/17/2017	3/18/2019			
Visitor Center Replacement - 18.5 ft raise	5/15/2020	7/14/2021			
Vehicular Bridges - 18.5 ft raise	5/2/2016	10/12/2018			
Reservoir Clearing - 18.5 ft raise	5/14/2018	1/25/2019			
Dikes - 18.5 ft raise	2/5/2016	1/30/2017			
Buildings/Facilities - Recreation - 18.5 ft raise	5/2/2016	6/11/2018			
Roads - 18.5 ft raise	10/14/2016	8/23/2019			
Utilities - 18.5 ft raise	1/4/2016	2/2/2018			
Recreation Facilities Enhancement - 18.5 ft raise	5/2/2016	5/2/2017			
Gravel Augmentation - 18.5 ft raise ¹	6/9/2016	7/14/2021			
Restore Riparian and Floodplain Habitat - 18.5 ft raise	6/9/2016	7/18/2016			
Shoreline Enhancement & Tributary Aquatic Habitat Enhancement - 18.5 ft raise	5/14/2018	8/22/2018			
Notes					
1. Gravel Augmentation would occur each year for a 10 year period. The total duration of this activity was reduced to 1,441 work days to coenside with the 5 year construction period for all all CPs.					

2.CP1 Daily Emission Summary													
		Start Date	End Date	Total Days	Weeks	Work Days							
Activities		01/04/2016	07/02/2021	2,006	287	1,433							
							Pounds/Day						
				ROG	NOx	PM10Exh	PM10 dust	PM2.5 Exh1	PM2.5 dust	CO	CO2		
UPRR Doney Creek Bridge - 6.5 ft raise	A01	01/15/2016	11/09/2017	19.566	139.638	7.795	33.841	7.171	4.673	82.283	56,979.433		
Left Wing Dam - 6.5 ft raise	A02	08/08/2016	06/19/2017	17.819	138.208	6.784	165.477	6.241	17.837	105.743	60,610.484		
Main Concrete Dam - 6.5 ft raise	A03	08/09/2016	11/20/2018	20.226	138.192	8.045	25.776	2.291	3.866	90.297	59,071.876		
Outlet Works - 6.5 ft raise	A04	04/23/2019	04/30/2020	13.445	138.112	4.903	25.776	4.511	3.866	53.097	51,044.377		
Pit River Bridge Pier 3 and 4 Prot - 6.5 ft raise	A05	05/02/2016	02/01/2017	15.433	138.138	5.875	25.776	5.405	3.866	65.719	53,762.633		
Powerplant and Penstocks - 6.5 ft raise	A06	10/20/2017	01/02/2018	12.235	138.098	4.335	25.776	3.988	3.866	48.166	49,791.795		
Railroad Realignment - 6.5 ft raise	A07	08/03/2016	08/08/2017	11.502	138.101	3.879	158.770	3.569	17.166	53.319	50,059.366		
Right Wing Dam - 6.5 ft raise	A08	08/09/2016	05/25/2018	10.590	138.086	3.467	53.684	3.190	6.657	44.905	48,468.823		
Sacramento River UPRR 2nd Crossing - 6.5 ft raise	A09	01/04/2016	12/22/2017	27.637	140.905	11.672	35.271	10.738	4.816	121.266	65,435.678		
Spillway - 6.5 ft raise	A10	01/03/2017	05/09/2019	27.199	138.696	11.236	25.776	10.337	3.866	112.637	63,012.327		
TCD Mods - 6.5 ft raise	A11	10/17/2017	03/15/2019	20.147	138.282	8.200	25.877	7.544	3.877	82.393	57,905.311		
Visitor Center Replacement - 6.5 ft raise	A12	05/15/2020	07/02/2021	10.275	138.079	3.373	43.436	3.103	5.632	40.558	47,766.171		
Vehicular Bridges - 6.5 ft raise	A13	05/02/2016	11/01/2017	24.148	155.117	9.592	34.381	8.825	4.727	109.620	63,865.565		
Reservoir Clearing - 6.5 ft raise	A14	05/14/2018	07/10/2018	35.020	260.190	11.841	27.416	10.894	4.030	112.134	81,261.224		
Dikes - 6.5 ft raise	A15	02/05/2016	08/12/2016	27.997	138.264	12.105	902.023	11.137	91.491	100.357	65,823.346		
Buildings/Facilities - Recreation - 6.5 ft raise	A16	05/02/2016	01/04/2018	39.941	140.529	20.048	1,483.427	18.444	149.631	166.479	76,557.919		
Roads - 6.5 ft raise	A17	10/14/2016	02/08/2018	27.848	138.251	11.621	587.657	10.691	60.054	102.498	65,828.616		
Utilities - 6.5 ft raise	A18	01/04/2016	09/12/2017	18.259	138.167	6.860	25.776	6.311	3.866	69.881	57,038.389		
	A19			-	-	-	-	-	-	-	-		
	A20			-	-	-	-	-	-	-	-		
	A21			-	-	-	-	-	-	-	-		
	A22			-	-	-	-	-	-	-	-		
				<u>ROG</u>	<u>NOx</u>	<u>PM10Exh</u>	<u>PM10 dust</u>	<u>PM2.5 Exh1</u>	<u>PM2.5 dust</u>	<u>CO</u>	<u>CO2</u>		
				Max Value	260	1,682	107	2,944	93	309	1,125	720,691	
				From	1/3/2017	1/3/2017	1/3/2017	8/9/2016	1/3/2017	8/9/2016	1/3/2017	1/3/2017	
				To	2/1/2017	2/1/2017	2/1/2017	8/12/2016	2/1/2017	8/12/2016	2/1/2017	2/1/2017	
				Duration	29	29	29	3	29	3	29	29	

3.CP2 Daily Emission Summary												
		Start Date	End Date	Total Days	Weeks	Work Days						
Activities		01/04/2016	07/14/2021	2,018	288	1,441	Pounds/Day					
				ROG	NOx	PM10Exh	PM10 dust	PM2.5 Exh1	PM2.5 dust	CO	CO2	
UPRR Doney Creek Bridge - 12.5ft raise	A01	01/15/2016	11/09/2017	19.566	139.638	7.795	33.841	7.171	4.673	82.283	56,979.433	
Left Wing Dam - 12.5 ft raise	A02	08/08/2016	10/25/2017	17.819	138.208	6.784	165.477	6.241	17.837	105.743	60,610.484	
Main Concrete Dam - 12.5 ft raise	A03	08/09/2016	04/17/2019	20.226	138.192	8.045	25.776	2.291	3.866	90.297	59,071.876	
Outlet Works - 12.5 ft raise	A04	04/23/2019	04/30/2020	13.445	138.112	4.903	25.776	4.511	3.866	53.097	51,044.377	
Pit River Bridge Pier 3 and 4 Prot - 12.5 ft raise	A05	05/02/2016	05/09/2017	15.433	138.138	5.875	25.776	5.405	3.866	65.719	53,762.633	
Powerplant and Penstocks - 12.5 ft raise	A06	10/20/2017	01/02/2018	12.235	138.098	4.335	25.776	3.988	3.866	48.166	49,791.795	
Railroad Realignment - 12.5 ft raise	A07	08/03/2016	08/08/2017	11.502	138.101	3.879	158.770	3.569	17.166	53.319	50,059.366	
Right Wing Dam - 12.5 ft raise	A08	08/09/2016	04/22/2019	10.590	138.086	3.467	53.684	3.190	6.657	44.905	48,468.823	
Sacramento River UPRR 2nd Crossing - 12.5 ft raise	A09	01/04/2016	12/22/2017	27.637	140.905	11.672	35.271	10.738	4.816	121.266	65,435.678	
Spillway - 12.5 ft raise	A10	01/03/2017	04/03/2019	27.199	138.696	11.236	25.776	10.337	3.866	112.637	63,012.327	
TCD Mods - 12.5 ft raise	A11	10/17/2017	03/17/2019	20.147	138.282	8.200	25.877	7.544	3.877	82.393	57,905.311	
Visitor Center Replacement - 12.5 ft raise	A12	05/15/2020	07/14/2021	10.275	138.079	3.373	43.436	3.103	5.632	40.558	47,766.171	
Vehicular Bridges - 12.5 ft raise	A13	05/02/2016	11/01/2017	24.148	155.117	9.592	34.381	8.825	4.727	109.620	63,865.565	
Reservoir Clearing - 12.5 ft raise	A14	05/14/2018	01/25/2019	35.020	260.190	11.841	27.416	10.894	4.030	112.134	81,261.224	
Dikes - 12.5 ft raise	A15	02/05/2016	09/09/2016	27.997	138.264	12.105	902.023	11.137	91.491	100.357	65,823.346	
Buildings/Facilities - Recreation - 12.5 ft raise	A16	05/02/2016	03/21/2018	39.941	140.529	20.048	1,483.427	18.444	149.631	166.479	76,557.919	
Roads - 12.5 ft raise	A17	10/14/2016	09/19/2018	27.848	138.251	11.621	587.657	10.691	60.054	102.498	65,828.616	
Utilities - 12.5 ft raise	A18	01/04/2016	10/05/2017	18.259	138.167	6.860	25.776	6.311	3.866	69.881	57,038.389	
	A19			-	-	-	-	-	-	-	-	
	A20			-	-	-	-	-	-	-	-	
	A21			-	-	-	-	-	-	-	-	
	A22			-	-	-	-	-	-	-	-	
				<u>ROG</u>	<u>NOx</u>	<u>PM10Exh</u>	<u>PM10 dust</u>	<u>PM2.5 Exh1</u>	<u>PM2.5 dust</u>	<u>CO</u>	<u>CO2</u>	
				Max Value	260	1,682	107	2,944	93	309	1,125	720,691
				From	1/3/2017	1/3/2017	1/3/2017	8/9/2016	1/3/2017	8/9/2016	1/3/2017	1/3/2017
				To	5/9/2017	5/9/2017	5/9/2017	9/9/2016	5/9/2017	9/9/2016	5/9/2017	5/9/2017
				Duration	126	126	126	31	126	31	126	126

4.CP3 Daily Emission Summary													
		Start Date	End Date	Total Days	Weeks	Work Days							
Activities		01/04/2016	07/14/2021	2,018	288	1,441							
							Pounds/Day						
				ROG	NOx	PM10Exh	PM10 dust	PM2.5 Exh1	PM2.5 dust	CO	CO2		
UPRR Doney Creek Bridge - 18.5ft raise	A01	01/15/2016	11/09/2017	19.566	139.638	7.795	33.841	7.171	4.673	82.283	56,979.433		
Left Wing Dam - 18.5 ft raise	A02	08/08/2016	03/23/2018	17.819	138.208	6.784	165.477	6.241	17.837	105.743	60,610.484		
Main Concrete Dam - 18.5 ft raise	A03	08/09/2016	04/22/2019	20.226	138.192	8.045	25.776	2.291	3.866	90.297	59,071.876		
Outlet Works - 18.5 ft raise	A04	04/23/2019	04/30/2020	13.445	138.112	4.903	25.776	4.511	3.866	53.097	51,044.377		
Pit River Bridge Pier 3 and 4 Prot - 18.5 ft raise	A05	05/02/2016	09/06/2017	15.433	138.138	5.875	25.776	5.405	3.866	65.719	53,762.633		
Powerplant and Penstocks - 18.5 ft raise	A06	10/20/2017	01/02/2018	12.235	138.098	4.335	25.776	3.988	3.866	48.166	49,791.795		
Railroad Realignment - 18.5 ft raise	A07	08/03/2016	08/08/2017	11.502	138.101	3.879	158.770	3.569	17.166	53.319	50,059.366		
Right Wing Dam - 18.5 ft raise	A08	08/09/2016	04/22/2019	10.590	138.086	3.467	53.684	3.190	6.657	44.905	48,468.823		
Sacramento River UPRR 2nd Crossing - 18.5 ft raise	A09	01/04/2016	12/22/2017	27.637	140.905	11.672	35.271	10.738	4.816	121.266	65,435.678		
Spillway - 18.5 ft raise	A10	01/03/2017	04/22/2019	27.199	138.696	11.236	25.776	10.337	3.866	112.637	63,012.327		
TCD Mods - 18.5 ft raise	A11	10/17/2017	03/18/2019	20.147	138.282	8.200	25.877	7.544	3.877	82.393	57,905.311		
Visitor Center Replacement - 18.5 ft raise	A12	05/15/2020	07/14/2021	10.275	138.079	3.373	43.436	3.103	5.632	40.558	47,766.171		
Vehicular Bridges - 18.5 ft raise	A13	05/02/2016	10/12/2018	24.148	155.117	9.592	34.381	8.825	4.727	109.620	63,865.565		
Reservoir Clearing - 18.5 ft raise	A14	05/14/2018	01/25/2019	35.020	260.190	11.841	27.416	10.894	4.030	112.134	81,261.224		
Dikes - 18.5 ft raise	A15	02/05/2016	01/30/2017	27.997	138.264	12.105	902.023	11.137	91.491	100.357	65,823.346		
Buildings/Facilities - Recreation - 18.5 ft raise	A16	05/02/2016	06/11/2018	39.941	140.529	20.048	1,483.427	18.444	149.631	166.479	76,557.919		
Roads - 18.5 ft raise	A17	10/14/2016	08/23/2019	27.848	138.251	11.621	587.657	10.691	60.054	102.498	65,828.616		
Utilities - 18.5 ft raise	A18	01/04/2016	02/02/2018	18.259	138.167	6.860	25.776	6.311	3.866	69.881	57,038.389		
	A19			-	-	-	-	-	-	-	-		
	A20			-	-	-	-	-	-	-	-		
	A21			-	-	-	-	-	-	-	-		
	A22			-	-	-	-	-	-	-	-		
				<u>ROG</u>	<u>NOx</u>	<u>PM10Exh</u>	<u>PM10 dust</u>	<u>PM2.5 Exh1</u>	<u>PM2.5 dust</u>	<u>CO</u>	<u>CO2</u>		
				Max Value	288	1,820	119	3,558	104	373	1,225	786,514	
				From	1/3/2017	1/3/2017	1/3/2017	1/3/2017	1/3/2017	1/3/2017	1/3/2017		
				To	1/30/2017	1/30/2017	1/30/2017	1/30/2017	1/30/2017	1/30/2017	1/30/2017		
				Duration	27	27	27	27	27	27	27		

5.CP4 Daily Emission Summary														
Activities		Start Date	End Date	Total Days	Weeks	Work Days	Pounds/Day							
							ROG	NOx	PM10Exh	PM10 dust	PM2.5 Exh1	PM2.5 dust	CO	CO2
UPRR Doney Creek Bridge - 18.5ft raise	A01	01/15/2016	11/09/2017	19.566	139.638	7.795	33.841	7.171	4.673	82.283	56,979.433			
Left Wing Dam - 18.5 ft raise	A02	08/08/2016	03/23/2018	17.819	138.208	6.784	165.477	6.241	17.837	105.743	60,610.484			
Main Concrete Dam - 18.5 ft raise	A03	08/09/2016	04/22/2019	20.226	138.192	8.045	25.776	2.291	3.866	90.297	59,071.876			
Outlet Works - 18.5 ft raise	A04	04/23/2019	04/30/2020	13.445	138.112	4.903	25.776	4.511	3.866	53.097	51,044.377			
Pit River Bridge Pier 3 and 4 Prot - 18.5 ft raise	A05	05/02/2016	09/06/2017	15.433	138.138	5.875	25.776	5.405	3.866	65.719	53,762.633			
Powerplant and Penstocks - 18.5 ft raise	A06	10/20/2017	01/02/2018	12.235	138.098	4.335	25.776	3.988	3.866	48.166	49,791.795			
Railroad Realignment - 18.5 ft raise	A07	08/03/2016	08/08/2017	11.502	138.101	3.879	158.770	3.569	17.166	53.319	50,059.366			
Right Wing Dam - 18.5 ft raise	A08	08/09/2016	04/22/2019	10.590	138.086	3.467	53.684	3.190	6.657	44.905	48,468.823			
Sacramento River UPRR 2nd Crossing - 18.5 ft raise	A09	01/04/2016	12/22/2017	27.637	140.905	11.672	35.271	10.738	4.816	121.266	65,435.678			
Spillway - 18.5 ft raise	A10	01/03/2017	04/22/2019	27.199	138.696	11.236	25.776	10.337	3.866	112.637	63,012.327			
TCD Mods - 18.5 ft raise	A11	10/17/2017	03/18/2019	20.147	138.282	8.200	25.877	7.544	3.877	82.393	57,905.311			
Visitor Center Replacement - 18.5 ft raise	A12	05/15/2020	07/14/2021	10.275	138.079	3.373	43.436	3.103	5.632	40.558	47,766.171			
Vehicular Bridges - 18.5 ft raise	A13	05/02/2016	10/12/2018	24.148	155.117	9.592	34.381	8.825	4.727	109.620	63,865.565			
Reservoir Clearing - 18.5 ft raise	A14	05/14/2018	01/25/2019	35.020	260.190	11.841	27.416	10.894	4.030	112.134	81,261.224			
Dikes - 18.5 ft raise	A15	02/05/2016	01/30/2017	27.997	138.264	12.105	902.023	11.137	91.491	100.357	65,823.346			
Buildings/Facilities - Recreation - 18.5 ft raise	A16	05/02/2016	06/11/2018	39.941	140.529	20.048	1,483.427	18.444	149.631	166.479	76,557.919			
Roads - 18.5 ft raise	A17	10/14/2016	08/23/2019	27.848	138.251	11.621	587.657	10.691	60.054	102.498	65,828.616			
Utilities - 18.5 ft raise	A18	01/04/2016	02/02/2018	18.259	138.167	6.860	25.776	6.311	3.866	69.881	57,038.389			
Gravel Augmentation - 18.5 ft raise	A19	06/09/2016	07/14/2021	11.366	184.385	3.405	35.455	3.132	5.242	45.882	61,661.485			
Restore Riparian and Floodplain Habitat - 18.5 ft raise	A20	06/09/2016	07/18/2016	34.902	184.605	14.694	33.928	13.518	5.089	124.703	84,680.805			
	A21			-	-	-	-	-	-	-	-			
	A22			-	-	-	-	-	-	-	-			
					<u>ROG</u>	<u>NOx</u>	<u>PM10Exh</u>	<u>PM10 dust</u>	<u>PM2.5 Exh1</u>	<u>PM2.5 dust</u>	<u>CO</u>	<u>CO2</u>		
					Max Value	300	2,005	122	3,593	107	378	1,271	848,176	
					From	1/3/2017	1/3/2017	1/3/2017	1/3/2017	1/3/2017	1/3/2017	1/3/2017	1/3/2017	
					To	1/30/2017	1/30/2017	1/30/2017	1/30/2017	1/30/2017	1/30/2017	1/30/2017	1/30/2017	
					Duration	27	27	27	27	27	27	27	27	
														<u>Unit</u>
Gravel Augmentation (5 more years)		07/14/2021	07/14/2026	11	184	3	35	3	5	46	61,661	lbs/day		
											308,307	lbs/year		
											140	MT/Yr		

6.CP5 Daily Emission Summary												
		Start Date	End Date	Total Days	Weeks	Work Days						
Activities		01/04/2016	07/14/2021	2,018	288	1,441						
							Pounds/day					
					ROG	NOx	PM10Exh	PM10 dust	PM2.5 Exh1	PM2.5 dust	CO	CO2
UPRR Doney Creek Bridge - 18.5ft raise	A01	01/15/2016	11/09/2017	19.566	139.638	7.795	33.841	7.171	4.673	82.283	56,979.433	
Left Wing Dam - 18.5 ft raise	A02	08/08/2016	03/23/2018	17.819	138.208	6.784	165.477	6.241	17.837	105.743	60,610.484	
Main Concrete Dam - 18.5 ft raise	A03	08/09/2016	04/22/2019	20.226	138.192	8.045	25.776	2.291	3.866	90.297	59,071.876	
Outlet Works - 18.5 ft raise	A04	04/23/2019	04/30/2020	13.445	138.112	4.903	25.776	4.511	3.866	53.097	51,044.377	
Pit River Bridge Pier 3 and 4 Prot - 18.5 ft raise	A05	05/02/2016	09/06/2017	15.433	138.138	5.875	25.776	5.405	3.866	65.719	53,762.633	
Powerplant and Penstocks - 18.5 ft raise	A06	10/20/2017	01/02/2018	12.235	138.098	4.335	25.776	3.988	3.866	48.166	49,791.795	
Railroad Realignment - 18.5 ft raise	A07	08/03/2016	01/00/1900	11.502	138.101	3.879	158.770	3.569	17.166	53.319	50,059.366	
Right Wing Dam - 18.5 ft raise	A08	08/09/2016	04/22/2019	10.590	138.086	3.467	53.684	3.190	6.657	44.905	48,468.823	
Sacramento River UPRR 2nd Crossing - 18.5 ft raise	A09	01/04/2016	12/22/2017	27.637	140.905	11.672	35.271	10.738	4.816	121.266	65,435.678	
Spillway - 18.5 ft raise	A10	01/03/2017	04/22/2019	27.199	138.696	11.236	25.776	10.337	3.866	112.637	63,012.327	
TCD Mods - 18.5 ft raise	A11	10/17/2017	03/18/2019	20.147	138.282	8.200	25.877	7.544	3.877	82.393	57,905.311	
Visitor Center Replacement - 18.5 ft raise	A12	05/15/2020	07/14/2021	10.275	138.079	3.373	43.436	3.103	5.632	40.558	47,766.171	
Vehicular Bridges - 18.5 ft raise	A13	05/02/2016	10/12/2018	24.148	155.117	9.592	34.381	8.825	4.727	109.620	63,865.565	
Reservoir Clearing - 18.5 ft raise	A14	05/14/2018	01/25/2019	35.020	260.190	11.841	27.416	10.894	4.030	112.134	81,261.224	
Dikes - 18.5 ft raise	A15	02/05/2016	01/30/2017	27.997	138.264	12.105	902.023	11.137	91.491	100.357	65,823.346	
Buildings/Facilities - Recreation - 18.5 ft raise	A16	05/02/2016	06/11/2018	39.941	140.529	20.048	1,483.427	18.444	149.631	166.479	76,557.919	
Roads - 18.5 ft raise	A17	10/14/2016	08/23/2019	27.848	138.251	11.621	587.657	10.691	60.054	102.498	65,828.616	
Utilities - 18.5 ft raise	A18	01/04/2016	02/02/2018	18.259	138.167	6.860	25.776	6.311	3.866	69.881	57,038.389	
Gravel Augmentation - 18.5 ft raise	A19	06/09/2016	07/14/2021	11.366	184.385	3.405	35.455	3.132	5.242	45.882	61,661.485	
Restore Riparian and Floodplain Habitat - 18.5 ft raise	A20	06/09/2016	07/18/2016	34.902	184.605	14.694	33.928	13.518	5.089	124.703	84,680.805	
Recreation Facilities Enhancement - 18.5 ft raise	A21	05/02/2016	05/02/2017	11.571	186.892	3.462	34.745	3.185	5.196	46.769	62,523.962	
Shoreline Enhancement & Tributary Aquatic Habitat Enhance	A22	05/14/2018	08/22/2018	34.356	187.140	15.948	886.824	14.672	90.404	167.565	88,536.483	
					<u>ROG</u>	<u>NOx</u>	<u>PM10Exh</u>	<u>PM10 dust</u>	<u>PM2.5 Exh1</u>	<u>PM2.5 dust</u>	<u>CO</u>	<u>CO2</u>
					300	2,053	122	3,469	107	366	1,264	860,641
					From	1/3/2017	1/3/2017	1/3/2017	1/3/2017	1/3/2017	1/3/2017	1/3/2017
					To	1/30/2017	1/30/2017	1/30/2017	1/30/2017	1/30/2017	1/30/2017	1/30/2017
					Duration	27	27	27	27	27	27	27
Gravel Augmentation (5 more years)												
		7/14/2021	4/1/2026	11.4	184.4	3.4	35.5	3.1	5.2	45.9	61,661	lbs/day
											308,307	lbs/yr
											140	MT/yr

Shasta Lake Water Resources Investigation

7. Daily Emission Summary									
		ROG	NOx	PM10 Exh	PM10 dust	PM2.5 Exh ¹	PM2.5 dust	CO	CO2
CP1									
UPRR Doney Creek Bridge	Activity Subtotal	19.6	139.6	7.8	33.8	7.2	4.7	82.3	56,979.4
	Off-Road Equipment	11.0	1.6	5.3	8.1	4.9	0.8	48.2	11,041.2
	Truck Haul	7.2	133.6	2.5	22.1	2.3	3.3	32.9	45,720.8
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
Left Wing Dam	Activity Subtotal	17.8	138.2	6.8	165.5	6.2	17.8	105.7	60,610.5
	Off-Road Equipment	9.3	0.1	4.3	139.7	4.0	14.0	71.6	14,672.2
	Truck Haul	7.2	133.6	2.5	22.1	2.3	3.3	32.9	45,720.8
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
Main Concrete Dam	Activity Subtotal	20.2	138.2	8.0	25.8	2.3	3.9	90.3	59,071.9
	Off-Road Equipment	11.7	0.1	5.6	0.0	0.0	0.0	56.2	13,133.6
	Truck Haul	7.2	133.6	2.5	22.1	2.3	3.3	32.9	45,720.8
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
Outlet Works	Activity Subtotal	13.4	138.1	4.9	25.8	4.5	3.9	53.1	51,044.4
	Off-Road Equipment	4.9	0.1	2.4	0.0	2.2	0.0	19.0	5,106.1
	Truck Haul	7.2	133.6	2.5	22.1	2.3	3.3	32.9	45,720.8
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
Pit River Bridge Pier 3 and 4	Activity Subtotal	15.4	138.1	5.9	25.8	5.4	3.9	65.7	53,762.6
	Off-Road Equipment	6.9	0.1	3.4	0.0	3.1	0.0	31.6	7,824.4
	Truck Haul	7.2	133.6	2.5	22.1	2.3	3.3	32.9	45,720.8
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
Powerplant and Penstocks	Activity Subtotal	12.2	138.1	4.3	25.8	4.0	3.9	48.2	49,791.8
	Off-Road Equipment	3.7	0.0	1.8	0.0	1.7	0.0	14.1	3,853.5
	Truck Haul	7.2	133.6	2.5	22.1	2.3	3.3	32.9	45,720.8
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
Railroad Realignment	Activity Subtotal	11.5	138.1	3.9	158.8	3.6	17.2	53.3	50,059.4
	Off-Road Equipment	2.9	0.0	1.4	133.0	1.3	13.3	19.2	4,121.1
	Truck Haul	7.2	133.6	2.5	22.1	2.3	3.3	32.9	45,720.8
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
Right Wing Dam	Activity Subtotal	10.6	138.1	3.5	53.7	3.2	6.7	44.9	48,468.8
	Off-Road Equipment	2.0	0.0	1.0	27.9	0.9	2.8	10.8	2,530.6
	Truck Haul	7.2	133.6	2.5	22.1	2.3	3.3	32.9	45,720.8
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
Sacramento River UPRR 2nd Crossing	Activity Subtotal	27.6	140.9	11.7	35.3	10.7	4.8	121.3	65,435.7
	Off-Road Equipment	19.1	2.8	9.2	9.5	8.4	0.9	87.2	19,497.4
	Truck Haul	7.2	133.6	2.5	22.1	2.3	3.3	32.9	45,720.8
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
Spillway	Activity Subtotal	27.2	138.7	11.2	25.8	10.3	3.9	112.6	63,012.3
	Off-Road Equipment	18.6	0.6	8.7	0.0	8.0	0.0	78.5	17,074.1
	Truck Haul	7.2	133.6	2.5	22.1	2.3	3.3	32.9	45,720.8
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
TCD Mods	Activity Subtotal	20.1	138.3	8.2	25.9	7.5	3.9	82.4	57,905.3
	Off-Road Equipment	11.6	0.2	5.7	0.1	5.3	0.0	48.3	11,967.1
	Truck Haul	7.2	133.6	2.5	22.1	2.3	3.3	32.9	45,720.8
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
Visitor Center Replacement	Activity Subtotal	10.3	138.1	3.4	43.4	3.1	5.6	40.6	47,766.2
	Off-Road Equipment	1.7	0.0	0.9	17.7	0.8	1.8	6.5	1,827.9
	Truck Haul	7.2	133.6	2.5	22.1	2.3	3.3	32.9	45,720.8
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
Vehicular Bridges	Activity Subtotal	24.1	155.1	9.6	34.4	8.8	4.7	109.6	63,865.6
	Off-Road Equipment	15.6	17.1	7.1	8.6	6.5	0.9	75.5	17,927.3
	Truck Haul	7.2	133.6	2.5	22.1	2.3	3.3	32.9	45,720.8
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
Reservoir Clearing	Activity Subtotal	35.0	260.2	11.8	27.4	10.9	4.0	112.1	81,261.2
	Off-Road Equipment	26.5	122.1	9.4	1.6	8.6	0.2	78.0	35,323.0
	Truck Haul	7.2	133.6	2.5	22.1	2.3	3.3	32.9	45,720.8
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4

		28.0	138.3	12.1	902.0	11.1	91.5	100.4	65,823.3
Dikes	Activity Subtotal								
	Off-Road Equipment	19.4	0.2	9.6	876.2	8.8	87.6	66.3	19,885.1
	Truck Haul	7.2	133.6	2.5	22.1	2.3	3.3	32.9	45,720.8
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
Buildings/Facilities	Activity Subtotal	39.9	140.5	20.0	1,483.4	18.4	149.6	166.5	76,557.9
	Off-Road Equipment	31.4	2.5	17.6	1,457.7	16.2	145.8	132.4	30,619.7
	Truck Haul	7.2	133.6	2.5	22.1	2.3	3.3	32.9	45,720.8
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
Roads	Activity Subtotal	27.8	138.3	11.6	587.7	10.7	60.1	102.5	65,828.6
	Off-Road Equipment	19.3	0.2	9.1	561.9	8.4	56.2	68.4	19,890.4
	Truck Haul	7.2	133.6	2.5	22.1	2.3	3.3	32.9	45,720.8
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
Utilities	Activity Subtotal	18.3	138.2	6.9	25.8	6.3	3.9	69.9	57,038.4
	Off-Road Equipment	9.7	0.1	4.4	0.0	4.0	0.0	35.8	11,100.1
	Truck Haul	7.2	133.6	2.5	22.1	2.3	3.3	32.9	45,720.8
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
CP2		ROG	NOx	PM10		PM2.5	PM2.5	CO	CO2
UPRR Doney Creek Bridge	Activity Subtotal	19.7	142.8	4.1	34.4	3.8	4.8	83.0	58,052.8
	Off-Road Equipment	11.0	1.6	1.6	8.1	1.4	0.8	48.2	11,038.7
	Truck Haul	7.4	136.7	2.5	22.6	2.3	3.4	33.7	46,796.6
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
Left Wing Dam	Activity Subtotal	19.6	141.8	7.9	270.3	7.3	28.3	85.9	57,027.6
	Off-Road Equipment	10.8	0.6	5.4	244.0	4.9	24.4	51.0	10,013.6
	Truck Haul	7.4	136.7	2.5	22.6	2.3	3.4	33.7	46,796.6
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
Main Concrete Dam	Activity Subtotal	20.5	141.3	7.7	26.3	7.1	3.9	93.3	60,547.6
	Off-Road Equipment	11.8	0.1	5.2	0.0	4.7	0.0	58.4	13,533.6
	Truck Haul	7.4	136.7	2.5	22.6	2.3	3.4	33.7	46,796.6
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
Outlet Works	Activity Subtotal	13.6	141.3	5.0	26.3	4.6	3.9	53.9	52,120.2
	Off-Road Equipment	4.9	0.1	2.4	0.0	2.2	0.0	19.0	5,106.1
	Truck Haul	7.4	136.7	2.5	22.6	2.3	3.4	33.7	46,796.6
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
Pit River Bridge Pier 3 and 4	Activity Subtotal	15.6	141.3	5.9	26.3	5.5	3.9	66.5	54,828.7
	Off-Road Equipment	6.9	0.1	3.4	0.0	3.1	0.0	31.6	7,814.7
	Truck Haul	7.4	136.7	2.5	22.6	2.3	3.4	33.7	46,796.6
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
Powerplant and Penstocks	Activity Subtotal	12.4	141.2	4.4	26.3	4.0	3.9	48.9	50,867.6
	Off-Road Equipment	3.7	0.0	1.8	0.0	1.7	0.0	14.1	3,853.5
	Truck Haul	7.4	136.7	2.5	22.6	2.3	3.4	33.7	46,796.6
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
Railroad Realignment	Activity Subtotal	11.7	141.2	3.9	159.3	3.6	17.2	54.1	51,135.1
	Off-Road Equipment	2.9	0.0	1.4	133.0	1.3	13.3	19.2	4,121.1
	Truck Haul	7.4	136.7	2.5	22.6	2.3	3.4	33.7	46,796.6
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
Right Wing Dam	Activity Subtotal	10.8	141.2	3.5	54.2	3.2	6.7	45.7	49,545.8
	Off-Road Equipment	2.0	0.0	1.0	27.9	0.9	2.8	10.8	2,531.8
	Truck Haul	7.4	136.7	2.5	22.6	2.3	3.4	33.7	46,796.6
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
Sacramento River UPRR 2nd Crossing	Activity Subtotal	27.8	144.0	11.7	35.8	10.8	4.9	122.0	66,511.5
	Off-Road Equipment	19.1	2.8	9.2	9.5	8.4	0.9	87.2	19,497.4
	Truck Haul	7.4	136.7	2.5	22.6	2.3	3.4	33.7	46,796.6
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
Spillway	Activity Subtotal	31.7	141.9	13.0	26.3	11.9	3.9	141.2	69,035.6
	Off-Road Equipment	23.0	0.7	10.4	0.0	9.6	0.0	106.3	22,021.6
	Truck Haul	7.4	136.7	2.5	22.6	2.3	3.4	33.7	46,796.6
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4

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TCD Mods	Activity Subtotal	20.3	141.4	8.3	26.4	7.6	4.0	83.3	58,993.0
	Off-Road Equipment	11.6	0.2	5.7	0.1	5.3	0.0	48.4	11,979.0
	Truck Haul	7.4	136.7	2.5	22.6	2.3	3.4	33.7	46,796.6
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
Visitor Center Replacement	Activity Subtotal	10.4	141.2	3.4	43.9	3.1	5.7	41.2	48,809.7
	Off-Road Equipment	1.7	0.0	0.9	17.6	0.8	1.8	6.4	1,795.7
	Truck Haul	7.4	136.7	2.5	22.6	2.3	3.4	33.7	46,796.6
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
Vehicular Bridges	Activity Subtotal	22.9	156.7	9.0	34.9	8.3	4.8	103.5	63,311.6
	Off-Road Equipment	14.2	15.5	6.5	8.6	5.9	0.9	68.7	16,297.6
	Truck Haul	7.4	136.7	2.5	22.6	2.3	3.4	33.7	46,796.6
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
Reservoir Clearing	Activity Subtotal	35.2	263.5	11.9	27.9	11.0	4.1	113.0	82,399.3
	Off-Road Equipment	26.5	122.3	9.4	1.6	8.6	0.2	78.2	35,385.3
	Truck Haul	7.4	136.7	2.5	22.6	2.3	3.4	33.7	46,796.6
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
Dikes	Activity Subtotal	28.2	141.4	12.2	1,070.2	11.2	108.3	101.1	66,899.1
	Off-Road Equipment	19.4	0.2	9.6	1,043.9	8.8	104.4	66.3	19,885.1
	Truck Haul	7.4	136.7	2.5	22.6	2.3	3.4	33.7	46,796.6
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
Buildings/Facilities	Activity Subtotal	40.1	143.7	20.1	1,466.0	18.5	147.9	167.1	77,596.1
	Off-Road Equipment	31.3	2.5	17.5	1,439.7	16.1	144.0	132.2	30,582.1
	Truck Haul	7.4	136.7	2.5	22.6	2.3	3.4	33.7	46,796.6
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
Roads	Activity Subtotal	28.0	141.4	11.7	940.8	10.8	95.4	103.3	66,916.5
	Off-Road Equipment	19.3	0.2	9.1	914.5	8.4	91.5	68.4	19,902.4
	Truck Haul	7.4	136.7	2.5	22.6	2.3	3.4	33.7	46,796.6
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
Utilities	Activity Subtotal	18.4	141.3	6.9	26.3	6.4	3.9	70.6	58,092.4
	Off-Road Equipment	9.7	0.1	4.4	0.0	4.0	0.0	35.7	11,078.4
	Truck Haul	7.4	136.7	2.5	22.6	2.3	3.4	33.7	46,796.6
	Worker Commute	1.4	4.5	0.0	3.7	0.0	0.6	1.2	217.4
CP3		ROG	NOx	PM10		PM2.5	PM2.5	CO	CO2
UPRR Doney Creek Bridge	Activity Subtotal	21.9	179.7	8.5	40.8	7.8	5.7	92.2	70,460.5
	Off-Road Equipment	11.0	1.6	5.3	7.9	4.9	0.8	48.2	11,038.7
	Truck Haul	9.3	172.9	3.2	28.6	3.0	4.3	42.6	59,168.1
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
Left Wing Dam	Activity Subtotal	20.4	178.2	7.6	223.2	7.0	24.0	120.5	74,351.3
	Off-Road Equipment	9.5	0.2	4.4	190.3	4.0	19.0	76.5	14,929.5
	Truck Haul	9.3	172.9	3.2	28.6	3.0	4.3	42.6	59,168.1
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
Main Concrete Dam	Activity Subtotal	22.8	178.2	8.8	32.9	8.1	4.9	107.5	73,468.2
	Off-Road Equipment	11.9	0.1	5.6	0.0	5.2	0.0	63.5	14,046.4
	Truck Haul	9.3	172.9	3.2	28.6	3.0	4.3	42.6	59,168.1
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
Outlet Works	Activity Subtotal	15.8	178.1	5.6	32.9	5.2	4.9	63.0	64,527.9
	Off-Road Equipment	4.9	0.1	2.4	0.0	2.2	0.0	19.0	5,106.1
	Truck Haul	9.3	172.9	3.2	28.6	3.0	4.3	42.6	59,168.1
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
Pit River Bridge Pier 3 and 4	Activity Subtotal	17.8	178.2	6.6	32.9	6.1	4.9	75.6	67,245.9
	Off-Road Equipment	6.9	0.1	3.4	0.0	3.1	0.0	31.6	7,824.1
	Truck Haul	9.3	172.9	3.2	28.6	3.0	4.3	42.6	59,168.1
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
Powerplant and Penstocks	Activity Subtotal	14.6	178.1	5.1	32.9	4.7	4.9	58.0	63,275.3
	Off-Road Equipment	3.7	0.0	1.8	0.0	1.7	0.0	14.1	3,853.5
	Truck Haul	9.3	172.9	3.2	28.6	3.0	4.3	42.6	59,168.1
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7

Railroad Realignment	Activity Subtotal	13.8	178.1	4.6	165.9	4.2	18.2	63.2	63,542.9
	Off-Road Equipment	2.9	0.0	1.4	133.0	1.3	13.3	19.2	4,121.1
	Truck Haul	9.3	172.9	3.2	28.6	3.0	4.3	42.6	59,168.1
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
Right Wing Dam	Activity Subtotal	12.9	178.1	4.2	51.4	3.9	6.8	54.8	61,953.6
	Off-Road Equipment	2.0	0.0	1.0	18.5	0.9	1.8	10.8	2,531.8
	Truck Haul	9.3	172.9	3.2	28.6	3.0	4.3	42.6	59,168.1
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
Sacramento River UPRR 2nd Crossing	Activity Subtotal	30.0	180.9	12.4	42.4	11.4	5.9	131.1	78,919.2
	Off-Road Equipment	19.1	2.8	9.2	9.5	8.4	0.9	87.2	19,497.4
	Truck Haul	9.3	172.9	3.2	28.6	3.0	4.3	42.6	59,168.1
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
Spillway	Activity Subtotal	34.0	178.8	13.8	32.9	12.7	4.9	151.9	81,797.4
	Off-Road Equipment	23.1	0.7	10.5	0.0	9.7	0.0	107.9	22,375.6
	Truck Haul	9.3	172.9	3.2	28.6	3.0	4.3	42.6	59,168.1
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
TCD Mods	Activity Subtotal	22.5	178.3	9.0	33.0	8.2	4.9	92.7	71,438.9
	Off-Road Equipment	11.6	0.2	5.7	0.1	5.3	0.0	48.7	12,017.1
	Truck Haul	9.3	172.9	3.2	28.6	3.0	4.3	42.6	59,168.1
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
Visitor Center Replacement	Activity Subtotal	12.6	178.1	4.1	49.8	3.8	6.6	50.4	61,227.4
	Off-Road Equipment	1.7	0.0	0.9	16.9	0.8	1.7	6.4	1,805.6
	Truck Haul	9.3	172.9	3.2	28.6	3.0	4.3	42.6	59,168.1
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
Vehicular Bridges	Activity Subtotal	26.5	195.2	10.3	38.5	9.5	5.5	119.5	77,359.4
	Off-Road Equipment	15.6	17.1	7.1	5.6	6.5	0.6	75.6	17,937.6
	Truck Haul	9.3	172.9	3.2	28.6	3.0	4.3	42.6	59,168.1
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
Reservoir Clearing	Activity Subtotal	37.5	300.8	12.6	34.5	11.6	5.1	122.4	94,900.0
	Off-Road Equipment	26.6	122.7	9.4	1.6	8.6	0.2	78.4	35,478.2
	Truck Haul	9.3	172.9	3.2	28.6	3.0	4.3	42.6	59,168.1
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
Dikes	Activity Subtotal	30.3	178.3	12.8	1,319.9	11.8	133.6	110.2	79,306.9
	Off-Road Equipment	19.4	0.2	9.6	1,287.0	8.8	128.7	66.3	19,885.1
	Truck Haul	9.3	172.9	3.2	28.6	3.0	4.3	42.6	59,168.1
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
Buildings/Facilities	Activity Subtotal	42.3	180.6	20.8	1,352.5	19.1	136.9	176.2	90,011.7
	Off-Road Equipment	31.3	2.5	17.5	1,319.6	16.1	132.0	132.2	30,589.9
	Truck Haul	9.3	172.9	3.2	28.6	3.0	4.3	42.6	59,168.1
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
Roads	Activity Subtotal	30.2	178.3	12.4	494.8	11.4	51.1	112.4	79,318.7
	Off-Road Equipment	19.3	0.2	9.1	461.9	8.4	46.2	68.4	19,896.9
	Truck Haul	9.3	172.9	3.2	28.6	3.0	4.3	42.6	59,168.1
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
Utilities	Activity Subtotal	20.6	178.2	7.6	32.9	7.0	4.9	79.7	70,508.2
	Off-Road Equipment	9.7	0.1	4.4	0.0	4.0	0.0	35.7	11,086.4
	Truck Haul	9.3	172.9	3.2	28.6	3.0	4.3	42.6	59,168.1
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
CP4		ROG	NOx	PM10	PM10 dust	PM2.5	PM2.5	CO	CO2
UPRR Doney Creek Bridge	Activity Subtotal	22.2	185.9	8.6	41.8	8.0	5.9	93.7	72,612.1
	Off-Road Equipment	11.0	1.6	5.3	7.9	4.9	0.8	48.2	11,038.7
	Truck Haul	9.7	179.2	3.3	29.6	3.1	4.4	44.2	61,319.7
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
Left Wing Dam	Activity Subtotal	20.7	184.5	7.7	224.3	7.1	24.1	122.0	76,502.8
	Off-Road Equipment	9.5	0.2	4.4	190.3	4.0	19.0	76.5	14,929.5
	Truck Haul	9.7	179.2	3.3	29.6	3.1	4.4	44.2	61,319.7
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7

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Main Concrete Dam	Activity Subtotal	23.2	184.5	9.0	33.9	8.2	5.1	109.0	75,619.8
	Off-Road Equipment	11.9	0.1	5.6	0.0	5.2	0.0	63.5	14,046.4
	Truck Haul	9.7	179.2	3.3	29.6	3.1	4.4	44.2	61,319.7
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
Outlet Works	Activity Subtotal	16.1	184.4	5.8	33.9	5.3	5.1	64.5	66,679.5
	Off-Road Equipment	4.9	0.1	2.4	0.0	2.2	0.0	19.0	5,106.1
	Truck Haul	9.7	179.2	3.3	29.6	3.1	4.4	44.2	61,319.7
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
Pit River Bridge Pier 3 and 4	Activity Subtotal	18.1	184.5	6.7	33.9	6.2	5.1	77.2	69,397.5
	Off-Road Equipment	6.9	0.1	3.4	0.0	3.1	0.0	31.6	7,824.1
	Truck Haul	9.7	179.2	3.3	29.6	3.1	4.4	44.2	61,319.7
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
Powerplant and Penstocks	Activity Subtotal	14.9	184.4	5.2	33.9	4.8	5.1	59.6	65,426.9
	Off-Road Equipment	3.7	0.0	1.8	0.0	1.7	0.0	14.1	3,853.5
	Truck Haul	9.7	179.2	3.3	29.6	3.1	4.4	44.2	61,319.7
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
Railroad Realignment	Activity Subtotal	14.2	184.4	4.7	166.9	4.4	18.4	64.8	65,694.5
	Off-Road Equipment	2.9	0.0	1.4	133.0	1.3	13.3	19.2	4,121.1
	Truck Haul	9.7	179.2	3.3	29.6	3.1	4.4	44.2	61,319.7
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
Right Wing Dam	Activity Subtotal	13.3	184.4	4.3	52.4	4.0	6.9	56.3	64,105.2
	Off-Road Equipment	2.0	0.0	1.0	18.5	0.9	1.8	10.8	2,531.8
	Truck Haul	9.7	179.2	3.3	29.6	3.1	4.4	44.2	61,319.7
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
Sacramento River UPRR 2nd Crossing	Activity Subtotal	30.3	187.2	12.5	43.4	11.5	6.0	132.7	81,070.8
	Off-Road Equipment	19.1	2.8	9.2	9.5	8.4	0.9	87.2	19,497.4
	Truck Haul	9.7	179.2	3.3	29.6	3.1	4.4	44.2	61,319.7
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
Spillway	Activity Subtotal	34.4	185.1	13.9	33.9	12.8	5.1	153.5	83,949.0
	Off-Road Equipment	23.1	0.7	10.5	0.0	9.7	0.0	107.9	22,375.6
	Truck Haul	9.7	179.2	3.3	29.6	3.1	4.4	44.2	61,319.7
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
TCD Mods	Activity Subtotal	22.9	184.6	9.1	34.0	8.4	5.1	94.3	73,590.5
	Off-Road Equipment	11.6	0.2	5.7	0.1	5.3	0.0	48.7	12,017.1
	Truck Haul	9.7	179.2	3.3	29.6	3.1	4.4	44.2	61,319.7
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
Visitor Center Replacement	Activity Subtotal	12.9	184.4	4.2	50.9	3.9	6.8	51.9	63,378.9
	Off-Road Equipment	1.7	0.0	0.9	16.9	0.8	1.7	6.4	1,805.6
	Truck Haul	9.7	179.2	3.3	29.6	3.1	4.4	44.2	61,319.7
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
Vehicular Bridges	Activity Subtotal	26.8	201.4	10.4	39.5	9.6	5.6	121.1	79,510.9
	Off-Road Equipment	15.6	17.1	7.1	5.6	6.5	0.6	75.6	17,937.6
	Truck Haul	9.7	179.2	3.3	29.6	3.1	4.4	44.2	61,319.7
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
Reservoir Clearing	Activity Subtotal	37.8	307.0	12.7	35.6	11.7	5.3	123.9	97,051.5
	Off-Road Equipment	26.6	122.7	9.4	1.6	8.6	0.2	78.4	35,478.2
	Truck Haul	9.7	179.2	3.3	29.6	3.1	4.4	44.2	61,319.7
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
Dikes	Activity Subtotal	30.7	184.6	13.0	1,320.9	11.9	133.8	111.8	81,458.5
	Off-Road Equipment	19.4	0.2	9.6	1,287.0	8.8	128.7	66.3	19,885.1
	Truck Haul	9.7	179.2	3.3	29.6	3.1	4.4	44.2	61,319.7
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
Buildings/Facilities	Activity Subtotal	42.6	186.8	20.9	1,363.9	19.2	138.1	177.8	92,163.3
	Off-Road Equipment	31.3	2.5	17.5	1,329.9	16.1	133.0	132.2	30,589.9
	Truck Haul	9.7	179.2	3.3	29.6	3.1	4.4	44.2	61,319.7
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
Roads	Activity Subtotal	30.5	184.6	12.5	495.9	11.5	51.3	114.0	81,470.2
	Off-Road Equipment	19.3	0.2	9.1	461.9	8.4	46.2	68.4	19,896.9
	Truck Haul	9.7	179.2	3.3	29.6	3.1	4.4	44.2	61,319.7
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7

Utilities	Activity Subtotal	20.9	184.5	7.7	33.9	7.1	5.1	81.3	72,659.8
	Off-Road Equipment	9.7	0.1	4.4	0.0	4.0	0.0	35.7	11,086.4
	Truck Haul	9.7	179.2	3.3	29.6	3.1	4.4	44.2	61,319.7
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
Gravel Augmentation	Activity Subtotal	11.4	184.4	3.4	35.5	3.1	5.2	45.9	61,661.5
	Off-Road Equipment	0.1	0.0	0.1	1.5	0.1	0.2	0.3	88.1
	Truck Haul	9.7	179.2	3.3	29.6	3.1	4.4	44.2	61,319.7
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
Recreation Facilities Enhancement	Activity Subtotal	34.9	184.6	14.7	33.9	13.5	5.1	124.7	84,680.8
	Off-Road Equipment	23.6	0.2	11.4	0.0	10.4	0.0	79.2	23,107.4
	Truck Haul	9.7	179.2	3.3	29.6	3.1	4.4	44.2	61,319.7
	Worker Commute	1.6	5.2	0.0	4.3	0.0	0.6	1.3	253.7
CP5		ROG	NOx	PM10 Exh	PM10 dust	PM2.5 Exh	PM2.5 dust	CO	CO2
UPRR Doney Creek Bridge	Activity Subtotal	22.4	188.5	8.7	42.3	8.0	6.0	94.1	73,385.1
	Off-Road Equipment	11.0	1.6	5.3	7.9	4.9	0.8	48.0	10,997.6
	Truck Haul	9.8	181.5	3.4	30.0	3.1	4.5	44.8	62,126.5
	Worker Commute	1.6	5.4	0.0	4.4	0.0	0.7	1.4	260.9
Left Wing Dam	Activity Subtotal	20.9	187.0	7.7	224.8	7.1	24.2	122.7	77,316.9
	Off-Road Equipment	9.5	0.2	4.4	190.3	4.0	19.0	76.5	14,929.5
	Truck Haul	9.8	181.5	3.4	30.0	3.1	4.5	44.8	62,126.5
	Worker Commute	1.6	5.4	0.0	4.4	0.0	0.7	1.4	260.9
Main Concrete Dam	Activity Subtotal	23.3	187.0	9.0	34.4	8.3	5.2	109.6	76,433.8
	Off-Road Equipment	11.9	0.1	5.6	0.0	5.2	0.0	63.5	14,046.4
	Truck Haul	9.8	181.5	3.4	30.0	3.1	4.5	44.8	62,126.5
	Worker Commute	1.6	5.4	0.0	4.4	0.0	0.7	1.4	260.9
Outlet Works	Activity Subtotal	16.3	186.9	5.8	34.4	5.3	5.2	65.2	67,493.6
	Off-Road Equipment	4.9	0.1	2.4	0.0	2.2	0.0	19.0	5,106.1
	Truck Haul	9.8	181.5	3.4	30.0	3.1	4.5	44.8	62,126.5
	Worker Commute	1.6	5.4	0.0	4.4	0.0	0.7	1.4	260.9
Pit River Bridge Pier 3 and 4	Activity Subtotal	18.3	187.0	6.8	34.4	6.2	5.2	77.8	70,211.6
	Off-Road Equipment	6.9	0.1	3.4	0.0	3.1	0.0	31.6	7,824.1
	Truck Haul	9.8	181.5	3.4	30.0	3.1	4.5	44.8	62,126.5
	Worker Commute	1.6	5.4	0.0	4.4	0.0	0.7	1.4	260.9
Powerplant and Penstocks	Activity Subtotal	15.1	186.9	5.2	34.4	4.8	5.2	60.2	66,241.0
	Off-Road Equipment	3.7	0.0	1.8	0.0	1.7	0.0	14.1	3,853.5
	Truck Haul	9.8	181.5	3.4	30.0	3.1	4.5	44.8	62,126.5
	Worker Commute	1.6	5.4	0.0	4.4	0.0	0.7	1.4	260.9
Railroad Realignment	Activity Subtotal	14.4	186.9	4.8	167.4	4.4	18.5	65.4	66,508.6
	Off-Road Equipment	2.9	0.0	1.4	133.0	1.3	13.3	19.2	4,121.1
	Truck Haul	9.8	181.5	3.4	30.0	3.1	4.5	44.8	62,126.5
	Worker Commute	1.6	5.4	0.0	4.4	0.0	0.7	1.4	260.9
Right Wing Dam	Activity Subtotal	13.4	186.9	4.4	52.9	4.0	7.0	57.0	64,919.2
	Off-Road Equipment	2.0	0.0	1.0	18.5	0.9	1.8	10.8	2,531.8
	Truck Haul	9.8	181.5	3.4	30.0	3.1	4.5	44.8	62,126.5
	Worker Commute	1.6	5.4	0.0	4.4	0.0	0.7	1.4	260.9
Sacramento River UPRR 2nd Crossing	Activity Subtotal	30.5	189.7	12.6	43.9	11.6	6.1	133.3	81,884.9
	Off-Road Equipment	19.1	2.8	9.2	9.5	8.4	0.9	87.2	19,497.4
	Truck Haul	9.8	181.5	3.4	30.0	3.1	4.5	44.8	62,126.5
	Worker Commute	1.6	5.4	0.0	4.4	0.0	0.7	1.4	260.9
Spillway	Activity Subtotal	34.6	187.6	13.9	34.4	12.8	5.2	154.1	84,763.0
	Off-Road Equipment	23.1	0.7	10.5	0.0	9.7	0.0	107.9	22,375.6
	Truck Haul	9.8	181.5	3.4	30.0	3.1	4.5	44.8	62,126.5
	Worker Commute	1.6	5.4	0.0	4.4	0.0	0.7	1.4	260.9
TCD Mods	Activity Subtotal	23.1	187.1	9.1	34.5	8.4	5.2	94.9	74,404.6
	Off-Road Equipment	11.6	0.2	5.7	0.1	5.3	0.0	48.7	12,017.1
	Truck Haul	9.8	181.5	3.4	30.0	3.1	4.5	44.8	62,126.5
	Worker Commute	1.6	5.4	0.0	4.4	0.0	0.7	1.4	260.9

Shasta Lake Water Resources Investigation

Visitor Center Replacement	Activity Subtotal	13.1	186.9	4.3	51.4	3.9	6.9	52.6	64,193.0
	Off-Road Equipment	1.7	0.0	0.9	16.9	0.8	1.7	6.4	1,805.6
	Truck Haul	9.8	181.5	3.4	30.0	3.1	4.5	44.8	62,126.5
	Worker Commute	1.6	5.4	0.0	4.4	0.0	0.7	1.4	260.9
Vehicular Bridges	Activity Subtotal	27.0	204.0	10.5	40.0	9.7	5.7	121.7	80,325.0
	Off-Road Equipment	15.6	17.1	7.1	5.6	6.5	0.6	75.6	17,937.6
	Truck Haul	9.8	181.5	3.4	30.0	3.1	4.5	44.8	62,126.5
	Worker Commute	1.6	5.4	0.0	4.4	0.0	0.7	1.4	260.9
Reservoir Clearing	Activity Subtotal	38.0	309.6	12.8	36.1	11.8	5.3	124.5	97,865.6
	Off-Road Equipment	26.6	122.7	9.4	1.6	8.6	0.2	78.4	35,478.2
	Truck Haul	9.8	181.5	3.4	30.0	3.1	4.5	44.8	62,126.5
	Worker Commute	1.6	5.4	0.0	4.4	0.0	0.7	1.4	260.9
Dikes	Activity Subtotal	30.9	187.1	13.0	1,321.5	12.0	133.9	112.4	82,272.5
	Off-Road Equipment	19.4	0.2	9.6	1,287.0	8.8	128.7	66.3	19,885.1
	Truck Haul	9.8	181.5	3.4	30.0	3.1	4.5	44.8	62,126.5
	Worker Commute	1.6	5.4	0.0	4.4	0.0	0.7	1.4	260.9
Buildings/Facilities	Activity Subtotal	42.8	189.4	20.9	1,364.4	19.3	138.2	178.4	92,977.3
	Off-Road Equipment	31.3	2.5	17.5	1,329.9	16.1	133.0	132.2	30,589.9
	Truck Haul	9.8	181.5	3.4	30.0	3.1	4.5	44.8	62,126.5
	Worker Commute	1.6	5.4	0.0	4.4	0.0	0.7	1.4	260.9
Roads	Activity Subtotal	30.7	187.1	12.5	504.1	11.5	52.1	114.6	82,284.3
	Off-Road Equipment	19.3	0.2	9.1	469.7	8.4	47.0	68.4	19,896.9
	Truck Haul	9.8	181.5	3.4	30.0	3.1	4.5	44.8	62,126.5
	Worker Commute	1.6	5.4	0.0	4.4	0.0	0.7	1.4	260.9
Utilities	Activity Subtotal	21.1	187.0	7.7	34.4	7.1	5.2	81.9	73,473.9
	Off-Road Equipment	9.7	0.1	4.4	0.0	4.0	0.0	35.7	11,086.4
	Truck Haul	9.8	181.5	3.4	30.0	3.1	4.5	44.8	62,126.5
	Worker Commute	1.6	5.4	0.0	4.4	0.0	0.7	1.4	260.9
Gravel Augmentation	Activity Subtotal	11.5	186.9	3.4	36.0	3.2	5.3	46.5	62,475.6
	Off-Road Equipment	0.1	0.0	0.1	1.5	0.1	0.2	0.3	88.1
	Truck Haul	9.8	181.5	3.4	30.0	3.1	4.5	44.8	62,126.5
	Worker Commute	1.6	5.4	0.0	4.4	0.0	0.7	1.4	260.9
Recreation Facilities Enhancement	Activity Subtotal	11.6	186.9	3.5	34.7	3.2	5.2	46.8	62,524.0
	Off-Road Equipment	0.1	0.0	0.1	0.3	0.1	0.0	0.6	136.5
	Truck Haul	9.8	181.5	3.4	30.0	3.1	4.5	44.8	62,126.5
	Worker Commute	1.6	5.4	0.0	4.4	0.0	0.7	1.4	260.9
Restore Riparian and Floodplain Habitat	Activity Subtotal	35.1	187.1	14.7	59.5	13.6	7.7	125.3	85,494.9
	Off-Road Equipment	23.6	0.2	11.4	25.1	10.4	2.5	79.2	23,107.4
	Truck Haul	9.8	181.5	3.4	30.0	3.1	4.5	44.8	62,126.5
	Worker Commute	1.6	5.4	0.0	4.4	0.0	0.7	1.4	260.9
Shoreline Enhancement/Aquatic Habitat Enhancement	Activity Subtotal	34.4	187.1	15.9	886.8	14.7	90.4	167.6	88,536.5
	Off-Road Equipment	22.9	0.2	12.6	852.4	11.6	85.2	121.4	26,149.0
	Truck Haul	9.8	181.5	3.4	30.0	3.1	4.5	44.8	62,126.5
	Worker Commute	1.6	5.4	0.0	4.4	0.0	0.7	1.4	260.9
Notes	Source								
1. Exhaust PM2.5 is assumed to be 92% of PM10	SMAQMD 2012. Roadway Construction Emissions Model, Version 7.2.1								
Off-Road Exhaust emissions are referenced from worksheets CP1 Equip. Exhaust through CP5 Equip. Exhaust									
Truck Haul trips and worker commute trips emissions are referenced from On-Road Emissions worksheet									
Truck Haul and Worker Commute Trips are based on daily trips that change by CP not by construction activity and therefore daily values are the same for each CP.									

Planned Construction Period	1/15/2016	11/9/2017											
Planned Duration (days)	461												
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
1150 CFM Port. RS Air Compressor Diesel 150 psi 525 HP	985	2.1	63.849	0.301	214.313	1.010	0.163	0.001	19.444	0.092	105,021.813	494.931	
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	11106	24.1	28.657	1.522	143.317	7.612	0.065	0.003	15.373	0.817	21,277.144	1,130.097	
4WD Articulated Wheel Loader - Cat 3.65 cy bucket - 160 HP - EROPS (Diesel)	318	0.7	32.104	0.049	133.153	0.202	0.065	0.000	17.328	0.026	28,323.951	43.043	
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	504	1.1	30.661	0.074	182.249	0.439	0.270	0.001	12.996	0.031	38,767.435	93.475	
600 CFM Port. RS Air Compressor Diesel Powered 150 psi 275 HP	1268	2.7	38.577	0.234	124.265	0.753	0.715	0.004	11.819	0.072	59,466.905	360.486	
AmPledr-VibrtryHmnr625HP	316	0.7	60.870	0.092	417.401	0.630	0.736	0.001	29.879	0.045	77,032.518	116.250	
Cat Self Propelled Tandem Vibratory Compactor - 56" Wide Smooth, 70 HP (Diesel)	46	0.1	20.522	0.005	104.325	0.023	0.158	0.000	13.790	0.003	16,510.744	3.639	
Cat Tractor-Loader-Backhoe, 4WD, 1 CY Bucket, Fixed Stick, 72 HP (Diesel)	85	0.2	17.151	0.007	75.359	0.031	0.154	0.000	12.059	0.005	16,091.489	6.518	
Centrifugal Pump, Gas, 100 gpm, 1.5" Size, 3 HP (Gas)	8859	19.2	4.801	0.203	21.443	0.908	0.052	0.002	1.735	0.073	3,364.335	142.529	
Centrifugal Pump, Gas, 300 gpm, 3" Size, 7 HP (Gas)	2068	4.5	4.801	0.047	21.443	0.212	0.052	0.001	1.735	0.017	3,364.335	33.272	
Concrete pump & boom Schwing 2525H-5/S-47 on 255 hp chassis, 181 cy/hr & 155 ft boom	478	1.0	46.019	0.105	176.972	0.405	1.027	0.002	15.541	0.036	91,257.575	208.779	
Core drill, 3-inch chuck, 24" feed stroke, 40 hp, diesel	94	0.2	17.955	0.008	47.458	0.021	0.113	0.000	7.551	0.003	11,812.980	5.291	
Crawler Mounted Hydraulic Excavator - Cat 2.25 cy bucket - 222 HP (Diesel)	291	0.6	22.896	0.032	212.598	0.296	0.417	0.001	9.661	0.013	43,667.789	60.699	
Crawler Mounted Hydraulic Excavator - Cat 2.5 cy bucket - 321 HP (Diesel)	534	1.2	22.896	0.059	212.598	0.543	0.417	0.001	9.661	0.025	43,667.789	111.614	
Grove 4x2x4 Hyd Yard Crane Diesel 9.1 MT 24' Boom, 80 HP	2218	4.8	30.944	0.328	66.584	0.706	0.127	0.001	18.180	0.193	13,333.705	141.406	
Grove Rough Terrain Hyd Crane 36 MT 105' Boom, 165 HP (Diesel)	592	1.3	33.157	0.094	111.882	0.317	0.214	0.001	18.204	0.052	22,404.817	63.431	
Hand Held Rammer - 4" to 13", 3180 lb/blow, 4 HP (Gas)	46	0.1	21.161	0.005	50.846	0.011	0.088	0.000	7.767	0.002	9,248.938	2.039	
Hand Held Vibratory Plate Compactor, 25", 6k-9k lb/blow, 11 HP, Gas Powered	46	0.1	2.276	0.001	11.937	0.003	0.030	0.000	0.556	0.000	1,954.951	0.431	
I.C. Self Propelled Scissor Lift, 2500# Cap., 90"x170" deck, 50 HP (Diesel)	1040	2.3	3.390	0.017	39.910	0.198	0.080	0.000	1.490	0.007	8,267.000	41.097	
Inland Tug Boat 250HP 26ft	2757	6.0	20.001	0.264	112.351	1.481	112.351	1.481	8.611	0.114	23,309.646	307.326	
Large Engine Generator, 100KW, Diesel, Enclosed, 160 HP	532	1.2	46.042	0.117	332.945	0.847	0.724	0.002	19.912	0.051	64,342.907	163.699	
Large Engine Generator, 20.0KW, Diesel, 34HP	4435	9.6	10.890	0.231	36.619	0.777	0.101	0.002	3.472	0.074	7,990.295	169.477	
Large Engine Generator, 60KW, Diesel, Enclosed, 88 HP	2454	5.3	37.238	0.437	216.406	2.539	0.414	0.005	19.867	0.233	35,325.511	414.533	
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	7141	15.5	44.891	1.533	252.851	8.635	0.484	0.017	22.580	0.771	50,634.394	1,729.182	
Manitowoc Crawler Mntd Lattice Boom Crane, 90.70 MT, 40' Boom, 230HP (Diesel)	4055	8.8	40.757	0.790	163.592	3.172	0.313	0.006	20.938	0.406	32,759.889	635.248	
Off-Highway Water Tanker, 5000 Gal, 175 HP (Diesel)	46	0.1	30.036	0.007	95.585	0.021	0.301	0.000	15.635	0.003	31,570.801	6.959	
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	1112	2.4	36.879	0.196	390.525	2.077	0.725	0.004	16.062	0.085	75,915.404	403.744	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	24459	53.1	30.036	3.513	95.585	11.180	0.301	0.035	15.635	1.829	31,570.801	3,692.745	
On-Highway Truck Tractor - 4X2, 30K gw, 210 HP (Diesel)	88	0.2	34.958	0.015	249.537	0.105	0.463	0.000	15.912	0.007	48,508.330	20.414	
On-Highway Truck Tractor - 6X4, 45K gw, 380 HP (Diesel)	840	1.8	34.958	0.140	249.537	1.002	0.463	0.002	15.912	0.064	48,508.330	194.863	
Portable Welder, 600 Amp, Trailer Mounted, DC-CC/CV, 42 HP (Diesel)	3280	7.1	32.697	0.513	113.219	1.776	0.152	0.002	8.318	0.130	11,763.806	184.545	
Small Engine Generator, 6.5KW, Diesel, 13HP	824	1.8	5.886	0.023	29.484	0.116	0.072	0.000	2.182	0.009	4,625.962	18.225	
Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)	11	0.02	64.216	0.003	205.356	0.010	0.419	0.000	32.966	0.002	43,901.277	2.238	
Vacuum, 5 cy capacity, PTO operated, truck included.	195	0.4	37.596	0.035	126.672	0.118	0.400	0.000	16.741	0.016	41,838.390	38.956	
Total	83,121			10.999		48.179		1.577		5.304		11,041.180	
Grading Equipment													
Dozer	11												
Grader	0												
Orange Cells	Represent grading equipment used to calculate fugitive dust and are shown on the Off-Road Dust Emissions Worksheet												
Mass Conversion Rates	453.59	Unit	Source										
		g/lb	google.com										

Shasta Lake Water Resources Investigation

TSC - 2													
Left Wing Dam - 6.5 ft raise		Start	Finish										
Planned Construction Period		8/8/2016	6/19/2017										
Planned Duration (days)		217											
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
175 CFM Rotary Screw Port Air Compressor Gas 125 psi 90 HP	367	1.7	28.657	0.107	143.317	0.534	0.250	0.001	15.373	0.057	21,277.144	79.340	
4WD Articulated Wheel Loader - Cat 3.65 cy bucket - 160 HP - EROPS (Diesel)	746	3.4	32.104	0.243	133.153	1.009	0.270	0.002	17.328	0.131	28,323.951	214.540	
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	1563	7.2	30.661	0.487	182.249	2.894	0.370	0.006	12.996	0.206	38,767.435	615.543	
Art Frm Grader-Cat-165hp	64	0.3	51.239	0.033	167.322	0.108	0.308	0.000	28.023	0.018	32,245.462	20.901	
Bandit 1990XP, Trailer Mounted Brush Chipper, 20" Capacity, 250 HP (Diesel)	22	0.1	2.207	0.000	8.368	0.002	24.873	0.006	0.742	0.000	4,200.444	0.939	
Barber-Greene Wheel Mounted Asphalt Paver, BG-240C, Pavemaster 10B, 2 wheel drive, 139 HP (Diesel)	30	0.1	29.785	0.009	202.541	0.061	0.328	0.000	15.909	0.005	34,379.976	10.374	
Cat Self Propelled Pneumatic Compactor - 7 wheel, 85 HP (Diesel)	30	0.1	20.522	0.006	104.325	0.031	0.158	0.000	13.790	0.004	16,510.744	4.982	
Cat Self Propelled Tandem Vibratory Compactor - 84" wide Smooth drum, 138 HP (Diesel)	59	0.3	20.522	0.012	104.325	0.063	0.158	0.000	13.790	0.008	16,510.744	9.964	
Cat Self Propelled Tandem Vibratory Compactor - 56" Wide Smooth, 70 HP (Diesel)	247	1.1	20.522	0.052	104.325	0.262	0.158	0.000	13.790	0.035	16,510.744	41.467	
Cat Single Drum Self Propelled Vibratory Compactor Padfoot - 66" wide drum, padfoot, 96 HP (Diesel)	64	0.3	20.522	0.013	104.325	0.068	0.158	0.000	13.790	0.009	16,510.744	10.702	
Centrifugal Pump, Gas, 200 gpm, 2" size, 8 HP (Gas)	254	1.2	4.801	0.012	21.443	0.055	0.052	0.000	1.735	0.004	3,364.335	8.671	
Centrifugal Pump, Gas, 400 gpm, 3" Size, 7 HP (Gas)	25	0.1	4.801	0.001	21.443	0.005	0.052	0.000	1.735	0.000	3,364.335	0.858	
Concrete Saw - 10.625" max depth, 26" Blade Dia. (not incl), 65 HP (Gas)	24	0.1	31.942	0.008	121.248	0.030	0.177	0.000	8.449	0.002	13,690.344	3.366	
Crawler Mounted Hydraulic Excavator - Cat 1.25 cy bucket - 168 HP (Diesel)	1178	5.4	20.870	0.250	142.100	1.701	0.279	0.003	11.199	0.134	29,187.403	349.425	
Grove 4x2x4 Hyd Yard Crane Diesel 9.1 MT 24' Boom, 80 HP	40	0.2	30.944	0.012	66.584	0.027	0.127	0.000	18.180	0.007	13,333.705	5.364	
Grove Rough Terrain Hyd Crane 36 MT 105' Boom, 165 HP (Diesel)	727	3.4	33.157	0.245	111.882	0.827	0.214	0.002	18.204	0.135	22,404.817	165.560	
Hand Held Rammer - 4" to 13", 3180 lb/blow, 4 HP (Gas)	247	1.1	21.161	0.053	50.846	0.128	0.088	0.000	7.767	0.020	9,248.938	23.229	
Hand Held Vibratory Plate Compactor, 25", 6k-9k lb/blow, 11 HP, Gas Powered	247	1.1	2.276	0.006	11.937	0.030	0.030	0.000	0.556	0.001	1,954.951	4.910	
Hydro-Ax 721E, Rubber Tired Brush Cutter, 8' Cutter size, 210 HP (Diesel)	22	0.1	64.220	0.014	205.360	0.046	0.420	0.000	32.970	0.007	43,901.000	9.812	
I.C. Self Propelled Scissor Lift, 1500# cap., 72"x132" deck, 25 HP, <30' (Diesel)	680	3.1	3.390	0.023	39.910	0.276	0.080	0.001	1.490	0.010	8,267.000	57.113	
Job pickup	2376	10.9	30.036	0.725	95.585	2.307	0.301	0.007	15.635	0.377	31,570.801	762.091	
Large Engine Generator, 100KW, Diesel, Enclosed, 160 HP	254	1.2	46.042	0.119	332.945	0.858	0.724	0.002	19.912	0.051	64,342.907	165.827	
Large Engine Generator, 20.0KW, Diesel, 34HP	792	3.6	10.890	0.088	36.619	0.295	0.101	0.001	3.472	0.028	7,990.295	64.293	
Off-Highway Water Tanker, 5000 Gal, 175 HP (Diesel)	1055	4.9	30.036	0.322	95.585	1.024	0.301	0.003	15.635	0.168	31,570.801	338.371	
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	13879	64.0	36.879	5.200	390.525	55.065	0.725	0.102	16.062	2.265	75,915.404	10,704.255	
On-Highway Light Duty Truck/Pickup - 4X4, 1/2T, Conventional, 191 HP (Gas)	59	0.3	30.036	0.018	95.585	0.058	0.301	0.000	15.635	0.009	31,570.801	19.052	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	802	3.7	30.036	0.245	95.585	0.779	0.301	0.002	15.635	0.127	31,570.801	257.370	
On-Highway Water Truck, 3000 Gal, 210 HP (Gas)	25	0.1	37.596	0.010	126.672	0.032	0.400	0.000	16.741	0.004	41,838.390	10.660	
Rear Discharge Concrete Transit Mixer - 8cy - 60kgw, 235 HP (Diesel)	428	2.0	37.596	0.163	126.672	0.551	0.400	0.002	16.741	0.073	41,838.390	181.890	
Skid Steer Loader, Bobcat, 2400 lb Capacity, 73 HP (Diesel)	11	0.1	26.181	0.003	75.635	0.008	0.154	0.000	17.613	0.002	16,088.868	1.798	
Small Engine Generator, 1.5KW, Gas, 3.5 HP	231	1.1	5.886	0.014	29.484	0.069	0.072	0.000	2.182	0.005	4,625.962	10.845	
Small Engine Generator, 6.5KW, Diesel, 13HP	118	0.5	5.886	0.007	29.484	0.035	0.072	0.000	2.182	0.003	4,625.962	5.532	
Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)	1151	5.3	64.216	0.751	205.356	2.401	0.419	0.005	32.966	0.385	43,901.277	513.186	
Truck Chassis, 25k lbs, 4x2, 295 HP (Gas)	171	0.8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Total				9.252		71.640		0.147		4.294		14,672.231	
Grading Equipment													
Dozer	1151												
Grader	64												

Shasta Lake Water Resources Investigation

TSC - 4													
Outlet Works - 6.5 ft raise	Start	Finish											
	4/23/2019	4/30/2020											
Planned Construction Period	Planned Duration (days)	Hours	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)
	260	(w/ 10%)											
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	11872		46	30.036	3.024	95.585	9.622	0.301	0.030	15.635	1.574	31,570.801	3,178.120
Centrifugal Pump, Gas, 200 gpm, 2" size, 8 HP (Gas)	11		0.0	4.801	0.000	21.443	0.002	0.052	0.000	1.735	0.000	3,364.335	0.311
Portable Welder, 300 Amp, Trailer Mounted, AC/DC-CC/CV, 20 HP (Diesel)	308		1.2	7.711	0.020	23.440	0.061	0.065	0.000	2.322	0.006	5,114.701	13.358
Large Engine Generator, 20.0KW, Diesel, 34HP	2529		9.7	10.890	0.234	36.619	0.785	0.101	0.002	3.472	0.074	7,990.295	171.339
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	1905		7.3	28.657	0.463	143.317	2.315	0.250	0.004	15.373	0.248	21,277.144	343.728
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	298		1.1	30.661	0.078	182.249	0.461	0.370	0.001	12.996	0.033	38,767.435	98.092
Rear Discharge Concrete Transit Mixer - 8cy - 60kgw, 235 HP (Diesel)	13		0.1	37.596	0.004	126.672	0.014	0.400	0.000	16.741	0.002	41,838.390	4.720
Large Engine Generator, 100KW, Diesel, Enclosed, 160 HP	11		0.0	46.042	0.004	332.945	0.031	0.724	0.000	19.912	0.002	64,342.907	5.949
Morgan Trailer Moundted Concrete Pump, 93 yph, 177 HP (Diesel)	88		0.3	47.797	0.036	333.673	0.249	0.715	0.001	20.623	0.015	63,501.811	47.384
On-Highway Truck Tractor - 6X4, 45K gw, 380 HP (Diesel)	1189		4.6	34.958	0.352	249.537	2.515	0.463	0.005	15.912	0.160	48,508.330	488.898
Manitowoc Crawler Mntd Lattice Boom Crane, 127MT, 60' Boom, 287HP (Diesel)	238		0.9	40.757	0.082	163.592	0.330	0.313	0.001	20.938	0.042	32,759.889	66.001
600 CFM Port. RS Air Compressor Diesel Powered 150 psi 275 HP	575		2.2	38.577	0.188	124.265	0.606	0.669	0.003	11.819	0.058	59,466.905	289.938
Grove Rough Terrain Hyd Crane 68 MT 138' Boom, 250 HP (Diesel)	751		2.9	40.757	0.259	163.592	1.041	0.313	0.002	20.938	0.133	32,759.889	208.562
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	136		0.5	36.879	0.043	390.525	0.451	0.725	0.001	16.062	0.019	75,915.404	87.713
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	238		0.9	44.891	0.090	252.851	0.509	0.484	0.001	22.580	0.045	50,634.394	102.012
Total					4.877		18.994		0.051		2.412		5,106.125
Grading Equipment													
Dozer	0												
Grader	0												

TSC - 5														
Pit River Bridge Pier 3 and 4 Prot - 6.5 ft raise		Start	Finish											
Planned Construction Period		5/2/2016	2/1/2017											
Planned Duration (days)		189												
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)		
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	545	3	28.657	0.182	143.317	0.911	0.250	0.002	15.373	0.098	21,277.144	135.320		
600 CFM Port. RS Air Compressor Diesel Powered 150 psi 275 HP	752	4.0	38.577	0.339	124.265	1.091	0.669	0.006	11.819	0.104	59,466.905	521.901		
Grove 8x4x4 Truck Mounted Hyd Crane, Singel Engine, 50MT, 110' Boom, 450 HP (Diesel)	62	0.3	44.891	0.033	252.851	0.184	0.484	0.000	22.580	0.016	50,634.394	36.831		
Grove Rough Terrain Hyd Crane 36 MT 105' Boom, 165 HP (Diesel)	155	0.8	33.157	0.060	111.882	0.202	0.214	0.000	18.204	0.033	22,404.817	40.434		
Grove Rough Terrain Hyd Crane 68 MT 138' Boom, 250 HP (Diesel)	122	0.6	40.757	0.058	163.592	0.232	0.313	0.000	20.938	0.030	32,759.889	46.461		
Ingersol Rand Hyd Track Drill, 4" hole max, Long Guide, 215 HP (Diesel)	1067	5.6	31.416	0.391	360.357	4.485	0.857	0.011	13.590	0.169	89,697.851	1,116.472		
Large Engine Generator, 15.0KW, Diesel, 26.5HP	15	0.1	5.886	0.001	29.484	0.005	0.072	0.000	2.182	0.000	4,625.962	0.787		
Large Engine Generator, 20.0KW, Diesel, 34HP	1819	9.6	10.890	0.231	36.619	0.777	0.101	0.002	3.472	0.074	7,990.295	169.527		
Large Engine Generator, 60KW, Diesel, Enclosed, 88 HP	752	4.0	37.238	0.327	216.406	1.899	0.414	0.004	19.867	0.174	35,325.511	310.028		
Manitowoc Crawler Mntd Lattice Boom Crane, 127MT, 60' Boom, 287HP (Diesel)	1802	9.5	40.757	0.857	163.592	3.438	0.313	0.007	20.938	0.440	32,759.889	688.474		
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	3230	17.1	44.891	1.691	252.851	9.527	0.484	0.018	22.580	0.851	50,634.394	1,907.780		
Morgan Trailer Mounded Concrete Pump, 122 yph, 177 HP (Diesel)	122	0.6	47.797	0.068	333.673	0.473	0.715	0.001	20.623	0.029	63,501.811	90.060		
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	7468	39.5	30.036	2.616	95.585	8.327	0.301	0.026	15.635	1.362	31,570.801	2,750.186		
Small Engine Generator, 3.0KW, Diesel, 5.5HP	66	0.3	5.886	0.005	29.484	0.023	0.072	0.000	2.182	0.002	4,625.962	3.558		
Small Engine Generator, 6.5KW, Diesel, 13HP	122	0.6	5.886	0.008	29.484	0.042	0.072	0.000	2.182	0.003	4,625.962	6.561		
Total				6.866		31.616		0.077		3.385		7,824.380		
Grading Equipment														
Dozer	0													
Grader	0													

TSC - 7													
Railroad Realignment - 6.5 ft raise		Start	Finish										
Planned Construction Period		8/3/2016	8/8/2017										
Planned Duration (days)		256											
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	712	3	28.657	0.176	143.317	0.879	0.250	0.002	15.373	0.094	21,277.144	130.509	
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	505	2.0	30.661	0.133	182.249	0.793	0.370	0.002	12.996	0.057	38,767.435	168.702	
Bomag Manually Vibratory Compactor - 30" Smooth Drum, 30" wide (Diesel)	138	0.5	20.522	0.024	104.325	0.124	0.158	0.000	13.790	0.016	16,510.744	19.551	
Cat 730 Articulated Rear Dump Truck - 28.1 MT, 17.1-22.1 CY, 6x6, 317 HP (Diesel)	724	2.8	34.958	0.218	249.537	1.556	0.463	0.003	15.912	0.099	48,508.330	302.528	
Cat Single Drum Self Propelled Vibratory Compactor Padfoot - 66" wide drum, padfoot, 96 HP (Diesel)	138	0.5	20.522	0.024	104.325	0.124	0.158	0.000	13.790	0.016	16,510.744	19.551	
Cat Tractor-Loader-Backhoe, 4WD, 1 CY Bucket, Fixed Stick, 72 HP (Diesel)	1376	5.4	17.151	0.203	75.359	0.893	0.154	0.002	12.059	0.143	16,091.489	190.725	
Crawler Mounted Hydraulic Excavator - Cat 2.25 cy bucket - 222 HP (Diesel)	356	1.4	22.896	0.070	212.598	0.652	0.417	0.001	9.661	0.030	43,667.789	133.924	
Crawler Mounted Hydraulic Excavator - Cat 2.5 cy bucket - 321 HP (Diesel)	227	0.9	22.896	0.045	212.598	0.415	0.417	0.001	9.661	0.019	43,667.789	85.318	
Hand Held Rammer - 4" to 13", 3180 lb/blow, 4 HP (Gas)	322	1.3	21.161	0.059	50.846	0.141	0.088	0.000	7.767	0.022	9,248.938	25.620	
Hand Held Vibratory Plate Compactor, 25", 6k-9k lb/blow, 11 HP, Gas Powered	459	1.8	2.276	0.009	11.937	0.047	0.030	0.000	0.556	0.002	1,954.951	7.730	
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	2718	10.6	36.879	0.863	390.525	9.140	0.725	0.017	16.062	0.376	75,915.404	1,776.671	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	712	2.8	30.036	0.184	95.585	0.586	0.301	0.002	15.635	0.096	31,570.801	193.648	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, Crew, 285 HP (Gas)	1650	6.4	37.596	0.534	126.672	1.800	0.400	0.006	16.741	0.238	41,838.390	594.502	
On-Highway Truck Tractor - 6X4, 45K gvw, 380 HP (Diesel)	667	2.6	34.958	0.201	249.537	1.433	0.463	0.003	15.912	0.091	48,508.330	278.561	
On-Highway Water Truck, 4000 Gal, 250 HP (Diesel)	459	1.8	37.596	0.149	126.672	0.501	0.400	0.002	16.741	0.066	41,838.390	165.436	
Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)	54	0.2	64.216	0.030	205.356	0.096	0.419	0.000	32.966	0.015	43,901.277	20.517	
Standard Crawler Loader - Cat 963C, 3.20 cy bucket - 158 HP - EROPS (Diesel)	55	0.2	26.181	0.012	75.635	0.036	0.154	0.000	17.613	0.008	16,088.868	7.620	
Total				2.935		19.216		0.040		1.389		4,121.113	
Grading Equipment													
Dozer	54												
Grader	0												

Shasta Lake Water Resources Investigation

TSC - 8													
Right Wing Dam - 6.5 ft raise	Planned Construction Period												
	8/9/2016 - 5/25/2018												
	Planned Duration (days)												
	451												
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
175 CFM Rotary Screw Port Air Compressor Gas 125 psi 90 HP	22	0.05	28.657	0.003	143.317	0.015	0.250	0.000	15.373	0.002	21,277.144	2.268	
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	678	1.50	28.657	0.095	143.317	0.475	0.250	0.001	15.373	0.051	21,277.144	70.476	
4WD Articulated Wheel Loader - Cat 3.65 cy bucket - 160 HP - EROPS (Diesel)	169	0.38	32.104	0.027	133.153	0.110	0.270	0.000	17.328	0.014	28,323.951	23.421	
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	260	0.58	30.661	0.039	182.249	0.232	0.370	0.000	12.996	0.017	38,767.435	49.351	
600 CFM Port. RS Air Compressor Diesel Powered 150 psi 250 HP	211	0.47	52.301	0.054	226.848	0.233	0.715	0.001	21.720	0.022	74,925.493	77.112	
Barber-Greene Wheel Mounted Asphalt Paver, BG-240C, Pavemaster 10B, 2 wheel drive, 139 HP (Diesel)	11	0.02	29.785	0.002	202.541	0.010	0.328	0.000	15.909	0.001	34,379.976	1.779	
Cat Self Propelled Pneumatic Compactor - 7 wheel, 85 HP (Diesel)	11	0.02	20.522	0.001	104.325	0.005	0.158	0.000	13.790	0.001	16,510.744	0.855	
Cat Self Propelled Tandem Vibratory Compactor - 84" wide Smooth drum, 138 HP (Diesel)	21	0.05	20.522	0.002	104.325	0.011	0.158	0.000	13.790	0.001	16,510.744	1.709	
Cat Single Drum Self Propelled Vibratory Compactor Padfoot - 66" wide drum, padfoot, 96 HP (Diesel)	115	0.25	20.522	0.012	104.325	0.058	0.158	0.000	13.790	0.008	16,510.744	9.258	
Cat Tractor-Loader-Backhoe, 4WD, 1.5 CY Bucket, Fixed Stick, 101 HP (Diesel)	2	0.00	17.151	0.000	75.359	0.001	0.154	0.000	12.059	0.000	16,091.489	0.168	
Centrifugal Pump, Gas, 200 gpm, 2" size, 8 HP (Gas)	260	0.58	4.801	0.006	21.443	0.027	0.052	0.000	1.735	0.002	3,364.335	4.274	
Concrete Saw - 10.625" max depth, 26" Blade Dia. (not incl), 65 HP (Gas)	12	0.03	31.942	0.002	121.248	0.007	0.177	0.000	8.449	0.001	13,690.344	0.833	
Core drill, 3-inch chuck, 24" feed stroke, 40 hp, diesel	7	0.02	17.955	0.001	47.458	0.002	0.113	0.000	7.551	0.000	11,812.980	0.419	
Crawler Mounted Hydraulic Excavator - Cat 1.25 cy bucket - 168 HP (Diesel)	24	0.05	20.870	0.002	142.100	0.017	0.279	0.000	11.199	0.001	29,187.403	3.453	
Crawler Mounted Hydraulic Excavator - Cat 2.25 cy bucket - 222 HP (Diesel)	58	0.13	22.896	0.007	212.598	0.060	0.417	0.000	9.661	0.003	43,667.789	12.398	
Grove 4x2x4 Hyd Yard Crane Diesel 9.1 MT 24' Boom, 80 HP	447	0.99	30.944	0.068	66.584	0.146	0.127	0.000	18.180	0.040	13,333.705	29.149	
Grove Rough Terrain Hyd Crane 36 MT 105' Boom, 165 HP (Diesel)	123	0.27	33.157	0.020	111.882	0.067	0.214	0.000	18.204	0.011	22,404.817	13.488	
Large Engine Generator, 100KW, Diesel, Enclosed, 160 HP	271	0.60	46.042	0.061	332.945	0.441	0.724	0.001	19.912	0.026	64,342.907	85.162	
Large Engine Generator, 15.0KW, Diesel, 26.5HP	103	0.23	5.886	0.003	29.484	0.015	0.072	0.000	2.182	0.001	4,625.962	2.338	
Large Engine Generator, 20.0KW, Diesel, 26.5HP	898	1.99	10.890	0.048	36.619	0.161	0.101	0.000	3.472	0.015	7,990.295	35.077	
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	546	1.21	44.891	0.120	252.851	0.674	0.484	0.001	22.580	0.060	50,634.394	135.066	
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel) Standby	32	0.07	44.891	0.007	252.851	0.040	0.484	0.000	22.580	0.004	50,634.394	7.997	
Off-Highway Water Tanker, 5000 Gal, 175 HP (Diesel)	107	0.24	30.036	0.016	95.585	0.050	0.301	0.000	15.635	0.008	31,570.801	16.582	
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	2413	5.35	36.879	0.435	390.525	4.606	0.725	0.009	16.062	0.189	75,915.404	895.359	
On-Highway Flatbed Truck, 4x2, 15k GVW, 210 HP (Gas)	116	0.26	37.596	0.021	126.672	0.072	0.400	0.000	16.741	0.010	41,838.390	23.819	
On-Highway Light Duty Truck/Pickup - 4X4, 1/2T, Conventional, 191 HP (Gas)	21	0.05	30.036	0.003	95.585	0.010	0.301	0.000	15.635	0.002	31,570.801	3.268	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	4877	10.81	30.036	0.716	95.585	2.279	0.301	0.007	15.635	0.373	31,570.801	752.691	
On-Highway Truck Tractor - 6X4, 45K gw, 380 HP (Diesel)	41	0.09	34.958	0.007	249.537	0.050	0.463	0.000	15.912	0.003	48,508.330	9.672	
On-Highway Truck Tractor - 6X6, 70K gw, 450 HP (Diesel)	80	0.18	36.879	0.014	390.525	0.152	0.725	0.000	16.062	0.006	75,915.404	29.528	
On-Highway Water Truck, 3000 Gal, 210 HP (Gas)	7	0.02	37.596	0.001	126.672	0.004	0.400	0.000	16.741	0.001	41,838.390	1.485	
Rear Discharge Concrete Transit Mixer - 8cy - 60kgw, 235 HP (Diesel)	968	2.15	37.596	0.178	126.672	0.599	0.400	0.002	16.741	0.079	41,838.390	197.900	
Screen Plant, Single Deck, 24"X60' Conveyor, 5'x10' Screen Size, 51 HP (Diesel)	58	0.13	26.105	0.007	42.740	0.012	0.078	0.000	8.385	0.002	8,198.480	2.328	
Skid Steer Loader, Bobcat, 2400 lb Capacity, 73 HP (Diesel)	11	0.02	26.181	0.001	75.635	0.004	0.154	0.000	17.613	0.001	16,088.868	0.856	
Small Engine Generator, 6.5KW, Diesel, 13HP	230	0.51	5.886	0.007	29.484	0.033	0.072	0.000	2.182	0.002	4,625.962	5.206	
Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)	120	0.27	64.216	0.038	205.356	0.121	0.419	0.000	32.966	0.019	43,901.277	25.824	
Truck Chassis, 25k lbs, 4x2, 295 HP (Gas)	11	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Truck Chassis, 50k lbs, 6x4, 255 HP (Diesel)	7	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Total				2.023		10.801		0.025		0.977		2,530.570	
Grading Equipment													
Dozer	120												
Grader	0												

TSC - 9													
Sacramento River UPRR 2nd Crossing - 6.5 ft raise													
Planned Construction Period	Start	Finish											
	1/4/2016	12/22/2017											
Planned Duration (days)	501												
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
1150 CFM Port. RS Air Compressor Diesel 150 psi 525 HP	1294	2.58	63.849	0.364	214.313	1.221	1.031	0.006	19.444	0.111	105,021.813	598.203	
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	20400	40.72	28.657	2.572	143.317	12.865	0.250	0.022	15.373	1.380	21,277.144	1,909.986	
4WD Articulated Wheel Loader - Cat 3.65 cy bucket - 160 HP - EROPS (Diesel)	825	1.65	32.104	0.117	133.153	0.483	0.270	0.001	17.328	0.063	28,323.951	102.788	
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	740	1.48	30.661	0.100	182.249	0.593	0.370	0.001	12.996	0.042	38,767.435	126.175	
600 CFM Port. RS Air Compressor Diesel Powered 150 psi 275 HP	3652	7.29	38.577	0.620	124.265	1.997	0.669	0.011	11.819	0.190	59,466.905	955.650	
AmPiledr-VibrtryHmnr625HP	673	1.34	60.870	0.180	417.401	1.237	0.736	0.002	29.879	0.089	77,032.518	228.200	
Cat Self Propelled Tandem Vibratory Compactor - 56" Wide Smooth, 70 HP (Diesel)	40	0.08	20.522	0.004	104.325	0.018	0.158	0.000	13.790	0.002	16,510.744	2.892	
Cat Tractor-Loader-Backhoe, 4WD, 1 CY Bucket, Fixed Stick, 72 HP (Diesel)	1194	2.38	17.151	0.090	75.359	0.396	0.154	0.001	12.059	0.063	16,091.489	84.537	
Centrifugal Pump, Gas, 100 gpm, 1.5" Size, 3 HP (Gas)	11196	22.35	4.801	0.237	21.443	1.056	0.052	0.003	1.735	0.085	3,364.335	165.758	
Centrifugal Pump, Gas, 300 gpm, 3" Size, 7 HP (Gas)	5066	10.11	4.801	0.107	21.443	0.478	0.052	0.001	1.735	0.039	3,364.335	74.999	
Concrete pump & boom Schwing 2525H-5/S-47 on 255 hp chassis, 181 cy/hr & 155 ft boom	887	1.77	46.019	0.180	176.972	0.691	1.027	0.004	15.541	0.061	91,257.575	356.087	
Core drill, 3-inch chuck, 24" feed stroke, 40 hp, diesel	243	0.49	17.955	0.019	47.458	0.051	0.113	0.000	7.551	0.008	11,812.980	12.635	
Crawler Mounted Hydraulic Excavator - Cat 2.25 cy bucket - 222 HP (Diesel)	498	0.99	22.896	0.050	212.598	0.465	0.417	0.001	9.661	0.021	43,667.789	95.606	
Crawler Mounted Hydraulic Excavator - Cat 2.5 cy bucket - 321 HP (Diesel)	2217	4.42	22.896	0.223	212.598	2.074	0.417	0.004	9.661	0.094	43,667.789	425.928	
Grove 4x2x4 Hyd Yard Crane Diesel 9.1 MT 24' Boom, 80 HP	3326	6.64	30.944	0.453	66.584	0.975	0.127	0.002	18.180	0.266	13,333.705	195.174	
Grove Rough Terrain Hyd Crane 36 MT 105' Boom, 165 HP (Diesel)	2226	4.44	33.157	0.325	111.882	1.096	0.214	0.002	18.204	0.178	22,404.817	219.506	
Hand Held Rammer - 4" to 13", 3180 lb/blow, 4 HP (Gas)	40	0.08	21.161	0.004	50.846	0.009	0.088	0.000	7.767	0.001	9,248.938	1.620	
Hand Held Vibratory Plate Compactor, 25", 6k-9k lb/blow, 11 HP, Gas Powered	40	0.08	2.276	0.000	11.937	0.002	0.030	0.000	0.556	0.000	1,954.951	0.342	
I.C. Self Propelled Scissor Lift, 2500# Cap., 90"x170" deck, 50 HP (Diesel)	3238	6.46	3.390	0.048	39.910	0.569	0.080	0.001	1.490	0.021	8,267.000	117.808	
Inland Tug Boat 250HP 26ft	5360	10.70	20.001	0.472	112.351	2.650	112.351	2.650	8.611	0.203	23,309.646	549.841	
Large Engine Generator, 100KW, Diesel, Enclosed, 160 HP	1650	3.29	46.042	0.334	332.945	2.417	0.724	0.005	19.912	0.145	64,342.907	467.177	
Large Engine Generator, 20.0KW, Diesel, 34HP	6653	13.28	10.890	0.319	36.619	1.072	0.101	0.003	3.472	0.102	7,990.295	233.918	
Large Engine Generator, 60KW, Diesel, Enclosed, 88 HP	5180	10.34	37.238	0.849	216.406	4.933	0.414	0.009	19.867	0.453	35,325.511	805.254	
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	13682	27.31	44.891	2.703	252.851	15.223	0.484	0.029	22.580	1.359	50,634.394	3,048.469	
Manitowoc Crawler Mntd Lattice Boom Crane, 90.70 MT, 40' Boom, 230HP (Diesel)	9862	19.69	40.757	1.769	163.592	7.100	0.313	0.014	20.938	0.909	32,759.889	1,421.751	
Off-Highway Water Tanker, 5000 Gal, 175 HP (Diesel)	40	0.08	30.036	0.005	95.585	0.017	0.301	0.000	15.635	0.003	31,570.801	5.531	
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	3497	6.98	36.879	0.567	390.525	6.009	0.725	0.011	16.062	0.247	75,915.404	1,168.128	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	38889	77.62	30.036	5.140	95.585	16.358	0.301	0.052	15.635	2.676	31,570.801	5,402.719	
On-Highway Truck Tractor - 4X2, 30K gw, 210 HP (Diesel)	88	0.18	34.958	0.014	249.537	0.097	0.463	0.000	15.912	0.006	48,508.330	18.784	
On-Highway Truck Tractor - 6X4, 45K gw, 380 HP (Diesel)	1386	2.77	34.958	0.213	249.537	1.522	0.463	0.003	15.912	0.097	48,508.330	295.853	
Portable Welder, 600 Amp, Trailer Mounted, DC-CC/CV, 42 HP (Diesel)	6290	12.55	32.697	0.905	113.219	3.134	0.152	0.004	8.318	0.230	11,763.806	325.590	
Small Engine Generator, 6.5KW, Diesel, 13HP	1479	2.95	5.886	0.038	29.484	0.192	0.072	0.000	2.182	0.014	4,625.962	30.098	
Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)	36	0.07	64.216	0.010	205.356	0.032	0.419	0.000	32.966	0.005	43,901.277	6.866	
Vacuum, 5 cy capacity, PTO operated, truck included.	237	0.47	37.596	0.039	126.672	0.132	0.400	0.000	16.741	0.017	41,838.390	43.550	
Total				19.070		87.162		2.844		9.182		19,497.425	
Grading Equipment													
Dozer	36												
Grader	0												

Shasta Lake Water Resources Investigation

TSC - 10													
Spillway - 6.5 ft raise	Planned Construction Period	Start	Finish										
	Planned Duration (days)	1/3/2017	5/9/2019										
		591											
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
175 CFM Rotary Screw Port Air Compressor Gas 125 psi 90 HP	5286	8.94	28.657	0.565	143.317	2.826	0.250	0.005	15.373	0.303	21,277.144	419.585	
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	8716	14.75	28.657	0.932	143.317	4.660	0.250	0.008	15.373	0.500	21,277.144	691.768	
40' X 10' X 5' barge - 360 day rental include freight in/out	5500	9.31	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
40' X 10' X 7' barge - 360 day rental include freight in/out	13200	22.34	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	1758	2.97	30.661	0.201	182.249	1.195	0.370	0.002	12.996	0.085	38,767.435	254.223	
Centrifugal Pump, Gas, 200 gpm, 2" size, 8 HP (Gas)	1518	2.57	4.801	0.027	21.443	0.121	0.052	0.000	1.735	0.010	3,364.335	19.055	
Concrete Saw - 10.625" max depth, 26" Blade Dia. (not incl), 65 HP (Gas)	498	0.84	31.942	0.059	121.248	0.225	0.177	0.000	8.449	0.016	13,690.344	25.428	
Concrete Street & Highway Slipform Paver, Gomaco, 12'-32' Paving Width, 4 track, 335 HP (Diesel)	325	0.55	19.794	0.024	273.909	0.332	0.444	0.001	9.219	0.011	46,494.289	56.313	
Core drill, 3-inch chuck, 24" feed stroke, 40 hp, diesel	9671	16.36	17.955	0.648	47.458	1.712	0.113	0.004	7.551	0.272	11,812.980	426.158	
Flexible Shaft Concrete Vibrator, 2.5" Dia., 10' Shaft Length, 3 HP (Electric)	4808	8.14	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Grove 4x2x4 Hyd Yard Crane Diesel 9.1 MT 24' Boom, 80 HP	1789	3.03	30.944	0.206	66.584	0.444	0.127	0.001	18.180	0.121	13,333.705	88.976	
Grove A125J Manlift, Articulating boom, 125' Max Ht, 500# Cap, 100 HP (Diesel)	132	0.22	3.952	0.002	57.607	0.028	0.114	0.000	2.553	0.001	11,931.823	5.875	
Grove All Terrain Hyd Crane, Dual Engine, 227 MT, 236' Boom, 165 HP (Diesel)	528	0.89	33.157	0.065	111.882	0.220	0.214	0.000	18.204	0.036	22,404.817	44.129	
Grove Rough Terrain Hyd Crane 36 MT 105' Boom, 165 HP (Diesel)	1423	2.41	33.157	0.176	111.882	0.594	0.214	0.001	18.204	0.097	22,404.817	118.946	
Heavy Duty Bottom Dump Concrete Bucket - Air 8 CY	8173	13.83	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
I.C. Self Propelled Scissor Lift, 2500# Cap., 90"x170" deck, 50 HP (Diesel)	1833	3.10	3.390	0.023	39.910	0.273	0.080	0.001	1.490	0.010	8,267.000	56.515	
Ingersol Rand Hyd Track Drill, 5" hole max, Extendable, 260 HP (Diesel)	1892	3.20	31.416	0.222	360.357	2.543	0.857	0.006	13.590	0.096	89,697.851	633.068	
Inland Tug Boat 250HP 26ft	1100	1.86	20.001	0.082	112.351	0.461	112.351	0.461	8.611	0.035	23,309.646	95.648	
Job pickup	35138	59.46	30.036	3.937	95.585	12.529	0.301	0.040	15.635	2.049	31,570.801	4,138.231	
Large Engine Generator, 100KW, Diesel, Enclosed, 160 HP	1518	2.57	46.042	0.261	332.945	1.886	0.724	0.004	19.912	0.113	64,342.907	364.433	
Large Engine Generator, 15.0KW, Diesel, 26.5HP	216	0.37	5.886	0.005	29.484	0.024	0.072	0.000	2.182	0.002	4,625.962	3.733	
Large Engine Generator, 60KW, Diesel, Enclosed, 88 HP	16658	28.19	37.238	2.314	216.406	13.448	0.414	0.026	19.867	1.235	35,325.511	2,195.141	
Manitowoc Crawler Mntd Lattice Boom Crane, 127MT, 60' Boom, 287HP (Diesel)	7408	12.53	40.757	1.126	163.592	4.521	0.313	0.009	20.938	0.579	32,759.889	905.276	
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	8004	13.54	44.891	1.340	252.851	7.550	0.484	0.014	22.580	0.674	50,634.394	1,511.826	
Manitowoc Crawler Mntd Lattice Boom Crane, 90.70 MT, 40' Boom, 230HP Operating cost	550	0.93	40.757	0.084	163.592	0.336	0.313	0.001	20.938	0.043	32,759.889	67.213	
OfficeTrailer-10'X32'	12778	21.62	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
On-Highway Flatbed Truck, 4x2, 15k GVW, 210 HP (Gas)	5544	9.38	37.596	0.777	126.672	2.620	0.400	0.008	16.741	0.346	41,838.390	865.210	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	19334	32.71	30.036	2.166	95.585	6.894	0.301	0.022	15.635	1.128	31,570.801	2,277.008	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, Crew, 285 HP (Gas)	2046	3.46	37.596	0.287	126.672	0.967	0.400	0.003	16.741	0.128	41,838.390	319.321	
On-Highway Truck Tractor - 6X4, 45K gw, 380 HP (Diesel)	2261	3.83	34.958	0.295	249.537	2.105	0.463	0.004	15.912	0.134	48,508.330	409.195	
On-Highway Truck Tractor - 6X6, 70K gw, 450 HP (Diesel)	308	0.52	36.879	0.042	390.525	0.449	0.725	0.001	16.062	0.018	75,915.404	87.222	
Portable Welder, 600 Amp, Trailer Mounted, DC-CC/CV, 42 HP (Diesel)	22664	38.35	32.697	2.764	113.219	9.572	0.152	0.013	8.318	0.703	11,763.806	994.579	
Total				18.632		78.534		0.635		8.746		17,074.075	
Grading Equipment													
Dozer	0												
Grader	0												

Shasta Lake Water Resources Investigation

TSC - 12													
Visitor Center Replacement - 6.5 ft raise		Start	Finish										
Planned Construction Period		5/15/2020	7/2/2021										
Planned Duration (days)		285											
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
4WD Articulated Wheel Loader - Cat 3.65 cy bucket - 160 HP - EROPS (Diesel)	153	0.54	32.104	0.038	133.153	0.157	0.270	0.000	17.328	0.020	28,323.951	33.440	
Art Frm Grader-Cat-165hp	31	0.11	51.239	0.012	167.322	0.040	0.308	0.000	28.023	0.007	32,245.462	7.643	
Cat 815 F Pad Foot Compactor, Self-Propelled	38	0.13	20.522	0.006	104.325	0.031	0.158	0.000	13.790	0.004	16,510.744	4.883	
Cat PM 565 b Cold planer - 82" cutting width	22	0.08	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Cat Self Propelled Pneumatic Compactor - 9 wheels, 100 HP (Diesel)	24	0.08	20.522	0.004	104.325	0.019	0.158	0.000	13.790	0.003	16,510.744	3.015	
Cat Single Drum Self Propelled Vibratory Compactor - 84" Smooth Drum, 142 HP (Diesel)	102	0.36	20.522	0.016	104.325	0.082	0.158	0.000	13.790	0.011	16,510.744	12.978	
Cat Tractor-Loader-Backhoe, 4WD, 1 CY Bucket, Fixed Stick, 72 HP (Diesel)	64	0.22	17.151	0.008	75.359	0.037	0.154	0.000	12.059	0.006	16,091.489	7.922	
Crawler Mounted Chain Trencher, Vermeer, 24" Trench Width, 96" Deep Trench, 140 HP (Diesel)	28	0.10	44.074	0.009	208.543	0.044	0.358	0.000	23.694	0.005	37,481.773	7.973	
Crawler Mounted Hydraulic Excavator - Cat 1.25 cy bucket - 138 HP (Diesel)	31	0.11	20.870	0.005	142.100	0.034	0.279	0.000	11.199	0.003	29,187.403	6.998	
Finn T280 Seed Sprayer (for Truck Mounting), Not including Truck, 2500 gal Working Capacity, 115 HP (Diesel)	6	0.02	21.219	0.001	87.888	0.004	0.163	0.000	14.730	0.001	17,084.849	0.727	
Fork Lift	83	0.29	12.526	0.008	47.128	0.030	0.083	0.000	8.614	0.005	8,648.626	5.519	
Grove 4x2x4 Hyd Yard Crane Diesel 9.1 MT 24' Boom, 80 HP	63	0.22	30.944	0.015	66.584	0.033	0.127	0.000	18.180	0.009	13,333.705	6.524	
Grove 4x4x4 Hyd Yard Crane Diesel 13.6MT 52' Boom	88	0.31	33.157	0.023	111.882	0.076	0.214	0.000	18.204	0.012	22,404.817	15.252	
Grove 8x4x4 Truck Mounted Hyd Crane, Single Engine, 50MT, 110' Boom, 450 HP (Diesel)	135	0.48	44.891	0.047	252.851	0.265	0.484	0.001	22.580	0.024	50,634.394	53.054	
Grove T80 Manlift, Telescopic Boom, 80' Max Ht, 600# Cap, 4wd, 85 HP (Diesel)	57	0.20	3.952	0.002	57.607	0.026	0.114	0.000	2.553	0.001	11,931.823	5.299	
Hand Held Vibratory Plate Compactor, 25", 6k-9k lb/blow, 11 HP, Gas Powered	33	0.11	2.276	0.001	11.937	0.003	0.030	0.000	0.556	0.000	1,954.951	0.492	
I.C. Self Propelled Scissor Lift, 1500# cap., 72"x132" deck, 25 HP, <30' (Diesel)	243	0.85	3.390	0.006	39.910	0.075	0.080	0.000	1.490	0.003	8,267.000	15.560	
Job pickup	5363	18.82	30.036	1.246	95.585	3.965	0.301	0.013	15.635	0.649	31,570.801	1,309.649	
Large Engine Generator, 20.0KW, Diesel, 26.5HP	80	0.28	10.890	0.007	36.619	0.023	0.101	0.000	3.472	0.002	7,990.295	4.929	
Midland Wheel Mounted Asphalt Paver, Mix-Paver 800, Extendable, 2 wheel drive, 250 HP (Diesel)	24	0.08	19.794	0.004	273.909	0.050	0.444	0.000	9.219	0.002	46,494.289	8.491	
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	135	0.47	36.879	0.039	390.525	0.408	0.725	0.001	16.062	0.017	75,915.404	79.278	
On-Highway Flatbed Truck, 4x2, 15k GVW, 210 HP (Gas)	53	0.19	37.596	0.016	126.672	0.052	0.400	0.000	16.741	0.007	41,838.390	17.266	
On-Highway Truck Tractor - 4X2, 30K gw, 217 HP (Diesel)	6	0.02	34.958	0.001	249.537	0.011	0.463	0.000	15.912	0.001	48,508.330	2.064	
On-Highway Truck Tractor - 6X6, 70K gw, 450 HP (Diesel)	167	0.58	36.879	0.047	390.525	0.503	0.725	0.001	16.062	0.021	75,915.404	97.778	
On-Highway Water Truck, 4000 Gal, 250 HP (Diesel)	157	0.55	37.596	0.046	126.672	0.154	0.400	0.000	16.741	0.020	41,838.390	50.867	
Portable Welder, 300 Amp, Trailer Mounted, AC/DC-CC/CV, 20 HP (Diesel)	94	0.33	7.711	0.006	23.440	0.017	0.065	0.000	2.322	0.002	5,114.701	3.699	
Rear Discharge Concrete Transit Mixer - 10cy - 66kgw, 285 HP (Diesel)	6	0.02	37.596	0.002	126.672	0.006	0.400	0.000	16.741	0.001	41,838.390	2.091	
Skid Steer Loader, Bobcat, 3000 lb Capacity, 105 HP (Diesel)	40	0.14	26.181	0.008	75.635	0.023	0.154	0.000	17.613	0.005	16,088.868	4.992	
Small Engine Generator, 10.0KW, Gas, 21HP	135	0.48	5.886	0.006	29.484	0.031	0.072	0.000	2.182	0.002	4,625.962	4.847	
Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)	161	0.57	64.216	0.080	205.356	0.256	0.419	0.001	32.966	0.041	43,901.277	54.686	
Truck Chassis, 50k lbs, 6x4, 255 HP (Diesel)	5	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Total					1.708		6.454		0.018		0.882		1,827.918
Grading Equipment													
Dozer	161												
Grader	31												

Shasta Lake Water Resources Investigation

MWH - 2													
Reservoir Clearing - 6.5 ft raise	Start	Finish											
Planned Construction Period	5/14/2018	7/10/2018											
Construction Duration (days)	40												
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
220 hp Bulldozer (Cat D7)	138	3.45	64.216	0.489	205.356	1.563	0.419	0.003	32.966	0.251	43,901.277	334.165	
3.5 CY Loader (Cat 950)	360	9.01	32.104	0.638	133.153	2.645	0.270	0.005	17.328	0.344	28,323.951	562.555	
4.5 CY Loader (Cat 966)	138	3.45	32.104	0.244	133.153	1.014	0.270	0.002	17.328	0.132	28,323.951	215.595	
1.5 CY Backhoe (Cat 325)	138	3.45	17.151	0.131	75.359	0.574	0.154	0.001	12.059	0.092	16,091.489	122.484	
20 Ton (10 CY) Tandem Truck	138	3.45	37.596	0.286	126.672	0.964	0.400	0.003	16.741	0.127	41,838.390	318.463	
140 hp Wheel Skidder (Cat 515)	488	12.19	17.893	0.481	187.211	5.031	0.279	0.008	10.229	0.275	29,259.636	786.294	
210 hp Harvester (Cat 580)	488	12.19	34.815	0.936	229.129	6.157	0.422	0.011	15.365	0.413	44,156.690	1,186.622	
Cat 330 LC Log Loader	65	1.62	17.893	0.064	187.211	0.669	0.279	0.001	10.229	0.037	29,259.636	104.582	
Chipper - clearing	360	9.01	1.573	0.031	9.008	0.179	11.412	0.227	0.847	0.017	1,434.720	28.496	
DT-320 Tree Mulcher	498	12.46	33.882	0.931	106.607	2.929	0.188	0.005	23.056	0.633	19,674.653	540.526	
Tower 4-Lights 12 hp	65	1.62	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Helicopter 5000lbs	392	9.80	510.000	11.020	610.000	13.181	3,360.000	72.601	91.000	1.966	893,115.194	19,298.008	
Truck Mounted Post Hole Auger	0	0.00	21.038	0.000	217.595	0.000	0.517	0.000	8.893	0.000	54,162.283	0.000	
100 hp Harbour Master	401	10.02	140.005	3.094	786.456	17.380	2,225.269	49.175	60.278	1.332	163,167.522	3,605.774	
1/2 Ton Pickup Truck 2x2	2673	66.83	30.036	4.425	95.585	14.082	0.301	0.044	15.635	2.303	31,570.801	4,651.138	
3/4 Ton Crew Cab Truck	297	7.43	37.596	0.615	126.672	2.074	0.400	0.007	16.741	0.274	41,838.390	684.867	
1- Ton Mechanic Truck	990	24.75	37.596	2.051	126.672	6.912	0.400	0.022	16.741	0.913	41,838.390	2,282.889	
logging Truck (Kenworth C500)	259	6.49	37.596	0.538	126.672	1.811	0.400	0.006	16.741	0.239	41,838.390	598.169	
30" Chain Saw	4618	115.44	1.885	0.480	3.409	0.868	0.030	0.008	0.005	0.001	9.215	2.345	
Total				26.453		78.030		122.129		9.351		35,322.972	
Grading Equipment													
Dozer	138												
Grader	0												

MWH - 3												
Dikes - 6.5 ft raise	Start	Finish										
Planned Construction Period	2/5/2016	8/12/2016										
Construction Duration (days)	133											
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)
220 hp Bulldozer (Cat D7)	590	4.44	64.216	0.628	205.356	2.008	0.419	0.004	32.966	0.322	43,901.277	429.312
3.5 CY Loader (Cat 950)	67	0.50	32.104	0.036	133.153	0.147	0.270	0.000	17.328	0.019	28,323.951	31.349
4.5 CY Loader (Cat 966)	260	1.96	32.104	0.139	133.153	0.575	0.270	0.001	17.328	0.075	28,323.951	122.230
125 hp Grader (Cat 120)	1980	14.89	46.432	1.524	100.328	3.293	0.185	0.006	29.005	0.952	19,334.700	634.667
1.5 CY Backhoe (Cat 325)	43	0.33	17.151	0.012	75.359	0.054	0.154	0.000	12.059	0.009	16,091.489	11.533
2.0 CY Backhoe (Cat 330)	831	6.25	21.606	0.298	128.999	1.777	0.263	0.004	11.773	0.162	27,545.365	379.467
4.1 CY Backhoe (Hitachi EX400)	1525	11.47	21.606	0.546	128.999	3.261	0.263	0.007	11.773	0.298	27,545.365	696.359
20 Ton (10 CY) Tandem Truck	1069	8.03	37.596	0.666	126.672	2.244	0.400	0.007	16.741	0.297	41,838.390	741.099
24 Ton (12 CY) Tandem Truck	6041	45.42	37.596	3.765	126.672	12.685	0.400	0.040	16.741	1.676	41,838.390	4,189.696
15 Ton Compactor 84" (Cat 563)	1746	13.13	20.522	0.594	104.325	3.019	0.158	0.005	13.790	0.399	16,510.744	477.832
140 hp Wheel Skidder (Cat 515)	66	0.50	17.893	0.020	187.211	0.204	0.279	0.000	10.229	0.011	29,259.636	31.959
210 hp Harvester (Cat 580)	66	0.50	34.815	0.038	229.129	0.250	0.422	0.000	15.365	0.017	44,156.690	48.231
Cat 330 LC Log Loader	16	0.12	17.893	0.005	187.211	0.049	0.279	0.000	10.229	0.003	29,259.636	7.693
Chipper - clearing	67	0.50	1.573	0.002	9.008	0.010	11.412	0.013	0.847	0.001	1,434.720	1.588
DT-320 Tree Mulcher	67	0.50	33.882	0.038	106.607	0.118	0.188	0.000	23.056	0.026	19,674.653	21.776
Truck Mounted Post Hole Auger	36	0.27	21.038	0.013	217.595	0.131	0.517	0.000	8.893	0.005	54,162.283	32.704
1/2 Ton Pickup Truck 2x2	10662	80.16	30.036	5.308	95.585	16.892	0.301	0.053	15.635	2.763	31,570.801	5,579.412
3/4 Ton Pickup Truck 2x2	1921	14.45	37.596	1.197	126.672	4.034	0.400	0.013	16.741	0.533	41,838.390	1,332.531
3/4 Ton Crew Cab Truck	4975	37.41	37.596	3.101	126.672	10.447	0.400	0.033	16.741	1.381	41,838.390	3,450.520
1- Ton Mechanic Truck	2369	17.81	37.596	1.476	126.672	4.975	0.400	0.016	16.741	0.657	41,838.390	1,643.105
logging Truck (Kenworth C500)	32	0.24	37.596	0.020	126.672	0.067	0.400	0.000	16.741	0.009	41,838.390	21.999
30" Chain Saw	198	1.49	1.885	0.006	3.409	0.011	0.030	0.000	0.005	0.000	9.215	0.030
Total				19.430		66.253		0.203		9.615		19,885.094
Grading Equipment												
Dozer	590											
Grader	1980											

Shasta Lake Water Resources Investigation

MWH - 7													
Utilities - 6.5 ft raise	Start	Finish											
Planned Construction Period	1/4/2016	9/12/2017											
Construction Duration (days)	427												
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
3.5 CY Loader (Cat 950)	2191	5.13	32.104	0.363	133.153	1.506	0.270	0.003	17.328	0.196	28,323.951	320.394	
3.0 CY Track Loader (Cat 963)	135	0.316	32.104	0.022	133.153	0.093	0.270	0.000	17.328	0.012	28,323.951	19.719	
1.5 CY Backhoe (Cat 225)	704	1.649	17.151	0.062	75.359	0.274	0.154	0.001	12.059	0.044	16,091.489	58.500	
2.3 CY Backhoe (Cat 235)	1636	3.831	21.606	0.182	128.999	1.089	0.263	0.002	11.773	0.099	27,545.365	232.641	
1.0 CY Backhoe Loader (Case 580)	5234	12.257	37.596	1.016	126.672	3.423	0.400	0.011	16.741	0.452	41,838.390	1,130.524	
5 Ton Flatbed Truck	1057	2.476	37.596	0.205	126.672	0.692	0.400	0.002	16.741	0.091	41,838.390	228.417	
12 Ton Flatbed Truck	71	0.166	37.596	0.014	126.672	0.046	0.400	0.000	16.741	0.006	41,838.390	15.330	
16 Ton (8 CY) Tandem Truck	37	0.087	37.596	0.007	126.672	0.024	0.400	0.000	16.741	0.003	41,838.390	8.048	
20 Ton (10 CY) Tandem Truck	244	0.570	37.596	0.047	126.672	0.159	0.400	0.001	16.741	0.021	41,838.390	52.620	
90 Kg Plate Tamper	71	0.166	2.276	0.001	11.937	0.004	0.030	0.000	0.556	0.000	1,954.951	0.716	
5 Ft Wheel Mounted Chain Trencher	206	0.483	44.074	0.047	208.543	0.222	0.358	0.000	23.694	0.025	37,481.773	39.896	
Acetylene Cutting Torch	172	0.403	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000	
Grout Pump	117	0.274	47.797	0.029	333.673	0.202	0.715	0.000	20.623	0.012	63,501.811	38.406	
10 KW Generator Set (Gas)	326	0.765	30.036	0.051	95.585	0.161	0.301	0.001	15.635	0.026	31,570.801	53.212	
Knuckboom Manlift 36 Ft	18	0.043	3.388	0.000	39.912	0.004	0.079	0.000	1.487	0.000	8,266.857	0.776	
Hoe Hammer 4X	64	0.150	88.486	0.029	694.256	0.229	1.224	0.000	42.483	0.014	128,126.723	42.252	
Hoe Hammer 10X	7	0.017	88.486	0.003	694.256	0.025	1.224	0.000	42.483	0.002	128,126.723	4.695	
3/4 Ton Pickup Truck 2x2	27603	64.643	37.596	5.358	126.672	18.053	0.400	0.057	16.741	2.386	41,838.390	5,962.563	
5 Ton Flat Bed Truck	5023	11.764	37.596	0.975	126.672	3.285	0.400	0.010	16.741	0.434	41,838.390	1,085.097	
2-Ton Mechanic Truck	222	0.519	37.596	0.043	126.672	0.145	0.400	0.000	16.741	0.019	41,838.390	47.906	
Electrical Service truck	3547	8.308	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
10 Ton Boomtruck	503	1.178	34.958	0.091	249.537	0.648	0.463	0.001	15.912	0.041	48,508.330	126.000	
15 Ton Pitman Boom Truck	222	0.519	34.958	0.040	249.537	0.286	0.463	0.001	15.912	0.018	48,508.330	55.544	
20 Ton Boomtruck	312	0.731	34.958	0.056	249.537	0.402	0.463	0.001	15.912	0.026	48,508.330	78.205	
Tractor & Trailer	503	1.178	34.960	0.091	249.540	0.648	0.460	0.001	15.910	0.041	48,508.000	125.999	
60 Ton Lowboy	3548	8.310	52.301	0.958	226.848	4.156	0.715	0.013	21.720	0.398	74,925.493	1,372.674	
Total				9.692		35.777		0.106		4.369		11,100.136	
Grading Equipment													
Dozer	0												
Grader	0												

9.CP2 Equipment Exhaust Emissions													
TSC - 1													
UPRR Doney Creek Bridge - 12.5ft raise													
Planned Construction Period		Start	Finish										
		1/15/2016	11/9/2017										
Planned Duration (days)		461											
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (g/hr)	CO (lb/day)	NOX (g/hr)	NOX (lb/day)	PM10 (g/hr)	PM10 (lb/day)	CO2 (g/hr)	CO2 (lb/day)	
1150 CFM Port. RS Air Compressor Diesel 150 psi 525 HP	985	2.1	63.849	0.301	214.313	1.010	0.163	0.001	19.444	0.092	105,021.813	494.931	
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	11106	24.1	28.657	1.522	143.317	7.612	0.065	0.003	15.373	0.817	21,277.144	1,130.097	
4WD Articulated Wheel Loader - Cat 3.65 cy bucket - 160 HP - EROPS (Diesel)	318	0.7	32.104	0.049	133.153	0.202	0.065	0.000	17.328	0.026	28,323.951	43.043	
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	504	1.1	30.661	0.074	182.249	0.439	0.270	0.001	12.996	0.031	38,767.435	93.475	
600 CFM Port. RS Air Compressor Diesel Powered 150 psi 275 HP	1268	2.7	38.577	0.234	124.265	0.753	0.715	0.004	11.819	0.072	59,466.905	360.486	
AmPiledr-VibrtryHmnr625HP	316	0.7	60.870	0.092	417.401	0.630	0.736	0.001	29.879	0.045	77,032.518	116.250	
Cat Self Propelled Tandem Vibratory Compactor - 56" Wide Smooth, 70 HP (Diesel)	46	0.1	20.522	0.005	104.325	0.023	0.158	0.000	13.790	0.003	16,510.744	3.639	
Cat Tractor-Loader-Backhoe, 4WD, 1 CY Bucket, Fixed Stick, 72 HP (Diesel)	85	0.2	17.151	0.007	75.359	0.031	0.154	0.000	12.059	0.005	16,091.489	6.518	
Centrifugal Pump, Gas, 100 gpm, 1.5" Size, 3 HP (Gas)	8859	19.2	4.801	0.203	21.443	0.908	0.052	0.002	1.735	0.073	3,364.335	142.529	
Centrifugal Pump, Gas, 300 gpm, 3" Size, 7 HP (Gas)	2068	4.5	4.801	0.047	21.443	0.212	0.052	0.001	1.735	0.017	3,364.335	33.272	
Concrete pump & boom Schwing 2525H-5/S-47 on 255 hp chassis, 181 cy/hr & 155 ft boom	478	1.0	46.019	0.105	176.972	0.405	1.027	0.002	15.541	0.036	91,257.575	208.779	
Core drill, 3-inch chuck, 24" feed stroke, 40 hp, diesel	94	0.2	17.955	0.008	47.458	0.021	0.113	0.000	7.551	0.003	11,812.980	5.291	
Crawler Mounted Hydraulic Excavator - Cat 2.25 cy bucket - 222 HP (Diesel)	291	0.6	22.896	0.032	212.598	0.296	0.417	0.001	9.661	0.013	43,667.789	60.699	
Crawler Mounted Hydraulic Excavator - Cat 2.5 cy bucket - 321 HP (Diesel)	534	1.2	22.896	0.059	212.598	0.543	0.417	0.001	9.661	0.025	43,667.789	111.614	
Grove 4x2x4 Hyd Yard Crane Diesel 9.1 MT 24' Boom, 80 HP	2218	4.8	30.944	0.328	66.584	0.706	0.127	0.001	18.180	0.193	13,333.705	141.406	
Grove Rough Terrain Hyd Crane 36 MT 105' Boom, 165 HP (Diesel)	592	1.3	33.157	0.094	111.882	0.317	0.214	0.001	18.204	0.052	22,404.817	63.431	
Hand Held Rammer - 4" to13", 3180 lb/blow, 4 HP (Gas)	46	0.1	21.161	0.005	50.846	0.011	0.088	0.000	7.767	0.002	9,248.938	2.039	
Hand Held Vibratory Plate Compactor, 25", 6k-9k lb/blow, 11 HP, Gas Powered	46	0.1	2.276	0.001	11.937	0.003	0.030	0.000	0.556	0.000	1,954.951	0.431	
I.C. Self Propelled Scissor Lift, 2500# Cap., 90"x170" deck, 50 HP (Diesel)	1040	2.3	3.390	0.017	39.910	0.198	0.080	0.000	1.490	0.007	8,267.000	41.097	
Inland Tug Boat 250HP 26ft	2735	5.9	20.001	0.262	112.351	1.469	112.351	1.469	8.611	0.113	23,309.646	304.873	
Large Engine Generator, 100KW, Diesel, Enclosed, 160 HP	532	1.2	46.042	0.117	332.945	0.847	0.724	0.002	19.912	0.051	64,342.907	163.699	
Large Engine Generator, 20.0KW, Diesel, 34HP	4435	9.6	10.890	0.231	36.619	0.777	0.101	0.002	3.472	0.074	7,990.295	169.477	
Large Engine Generator, 60KW, Diesel, Enclosed, 88 HP	2454	5.3	37.238	0.437	216.406	2.539	0.414	0.005	19.867	0.233	35,325.511	414.533	
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	7141	15.5	44.891	1.533	252.851	8.635	0.484	0.017	22.580	0.771	50,634.394	1,729.182	
Manitowoc Crawler Mntd Lattice Boom Crane, 90.70 MT, 40' Boom, 230HP (Diesel)	4055	8.8	40.757	0.790	163.592	3.172	0.313	0.006	20.938	0.406	32,759.889	635.248	
Off-Highway Water Tanker, 5000 Gal, 175 HP (Diesel)	46	0.1	30.036	0.007	95.585	0.021	0.301	0.000	15.635	0.003	31,570.801	6.959	
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	1112	2.4	36.879	0.196	390.525	2.077	0.725	0.004	16.062	0.085	75,915.404	403.744	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	24459	53.1	30.036	3.513	95.585	11.180	0.301	0.035	15.635	1.829	31,570.801	3,692.745	
On-Highway Truck Tractor - 4X2, 30K gvw, 210 HP (Diesel)	88	0.2	34.958	0.015	249.537	0.105	0.463	0.000	15.912	0.007	48,508.330	20.414	
On-Highway Truck Tractor - 6X4, 45K gvw, 380 HP (Diesel)	840	1.8	34.958	0.140	249.537	1.002	0.463	0.002	15.912	0.064	48,508.330	194.863	
Portable Welder, 600 Amp, Trailer Mounted, DC-CC/CV, 42 HP (Diesel)	3280	7.1	32.697	0.513	113.219	1.776	0.152	0.002	8.318	0.130	11,763.806	184.545	
Small Engine Generator, 6.5KW, Diesel, 13HP	824	1.8	5.886	0.023	29.484	0.116	0.072	0.000	2.182	0.009	4,625.962	18.225	
Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)	11	0.02	64.216	0.003	205.356	0.010	0.419	0.000	32.966	0.002	43,901.277	2.238	
Vacuum, 5 cy capacity, PTO operated, truck included.	195	0.4	37.596	0.035	126.672	0.118	0.400	0.000	16.741	0.016	41,838.390	38.956	
Total	83099			10.997		48.167		1.565		5.304		11,038.728	
Grading Equipment													
Dozer	11												
Grader	0												

Shasta Lake Water Resources Investigation

TSC - 2																								
Left Wing Dam - 12.5 ft raise													Start	Finish										
Planned Construction Period													8/8/2016	10/25/2017										
Planned Duration (days)													306											
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)												
175 CFM Rotary Screw Port Air Compressor Gas 125 psi 90 HP	367	5.49	28.657	0.347	143.317	1.735	0.250	0.003	15.373	0.186	21,277.144	257.526												
20" Gas Chain Saw	22	0.15	1.885	0.001	3.409	0.001	0.030	0.000	0.005	0.000	9.215	0.003												
4WD Articulated Wheel Loader - Cat 3.65 cy bucket - 160 HP - EROPS (Diesel)	1276	5.12	32.104	0.362	133.153	1.503	0.270	0.003	17.328	0.196	28,323.951	319.712												
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	1773	7.92	30.661	0.535	182.249	3.182	0.370	0.006	12.996	0.227	38,767.435	676.904												
Art Frm Grader-Cat-165hp	64	7.00	51.239	0.791	167.322	2.582	0.308	0.005	28.023	0.432	32,245.462	497.624												
Bandit 1990XP, Trailer Mounted Brush Chipper, 20" Capacity, 250 HP (Diesel)	22	9.00	2.207	0.044	8.368	0.166	24.873	0.494	0.742	0.015	4,200.444	83.344												
Barber-Greene Wheel Mounted Asphalt Paver, BG-240C, Pavemaster 10B, 2 wheel drive, 139 HP (Diesel)	30	5.70	29.785	0.374	202.541	2.545	0.328	0.004	15.909	0.200	34,379.976	432.031												
Cat Self Propelled Pneumatic Compactor - 7 wheel, 85 HP (Diesel)	30	2.34	20.522	0.106	104.325	0.538	0.158	0.001	13.790	0.071	16,510.744	85.176												
Cat Self Propelled Tandem Vibratory Compactor - 84" wide Smooth drum, 138 HP (Diesel)	59	2.35	20.522	0.106	104.325	0.540	0.158	0.001	13.790	0.071	16,510.744	85.540												
Cat Self Propelled Tandem Vibratory Compactor - 56" Wide Smooth, 70 HP (Diesel)	321	1.65	20.522	0.075	104.325	0.379	0.158	0.001	13.790	0.050	16,510.744	60.060												
Cat Single Drum Self Propelled Vibratory Compactor Padfoot - 66" wide drum, padfoot, 96 HP (Diesel)	64	2.50	20.522	0.113	104.325	0.575	0.158	0.001	13.790	0.076	16,510.744	91.000												
Centrifugal Pump, Gas, 200 gpm, 2" size, 8 HP (Gas)	285	0.52	4.801	0.006	21.443	0.025	0.052	0.000	1.735	0.002	3,364.335	3.857												
Centrifugal Pump, Gas, 400 gpm, 3" Size, 7 HP (Gas)	27	0.46	4.801	0.005	21.443	0.022	0.052	0.000	1.735	0.002	3,364.335	3.412												
Concrete Saw - 10.625" max depth, 26" Blade Dia. (not incl), 65 HP (Gas)	24	5.08	31.942	0.358	121.248	1.358	0.177	0.002	8.449	0.095	13,690.344	153.325												
Crawler Mounted Hydraulic Excavator - Cat 1.25 cy bucket - 168 HP (Diesel)	1382	7.06	20.870	0.325	142.100	2.212	0.279	0.004	11.199	0.174	29,187.403	454.292												
Grove 4x2x4 Hyd Yard Crane Diesel 9.1 MT 24' Boom, 80 HP	57	2.96	30.944	0.202	66.584	0.435	0.127	0.001	18.180	0.119	13,333.705	87.012												
Grove Rough Terrain Hyd Crane 36 MT 105' Boom, 165 HP (Diesel)	841	6.10	33.157	0.446	111.882	1.505	0.214	0.003	18.204	0.245	22,404.817	301.305												
Hand Held Rammer - 4" to 13", 3180 lb/blow, 4 HP (Gas)	321	0.36	21.161	0.017	50.846	0.040	0.088	0.000	7.767	0.006	9,248.938	7.341												
Hand Held Vibratory Plate Compactor, 25", 6k-9k lb/blow, 11 HP, Gas Powered	321	0.99	2.276	0.005	11.937	0.026	0.030	0.000	0.556	0.001	1,954.951	4.267												
Hydro-Ax 721E, Rubber Tired Brush Cutter, 8' Cutter size, 210 HP (Diesel)	22	7.56	64.220	1.070	205.360	3.423	0.420	0.007	32.970	0.550	43,901.000	731.696												
I.C. Self Propelled Scissor Lift, 1500# cap., 72"x132" deck, 25 HP, <30' (Diesel)	876	0.66	3.390	0.005	39.910	0.058	0.080	0.000	1.490	0.002	8,267.000	12.029												
Job pickup	3432	1.92	30.036	0.127	95.585	0.405	0.301	0.001	15.635	0.066	31,570.801	133.635												
Large Engine Generator, 100KW, Diesel, Enclosed, 160 HP	285	8.64	46.042	0.877	332.945	6.342	0.724	0.014	19.912	0.379	64,342.907	1,225.601												
Large Engine Generator, 20.0KW, Diesel, 34HP	1144	1.84	10.890	0.044	36.619	0.149	0.101	0.000	3.472	0.014	7,990.295	32.413												
Off-Highway Water Tanker, 5000 Gal, 175 HP (Diesel)	1659	5.98	30.036	0.396	95.585	1.260	0.301	0.004	15.635	0.206	31,570.801	416.219												
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	21135	11.20	36.879	0.911	390.525	9.643	0.725	0.018	16.062	0.397	75,915.404	1,874.487												
On-Highway Light Duty Truck/Pickup - 4X4, 1/2T, Conventional, 191 HP (Gas)	59	3.63	30.036	0.240	95.585	0.765	0.301	0.002	15.635	0.125	31,570.801	252.654												
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	874	1.92	30.036	0.127	95.585	0.405	0.301	0.001	15.635	0.066	31,570.801	133.635												
On-Highway Water Truck, 3000 Gal, 210 HP (Gas)	25	8.06	37.596	0.668	126.672	2.251	0.400	0.007	16.741	0.297	41,838.390	743.438												
Rear Discharge Concrete Transit Mixer - 8cy - 60kgw, 235 HP (Diesel)	494	8.11	37.596	0.672	126.672	2.265	0.400	0.007	16.741	0.299	41,838.390	748.050												
Skid Steer Loader, Bobcat, 2400 lb Capacity, 73 HP (Diesel)	11	2.70	26.181	0.156	75.635	0.450	0.154	0.001	17.613	0.105	16,088.868	95.769												
Small Engine Generator, 1.5KW, Gas, 3.5 HP	254	0.30	5.886	0.004	29.484	0.020	0.072	0.000	2.182	0.001	4,625.962	3.060												
Small Engine Generator, 6.5KW, Diesel, 13HP	118	0.70	5.886	0.009	29.484	0.046	0.072	0.000	2.182	0.003	4,625.962	7.139												
Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)	1642	9.28	64.216	1.314	205.356	4.201	0.419	0.009	32.966	0.674	0.000	0.000												
Truck Chassis, 25k lbs, 4x2, 295 HP (Gas)	194	11.21	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000												
Total	39510			10.837		51.050		0.600		5.354		10,013.552												
Grading Equipment																								
Dozer	1642																							
Grader	64																							

Shasta Lake Water Resources Investigation

TSC - 4													
Outlet Works - 12.5 ft raise	Start	Finish											
	4/23/2019	4/30/2020											
Planned Construction Period	Planned Duration (days)												
	260												
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	11872	46	30.036	3.024	95.585	9.622	0.301	0.030	15.635	1.574	31,570.801	3,178.120	
Centrifugal Pump, Gas, 200 gpm, 2" size, 8 HP (Gas)	11	0.0	4.801	0.000	21.443	0.002	0.052	0.000	1.735	0.000	3,364.335	0.311	
Portable Welder, 300 Amp, Trailer Mounted, AC/DC-CC/CV, 20 HP (Diesel)	308	1.2	7.711	0.020	23.440	0.061	0.065	0.000	2.322	0.006	5,114.701	13.358	
Large Engine Generator, 20.0KW, Diesel, 34HP	2529	9.7	10.890	0.234	36.619	0.785	0.101	0.002	3.472	0.074	7,990.295	171.339	
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	1905	7.3	28.657	0.463	143.317	2.315	0.250	0.004	15.373	0.248	21,277.144	343.728	
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	298	1.1	30.661	0.078	182.249	0.461	0.370	0.001	12.996	0.033	38,767.435	98.092	
Rear Discharge Concrete Transit Mixer - 8cy - 60kgw, 235 HP (Diesel)	13	0.1	37.596	0.004	126.672	0.014	0.400	0.000	16.741	0.002	41,838.390	4.720	
Large Engine Generator, 100KW, Diesel, Enclosed, 160 HP	11	0.0	46.042	0.004	332.945	0.031	0.724	0.000	19.912	0.002	64,342.907	5.949	
Morgan Trailer Mounded Concrete Pump, 93 yph, 177 HP (Diesel)	88	0.3	47.797	0.036	333.673	0.249	0.715	0.001	20.623	0.015	63,501.811	47.384	
On-Highway Truck Tractor - 6X4, 45K gww, 380 HP (Diesel)	1189	4.6	34.958	0.352	249.537	2.515	0.463	0.005	15.912	0.160	48,508.330	488.898	
Manitowoc Crawler Mntd Lattice Boom Crane, 127MT, 60' Boom, 287HP (Diesel)	238	0.9	40.757	0.082	163.592	0.330	0.313	0.001	20.938	0.042	32,759.889	66.001	
600 CFM Port. RS Air Compressor Diesel Powered 150 psi 275 HP	575	2.2	38.577	0.188	124.265	0.606	0.669	0.003	11.819	0.058	59,466.905	289.938	
Grove Rough Terrain Hyd Crane 68 MT 138' Boom, 250 HP (Diesel)	751	2.9	40.757	0.259	163.592	1.041	0.313	0.002	20.938	0.133	32,759.889	208.562	
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	136	0.5	36.879	0.043	390.525	0.451	0.725	0.001	16.062	0.019	75,915.404	87.713	
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	238	0.9	44.891	0.090	252.851	0.509	0.484	0.001	22.580	0.045	50,634.394	102.012	
Total	20161			4.877		18.994		0.051		2.412		5,106.125	
Grading Equipment													
Dozer	0												
Grader	0												

TSC - 5		Start	Finish											
Pit River Bridge Pier 3 and 4 Prot - 12.5 ft raise		5/2/2016	5/9/2017											
Planned Construction Period		5/2/2016	5/9/2017											
Planned Duration (days)		257												
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)		
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	740	3	28.657	0.182	143.317	0.910	0.250	0.002	15.373	0.098	21,277.144	135.152		
600 CFM Port. RS Air Compressor Diesel Powered 150 psi 275 HP	1022	4.0	38.577	0.338	124.265	1.089	0.669	0.006	11.819	0.104	59,466.905	521.254		
Grove 8x4x4 Truck Mounted Hyd Crane, Singel Engine, 50MT, 110' Boom, 450 HP (Diesel)	85	0.3	44.891	0.033	252.851	0.184	0.484	0.000	22.580	0.016	50,634.394	36.785		
Grove Rough Terrain Hyd Crane 36 MT 105' Boom, 165 HP (Diesel)	210	0.8	33.157	0.060	111.882	0.202	0.214	0.000	18.204	0.033	22,404.817	40.384		
Grove Rough Terrain Hyd Crane 68 MT 138' Boom, 250 HP (Diesel)	165	0.6	40.757	0.058	163.592	0.232	0.313	0.000	20.938	0.030	32,759.889	46.403		
Ingersol Rand Hyd Track Drill, 4" hole max, Long Guide, 215 HP (Diesel)	1449	5.6	31.416	0.391	360.357	4.480	0.857	0.011	13.590	0.169	89,697.851	1,115.088		
Large Engine Generator, 15.0KW, Diesel, 26.5HP	20	0.1	5.886	0.001	29.484	0.005	0.072	0.000	2.182	0.000	4,625.962	0.786		
Large Engine Generator, 20.0KW, Diesel, 34HP	2470	9.6	10.890	0.231	36.619	0.776	0.101	0.002	3.472	0.074	7,990.295	169.317		
Large Engine Generator, 60KW, Diesel, Enclosed, 88 HP	1022	4.0	37.238	0.326	216.406	1.897	0.414	0.004	19.867	0.174	35,325.511	309.644		
Manitowoc Crawler Mntd Lattice Boom Crane, 127MT, 60' Boom, 287HP (Diesel)	2447	9.5	40.757	0.855	163.592	3.434	0.313	0.007	20.938	0.439	32,759.889	687.621		
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	4387	17.1	44.891	1.689	252.851	9.515	0.484	0.018	22.580	0.850	50,634.394	1,905.416		
Morgan Trailer Mounded Concrete Pump, 122 yph, 177 HP (Diesel)	165	0.6	47.797	0.068	333.673	0.473	0.715	0.001	20.623	0.029	63,501.811	89.948		
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	10142	39.5	30.036	2.613	95.585	8.316	0.301	0.026	15.635	1.360	31,570.801	2,746.778		
Small Engine Generator, 3.0KW, Diesel, 5.5HP	90	0.3	5.886	0.005	29.484	0.023	0.072	0.000	2.182	0.002	4,625.962	3.554		
Small Engine Generator, 6.5KW, Diesel, 13HP	165	0.6	5.886	0.008	29.484	0.042	0.072	0.000	2.182	0.003	4,625.962	6.553		
Total	24579			6.858		31.576		0.077		3.381		7,814.683		
Grading Equipment														
Dozer	0													
Grader	0													

TSC - 7													
Railroad Realignment - 12.5 ft raise													
Planned Construction Period		Start	Finish										
		8/3/2016	8/8/2017										
Planned Duration (days)		256											
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	712	3	28.657	0.176	143.317	0.879	0.250	0.002	15.373	0.094	21,277.144	130.509	
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	505	2.0	30.661	0.133	182.249	0.793	0.370	0.002	12.996	0.057	38,767.435	168.702	
Bomag Manually Vibratory Compactor - 30" Smooth Drum, 30" wide (Diesel)	138	0.5	20.522	0.024	104.325	0.124	0.158	0.000	13.790	0.016	16,510.744	19.551	
Cat 730 Articulated Rear Dump Truck - 28.1 MT, 17.1-22.1 CY, 6x6, 317 HP (Diesel)	724	2.8	34.958	0.218	249.537	1.556	0.463	0.003	15.912	0.099	48,508.330	302.528	
Cat Single Drum Self Propelled Vibratory Compactor Padfoot - 66" wide drum, padfoot, 96 HP (Diesel)	138	0.5	20.522	0.024	104.325	0.124	0.158	0.000	13.790	0.016	16,510.744	19.551	
Cat Tractor-Loader-Backhoe, 4WD, 1 CY Bucket, Fixed Stick, 72 HP (Diesel)	1376	5.4	17.151	0.203	75.359	0.893	0.154	0.002	12.059	0.143	16,091.489	190.725	
Crawler Mounted Hydraulic Excavator - Cat 2.25 cy bucket - 222 HP (Diesel)	356	1.4	22.896	0.070	212.598	0.652	0.417	0.001	9.661	0.030	43,667.789	133.924	
Crawler Mounted Hydraulic Excavator - Cat 2.5 cy bucket - 321 HP (Diesel)	227	0.9	22.896	0.045	212.598	0.415	0.417	0.001	9.661	0.019	43,667.789	85.318	
Hand Held Rammer - 4" to 13", 3180 lb/blow, 4 HP (Gas)	322	1.3	21.161	0.059	50.846	0.141	0.088	0.000	7.767	0.022	9,248.938	25.620	
Hand Held Vibratory Plate Compactor, 25", 6k-9k lb/blow, 11 HP, Gas Powered	459	1.8	2.276	0.009	11.937	0.047	0.030	0.000	0.556	0.002	1,954.951	7.730	
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	2718	10.6	36.879	0.863	390.525	9.140	0.725	0.017	16.062	0.376	75,915.404	1,776.671	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	712	2.8	30.036	0.184	95.585	0.586	0.301	0.002	15.635	0.096	31,570.801	193.648	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, Crew, 285 HP (Gas)	1650	6.4	37.596	0.534	126.672	1.800	0.400	0.006	16.741	0.238	41,838.390	594.502	
On-Highway Truck Tractor - 6X4, 45K gww, 380 HP (Diesel)	667	2.6	34.958	0.201	249.537	1.433	0.463	0.003	15.912	0.091	48,508.330	278.561	
On-Highway Water Truck, 4000 Gal, 250 HP (Diesel)	459	1.8	37.596	0.149	126.672	0.501	0.400	0.002	16.741	0.066	41,838.390	165.436	
Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)	54	0.2	64.216	0.030	205.356	0.096	0.419	0.000	32.966	0.015	43,901.277	20.517	
Standard Crawler Loader - Cat 963C, 3.20 cy bucket - 158 HP - EROPS (Diesel)	55	0.2	26.181	0.012	75.635	0.036	0.154	0.000	17.613	0.008	16,088.868	7.620	
Total	11272			2.935		19.216		0.040		1.389		4,121.113	
Grading Equipment													
Dozer	54												
Grader	0												

Shasta Lake Water Resources Investigation

TSC - 8													
Right Wing Dam - 12.5 ft raise	Planned Construction Period												
	Start	Finish											
	8/9/2016	4/22/2019											
	Planned Duration (days)												
	683												
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
175 CFM Rotary Screw Port Air Compressor Gas 125 psi 90 HP	33	0.05	28.657	0.003	143.317	0.015	0.250	0.000	15.373	0.002	21,277.144	2.269	
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	1027	1.50	28.657	0.095	143.317	0.475	0.250	0.001	15.373	0.051	21,277.144	70.511	
4WD Articulated Wheel Loader - Cat 3.65 cy bucket - 160 HP - EROPS (Diesel)	256	0.38	32.104	0.027	133.153	0.110	0.270	0.000	17.328	0.014	28,323.951	23.432	
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	395	0.58	30.661	0.039	182.249	0.232	0.370	0.000	12.996	0.017	38,767.435	49.375	
600 CFM Port. RS Air Compressor Diesel Powered 150 psi 250 HP	319	0.47	52.301	0.054	226.848	0.234	0.715	0.001	21.720	0.022	74,925.493	77.150	
Barber-Greene Wheel Mounted Asphalt Paver, BG-240C, Pavemaster 10B, 2 wheel drive, 139 HP (Diesel)	16	0.02	29.785	0.002	202.541	0.010	0.328	0.000	15.909	0.001	34,379.976	1.780	
Cat Self Propelled Pneumatic Compactor - 7 wheel, 85 HP (Diesel)	16	0.02	20.522	0.001	104.325	0.005	0.158	0.000	13.790	0.001	16,510.744	0.855	
Cat Self Propelled Tandem Vibratory Compactor - 84" wide Smooth drum, 138 HP (Diesel)	32	0.05	20.522	0.002	104.325	0.011	0.158	0.000	13.790	0.001	16,510.744	1.710	
Cat Single Drum Self Propelled Vibratory Compactor Padfoot - 66" wide drum, padfoot, 96 HP (Diesel)	174	0.25	20.522	0.012	104.325	0.059	0.158	0.000	13.790	0.008	16,510.744	9.263	
Cat Tractor-Loader-Backhoe, 4WD, 1.5 CY Bucket, Fixed Stick, 101 HP (Diesel)	3	0.00	17.151	0.000	75.359	0.001	0.154	0.000	12.059	0.000	16,091.489	0.168	
Centrifugal Pump, Gas, 200 gpm, 2" size, 8 HP (Gas)	394	0.58	4.801	0.006	21.443	0.027	0.052	0.000	1.735	0.002	3,364.335	4.276	
Concrete Saw - 10.625" max depth, 26" Blade Dia. (not incl), 65 HP (Gas)	19	0.03	31.942	0.002	121.248	0.007	0.177	0.000	8.449	0.001	13,690.344	0.833	
Core drill, 3-inch chuck, 24" feed stroke, 40 hp, diesel	11	0.02	17.955	0.001	47.458	0.002	0.113	0.000	7.551	0.000	11,812.980	0.419	
Crawler Mounted Hydraulic Excavator - Cat 1.25 cy bucket - 168 HP (Diesel)	37	0.05	20.870	0.002	142.100	0.017	0.279	0.000	11.199	0.001	29,187.403	3.454	
Crawler Mounted Hydraulic Excavator - Cat 2.25 cy bucket - 222 HP (Diesel)	88	0.13	22.896	0.007	212.598	0.060	0.417	0.000	9.661	0.003	43,667.789	12.404	
Grove 4x2x4 Hyd Yard Crane Diesel 9.1 MT 24' Boom, 80 HP	678	0.99	30.944	0.068	66.584	0.146	0.127	0.000	18.180	0.040	13,333.705	29.163	
Grove Rough Terrain Hyd Crane 36 MT 105' Boom, 165 HP (Diesel)	187	0.27	33.157	0.020	111.882	0.067	0.214	0.000	18.204	0.011	22,404.817	13.495	
Large Engine Generator, 100KW, Diesel, Enclosed, 160 HP	410	0.60	46.042	0.061	332.945	0.441	0.724	0.001	19.912	0.026	64,342.907	85.204	
Large Engine Generator, 15.0KW, Diesel, 26.5HP	157	0.23	5.886	0.003	29.484	0.015	0.072	0.000	2.182	0.001	4,625.962	2.339	
Large Engine Generator, 20.0KW, Diesel, 26.5HP	1361	1.99	10.890	0.048	36.619	0.161	0.101	0.000	3.472	0.015	7,990.295	35.095	
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	827	1.21	44.891	0.120	252.851	0.675	0.484	0.001	22.580	0.060	50,634.394	135.132	
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel) Standby	49	0.07	44.891	0.007	252.851	0.040	0.484	0.000	22.580	0.004	50,634.394	8.001	
Off-Highway Water Tanker, 5000 Gal, 175 HP (Diesel)	163	0.24	30.036	0.016	95.585	0.050	0.301	0.000	15.635	0.008	31,570.801	16.590	
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	3656	5.35	36.879	0.435	390.525	4.608	0.725	0.009	16.062	0.190	75,915.404	895.796	
On-Highway Flatbed Truck, 4x2, 15k GVW, 210 HP (Gas)	176	0.26	37.596	0.021	126.672	0.072	0.400	0.000	16.741	0.010	41,838.390	23.830	
On-Highway Light Duty Truck/Pickup - 4X4, 1/2T, Conventional, 191 HP (Gas)	32	0.05	30.036	0.003	95.585	0.010	0.301	0.000	15.635	0.002	31,570.801	3.269	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	7390	10.82	30.036	0.716	95.585	2.280	0.301	0.007	15.635	0.373	31,570.801	753.059	
On-Highway Truck Tractor - 6X4, 45K gw, 380 HP (Diesel)	62	0.09	34.958	0.007	249.537	0.050	0.463	0.000	15.912	0.003	48,508.330	9.677	
On-Highway Truck Tractor - 6X6, 70K gw, 450 HP (Diesel)	121	0.18	36.879	0.014	390.525	0.152	0.725	0.000	16.062	0.006	75,915.404	29.542	
On-Highway Water Truck, 3000 Gal, 210 HP (Gas)	11	0.02	37.596	0.001	126.672	0.004	0.400	0.000	16.741	0.001	41,838.390	1.486	
Rear Discharge Concrete Transit Mixer - 8cy - 60kgw, 235 HP (Diesel)	1466	2.15	37.596	0.178	126.672	0.599	0.400	0.002	16.741	0.079	41,838.390	197.996	
Screen Plant, Single Deck, 24"X60' Conveyor, 5'x10' Screen Size, 51 HP (Diesel)	88	0.13	26.105	0.007	42.740	0.012	0.078	0.000	8.385	0.002	8,198.480	2.329	
Skid Steer Loader, Bobcat, 2400 lb Capacity, 73 HP (Diesel)	17	0.02	26.181	0.001	75.635	0.004	0.154	0.000	17.613	0.001	16,088.868	0.857	
Small Engine Generator, 6.5KW, Diesel, 13HP	349	0.51	5.886	0.007	29.484	0.033	0.072	0.000	2.182	0.002	4,625.962	5.209	
Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)	182	0.27	64.216	0.038	205.356	0.121	0.419	0.000	32.966	0.019	43,901.277	25.837	
Truck Chassis, 25k lbs, 4x2, 295 HP (Gas)	17	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Truck Chassis, 50k lbs, 6x4, 255 HP (Diesel)	11	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Total	20226			2.024		10.806		0.025		0.977		2,531.805	
Grading Equipment													
Dozer	182												
Grader	0												

TSC - 9													
Sacramento River UPRR 2nd Crossing - 12.5 ft raise													
Planned Construction Period	Start	Finish											
	1/4/2016	12/22/2017											
Planned Duration (days)	501												
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
1150 CFM Port. RS Air Compressor Diesel 150 psi 525 HP	1294	2.6	63.849	0.364	214.313	1.221	1.031	0.006	19.444	0.111	105,021.813	598.203	
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	20400	40.7	28.657	2.572	143.317	12.865	0.250	0.022	15.373	1.380	21,277.144	1,909.986	
4WD Articulated Wheel Loader - Cat 3.65 cy bucket - 160 HP - EROPS (Diesel)	825	1.6	32.104	0.117	133.153	0.483	0.270	0.001	17.328	0.063	28,323.951	102.788	
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	740	1.5	30.661	0.100	182.249	0.593	0.370	0.001	12.996	0.042	38,767.435	126.175	
600 CFM Port. RS Air Compressor Diesel Powered 150 psi 275 HP	3652	7.3	38.577	0.620	124.265	1.997	0.669	0.011	11.819	0.190	59,466.905	955.650	
AmPiledr-VibrtryHmnr625HP	673	1.3	60.870	0.180	417.401	1.237	0.736	0.002	29.879	0.089	77,032.518	228.200	
Cat Self Propelled Tandem Vibratory Compactor - 56" Wide Smooth, 70 HP (Diesel)	40	0.1	20.522	0.004	104.325	0.018	0.158	0.000	13.790	0.002	16,510.744	2.892	
Cat Tractor-Loader-Backhoe, 4WD, 1 CY Bucket, Fixed Stick, 72 HP (Diesel)	1194	2.4	17.151	0.090	75.359	0.396	0.154	0.001	12.059	0.063	16,091.489	84.537	
Centrifugal Pump, Gas, 100 gpm, 1.5" Size, 3 HP (Gas)	11196	22.3	11196	0.237	21.443	1.056	4.052	0.003	1.735	0.085	3,364.335	165.758	
Centrifugal Pump, Gas, 300 gpm, 3" Size, 7 HP (Gas)	5066	10.1	4.801	0.107	21.443	0.478	0.052	0.001	1.735	0.039	3,364.335	74.999	
Concrete pump & boom Schwing 2525H-5/S-47 on 255 hp chassis, 181 cy/hr & 155 ft boom	887	1.8	46.019	0.180	176.972	0.691	1.027	0.004	15.541	0.061	91,257.575	356.087	
Core drill, 3-inch chuck, 24" feed stroke, 40 hp, diesel	243	0.5	17.955	0.019	47.458	0.051	0.113	0.000	7.551	0.008	11,812.980	12.635	
Crawler Mounted Hydraulic Excavator - Cat 2.25 cy bucket - 222 HP (Diesel)	498	1.0	22.896	0.050	212.598	0.465	0.417	0.001	9.661	0.021	43,667.789	95.606	
Crawler Mounted Hydraulic Excavator - Cat 2.5 cy bucket - 321 HP (Diesel)	2217	4.4	22.896	0.223	212.598	2.074	0.417	0.004	9.661	0.094	43,667.789	425.928	
Grove 4x2x4 Hyd Yard Crane Diesel 9.1 MT 24' Boom, 80 HP	3326	6.6	30.944	0.453	66.584	0.975	0.127	0.002	18.180	0.266	13,333.705	195.174	
Grove Rough Terrain Hyd Crane 36 MT 105' Boom, 165 HP (Diesel)	2226	4.4	33.157	0.325	111.882	1.096	0.214	0.002	18.204	0.178	22,404.817	219.506	
Hand Held Rammer - 4" to 13", 3180 lb/blow, 4 HP (Gas)	40	0.1	21.161	0.004	50.846	0.009	0.088	0.000	7.767	0.001	9,248.938	1.620	
Hand Held Vibratory Plate Compactor, 25", 6k-9k lb/blow, 11 HP, Gas Powered	40	0.1	2.276	0.000	11.937	0.002	0.030	0.000	0.556	0.000	1,954.951	0.342	
I.C. Self Propelled Scissor Lift, 2500# Cap., 90"x170" deck, 50 HP (Diesel)	3238	6.5	3.390	0.048	39.910	0.569	0.080	0.001	1.490	0.021	8,267.000	117.808	
Inland Tug Boat 250HP 26ft	5360	10.7	20.001	0.472	112.351	2.650	112.351	2.650	8.611	0.203	23,309.646	549.841	
Large Engine Generator, 100KW, Diesel, Enclosed, 160 HP	1650	3.3	46.042	0.334	332.945	2.417	0.724	0.005	19.912	0.145	64,342.907	467.177	
Large Engine Generator, 20.0KW, Diesel, 34HP	6653	13.3	10.890	0.319	36.619	1.072	0.101	0.003	3.472	0.102	7,990.295	233.918	
Large Engine Generator, 60KW, Diesel, Enclosed, 88 HP	5180	10.3	37.238	0.849	216.406	4.933	0.414	0.009	19.867	0.453	35,325.511	805.254	
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	13682	27.3	44.891	2.703	252.851	15.223	0.484	0.029	22.580	1.359	50,634.394	3,048.469	
Manitowoc Crawler Mntd Lattice Boom Crane, 90.70 MT, 40' Boom, 230HP (Diesel)	9862	19.7	40.757	1.769	163.592	7.100	0.313	0.014	20.938	0.909	32,759.889	1,421.751	
Off-Highway Water Tanker, 5000 Gal, 175 HP (Diesel)	40	0.1	30.036	0.005	95.585	0.017	0.301	0.000	15.635	0.003	31,570.801	5.531	
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	3497	7.0	36.879	0.567	390.525	6.009	0.725	0.011	16.062	0.247	75,915.404	1,168.128	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	38889	77.6	30.036	5.140	95.585	16.358	0.301	0.052	15.635	2.676	31,570.801	5,402.719	
On-Highway Truck Tractor - 4X2, 30K gw, 210 HP (Diesel)	88	0.2	34.958	0.014	249.537	0.097	0.463	0.000	15.912	0.006	48,508.330	18.784	
On-Highway Truck Tractor - 6X4, 45K gw, 380 HP (Diesel)	1386	2.8	34.958	0.213	249.537	1.522	0.463	0.003	15.912	0.097	48,508.330	295.853	
Portable Welder, 600 Amp, Trailer Mounted, DC-CC/CV, 42 HP (Diesel)	6290	12.6	32.697	0.905	113.219	3.134	0.152	0.004	8.318	0.230	11,763.806	325.590	
Small Engine Generator, 6.5KW, Diesel, 13HP	1479	3.0	5.886	0.038	29.484	0.192	0.072	0.000	2.182	0.014	4,625.962	30.098	
Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)	36	0.1	64.216	0.010	205.356	0.032	0.419	0.000	32.966	0.005	43,901.277	6.866	
Vacuum, 5 cy capacity, PTO operated, truck included.	237	0.5	37.596	0.039	126.672	0.132	0.400	0.000	16.741	0.017	41,838.390	43.550	
Total	152122			19.070		87.162		2.844		9.182		19,497.425	
Grading Equipment													
Dozer	36												
Grader	0												

Shasta Lake Water Resources Investigation

TSC - 10													
Spillway - 12.5 ft raise	Planned Construction Period	Start	Finish										
	Planned Duration (days)	1/3/2017	4/3/2019										
		565											
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
175 CFM Rotary Screw Port Air Compressor Gas 125 psi 90 HP	3804	6.73	28.657	0.425	143.317	2.127	0.250	0.004	15.373	0.228	21,277.144	315.844	
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	8221	14.55	28.657	0.919	143.317	4.598	0.250	0.008	15.373	0.493	21,277.144	682.559	
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	1613	2.86	30.661	0.193	182.249	1.147	0.370	0.002	12.996	0.082	0.000	0.000	
600 CFM Port. RS Air Compressor Diesel Powered 150 psi 275 HP	6348	11.24	38.577	0.956	124.265	3.078	0.669	0.017	11.819	0.293	0.000	0.000	
Centrifugal Pump, Gas, 200 gpm, 2" size, 8 HP (Gas)	1377	2.44	4.801	0.026	21.443	0.115	0.052	0.000	1.735	0.009	3,364.335	18.075	
Concrete Saw - 10.625" max depth, 26" Blade Dia. (not incl), 65 HP (Gas)	462	0.82	31.942	0.058	121.248	0.219	0.177	0.000	8.449	0.015	13,690.344	24.680	
Concrete Street & Highway Slipform Paver, Gomaco, 12'-32' Paving Width, 4 track, 335 HP (Diesel)	286	0.51	19.794	0.022	273.909	0.306	0.444	0.000	9.219	0.010	46,494.289	51.886	
Core drill, 3-inch chuck, 24" feed stroke, 40 hp, diesel	9671	17.12	17.955	0.678	47.458	1.791	0.113	0.004	7.551	0.285	11,812.980	445.769	
Grove 4x2x4 Hyd Yard Crane Diesel 9.1 MT 24' Boom, 80 HP	1789	3.17	30.944	0.216	66.584	0.465	0.127	0.001	18.180	0.127	13,333.705	93.071	
Grove A125J Manlift, Articulating boom, 125' Max Ht, 500# Cap, 100 HP (Diesel)	132	0.23	3.952	0.002	57.607	0.030	0.114	0.000	2.553	0.001	11,931.823	6.146	
Grove All Terrain Hyd Crane, Dual Engine, 227 MT, 236' Boom, 165 HP (Diesel)	528	0.93	33.157	0.068	111.882	0.231	0.214	0.000	18.204	0.038	22,404.817	46.160	
Grove Rough Terrain Hyd Crane 36 MT 105' Boom, 165 HP (Diesel)	1328	2.35	33.157	0.172	111.882	0.580	0.214	0.001	18.204	0.094	22,404.817	116.096	
I.C. Self Propelled Scissor Lift, 2500# Cap., 90"x170" deck, 50 HP (Diesel)	1833	3.24	3.390	0.024	39.910	0.285	0.080	0.001	1.490	0.011	8,267.000	59.116	
Ingersol Rand Hyd Track Drill, 5" hole max, Extendable, 260 HP (Diesel)	1781	3.15	31.416	0.218	360.357	2.504	0.857	0.006	13.590	0.094	89,697.851	623.315	
Inland Tug Boat 250HP 26ft	1100	1.95	20.001	0.086	112.351	0.482	112.351	0.482	8.611	0.037	23,309.646	100.049	
Job pickup	35138	62.19	30.036	4.118	95.585	13.106	0.301	0.041	15.635	2.144	31,570.801	4,328.663	
Large Engine Generator, 100KW, Diesel, Enclosed, 160 HP	1377	2.44	46.042	0.247	332.945	1.789	0.724	0.004	19.912	0.107	64,342.907	345.684	
Large Engine Generator, 15.0KW, Diesel, 26.5HP	192	0.34	5.886	0.004	29.484	0.022	0.072	0.000	2.182	0.002	4,625.962	3.460	
Large Engine Generator, 20.0KW, Diesel, 34HP	11263	19.93	10.890	0.479	36.619	1.609	0.101	0.004	3.472	0.153	7,990.295	351.150	
Large Engine Generator, 60KW, Diesel, Enclosed, 88 HP	16658	29.48	37.238	2.420	216.406	14.066	0.414	0.027	19.867	1.291	35,325.511	2,296.157	
Manitowoc Crawler Mntd Lattice Boom Crane, 127MT, 60' Boom, 287HP (Diesel)	6997	12.38	40.757	1.113	163.592	4.466	0.313	0.009	20.938	0.572	32,759.889	894.431	
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	7461	13.21	44.891	1.307	252.851	7.361	0.484	0.014	22.580	0.657	50,634.394	1,474.166	
Manitowoc Crawler Mntd Lattice Boom Crane, 90.70 MT, 40' Boom, 230HP Operating cost	550	0.97	40.757	0.087	163.592	0.351	0.313	0.001	20.938	0.045	32,759.889	70.306	
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	12770	22.60	36.879	1.838	390.525	19.459	0.725	0.036	16.062	0.800	75,915.404	3,782.750	
On-Highway Flatbed Truck, 4x2, 15k GVW, 210 HP (Gas)	5489	9.71	37.596	0.805	126.672	2.713	0.400	0.009	16.741	0.359	41,838.390	896.053	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	18332	32.45	30.036	2.149	95.585	6.837	0.301	0.022	15.635	1.118	31,570.801	2,258.352	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, Crew, 285 HP (Gas)	1935	3.42	37.596	0.284	126.672	0.956	0.400	0.003	16.741	0.126	41,838.390	315.878	
On-Highway Truck Tractor - 6X4, 45K gvw, 380 HP (Diesel)	2228	3.94	34.958	0.304	249.537	2.170	0.463	0.004	15.912	0.138	48,508.330	421.740	
On-Highway Truck Tractor - 6X6, 70K gvw, 450 HP (Diesel)	308	0.55	36.879	0.044	390.525	0.469	0.725	0.001	16.062	0.019	75,915.404	91.236	
Portable Welder, 600 Amp, Trailer Mounted, DC-CC/CV, 42 HP (Diesel)	22664	40.11	32.697	2.892	113.219	10.013	0.152	0.013	8.318	0.736	11,763.806	1,040.347	
Rear Discharge Concrete Transit Mixer - 8cy - 60kgw, 235 HP (Diesel)	4730	8.37	37.596	0.694	126.672	2.338	0.400	0.007	16.741	0.309	41,838.390	772.263	
Small Engine Generator, 6.5KW, Diesel, 13HP	5328	9.43	5.886	0.122	29.484	0.613	0.072	0.001	2.182	0.045	4,625.962	96.176	
Total	193694			22.970		106.297		0.724		10.439		22,021.575	
Grading Equipment													
Dozer	0												
Grader	0												

TSC - 11														
Equipment	Planned Construction Period		Start	Finish										
	Planned Duration (days)	10/17/2017			3/17/2019									
	Hours (w/ 10%)	Hours/day	169	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	2653	15.70			28.657	0.992	143.317	4.959	0.250	0.009	15.373	0.532	21,277.144	736.239
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	189	1.12			30.661	0.076	182.249	0.450	0.370	0.001	12.996	0.032	38,767.435	95.683
600 CFM Port. RS Air Compressor Diesel Powered 150 psi 275 HP	37	0.22			38.577	0.019	124.265	0.061	0.669	0.000	11.819	0.006	59,466.905	28.964
Grove 4x4x4 Hyd Yard Crane Diesel 13.6MT 52' Boom	144	0.85			33.157	0.062	111.882	0.210	0.214	0.000	18.204	0.034	22,404.817	42.028
Grove Rough Terrain Hyd Crane 68 MT 138' Boom, 250 HP (Diesel)	1956	11.57			40.757	1.040	163.592	4.174	0.313	0.008	20.938	0.534	32,759.889	835.934
Grove T60 Manlift, Telescopic Boom, 60' Max Ht, 500# Cap, 4WD, 60 HP (Diesel)	174	1.03			3.388	0.008	39.912	0.091	0.079	0.000	1.487	0.003	8,266.857	18.780
Inland Tug Boat 250HP 26ft	70	0.41			20.001	0.018	112.351	0.102	112.351	0.102	8.611	0.008	23,309.646	21.250
Job pickup	9196	54.41			30.036	3.603	95.585	11.467	0.301	0.036	15.635	1.876	31,570.801	3,787.324
Large Engine Generator, 20.0KW, Diesel, 34HP	3577	21.17			10.890	0.508	36.619	1.709	0.101	0.005	3.472	0.162	7,990.295	372.867
Low Ground Pressure Crawler Dozer - Cat 238 hp - EROPS - Straight (Diesel)	36	0.21			64.216	0.030	205.356	0.096	0.419	0.000	32.966	0.015	43,901.277	20.474
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	2544	15.05			44.891	1.490	252.851	8.390	0.484	0.016	22.580	0.749	50,634.394	1,680.070
On-Highway Flatbed Truck, 4x2, 15k GVW, 210 HP (Gas)	2409	14.25			37.596	1.181	126.672	3.981	0.400	0.013	16.741	0.526	41,838.390	1,314.723
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	3399	20.11			30.036	1.332	95.585	4.238	0.301	0.013	15.635	0.693	31,570.801	1,399.693
On-Highway Truck Tractor - 6X4, 45K gw, 380 HP (Diesel)	2516	14.89			34.958	1.148	249.537	8.192	0.463	0.015	15.912	0.522	48,508.330	1,592.415
Portable Welder, 300 Amp, Trailer Mounted, AC/DC-CC/CV, 20 HP (Diesel)	4	0.03			7.711	0.000	23.440	0.001	0.065	0.000	2.322	0.000	5,114.701	0.294
Portable Welder, 600 Amp, Trailer Mounted, DC-CC/CV, 42 HP (Diesel)	191	1.13			32.697	0.081	113.219	0.282	0.152	0.000	8.318	0.021	11,763.806	29.289
Small Engine Generator, 6.5KW, Diesel, 13HP	49	0.29			5.886	0.004	29.484	0.019	0.072	0.000	2.182	0.001	4,625.962	2.974
Total	29144					11.591		48.420		0.220		5.715		11,979.003
Grading Equipment														
Dozer	36													
Grader	0													

Shasta Lake Water Resources Investigation

MWH - 2													
Reservoir Clearing - 12.5 ft raise		Start	Finish										
Planned Construction Period		5/14/2018	1/25/2019										
Construction Duration (days)		63											
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
220 Hp Bulldozer (Cat D7)	218	3.46	64.216	0.490	205.356	1.566	0.419	0.003	32.966	0.251	43,901.277	334.755	
3.5 CY Loader (Cat 950)	569	9.02	32.104	0.639	133.153	2.649	0.270	0.005	17.328	0.345	28,323.951	563.547	
4.5 CY Loader (Cat 966)	218	3.46	32.104	0.245	133.153	1.015	0.270	0.002	17.328	0.132	28,323.951	215.975	
1.5 CY Backhoe (Cat 325)	218	3.46	17.151	0.131	75.359	0.575	0.154	0.001	12.059	0.092	16,091.489	122.700	
20 Ton (10 CY) Tandem Truck	218	3.46	37.596	0.287	126.672	0.966	0.400	0.003	16.741	0.128	41,838.390	319.025	
140 hp Wheel Skidder (Cat 515)	769	12.21	17.893	0.482	187.211	5.040	0.279	0.008	10.229	0.275	29,259.636	787.681	
210 hp Harvester (Cat 580)	769	12.21	34.815	0.937	229.129	6.168	0.422	0.011	15.365	0.414	44,156.690	1,188.715	
Cat 330 LC Log Loader	102	1.62	17.893	0.064	187.211	0.670	0.279	0.001	10.229	0.037	29,259.636	104.767	
Chipper - clearing	569	9.02	1.573	0.031	9.008	0.179	11.412	0.227	0.847	0.017	1,434.720	28.546	
DT-320 Tree Mulcher	786	12.48	33.882	0.932	106.607	2.934	0.188	0.005	23.056	0.635	19,674.653	541.479	
Tower 4-Lights 12 hp	102	1.62	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Helicopter 5000lbs	619	9.82	510.000	11.039	610.000	13.204	3,360.000	72.729	91.000	1.970	893,115.194	19,332.043	
Truck Mounted Post Hole Auger	0	0.00	21.038	0.000	217.595	0.000	0.517	0.000	8.893	0.000	54,162.283	0.000	
100 hp Harbour Master	633	10.04	140.005	3.099	786.456	17.410	2,225.269	49.262	60.278	1.334	163,167.522	3,612.134	
1/2 Ton Pickup Truck 2x2	4217	66.94	30.036	4.433	95.585	14.107	0.301	0.044	15.635	2.307	31,570.801	4,659.341	
3/4 Ton Crew Cab Truck	469	7.44	37.596	0.617	126.672	2.077	0.400	0.007	16.741	0.275	41,838.390	686.075	
1- Ton Mechanic Truck	1562	24.79	37.596	2.055	126.672	6.924	0.400	0.022	16.741	0.915	41,838.390	2,286.915	
logging Truck (Kenworth C500)	409	6.50	37.596	0.538	126.672	1.814	0.400	0.006	16.741	0.240	41,838.390	599.224	
30" Chain Saw	7286	115.64	1.885	0.481	3.409	0.869	0.030	0.008	0.005	0.001	9.215	2.349	
Total	19732			26.500		78.168		122.345		9.367		35,385.270	
Grading Equipment													
Dozer	218												
Grader	0												

MWH - 3														
Dikes - 12.5 ft raise	Start	Finish												
Planned Construction Period	2/5/2016	9/9/2016												
Construction Duration (days)	152													
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)		
220 hp Bulldozer (Cat D7)	674	4.44	64,216	0.628	205,356	2.008	0.419	0.004	32.966	0.322	43,901.277	429.312		
3.5 CY Loader (Cat 950)	76	0.50	32,104	0.036	133,153	0.147	0.270	0.000	17,328	0.019	28,323.951	31.349		
4.5 CY Loader (Cat 966)	298	1.96	32,104	0.139	133,153	0.575	0.270	0.001	17,328	0.075	28,323.951	122.230		
125 hp Grader (Cat 120)	2263	14.89	46,432	1.524	100,328	3.293	0.185	0.006	29,005	0.952	19,334.700	634.667		
1.5 CY Backhoe (Cat 325)	49	0.33	17,151	0.012	75,359	0.054	0.154	0.000	12,059	0.009	16,091.489	11.533		
2.0 CY Backhoe (Cat 330)	950	6.25	21,606	0.298	128,999	1.777	0.263	0.004	11,773	0.162	27,545.365	379.467		
4.1 CY Backhoe (Hitachi EX400)	1743	11.47	21,606	0.546	128,999	3.261	0.263	0.007	11,773	0.298	27,545.365	696.359		
20 Ton (10 CY) Tandem Truck	1221	8.03	37,596	0.666	126,672	2.244	0.400	0.007	16,741	0.297	41,838.390	741.099		
24 Ton (12 CY) Tandem Truck	6904	45.42	37,596	3.765	126,672	12.685	0.400	0.040	16,741	1.676	41,838.390	4,189.696		
15 Ton Compactor 84" (Cat 563)	1995	13.13	20,522	0.594	104,325	3.019	0.158	0.005	13,790	0.399	16,510.744	477.832		
140 hp Wheel Skidder (Cat 515)	75	0.50	17,893	0.020	187,211	0.204	0.279	0.000	10,229	0.011	29,259.636	31.959		
210 hp Harvester (Cat 580)	75	0.50	34,815	0.038	229,129	0.250	0.422	0.000	15,365	0.017	44,156.690	48.231		
Cat 330 LC Log Loader	18	0.12	17,893	0.005	187,211	0.049	0.279	0.000	10,229	0.003	29,259.636	7.693		
Chipper - clearing	76	0.50	1,573	0.002	9,008	0.010	11.412	0.013	0.847	0.001	1,434.720	1.588		
DT-320 Tree Mulcher	76	0.50	33,882	0.038	106,607	0.118	0.188	0.000	23,056	0.026	19,674.653	21.776		
Truck Mounted Post Hole Auger	42	0.27	21,038	0.013	217,595	0.131	0.517	0.000	8,893	0.005	54,162.283	32.704		
1/2 Ton Pickup Truck 2x2	12185	80.16	30,036	5.308	95,585	16.892	0.301	0.053	15,635	2.763	31,570.801	5,579.412		
3/4 Ton Pickup Truck 2x2	2196	14.45	37,596	1.197	126,672	4.034	0.400	0.013	16,741	0.533	41,838.390	1,332.531		
3/4 Ton Crew Cab Truck	5686	37.41	37,596	3.101	126,672	10.447	0.400	0.033	16,741	1.381	41,838.390	3,450.520		
1- Ton Mechanic Truck	2708	17.81	37,596	1.476	126,672	4.975	0.400	0.016	16,741	0.657	41,838.390	1,643.105		
logging Truck (Kenworth C500)	36	0.24	37,596	0.020	126,672	0.067	0.400	0.000	16,741	0.009	41,838.390	21.999		
30" Chain Saw	226	1.49	1,885	0.006	3,409	0.011	0.030	0.000	0.005	0.000	9.215	0.030		
Total	39574			19.430		66.253		0.203		9.615		19,885.094		
Grading Equipment														
Dozer	674													
Grader	2263													

Shasta Lake Water Resources Investigation

MWH - 7												
Utilities - 12.5 ft raise	Start	Finish										
Planned Construction Period	1/4/2016	10/5/2017										
Construction Duration (days)	444											
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)
3.5 CY Loader (Cat 950)	2279	5.13	32.104	0.363	133.153	1.506	0.270	0.003	17.328	0.196	28,323.951	320.452
3.0 CY Track Loader (Cat 963)	140	0.316	32.104	0.022	133.153	0.093	0.270	0.000	17.328	0.012	28,323.951	19.722
1.5 CY Backhoe (Cat 225)	732	1.649	17.151	0.062	75.359	0.274	0.154	0.001	12.059	0.044	16,091.489	58.511
2.3 CY Backhoe (Cat 235)	1701	3.832	21.606	0.183	128.999	1.090	0.263	0.002	11.773	0.099	27,545.365	232.683
1.0 CY Backhoe Loader (Case 580)	5443	12.259	37.596	1.016	126.672	3.423	0.400	0.011	16.741	0.452	41,838.390	1,130.728
5 Ton Flatbed Truck	1100	2.477	37.596	0.205	126.672	0.692	0.400	0.002	16.741	0.091	41,838.390	228.458
12 Ton Flatbed Truck	74	0.166	37.596	0.014	126.672	0.046	0.400	0.000	16.741	0.006	41,838.390	15.333
16 Ton (8 CY) Tandem Truck	39	0.087	37.596	0.007	126.672	0.024	0.400	0.000	16.741	0.003	41,838.390	8.050
20 Ton (10 CY) Tandem Truck	253	0.571	37.596	0.047	126.672	0.159	0.400	0.001	16.741	0.021	41,838.390	52.630
90 Kg Plate Tamper	74	0.166	2.276	0.001	11.937	0.004	0.030	0.000	0.556	0.000	1,954.951	0.716
5 Ft Wheel Mounted Chain Trencher	214	0.483	44.074	0.047	208.543	0.222	0.358	0.000	23.694	0.025	37,481.773	39.904
Acetylene Cutting Torch	179	0.403	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000
Grout Pump	122	0.274	47.797	0.029	333.673	0.202	0.715	0.000	20.623	0.012	63,501.811	38.413
10 KW Generator Set (Gas)	340	0.765	30.036	0.051	95.585	0.161	0.301	0.001	15.635	0.026	31,570.801	53.222
Knuckboom Manlift 36 Ft	19	0.043	3.388	0.000	39.912	0.004	0.079	0.000	1.487	0.000	8,266.857	0.776
Hoe Hammer 4X	66	0.150	88.486	0.029	694.256	0.229	1.224	0.000	42.483	0.014	128,126.723	42.260
Hoe Hammer 10X	7	0.017	88.486	0.003	694.256	0.025	1.224	0.000	42.483	0.002	128,126.723	4.696
3/4 Ton Pickup Truck 2x2	28592	64.397	37.596	5.338	126.672	17.984	0.400	0.057	16.741	2.377	41,838.390	5,939.871
5 Ton Flat Bed Truck	5224	11.766	37.596	0.975	126.672	3.286	0.400	0.010	16.741	0.434	41,838.390	1,085.292
2-Ton Mechanic Truck	231	0.519	37.596	0.043	126.672	0.145	0.400	0.000	16.741	0.019	41,838.390	47.915
Electrical Service truck	3689	8.309	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10 Ton Boomtruck	523	1.178	34.958	0.091	249.537	0.648	0.463	0.001	15.912	0.041	48,508.330	126.023
15 Ton Pitman Boom Truck	231	0.519	34.958	0.040	249.537	0.286	0.463	0.001	15.912	0.018	48,508.330	55.554
20 Ton Boomtruck	325	0.731	34.958	0.056	249.537	0.402	0.463	0.001	15.912	0.026	48,508.330	78.219
Tractor & Trailer	523	1.178	34.960	0.091	249.540	0.648	0.460	0.001	15.910	0.041	48,508.000	126.022
60 Ton Lowboy	3690	8.312	52.301	0.958	226.848	4.157	0.715	0.013	21.720	0.398	74,925.493	1,372.921
Total	55811			9.672		35.712		0.106		4.360		11,078.370
Grading Equipment												
Dozer	0											
Grader	0											

Shasta Lake Water Resources Investigation

TSC - 2													
Left Wing Dam - 18.5 ft raise	Start	Finish											
	Planned Construction Period	8/8/2016	3/23/2018										
	Planned Duration (days)	410											
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
175 CFM Rotary Screw Port Air Compressor Gas 125 psi 90 HP	367	0.90	28.657	0.057	143.317	0.283	0.250	0.000	15.373	0.030	21,277.144	41.992	
20" Gas Chain Saw	22	0.05	1.885	0.000	3.409	0.000	0.030	0.000	0.005	0.000	9.215	0.001	
4WD Articulated Wheel Loader - Cat 3.65 cy bucket - 160 HP - EROPS (Diesel)	1870	4.56	32.104	0.323	133.153	1.339	0.270	0.003	17.328	0.174	28,323.951	284.804	
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	2176	5.31	30.661	0.359	182.249	2.132	0.370	0.004	12.996	0.152	38,767.435	453.544	
Bandit 1990XP, Trailer Mounted Brush Chipper, 20" Capacity, 250 HP (Diesel)	22	0.05	2.207	0.000	8.368	0.001	24.873	0.003	0.742	0.000	4,200.444	0.497	
Barber-Greene Wheel Mounted Asphalt Paver, BG-240C, Pavemaster 10B, 2 wheel drive, 139 HP (Diesel)	30	0.07	29.785	0.005	202.541	0.032	0.328	0.000	15.909	0.003	34,379.976	5.491	
Cat Self Propelled Pneumatic Compactor - 7 wheel, 85 HP (Diesel)	30	0.07	20.522	0.003	104.325	0.017	0.158	0.000	13.790	0.002	16,510.744	2.637	
Cat Self Propelled Tandem Vibratory Compactor - 84" wide Smooth drum, 138 HP (Diesel)	59	0.14	20.522	0.007	104.325	0.033	0.158	0.000	13.790	0.004	16,510.744	5.274	
Cat Self Propelled Tandem Vibratory Compactor - 56" Wide Smooth, 70 HP (Diesel)	455	1.11	20.522	0.050	104.325	0.255	0.158	0.000	13.790	0.034	16,510.744	40.431	
Cat Single Drum Self Propelled Vibratory Compactor Padfoot - 66" wide drum, padfoot, 96 HP (Diesel)	64	0.16	20.522	0.007	104.325	0.036	0.158	0.000	13.790	0.005	16,510.744	5.664	
Centrifugal Pump, Gas, 200 gpm, 2" size, 8 HP (Gas)	371	0.90	4.801	0.010	21.443	0.043	0.052	0.000	1.735	0.003	3,364.335	6.708	
Centrifugal Pump, Gas, 400 gpm, 3" Size, 7 HP (Gas)	39	0.09	4.801	0.001	21.443	0.004	0.052	0.000	1.735	0.000	3,364.335	0.703	
Concrete Saw - 10.625" max depth, 26" Blade Dia. (not incl), 65 HP (Gas)	24	0.06	31.942	0.004	121.248	0.016	0.177	0.000	8.449	0.001	13,690.344	1.781	
Crawler Mounted Hydraulic Excavator - Cat 1.25 cy bucket - 168 HP (Diesel)	1667	4.07	20.870	0.187	142.100	1.274	0.279	0.002	11.199	0.100	29,187.403	261.622	
Grove 4x2x4 Hyd Yard Crane Diesel 9.1 MT 24' Boom, 80 HP	60	0.15	30.944	0.010	66.584	0.021	0.127	0.000	18.180	0.006	13,333.705	4.290	
Grove Rough Terrain Hyd Crane 36 MT 105' Boom, 165 HP (Diesel)	1253	3.06	33.157	0.223	111.882	0.754	0.214	0.001	18.204	0.123	22,404.817	150.943	
Hand Held Rammer - 4" to 13", 3180 lb/blow, 4 HP (Gas)	455	1.11	21.161	0.052	50.846	0.125	0.088	0.000	7.767	0.019	9,248.938	22.648	
Hand Held Vibratory Plate Compactor, 25", 6k-9k lb/blow, 11 HP, Gas Powered	455	1.11	2.276	0.006	11.937	0.029	0.030	0.000	0.556	0.001	1,954.951	4.787	
Hydro-Ax 721E, Rubber Tired Brush Cutter, 8' Cutter size, 210 HP (Diesel)	22	0.05	64.220	0.008	205.360	0.024	0.420	0.000	32.970	0.004	43,901.000	5.193	
I.C. Self Propelled Scissor Lift, 1500# cap., 72"x132" deck, 25 HP, <30' (Diesel)	1461	3.56	3.390	0.027	39.910	0.313	0.080	0.001	1.490	0.012	8,267.000	64.937	
Large Engine Generator, 100KW, Diesel, Enclosed, 160 HP	371	0.90	46.042	0.092	332.945	0.664	0.724	0.001	19.912	0.040	64,342.907	128.293	
Large Engine Generator, 20.0KW, Diesel, 34HP	1197	2.92	10.890	0.070	36.619	0.236	0.101	0.001	3.472	0.022	7,990.295	51.420	
Off-Highway Water Tanker, 5000 Gal, 175 HP (Diesel)	2387	5.82	30.036	0.386	95.585	1.227	0.301	0.004	15.635	0.201	31,570.801	405.255	
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	29610	72.22	36.879	5.872	390.525	62.178	0.725	0.115	16.062	2.557	75,915.404	12,086.928	
On-Highway Light Duty Truck/Pickup - 4X4, 1/2T, Conventional, 191 HP (Gas)	59	0.14	30.036	0.010	95.585	0.031	0.301	0.000	15.635	0.005	31,570.801	10.084	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	1037	2.53	30.036	0.167	95.585	0.533	0.301	0.002	15.635	0.087	31,570.801	176.015	
On-Highway Water Truck, 3000 Gal, 210 HP (Gas)	25	0.06	37.596	0.005	126.672	0.017	0.400	0.000	16.741	0.002	41,838.390	5.642	
Rear Discharge Concrete Transit Mixer - 8cy - 60kgw, 235 HP (Diesel)	679	1.66	37.596	0.137	126.672	0.463	0.400	0.001	16.741	0.061	41,838.390	152.817	
Skid Steer Loader, Bobcat, 2400 lb Capacity, 73 HP (Diesel)	11	0.03	26.181	0.002	75.635	0.004	0.154	0.000	17.613	0.001	16,088.868	0.952	
Small Engine Generator, 1.5KW, Gas, 3.5 HP	328	0.80	5.886	0.010	29.484	0.052	0.072	0.000	2.182	0.004	4,625.962	8.152	
Small Engine Generator, 6.5KW, Diesel, 13HP	118	0.29	5.886	0.004	29.484	0.019	0.072	0.000	2.182	0.001	4,625.962	2.928	
Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)	2275	5.55	64.216	0.786	205.356	2.512	0.419	0.005	32.966	0.403	43,901.277	537.058	
Truck Chassis, 25k lbs, 4x2, 295 HP (Gas)	267	0.65	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Job pickup	3590	8.76	30.036	0.580	95.585	1.845	0.301	0.006	15.635	0.302	0.000	0.000	
Total	52857			9.457		76.512		0.152		4.361		14,929.491	
Grading Equipment													
Dozer	2275												
Grader	0												

TSC - 3														
Main Concrete Dam - 18.5 ft raise		Start	Finish											
Planned Construction Period		8/9/2016	4/22/2019											
Planned Duration (days)		683												
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)		
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	10885	16	28.657	1.007	143.317	5.035	0.250	0.009	15.373	0.540	21,277.144	747.566		
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	2786	4.1	30.661	0.276	182.249	1.639	0.370	0.003	12.996	0.117	38,767.435	348.648		
600 CFM Port. RS Air Compressor Diesel Powered 150 psi 275 HP	2004	2.9	38.577	0.250	124.265	0.804	0.669	0.004	11.819	0.076	59,466.905	384.764		
Cat Tractor-Loader-Backhoe, 4WD, 1.5 CY Bucket, Fixed Stick, 101 HP (Diesel)	358	0.5	17.151	0.020	75.359	0.087	0.154	0.000	12.059	0.014	16,091.489	18.574		
Centrifugal Pump, Gas, 200 gpm, 2" size, 8 HP (Gas)	2710	4.0	4.801	0.042	21.443	0.188	0.052	0.000	1.735	0.015	3,364.335	29.433		
Concrete Saw - 10.625" max depth, 26" Blade Dia. (not incl), 65 HP (Gas)	937	1.4	31.942	0.097	121.248	0.367	0.177	0.001	8.449	0.026	13,690.344	41.428		
Core drill, 3-inch chuck, 24" feed stroke, 40 hp, diesel	589	0.9	17.955	0.034	47.458	0.090	0.113	0.000	7.551	0.014	11,812.980	22.470		
Crawler Mounted Hydraulic Excavator - Cat 2.25 cy bucket - 222 HP (Diesel)	22	0.0	22.896	0.002	212.598	0.015	0.417	0.000	9.661	0.001	43,667.789	3.101		
Grove 4x2x4 Hyd Yard Crane Diesel 9.1 MT 24' Boom, 80 HP	528	0.8	30.944	0.053	66.584	0.113	0.127	0.000	18.180	0.031	13,333.705	22.725		
Grove 4x4x4 Hyd Yard Crane Diesel 13.6MT 52' Boom	333	0.5	33.157	0.036	111.882	0.120	0.214	0.000	18.204	0.020	22,404.817	24.056		
Grove A60J Manlift, Articulating Boom, 60' Max Ht, 500# Cap, 85 HP (Diesel)	208	0.3	3.952	0.003	57.607	0.039	0.114	0.000	2.553	0.002	11,931.823	8.007		
Grove Rough Terrain Hyd Crane 36 MT 105' Boom, 165 HP (Diesel)	3382	5.0	33.157	0.362	111.882	1.221	0.214	0.002	18.204	0.199	22,404.817	244.599		
Grove T80 Manlift, Telescopic Boom, 80' Max Ht, 600# Cap, 4wd, 85 HP (Diesel)	21	0.0	3.952	0.000	57.607	0.004	0.114	0.000	2.553	0.000	11,931.823	0.797		
I.C. Self Propelled Scissor Lift, 2500# Cap., 90"x170" deck, 50 HP (Diesel)	209	0.3	3.390	0.002	39.910	0.027	0.080	0.000	1.490	0.001	8,267.000	5.577		
Ingersol Rand Hyd Track Drill, 5" hole max, Extendable, 260 HP (Diesel)	2431	3.6	31.416	0.247	360.357	2.828	0.857	0.007	13.590	0.107	89,697.851	703.851		
Large Engine Generator, 100KW, Diesel, Enclosed, 160 HP	2971	4.3	46.042	0.441	332.945	3.193	0.724	0.007	19.912	0.191	64,342.907	616.970		
Large Engine Generator, 15.0KW, Diesel, 26.5HP	1395	2.0	5.886	0.027	29.484	0.133	0.072	0.000	2.182	0.010	4,625.962	20.832		
Large Engine Generator, 20.0KW, Diesel, 34HP	3870	5.7	10.890	0.136	36.619	0.457	0.101	0.001	3.472	0.043	7,990.295	99.804		
Large Engine Generator, 60KW, Diesel, Enclosed, 88 HP	4608	6.7	37.238	0.554	216.406	3.219	0.414	0.006	19.867	0.295	35,325.511	525.428		
Manitowoc Crawler Mntd Lattice Boom Crane, 127MT, 60' Boom, 287HP (Diesel)	6033	8.8	40.757	0.794	163.592	3.185	0.313	0.006	20.938	0.408	32,759.889	637.903		
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	8469	12.4	44.891	1.227	252.851	6.912	0.484	0.013	22.580	0.617	50,634.394	1,384.110		
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	13584	19.9	36.879	1.617	390.525	17.123	0.725	0.032	16.062	0.704	75,915.404	3,328.665		
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	25086	36.7	30.036	2.432	95.585	7.740	0.301	0.024	15.635	1.266	31,570.801	2,556.439		
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, Crew, 285 HP (Gas)	2739	4.0	37.596	0.332	126.672	1.120	0.400	0.004	16.741	0.148	41,838.390	369.897		
On-Highway Truck Tractor - 6X4, 45K gw, 380 HP (Diesel)	1382	2.0	34.958	0.156	249.537	1.113	0.463	0.002	15.912	0.071	48,508.330	216.375		
On-Highway Truck Tractor - 6X6, 70K gw, 450 HP (Diesel)	765	1.1	36.879	0.091	390.525	0.964	0.725	0.002	16.062	0.040	75,915.404	187.358		
Portable Welder, 300 Amp, Trailer Mounted, AC/DC-CC/CV, 20 HP (Diesel)	208	0.3	7.711	0.005	23.440	0.016	0.065	0.000	2.322	0.002	5,114.701	3.438		
Portable Welder, 600 Amp, Trailer Mounted, DC-CC/CV, 42 HP (Diesel)	4051	5.9	32.697	0.428	113.219	1.480	0.152	0.002	8.318	0.109	11,763.806	153.811		
Rear Discharge Concrete Transit Mixer - 8cy - 60kgw, 235 HP (Diesel)	9448	13.8	37.596	1.147	126.672	3.863	0.400	0.012	16.741	0.511	41,838.390	1,275.980		
Skid Steer Loader, Bobcat, 2400 lb Capacity, 73 HP (Diesel)	330	0.5	26.181	0.028	75.635	0.081	0.154	0.000	17.613	0.019	16,088.868	17.138		
Small Engine Generator, 3.0KW, Diesel, 5.5HP	529	0.8	5.886	0.010	29.484	0.050	0.072	0.000	2.182	0.004	4,625.962	7.895		
Small Engine Generator, 6.5KW, Diesel, 13HP	2596	3.8	5.886	0.049	29.484	0.247	0.072	0.001	2.182	0.018	4,625.962	38.760		
Total	115466			11.902		63.474		0.140		5.617		14,046.400		
Grading Equipment														
Dozer	0													
Grader	0													

Shasta Lake Water Resources Investigation

TSC - 4													
Outlet Works - 18.5 ft raise	Start	Finish											
Planned Construction Period	4/23/2019	4/30/2020											
Planned Duration (days)	260												
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	11872	46	30.036	3.024	95.585	9.622	0.301	0.030	15.635	1.574	31,570.801	3,178.120	
Centrifugal Pump, Gas, 200 gpm, 2" size, 8 HP (Gas)	11	0.0	4.801	0.000	21.443	0.002	0.052	0.000	1.735	0.000	3,364.335	0.311	
Portable Welder, 300 Amp, Trailer Mounted, AC/DC-CC/CV, 20 HP (Diesel)	308	1.2	7.711	0.020	23.440	0.061	0.065	0.000	2.322	0.006	5,114.701	13.358	
Large Engine Generator, 20.0KW, Diesel, 34HP	2529	9.7	10.890	0.234	36.619	0.785	0.101	0.002	3.472	0.074	7,990.295	171.339	
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	1905	7.3	28.657	0.463	143.317	2.315	0.250	0.004	15.373	0.248	21,277.144	343.728	
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	298	1.1	30.661	0.078	182.249	0.461	0.370	0.001	12.996	0.033	38,767.435	98.092	
Rear Discharge Concrete Transit Mixer - 8cy - 60kgw, 235 HP (Diesel)	13	0.1	37.596	0.004	126.672	0.014	0.400	0.000	16.741	0.002	41,838.390	4.720	
Large Engine Generator, 100KW, Diesel, Enclosed, 160 HP	11	0.0	46.042	0.004	332.945	0.031	0.724	0.000	19.912	0.002	64,342.907	5.949	
Morgan Trailer Mounded Concrete Pump, 93 yph, 177 HP (Diesel)	88	0.3	47.797	0.036	333.673	0.249	0.715	0.001	20.623	0.015	63,501.811	47.384	
On-Highway Truck Tractor - 6X4, 45K gvw, 380 HP (Diesel)	1189	4.6	34.958	0.352	249.537	2.515	0.463	0.005	15.912	0.160	48,508.330	488.898	
Manitowoc Crawler Mntd Lattice Boom Crane, 127MT, 60' Boom, 287HP (Diesel)	238	0.9	40.757	0.082	163.592	0.330	0.313	0.001	20.938	0.042	32,759.889	66.001	
600 CFM Port. RS Air Compressor Diesel Powered 150 psi 275 HP	575	2.2	38.577	0.188	124.265	0.606	0.669	0.003	11.819	0.058	59,466.905	289.938	
Grove Rough Terrain Hyd Crane 68 MT 138' Boom, 250 HP (Diesel)	751	2.9	40.757	0.259	163.592	1.041	0.313	0.002	20.938	0.133	32,759.889	208.562	
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	136	0.5	36.879	0.043	390.525	0.451	0.725	0.001	16.062	0.019	75,915.404	87.713	
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	238	0.9	44.891	0.090	252.851	0.509	0.484	0.001	22.580	0.045	50,634.394	102.012	
Total	20161			4.877		18.994		0.051		2.412		5,106.125	
Grading Equipment													
Dozer	0												
Grader	0												

TSC - 7															
Railroad Realignment - 18.5 ft raise		Start	Finish												
Planned Construction Period		8/3/2016	8/8/2017												
Planned Duration (days)		256													
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)			
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	712	3	28.657	0.176	143.317	0.879	0.250	0.002	15.373	0.094	21,277.144	130.509			
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	505	2.0	30.661	0.133	182.249	0.793	0.370	0.002	12.996	0.057	38,767.435	168.702			
Bomag Manually Vibratory Compactor - 30" Smooth Drum, 30" wide (Diesel)	138	0.5	20.522	0.024	104.325	0.124	0.158	0.000	13.790	0.016	16,510.744	19.551			
Cat 730 Articulated Rear Dump Truck - 28.1 MT, 17.1-22.1 CY, 6x6, 317 HP (Diesel)	724	2.8	34.958	0.218	249.537	1.556	0.463	0.003	15.912	0.099	48,508.330	302.528			
Cat Single Drum Self Propelled Vibratory Compactor Padfoot - 66" wide drum, padfoot, 96 HP (Diesel)	138	0.5	20.522	0.024	104.325	0.124	0.158	0.000	13.790	0.016	16,510.744	19.551			
Cat Tractor-Loader-Backhoe, 4WD, 1 CY Bucket, Fixed Stick, 72 HP (Diesel)	1376	5.4	17.151	0.203	75.359	0.893	0.154	0.002	12.059	0.143	16,091.489	190.725			
Crawler Mounted Hydraulic Excavator - Cat 2.25 cy bucket - 222 HP (Diesel)	356	1.4	22.896	0.070	212.598	0.652	0.417	0.001	9.661	0.030	43,667.789	133.924			
Crawler Mounted Hydraulic Excavator - Cat 2.5 cy bucket - 321 HP (Diesel)	227	0.9	22.896	0.045	212.598	0.415	0.417	0.001	9.661	0.019	43,667.789	85.318			
Hand Held Rammer - 4" to 13", 3180 lb/blow, 4 HP (Gas)	322	1.3	21.161	0.059	50.846	0.141	0.088	0.000	7.767	0.022	9,248.938	25.620			
Hand Held Vibratory Plate Compactor, 25", 6k-9k lb/blow, 11 HP, Gas Powered	459	1.8	2.276	0.009	11.937	0.047	0.030	0.000	0.556	0.002	1,954.951	7.730			
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	2718	10.6	36.879	0.863	390.525	9.140	0.725	0.017	16.062	0.376	75,915.404	1,776.671			
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	712	2.8	30.036	0.184	95.585	0.586	0.301	0.002	15.635	0.096	31,570.801	193.648			
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, Crew, 285 HP (Gas)	1650	6.4	37.596	0.534	126.672	1.800	0.400	0.006	16.741	0.238	41,838.390	594.502			
On-Highway Truck Tractor - 6X4, 45K gw, 380 HP (Diesel)	667	2.6	34.958	0.201	249.537	1.433	0.463	0.003	15.912	0.091	48,508.330	278.561			
On-Highway Water Truck, 4000 Gal, 250 HP (Diesel)	459	1.8	37.596	0.149	126.672	0.501	0.400	0.002	16.741	0.066	41,838.390	165.436			
Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)	54	0.2	64.216	0.030	205.356	0.096	0.419	0.000	32.966	0.015	43,901.277	20.517			
Standard Crawler Loader - Cat 963C, 3.20 cy bucket - 158 HP - EROPS (Diesel)	55	0.2	26.181	0.012	75.635	0.036	0.154	0.000	17.613	0.008	16,088.868	7.620			
Total	11272			2.935		19.216		0.040		1.389		4,121.113			
Grading Equipment															
Dozer	54														
Grader	0														

Shasta Lake Water Resources Investigation

TSC - 8													
Right Wing Dam - 18.5 ft raise													
Planned Construction Period		Start	Finish										
		8/9/2016	4/22/2019										
Planned Duration (days)		683											
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
175 CFM Rotary Screw Port Air Compressor Gas 125 psi 90 HP	33	0.05	28.657	0.003	143.317	0.015	0.250	0.000	15.373	0.002	21,277.144	2.269	
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	1027	1.50	28.657	0.095	143.317	0.475	0.250	0.001	15.373	0.051	21,277.144	70.511	
4WD Articulated Wheel Loader - Cat 3.65 cy bucket - 160 HP - EROPS (Diesel)	256	0.38	32.104	0.027	133.153	0.110	0.270	0.000	17.328	0.014	28,323.951	23.432	
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	395	0.58	30.661	0.039	182.249	0.232	0.370	0.000	12.996	0.017	38,767.435	49.375	
600 CFM Port. RS Air Compressor Diesel Powered 150 psi 250 HP	319	0.47	52.301	0.054	226.848	0.234	0.715	0.001	21.720	0.022	74,925.493	77.150	
Barber-Greene Wheel Mounted Asphalt Paver, BG-240C, Pavemaster 10B, 2 wheel drive, 139 HP (Diesel)	16	0.02	29.785	0.002	202.541	0.010	0.328	0.000	15.909	0.001	34,379.976	1.780	
Cat Self Propelled Pneumatic Compactor - 7 wheel, 85 HP (Diesel)	16	0.02	20.522	0.001	104.325	0.005	0.158	0.000	13.790	0.001	16,510.744	0.855	
Cat Self Propelled Tandem Vibratory Comactor - 84" wide Smooth drum, 138 HP (Diesel)	32	0.05	20.522	0.002	104.325	0.011	0.158	0.000	13.790	0.001	16,510.744	1.710	
Cat Single Drum Self Propelled Vibratory Compactor Padfoot - 66" wide drum, padfoot, 96 HP (Diesel)	174	0.25	20.522	0.012	104.325	0.059	0.158	0.000	13.790	0.008	16,510.744	9.263	
Cat Tractor-Loader-Backhoe, 4WD, 1.5 CY Bucket, Fixed Stick, 101 HP (Diesel)	3	0.00	17.151	0.000	75.359	0.001	0.154	0.000	12.059	0.000	16,091.489	0.168	
Centrifugal Pump, Gas, 200 gpm, 2" size, 8 HP (Gas)	394	0.58	4.801	0.006	21.443	0.027	0.052	0.000	1.735	0.002	3,364.335	4.276	
Concrete Saw - 10.625" max depth, 26" Blade Dia. (not incl), 65 HP (Gas)	19	0.03	31.942	0.002	121.248	0.007	0.177	0.000	8.449	0.001	13,690.344	0.833	
Core drill, 3-inch chuck, 24" feed stroke, 40 hp, diesel	11	0.02	17.955	0.001	47.458	0.002	0.113	0.000	7.551	0.000	11,812.980	0.419	
Crawler Mounted Hydraulic Excavator - Cat 1.25 cy bucket - 168 HP (Diesel)	37	0.05	20.870	0.002	142.100	0.017	0.279	0.000	11.199	0.001	29,187.403	3.454	
Crawler Mounted Hydraulic Excavator - Cat 2.25 cy bucket - 222 HP (Diesel)	88	0.13	22.896	0.007	212.598	0.060	0.417	0.000	9.661	0.003	43,667.789	12.404	
Grove 4x2x4 Hyd Yard Crane Diesel 9.1 MT 24' Boom, 80 HP	678	0.99	30.944	0.068	66.584	0.146	0.127	0.000	18.180	0.040	13,333.705	29.163	
Grove Rough Terrain Hyd Crane 36 MT 105' Boom, 165 HP (Diesel)	187	0.27	33.157	0.020	111.882	0.067	0.214	0.000	18.204	0.011	22,404.817	13.495	
Large Engine Generator, 100KW, Diesel, Enclosed, 160 HP	410	0.60	46.042	0.061	332.945	0.441	0.724	0.001	19.912	0.026	64,342.907	85.204	
Large Engine Generator, 15.0KW, Diesel, 26.5HP	157	0.23	5.886	0.003	29.484	0.015	0.072	0.000	2.182	0.001	4,625.962	2.339	
Large Engine Generator, 20.0KW, Diesel, 26.5HP	1361	1.99	10.890	0.048	36.619	0.161	0.101	0.000	3.472	0.015	7,990.295	35.095	
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	827	1.21	44.891	0.120	252.851	0.675	0.484	0.001	22.580	0.060	50,634.394	135.132	
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel) Standby	49	0.07	44.891	0.007	252.851	0.040	0.484	0.000	22.580	0.004	50,634.394	8.001	
Off-Highway Water Tanker, 5000 Gal, 175 HP (Diesel)	163	0.24	30.036	0.016	95.585	0.050	0.301	0.000	15.635	0.008	31,570.801	16.590	
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	3656	5.35	36.879	0.435	390.525	4.608	0.725	0.009	16.062	0.190	75,915.404	895.796	
On-Highway Flatbed Truck, 4x2, 15k GVW, 210 HP (Gas)	176	0.26	37.596	0.021	126.672	0.072	0.400	0.000	16.741	0.010	41,838.390	23.830	
On-Highway Light Duty Truck/Pickup - 4X4, 1/2T, Conventional, 191 HP (Gas)	32	0.05	30.036	0.003	95.585	0.010	0.301	0.000	15.635	0.002	31,570.801	3.269	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	7390	10.82	30.036	0.716	95.585	2.280	0.301	0.007	15.635	0.373	31,570.801	753.059	
On-Highway Truck Tractor - 6X4, 45K gw, 380 HP (Diesel)	62	0.09	34.958	0.007	249.537	0.050	0.463	0.000	15.912	0.003	48,508.330	9.677	
On-Highway Truck Tractor - 6X6, 70K gw, 450 HP (Diesel)	121	0.18	36.879	0.014	390.525	0.152	0.725	0.000	16.062	0.006	75,915.404	29.542	
On-Highway Water Truck, 3000 Gal, 210 HP (Gas)	11	0.02	37.596	0.001	126.672	0.004	0.400	0.000	16.741	0.001	41,838.390	1.486	
Rear Discharge Concrete Transit Mixer - 8cy - 60kgw, 235 HP (Diesel)	1466	2.15	37.596	0.178	126.672	0.599	0.400	0.002	16.741	0.079	41,838.390	197.996	
Screen Plant, Single Deck, 24"X60' Conveyor, 5'x10' Screen Size, 51 HP (Diesel)	88	0.13	26.105	0.007	42.740	0.012	0.078	0.000	8.385	0.002	8,198.480	2.329	
Skid Steer Loader, Bobcat, 2400 lb Capacity, 73 HP (Diesel)	17	0.02	26.181	0.001	75.635	0.004	0.154	0.000	17.613	0.001	16,088.868	0.857	
Small Engine Generator, 6.5KW, Diesel, 13HP	349	0.51	5.886	0.007	29.484	0.033	0.072	0.000	2.182	0.002	4,625.962	5.209	
Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)	182	0.27	64.216	0.038	205.356	0.121	0.419	0.000	32.966	0.019	43,901.277	25.837	
Truck Chassis, 25k lbs, 4x2, 295 HP (Gas)	17	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Truck Chassis, 50k lbs, 6x4, 255 HP (Diesel)	11	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Total	20226			2.024		10.806		0.025		0.977		2,531.805	
Grading Equipment													
Dozer	182												
Grader	0												

Shasta Dam 6.5' Raise - Feasibility Estimate - Most Probable - April 2010 Price Level													
TSC - 9													
Sacramento River UPRR 2nd Crossing - 18.5 ft raise		Start	Finish										
Planned Construction Period		1/4/2016	12/22/2017										
Planned Duration (days)		501											
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
1150 CFM Port. RS Air Compressor Diesel 150 psi 525 HP	1294	2.58	63.849	0.364	214.313	1.221	1.031	0.006	19.444	0.111	105,021.813	598.203	
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	20400	40.72	28.657	2.572	143.317	12.865	0.250	0.022	15.373	1.380	21,277.144	1,909.986	
#WD Articulated Wheel Loader - Cat 3.65 cy bucket - 160 HP - EROPS (Diesel)	825	1.65	32.104	0.117	133.153	0.483	0.270	0.001	17.328	0.063	28,323.951	102.788	
#WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	740	1.48	30.661	0.100	182.249	0.593	0.370	0.001	12.996	0.042	38,767.435	126.175	
600 CFM Port. RS Air Compressor Diesel Powered 150 psi 275 HP	3652	7.29	38.577	0.620	124.265	1.997	0.669	0.011	11.819	0.190	59,466.905	955.650	
AmPiledr-VibrtryHmrr625HP	673	1.34	60.870	0.180	417.401	1.237	0.736	0.002	29.879	0.089	77,032.518	228.200	
Cat Self Propelled Tandem Vibratory Compactor - 56" Wide Smooth, 70 HP (Diesel)	40	0.08	20.522	0.004	104.325	0.018	0.158	0.000	13.790	0.002	16,510.744	2.892	
Cat Tractor-Loader-Backhoe, 4WD, 1 CY Bucket, Fixed Stick, 72 HP (Diesel)	1194	2.38	17.151	0.090	75.359	0.396	0.154	0.001	12.059	0.063	16,091.489	84.537	
Centrifugal Pump, Gas, 100 gpm, 1.5" Size, 3 HP (Gas)	11196	22.35	4.801	0.237	21.443	1.056	0.052	0.003	1.735	0.085	3,364.335	165.758	
Centrifugal Pump, Gas, 300 gpm, 3" Size, 7 HP (Gas)	5066	10.11	4.801	0.107	21.443	0.478	0.052	0.001	1.735	0.039	3,364.335	74.999	
Concrete pump & boom Schwing 2525H-5/S-47 on 255 hp chassis, 181 cy/hr & 155 ft boom	887	1.77	46.019	0.180	176.972	0.691	1.027	0.004	15.541	0.061	91,257.575	356.087	
Core drill, 3-inch chuck, 24" feed stroke, 40 hp, diesel	243	0.49	17.955	0.019	47.458	0.051	0.113	0.000	7.551	0.008	11,812.980	12.635	
Crawler Mounted Hydraulic Excavator - Cat 2.25 cy bucket - 222 HP (Diesel)	498	0.99	22.896	0.050	212.598	0.465	0.417	0.001	9.661	0.021	43,667.789	95.606	
Crawler Mounted Hydraulic Excavator - Cat 2.5 cy bucket - 321 HP (Diesel)	2217	4.42	22.896	0.223	212.598	2.074	0.417	0.004	9.661	0.094	43,667.789	425.928	
Grove 4x2x4 Hyd Yard Crane Diesel 9.1 MT 24' Boom, 80 HP	3326	6.64	30.944	0.453	66.584	0.975	0.127	0.002	18.180	0.266	13,333.705	195.174	
Grove Rough Terrain Hyd Crane 36 MT 105' Boom, 165 HP (Diesel)	2226	4.44	33.157	0.325	111.882	1.096	0.214	0.002	18.204	0.178	22,404.817	219.506	
Hand Held Rammer - 4" to 13", 3180 lb/blow, 4 HP (Gas)	40	0.08	21.161	0.004	50.846	0.009	0.088	0.000	7.767	0.001	9,248.938	1.620	
Hand Held Vibratory Plate Compactor, 25", 6k-9k lb/blow, 11 HP, Gas Powered	40	0.08	2.276	0.000	11.937	0.002	0.030	0.000	0.556	0.000	1,954.951	0.342	
I. C. Self Propelled Scissor Lift, 2500# Cap., 90"x170" deck, 50 HP (Diesel)	3238	6.46	3.390	0.048	39.910	0.569	0.080	0.001	1.490	0.021	8,267.000	117.808	
Inland Tug Boat 250HP 26ft	5360	10.70	20.001	0.472	112.351	2.650	112.351	2.650	8.611	0.203	23,309.646	549.841	
Large Engine Generator, 100KW, Diesel, Enclosed, 160 HP	1650	3.29	46.042	0.334	332.945	2.417	0.724	0.005	19.912	0.145	64,342.907	467.177	
Large Engine Generator, 20.0KW, Diesel, 34HP	6653	13.28	10.890	0.319	36.619	1.072	0.101	0.003	3.472	0.102	7,990.295	233.918	
Large Engine Generator, 60KW, Diesel, Enclosed, 88 HP	5180	10.34	37.238	0.849	216.406	4.933	0.414	0.009	19.867	0.453	35,325.511	805.254	
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	13682	27.31	44.891	2.703	252.851	15.223	0.484	0.029	22.580	1.359	50,634.394	3,048.469	
Manitowoc Crawler Mntd Lattice Boom Crane, 90.70 MT, 40' Boom, 230HP (Diesel)	9862	19.69	40.757	1.769	163.592	7.100	0.313	0.014	20.938	0.909	32,759.889	1,421.751	
Off-Highway Water Tanker, 5000 Gal, 175 HP (Diesel)	40	0.08	30.036	0.005	95.585	0.017	0.301	0.000	15.635	0.003	31,570.801	5.531	
On-Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	3497	6.98	36.879	0.567	390.525	6.009	0.725	0.011	16.062	0.247	75,915.404	1,168.128	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	38889	77.62	30.036	5.140	95.585	16.358	0.301	0.052	15.635	2.676	31,570.801	5,402.719	
On-Highway Truck Tractor - 4X2, 30K gw, 210 HP (Diesel)	88	0.18	34.958	0.014	249.537	0.097	0.463	0.000	15.912	0.006	48,508.330	18.784	
On-Highway Truck Tractor - 6X4, 45K gw, 380 HP (Diesel)	1386	2.77	34.958	0.213	249.537	1.522	0.463	0.003	15.912	0.097	48,508.330	295.853	
Portable Welder, 600 Amp, Trailer Mounted, DC-CC/CV, 42 HP (Diesel)	6290	12.55	32.697	0.905	113.219	3.134	0.152	0.004	8.318	0.230	11,763.806	325.590	
Small Engine Generator, 6.5KW, Diesel, 13HP	1479	2.95	5.886	0.038	29.484	0.192	0.072	0.000	2.182	0.014	4,625.962	30.098	
Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)	36	0.07	64.216	0.010	205.356	0.032	0.419	0.000	32.966	0.005	43,901.277	6.866	
Vacuum, 5 cy capacity, PTO operated, truck included.	237	0.47	37.596	0.039	126.672	0.132	0.400	0.000	16.741	0.017	41,838.390	43.550	
Total	152122			19.070		87.162		2.844		9.182		19,497.425	
Grading Equipment													
Dozer	36												
Grader	0												

Shasta Lake Water Resources Investigation

TSC - 10														
Spillway - 18.5 ft raise	Start	Finish												
	Planned Construction Period	1/3/2017	4/22/2019											
	Planned Duration (days)	583												
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)		
175 CFM Rotary Screw Port Air Compressor Gas 125 psi 90 HP	3804	6.53	28.657	0.412	143.317	2.062	0.250	0.004	15.373	0.221	21,277.144	306.092		
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	8716	14.95	28.657	0.945	143.317	4.723	0.250	0.008	15.373	0.507	21,277.144	701.260		
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	1758	3.02	30.661	0.204	182.249	1.212	0.370	0.002	12.996	0.086	0.000	0.000		
600 CFM Port. RS Air Compressor Diesel Powered 150 psi 275 HP	6348	10.89	38.577	0.926	124.265	2.983	0.669	0.016	11.819	0.284	0.000	0.000		
Centrifugal Pump, Gas, 200 gpm, 2" size, 8 HP (Gas)	1518	2.60	4.801	0.028	21.443	0.123	0.052	0.000	1.735	0.010	3,364.335	19.317		
Concrete Saw - 10.625" max depth, 26" Blade Dia. (not incl), 65 HP (Gas)	462	0.79	31.942	0.056	121.248	0.212	0.177	0.000	8.449	0.015	13,690.344	23.918		
Concrete Street & Highway Slipform Paver, Gomaco, 12'-32' Paving Width, 4 track, 335 HP (Diesel)	325	0.56	19.794	0.024	273.909	0.336	0.444	0.001	9.219	0.011	46,494.289	57.085		
Core drill, 3-inch chuck, 24" feed stroke, 40 hp, diesel	9671	16.59	17.955	0.657	47.458	1.736	0.113	0.004	7.551	0.276	11,812.980	432.006		
Grove 4x2x4 Hyd Yard Crane Diesel 9.1 MT 24' Boom, 80 HP	1789	3.07	30.944	0.209	66.584	0.450	0.127	0.001	18.180	0.123	13,333.705	90.197		
Grove A125J Manlift, Articulating boom, 125' Max Ht, 500# Cap, 100 HP (Diesel)	132	0.23	3.952	0.002	57.607	0.029	0.114	0.000	2.553	0.001	11,931.823	5.956		
Grove All Terrain Hyd Crane, Dual Engine, 227 MT, 236' Boom, 165 HP (Diesel)	528	0.91	33.157	0.066	111.882	0.223	0.214	0.000	18.204	0.036	22,404.817	44.734		
Grove Rough Terrain Hyd Crane 36 MT 105' Boom, 165 HP (Diesel)	1423	2.44	33.157	0.178	111.882	0.602	0.214	0.001	18.204	0.098	22,404.817	120.578		
I.C. Self Propelled Scissor Lift, 2500# Cap., 90"x170" deck, 50 HP (Diesel)	1833	3.14	3.390	0.023	39.910	0.277	0.080	0.001	1.490	0.010	8,267.000	57.290		
Ingersol Rand Hyd Track Drill, 5" hole max, Extendable, 260 HP (Diesel)	1892	3.25	31.416	0.225	360.357	2.578	0.857	0.006	13.590	0.097	89,697.851	641.755		
Inland Tug Boat 250HP 26ft	1100	1.89	20.001	0.083	112.351	0.467	112.351	0.467	8.611	0.036	23,309.646	96.960		
Job pickup	35138	60.27	30.036	3.991	95.585	12.701	0.301	0.040	15.635	2.077	31,570.801	4,195.016		
Large Engine Generator, 100KW, Diesel, Enclosed, 160 HP	1518	2.60	46.042	0.264	332.945	1.912	0.724	0.004	19.912	0.114	64,342.907	369.434		
Large Engine Generator, 15.0KW, Diesel, 26.5HP	216	0.37	5.886	0.005	29.484	0.024	0.072	0.000	2.182	0.002	4,625.962	3.784		
Large Engine Generator, 20.0KW, Diesel, 34HP	11263	19.32	10.890	0.464	36.619	1.560	0.101	0.004	3.472	0.148	7,990.295	340.308		
Large Engine Generator, 60KW, Diesel, Enclosed, 88 HP	16658	28.57	37.238	2.346	216.406	13.632	0.414	0.026	19.867	1.251	35,325.511	2,225.263		
Manitowoc Crawler Mntd Lattice Boom Crane, 127MT, 60' Boom, 287HP (Diesel)	7343	12.59	40.757	1.132	163.592	4.542	0.313	0.009	20.938	0.581	32,759.889	909.604		
Manitowoc Crawler Mntd Lattice Boom Crane, 200 UST, 60' Boom, 340 HP (Diesel) OPERATING COSTS	1100	1.89	44.891	0.187	252.851	1.052	0.484	0.002	22.580	0.094	50,634.394	210.622		
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	7939	13.62	44.891	1.348	252.851	7.591	0.484	0.015	22.580	0.678	50,634.394	1,520.061		
Manitowoc Crawler Mntd Lattice Boom Crane, 90.7 MT, 40' Boom, 230HP Ownership costs	550	0.94	44.891	0.093	252.851	0.526	0.484	0.001	22.580	0.047	50,634.394	105.311		
Manitowoc Crawler Mntd Lattice Boom Crane, 90.70 MT, 40' Boom, 230HP Operating cost	550	0.94	40.757	0.085	163.592	0.340	0.313	0.001	20.938	0.044	32,759.889	68.135		
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	13539	23.22	36.879	1.888	390.525	19.995	0.725	0.037	16.062	0.822	75,915.404	3,886.802		
On-Highway Flatbed Truck, 4x2, 15k GVW, 210 HP (Gas)	5544	9.51	37.596	0.788	126.672	2.655	0.400	0.008	16.741	0.351	41,838.390	877.082		
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	19334	33.16	30.036	2.196	95.585	6.989	0.301	0.022	15.635	1.143	31,570.801	2,308.254		
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, Crew, 285 HP (Gas)	2046	3.51	37.596	0.291	126.672	0.980	0.400	0.003	16.741	0.130	41,838.390	323.703		
On-Highway Truck Tractor - 6X4, 45K gw, 380 HP (Diesel)	2261	3.88	34.958	0.299	249.537	2.134	0.463	0.004	15.912	0.136	48,508.330	414.810		
On-Highway Truck Tractor - 6X6, 70K gw, 450 HP (Diesel)	308	0.53	36.879	0.043	390.525	0.455	0.725	0.001	16.062	0.019	75,915.404	88.419		
Portable Welder, 600 Amp, Trailer Mounted, DC-CC/CV, 42 HP (Diesel)	22664	38.88	32.697	2.802	113.219	9.704	0.152	0.013	8.318	0.713	11,763.806	1,008.227		
Rear Discharge Concrete Transit Mixer - 8cy - 60kgw, 235 HP (Diesel)	5234	8.98	37.596	0.744	126.672	2.507	0.400	0.008	16.741	0.331	41,838.390	828.127		
Small Engine Generator, 6.5KW, Diesel, 13HP	5459	9.36	5.886	0.121	29.484	0.609	0.072	0.001	2.182	0.045	4,625.962	95.488		
	199963			23.125		107.919		0.712		10.539		22,375.600		
Grading Equipment														
Dozer	0													
Grader	0													

TSC - 11													
TCD Mods - 18.5 ft raise	Planned Construction Period	Start	Finish										
		10/17/2017	3/18/2019										
	Planned Duration (days)	170											
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	2704	15.91	28.657	1.005	143.317	5.026	0.250	0.009	15.373	0.539	21,277.144	746.112	
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	189	1.11	30.661	0.075	182.249	0.447	0.370	0.001	12.996	0.032	38,767.435	95.120	
600 CFM Port. RS Air Compressor Diesel Powered 150 psi 250 HP	37	0.22	52.301	0.025	226.848	0.110	0.715	0.000	21.720	0.011	74,925.493	36.279	
Grove 4x4x4 Hyd Yard Crane Diesel 13.6MT 52' Boom	144	0.85	33.157	0.062	111.882	0.209	0.214	0.000	18.204	0.034	22,404.817	41.781	
Grove Rough Terrain Hyd Crane 68 MT 138' Boom, 250 HP (Diesel)	2010	11.82	40.757	1.062	163.592	4.265	0.313	0.008	20.938	0.546	32,759.889	854.000	
Grove T60 Manlift, Telescopic Boom, 60' Max Ht, 500# Cap, 4WD, 60 HP (Diesel)	174	1.02	3.388	0.008	39.912	0.090	0.079	0.000	1.487	0.003	8,266.857	18.670	
Inland Tug Boat 250HP 26ft	70	0.41	20.001	0.018	112.351	0.102	112.351	0.102	8.611	0.008	23,309.646	21.125	
Large Engine Generator, 20.0KW, Diesel, 26.5HP	3577	21.04	10.890	0.505	36.619	1.699	0.101	0.005	3.472	0.161	7,990.295	370.674	
Low Ground Pressure Crawler Dozer - Cat 238 hp - EROPS - Straight (Diesel)	36	0.21	64.216	0.030	205.356	0.095	0.419	0.000	32.966	0.015	43,901.277	20.353	
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	2608	15.34	44.891	1.518	252.851	8.551	0.484	0.016	22.580	0.764	50,634.394	1,712.415	
On-Highway Flatbed Truck, 4x2, 15k GVW, 210 HP (Gas)	2350	13.83	37.596	1.146	126.672	3.861	0.400	0.012	16.741	0.510	41,838.390	1,275.235	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	12646	74.39	30.036	4.926	95.585	15.676	0.301	0.049	15.635	2.564	31,570.801	5,177.580	
On-Highway Truck Tractor - 6X4, 45K gww, 380 HP (Diesel)	2568	15.11	34.958	1.164	249.537	8.310	0.463	0.015	15.912	0.530	48,508.330	1,615.429	
Portable Welder, 300 Amp, Trailer Mounted, AC/DC-CC/CV, 20 HP (Diesel)	4	0.03	7.711	0.000	23.440	0.001	0.065	0.000	2.322	0.000	5,114.701	0.292	
Portable Welder, 600 Amp, Trailer Mounted, DC-CC/CV, 42 HP (Diesel)	191	1.12	32.697	0.081	113.219	0.280	0.152	0.000	8.318	0.021	11,763.806	29.117	
Small Engine Generator, 6.5KW, Diesel, 13HP	49	0.29	5.886	0.004	29.484	0.019	0.072	0.000	2.182	0.001	4,625.962	2.956	
Total	29358			11.630		48.740		0.219		5.739		12,017.138	
Grading Equipment													
Dozer	36												
Grader	0												

Shasta Lake Water Resources Investigation

TSC - 12													
Visitor Center Replacement - 18.5 ft raise	Start	Finish											
Planned Construction Period	5/15/2020	7/14/2021											
Planned Duration (days)	297												
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
4WD Articulated Wheel Loader - Cat 3.65 cy bucket - 160 HP - EROPS (Diesel)	153	0.51	32.104	0.036	133.153	0.151	0.270	0.000	17.328	0.020	28,323.951	32.089	
Art Frm Grader-Cat-165hp	31	0.10	51.239	0.012	167.322	0.038	0.308	0.000	28.023	0.006	32,245.462	7.335	
Atlantic Truck Mounted Vertical Earth Drill, 80' Depth, 6" Kelly Bar, 177 HP (Diesel)	22	0.07	21.038	0.003	217.595	0.036	0.517	0.000	8.893	0.001	54,162.283	8.845	
Cat PM 565 b Cold planer - 82" cutting width	22	0.07	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Cat Self Propelled Pneumatic Compactor - 9 wheels, 100 HP (Diesel)	24	0.08	20.522	0.004	104.325	0.018	0.158	0.000	13.790	0.002	16,510.744	2.894	
Cat Single Drum Self Propelled Vibratory Compactor - 84" pad foot 142 HP (Diesel)	102	0.34	20.522	0.015	104.325	0.079	0.158	0.000	13.790	0.010	16,510.744	12.454	
Cat Tractor-Loader-Backhoe, 4WD, 1 CY Bucket, Fixed Stick, 72 HP (Diesel)	64	0.21	17.151	0.008	75.359	0.036	0.154	0.000	12.059	0.006	16,091.489	7.602	
Cedarapids Wheel Mounted Asphalt Paver, CR552RX, Fastach 10', 2 wheel drive, 240 HP (Diesel)	24	0.08	19.794	0.003	273.909	0.048	0.444	0.000	9.219	0.002	46,494.289	8.148	
Crawler Mounted Chain Trencher, Vermeer, 24" Trench Width, 96" Deep Trench, 140 HP (Diesel)	28	0.09	44.074	0.009	208.543	0.043	0.358	0.000	23.694	0.005	37,481.773	7.651	
Crawler Mounted Hydraulic Excavator - Cat 1.25 cy bucket - 138 HP (Diesel)	31	0.10	20.870	0.005	142.100	0.033	0.279	0.000	11.199	0.003	29,187.403	6.715	
Finn T280 Seed Sprayer (for Truck Mounting), Not including Truck, 2500 gal Working Capacity, 115 HP (Diesel)	6	0.02	21.219	0.001	87.888	0.004	0.163	0.000	14.730	0.001	17,084.849	0.698	
Fork Lift	83	0.28	12.526	0.008	47.128	0.029	0.083	0.000	8.614	0.005	8,648.626	5.296	
Grove 4x2x4 Hyd Yard Crane Diesel 9.1 MT 24' Boom, 80 HP	91	0.31	30.944	0.021	66.584	0.045	0.127	0.000	18.180	0.012	13,333.705	9.036	
Grove 4x4x4 Hyd Yard Crane Diesel 13.6MT 52' Boom	88	0.30	33.157	0.022	111.882	0.073	0.214	0.000	18.204	0.012	22,404.817	14.635	
Grove 8x4x4 Truck Mounted Hyd Crane, Single Engine, 50MT, 110' Boom, 450 HP (Diesel)	135	0.46	44.891	0.045	252.851	0.254	0.484	0.000	22.580	0.023	50,634.394	50.910	
Grove Rough Terrain Hyd Crane 36 MT 105' Boom, 165 HP (Diesel)	6	0.02	33.157	0.001	111.882	0.005	0.214	0.000	18.204	0.001	22,404.817	0.915	
Grove T80 Manlift, Telescopic Boom, 80' Max Ht, 600# Cap, 4wd, 85 HP (Diesel)	87	0.29	3.952	0.003	57.607	0.037	0.114	0.000	2.553	0.002	11,931.823	7.745	
Hand Held Vibratory Plate Compactor, 25", 6k-9k lb/blow, 11 HP, Gas Powered	33	0.11	2.276	0.001	11.937	0.003	0.030	0.000	0.556	0.000	1,954.951	0.472	
I.C. Self Propelled Scissor Lift, 1500# cap., 72"x132" deck, 25 HP, <30' (Diesel)	299	1.01	3.390	0.008	39.910	0.089	0.080	0.000	1.490	0.003	8,267.000	18.374	
Job pickup	5415	18.23	30.036	1.207	95.585	3.842	0.301	0.012	15.635	0.629	31,570.801	1,269.107	
Large Engine Generator, 20.0KW, Diesel, 34HP	104	0.35	10.890	0.008	36.619	0.028	0.101	0.000	3.472	0.003	7,990.295	6.165	
Large Engine Generator, 60KW, Diesel, Enclosed, 88 HP	33	0.11	37.238	0.009	216.406	0.053	0.414	0.000	19.867	0.005	35,325.511	8.653	
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	135	0.45	36.879	0.037	390.525	0.391	0.725	0.001	16.062	0.016	75,915.404	76.075	
On-Highway Flatbed Truck, 4x2, 15k GVW, 210 HP (Gas)	73	0.24	37.596	0.020	126.672	0.068	0.400	0.000	16.741	0.009	41,838.390	22.547	
On-Highway Light Duty Truck/Pickup - 4X4, 1/2T, Conventional, 160 HP (Diesel)	22	0.07	37.596	0.006	126.672	0.021	0.400	0.000	16.741	0.003	41,838.390	6.832	
On-Highway Truck Tractor - 4X2, 30K gw, 217 HP (Diesel)	6	0.02	34.958	0.001	249.537	0.010	0.463	0.000	15.912	0.001	48,508.330	1.980	
On-Highway Truck Tractor - 6X6, 70K gw, 450 HP (Diesel)	167	0.56	36.879	0.046	390.525	0.483	0.725	0.001	16.062	0.020	75,915.404	93.827	
On-Highway Water Truck, 4000 Gal, 250 HP (Diesel)	157	0.53	37.596	0.044	126.672	0.148	0.400	0.000	16.741	0.020	41,838.390	48.812	
Portable Welder, 300 Amp, Trailer Mounted, AC/DC-CC/CV, 20 HP (Diesel)	154	0.52	7.711	0.009	23.440	0.027	0.065	0.000	2.322	0.003	5,114.701	5.847	
Rear Discharge Concrete Transit Mixer - 10cy - 66kgw, 285 HP (Diesel)	6	0.02	37.596	0.002	126.672	0.006	0.400	0.000	16.741	0.001	41,838.390	2.007	
Skid Steer Loader, Bobcat, 3000 lb Capacity, 105 HP (Diesel)	40	0.14	26.181	0.008	75.635	0.023	0.154	0.000	17.613	0.005	16,088.868	4.791	
Small Engine Generator, 10.0KW, Gas, 21HP	135	0.46	5.886	0.006	29.484	0.030	0.072	0.000	2.182	0.002	4,625.962	4.651	
Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)	161	0.54	64.216	0.077	205.356	0.245	0.419	0.001	32.966	0.039	43,901.277	52.476	
Truck Chassis, 25k lbs, 4x2, 295 HP (Gas)	6	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Truck Chassis, 50k lbs, 6x4, 255 HP (Diesel)	5	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Total	7944			1.684		6.394		0.017		0.868		1,805.586	
Grading Equipment													
Dozer	161												
Grader	31												

MWH - 3													
Dikes - 18.5 ft raise	Start	Finish											
Planned Construction Period	2/5/2016	1/30/2017											
Construction Duration (days)	247												
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
220 hp Bulldozer (Cat D7)	1096	4.44	64.216	0.628	205.356	2.008	0.419	0.004	32.966	0.322	43,901.277	429.312	
3.5 CY Loader (Cat 950)	124	0.50	32.104	0.036	133.153	0.147	0.270	0.000	17.328	0.019	28,323.951	31.349	
4.5 CY Loader (Cat 966)	483	1.96	32.104	0.139	133.153	0.575	0.270	0.001	17.328	0.075	28,323.951	122.230	
125 hp Grader (Cat 120)	3678	14.89	46.432	1.524	100.328	3.293	0.185	0.006	29.005	0.952	19,334.700	634.667	
1.5 CY Backhoe (Cat 325)	80	0.33	17.151	0.012	75.359	0.054	0.154	0.000	12.059	0.009	16,091.489	11.533	
2.0 CY Backhoe (Cat 330)	1543	6.25	21.606	0.298	128.999	1.777	0.263	0.004	11.773	0.162	27,545.365	379.467	
4.1 CY Backhoe (Hitachi EX400)	2832	11.47	21.606	0.546	128.999	3.261	0.263	0.007	11.773	0.298	27,545.365	696.359	
20 Ton (10 CY) Tandem Truck	1985	8.03	37.596	0.666	126.672	2.244	0.400	0.007	16.741	0.297	41,838.390	741.099	
24 Ton (12 CY) Tandem Truck	11219	45.42	37.596	3.765	126.672	12.685	0.400	0.040	16.741	1.676	41,838.390	4,189.696	
15 Ton Compactor 84" (Cat 563)	3242	13.13	20.522	0.594	104.325	3.019	0.158	0.005	13.790	0.399	16,510.744	477.832	
140 hp Wheel Skidder (Cat 515)	122	0.50	17.893	0.020	187.211	0.204	0.279	0.000	10.229	0.011	29,259.636	31.959	
210 hp Harvester (Cat 580)	122	0.50	34.815	0.038	229.129	0.250	0.422	0.000	15.365	0.017	44,156.690	48.231	
Cat 330 LC Log Loader	29	0.12	17.893	0.005	187.211	0.049	0.279	0.000	10.229	0.003	29,259.636	7.693	
Chipper - clearing	124	0.50	1.573	0.002	9.008	0.010	11.412	0.013	0.847	0.001	1,434.720	1.588	
DT-320 Tree Mulcher	124	0.50	33.882	0.038	106.607	0.118	0.188	0.000	23.056	0.026	19,674.653	21.776	
Truck Mounted Post Hole Auger	68	0.27	21.038	0.013	217.595	0.131	0.517	0.000	8.893	0.005	54,162.283	32.704	
1/2 Ton Pickup Truck 2x2	19800	80.16	30.036	5.308	95.585	16.892	0.301	0.053	15.635	2.763	31,570.801	5,579.412	
3/4 Ton Pickup Truck 2x2	3568	14.45	37.596	1.197	126.672	4.034	0.400	0.013	16.741	0.533	41,838.390	1,332.531	
3/4 Ton Crew Cab Truck	9240	37.41	37.596	3.101	126.672	10.447	0.400	0.033	16.741	1.381	41,838.390	3,450.520	
1- Ton Mechanic Truck	4400	17.81	37.596	1.476	126.672	4.975	0.400	0.016	16.741	0.657	41,838.390	1,643.105	
logging Truck (Kenworth C500)	59	0.24	37.596	0.020	126.672	0.067	0.400	0.000	16.741	0.009	41,838.390	21.999	
30" Chain Saw	367	1.49	1.885	0.006	3.409	0.011	0.030	0.000	0.005	0.000	9.215	0.030	
Total	64307			19.430		66.253		0.203		9.615		19,885.093	
Grading Equipment													
Dozer	1096												
Grader	3678												

Shasta Lake Water Resources Investigation

MWH - 7												
Utilities - 18.5 ft raise	Start	Finish										
Planned Construction Period	1/4/2016	2/2/2018										
Construction Duration (days)	529											
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)
3.5 CY Loader (Cat 950)	2717	5.14	32.104	0.363	133.153	1.508	0.270	0.003	17.328	0.196	28,323.951	320.685
3.0 CY Track Loader (Cat 963)	167	0.316	32.104	0.022	133.153	0.093	0.270	0.000	17.328	0.012	28,323.951	19.736
1.5 CY Backhoe (Cat 225)	873	1.651	17.151	0.062	75.359	0.274	0.154	0.001	12.059	0.044	16,091.489	58.553
2.3 CY Backhoe (Cat 235)	2028	3.834	21.606	0.183	128.999	1.090	0.263	0.002	11.773	0.100	27,545.365	232.853
1.0 CY Backhoe Loader (Case 580)	6490	12.268	37.596	1.017	126.672	3.426	0.400	0.011	16.741	0.453	41,838.390	1,131.550
5 Ton Flatbed Truck	1311	2.479	37.596	0.205	126.672	0.692	0.400	0.002	16.741	0.091	41,838.390	228.625
12 Ton Flatbed Truck	88	0.166	37.596	0.014	126.672	0.046	0.400	0.000	16.741	0.006	41,838.390	15.344
16 Ton (8 CY) Tandem Truck	46	0.087	37.596	0.007	126.672	0.024	0.400	0.000	16.741	0.003	41,838.390	8.056
20 Ton (10 CY) Tandem Truck	302	0.571	37.596	0.047	126.672	0.159	0.400	0.001	16.741	0.021	41,838.390	52.668
90 Kg Plate Tamper	88	0.166	2.276	0.001	11.937	0.004	0.030	0.000	0.556	0.000	1,954.951	0.717
5 Ft Wheel Mounted Chain Trencher	256	0.483	44.074	0.047	208.543	0.222	0.358	0.000	23.694	0.025	37,481.773	39.933
Acetylene Cutting Torch	213	0.403	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000
Grout Pump	145	0.275	47.797	0.029	333.673	0.202	0.715	0.000	20.623	0.012	63,501.811	38.441
10 KW Generator Set (Gas)	405	0.765	30.036	0.051	95.585	0.161	0.301	0.001	15.635	0.026	31,570.801	53.260
Knuckboom Manlift 36 Ft	23	0.043	3.388	0.000	39.912	0.004	0.079	0.000	1.487	0.000	8,266.857	0.777
Hoe Hammer 4X	79	0.150	88.486	0.029	694.256	0.229	1.224	0.000	42.483	0.014	128,126.723	42.291
Hoe Hammer 10X	9	0.017	88.486	0.003	694.256	0.025	1.224	0.000	42.483	0.002	128,126.723	4.699
3/4 Ton Pickup Truck 2x2	34091	64.444	37.596	5.341	126.672	17.997	0.400	0.057	16.741	2.378	41,838.390	5,944.190
5 Ton Flat Bed Truck	6229	11.775	37.596	0.976	126.672	3.288	0.400	0.010	16.741	0.435	41,838.390	1,086.081
2-Ton Mechanic Truck	275	0.520	37.596	0.043	126.672	0.145	0.400	0.000	16.741	0.019	41,838.390	47.950
Electrical Service truck	4399	8.315	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10 Ton Boomtruck	624	1.179	34.958	0.091	249.537	0.649	0.463	0.001	15.912	0.041	48,508.330	126.114
15 Ton Pitman Boom Truck	275	0.520	34.958	0.040	249.537	0.286	0.463	0.001	15.912	0.018	48,508.330	55.594
20 Ton Boomtruck	387	0.732	34.958	0.056	249.537	0.403	0.463	0.001	15.912	0.026	48,508.330	78.276
Tractor & Trailer	624	1.179	34.960	0.091	249.540	0.649	0.460	0.001	15.910	0.041	48,508.000	126.113
60 Ton Lowboy	4400	8.318	52.301	0.959	226.848	4.160	0.715	0.013	21.720	0.398	74,925.493	1,373.919
Total	66544			9.680		35.738		0.106		4.364		11,086.425
Grading Equipment												
Dozer	0											
Grader	0											

11.CP4 Equipment Exhaust Emissions													
TSC - 1													
UPRR Doney Creek Bridge - 18.5ft raise		Start	Finish										
Planned Construction Period		1/15/2016	11/9/2017										
Planned Duration (days)		461											
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (g/hr)	CO (lb/day)	NOX (g/hr)	NOX (lb/day)	PM10 (g/hr)	PM10 (lb/day)	CO2 (g/hr)	CO2 (lb/day)	
1150 CFM Port. RS Air Compressor Diesel 150 psi 525 HP	985	2.1	63.849	0.301	214.313	1.010	0.163	0.001	19.444	0.092	105,021.813	494.931	
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	11106	24.1	28.657	1.522	143.317	7.612	0.065	0.003	15.373	0.817	21,277.144	1,130.097	
4WD Articulated Wheel Loader - Cat 3.65 cy bucket - 160 HP - EROPS (Diesel)	318	0.7	32.104	0.049	133.153	0.202	0.065	0.000	17.328	0.026	28,323.951	43.043	
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	504	1.1	30.661	0.074	182.249	0.439	0.270	0.001	12.996	0.031	38,767.435	93.475	
600 CFM Port. RS Air Compressor Diesel Powered 150 psi 275 HP	1268	2.7	38.577	0.234	124.265	0.753	0.715	0.004	11.819	0.072	59,466.905	360.486	
AmPiledr-VibrtryHmnr625HP	316	0.7	60.870	0.092	417.401	0.630	0.736	0.001	29.879	0.045	77,032.518	116.250	
Cat Self Propelled Tandem Vibratory Compactor - 56" Wide Smooth, 70 HP (Diesel)	46	0.1	20.522	0.005	104.325	0.023	0.158	0.000	13.790	0.003	16,510.744	3.639	
Cat Tractor-Loader-Backhoe, 4WD, 1 CY Bucket, Fixed Stick, 72 HP (Diesel)	85	0.2	17.151	0.007	75.359	0.031	0.154	0.000	12.059	0.005	16,091.489	6.518	
Centrifugal Pump, Gas, 100 gpm, 1.5" Size, 3 HP (Gas)	8859	19.2	4.801	0.203	21.443	0.908	0.052	0.002	1.735	0.073	3,364.335	142.529	
Centrifugal Pump, Gas, 300 gpm, 3" Size, 7 HP (Gas)	2068	4.5	4.801	0.047	21.443	0.212	0.052	0.001	1.735	0.017	3,364.335	33.272	
Concrete pump & boom Schwing 2525H-5/S-47 on 255 hp chassis, 181 cy/hr & 155 ft boom	478	1.0	46.019	0.105	176.972	0.405	1.027	0.002	15.541	0.036	91,257.575	208.779	
Core drill, 3-inch chuck, 24" feed stroke, 40 hp, diesel	94	0.2	17.955	0.008	47.458	0.021	0.113	0.000	7.551	0.003	11,812.980	5.291	
Crawler Mounted Hydraulic Excavator - Cat 2.25 cy bucket - 222 HP (Diesel)	291	0.6	22.896	0.032	212.598	0.296	0.417	0.001	9.661	0.013	43,667.789	60.699	
Crawler Mounted Hydraulic Excavator - Cat 2.5 cy bucket - 321 HP (Diesel)	534	1.2	22.896	0.059	212.598	0.543	0.417	0.001	9.661	0.025	43,667.789	111.614	
Grove 4x2x4 Hyd Yard Crane Diesel 9.1 MT 24' Boom, 80 HP	2218	4.8	30.944	0.328	66.584	0.706	0.127	0.001	18.180	0.193	13,333.705	141.406	
Grove Rough Terrain Hyd Crane 36 MT 105' Boom, 165 HP (Diesel)	592	1.3	33.157	0.094	111.882	0.317	0.214	0.001	18.204	0.052	22,404.817	63.431	
Hand Held Rammer - 4" to13", 3180 lb/blow, 4 HP (Gas)	46	0.1	21.161	0.005	50.846	0.011	0.088	0.000	7.767	0.002	9,248.938	2.039	
Hand Held Vibratory Plate Compactor, 25", 6k-9k lb/blow, 11 HP, Gas Powered	46	0.1	2.276	0.001	11.937	0.003	0.030	0.000	0.556	0.000	1,954.951	0.431	
I.C. Self Propelled Scissor Lift, 2500# Cap., 90"x170" deck, 50 HP (Diesel)	1040	2.3	3.390	0.017	39.910	0.198	0.080	0.000	1.490	0.007	8,267.000	41.097	
Inland Tug Boat 250HP 26ft	2735	5.9	20.001	0.262	112.351	1.469	112.351	1.469	8.611	0.113	23,309.646	304.873	
Large Engine Generator, 100KW, Diesel, Enclosed, 160 HP	532	1.2	46.042	0.117	332.945	0.847	0.724	0.002	19.912	0.051	64,342.907	163.699	
Large Engine Generator, 20.0KW, Diesel, 34HP	4435	9.6	10.890	0.231	36.619	0.777	0.101	0.002	3.472	0.074	7,990.295	169.477	
Large Engine Generator, 60KW, Diesel, Enclosed, 88 HP	2454	5.3	37.238	0.437	216.406	2.539	0.414	0.005	19.867	0.233	35,325.511	414.533	
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	7141	15.5	44.891	1.533	252.851	8.635	0.484	0.017	22.580	0.771	50,634.394	1,729.182	
Manitowoc Crawler Mntd Lattice Boom Crane, 90.70 MT, 40' Boom, 230HP (Diesel)	4055	8.8	40.757	0.790	163.592	3.172	0.313	0.006	20.938	0.406	32,759.889	635.248	
Off-Highway Water Tanker, 5000 Gal, 175 HP (Diesel)	46	0.1	30.036	0.007	95.585	0.021	0.301	0.000	15.635	0.003	31,570.801	6.959	
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	1112	2.4	36.879	0.196	390.525	2.077	0.725	0.004	16.062	0.085	75,915.404	403.744	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	24459	53.1	30.036	3.513	95.585	11.180	0.301	0.035	15.635	1.829	31,570.801	3,692.745	
On-Highway Truck Tractor - 4X2, 30K gww, 210 HP (Diesel)	88	0.2	34.958	0.015	249.537	0.105	0.463	0.000	15.912	0.007	48,508.330	20.414	
On-Highway Truck Tractor - 6X4, 45K gww, 380 HP (Diesel)	840	1.8	34.958	0.140	249.537	1.002	0.463	0.002	15.912	0.064	48,508.330	194.863	
Portable Welder, 600 Amp, Trailer Mounted, DC-CC/CV, 42 HP (Diesel)	3280	7.1	32.697	0.513	113.219	1.776	0.152	0.002	8.318	0.130	11,763.806	184.545	
Small Engine Generator, 6.5KW, Diesel, 13HP	824	1.8	5.886	0.023	29.484	0.116	0.072	0.000	2.182	0.009	4,625.962	18.225	
Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)	11	0.02	64.216	0.003	205.356	0.010	0.419	0.000	32.966	0.002	43,901.277	2.238	
Vacuum, 5 cy capacity, PTO operated, truck included.	195	0.4	37.596	0.035	126.672	0.118	0.400	0.000	16.741	0.016	41,838.390	38.956	
Total	83099			10.997		48.167		1.565		5.304		11,038.728	
Grading Equipment													
Dozer	11												
Grader	0												

Shasta Lake Water Resources Investigation

TSC - 2													
Left Wing Dam - 18.5 ft raise	Start	Finish											
	8/8/2016	3/23/2018											
	Planned Construction Period												
	Planned Duration (days)		410										
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
175 CFM Rotary Screw Port Air Compressor Gas 125 psi 90 HP	367	0.90	28.657	0.057	143.317	0.283	0.250	0.000	15.373	0.030	21,277.144	41.992	
20" Gas Chain Saw	22	0.05	1.885	0.000	3.409	0.000	0.030	0.000	0.005	0.000	9.215	0.001	
4WD Articulated Wheel Loader - Cat 3.65 cy bucket - 160 HP - EROPS (Diesel)	1870	4.56	32.104	0.323	133.153	1.339	0.270	0.003	17.328	0.174	28,323.951	284.804	
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	2176	5.31	30.661	0.359	182.249	2.132	0.370	0.004	12.996	0.152	38,767.435	453.544	
Bandit 1990XP, Trailer Mounted Brush Chipper, 20" Capacity, 250 HP (Diesel)	22	0.05	2.207	0.000	8.368	0.001	24.873	0.003	0.742	0.000	4,200.444	0.497	
Barber-Greene Wheel Mounted Asphalt Paver, BG-240C, Pavemaster 10B, 2 wheel drive, 139 HP (Diesel)	30	0.07	29.785	0.005	202.541	0.032	0.328	0.000	15.909	0.003	34,379.976	5.491	
Cat Self Propelled Pneumatic Compactor - 7 wheel, 85 HP (Diesel)	30	0.07	20.522	0.003	104.325	0.017	0.158	0.000	13.790	0.002	16,510.744	2.637	
Cat Self Propelled Tandem Vibratory Comactor - 84" wide Smooth drum, 138 HP (Diesel)	59	0.14	20.522	0.007	104.325	0.033	0.158	0.000	13.790	0.004	16,510.744	5.274	
Cat Self Propelled Tandem Vibratory Compactor - 56" Wide Smooth, 70 HP (Diesel)	455	1.11	20.522	0.050	104.325	0.255	0.158	0.000	13.790	0.034	16,510.744	40.431	
Cat Single Drum Self Propelled Vibratory Compactor Padfoot - 66" wide drum, padfoot, 96 HP (Diesel)	64	0.16	20.522	0.007	104.325	0.036	0.158	0.000	13.790	0.005	16,510.744	5.664	
Centrifugal Pump, Gas, 200 gpm, 2" size, 8 HP (Gas)	371	0.90	4.801	0.010	21.443	0.043	0.052	0.000	1.735	0.003	3,364.335	6.708	
Centrifugal Pump, Gas, 400 gpm, 3" Size, 7 HP (Gas)	39	0.09	4.801	0.001	21.443	0.004	0.052	0.000	1.735	0.000	3,364.335	0.703	
Concrete Saw - 10.625" max depth, 26" Blade Dia. (not incl), 65 HP (Gas)	24	0.06	31.942	0.004	121.248	0.016	0.177	0.000	8.449	0.001	13,690.344	1.781	
Crawler Mounted Hydraulic Excavator - Cat 1.25 cy bucket - 168 HP (Diesel)	1667	4.07	20.870	0.187	142.100	1.274	0.279	0.002	11.199	0.100	29,187.403	261.622	
Grove 4x2x4 Hyd Yard Crane Diesel 9.1 MT 24' Boom, 80 HP	60	0.15	30.944	0.010	66.584	0.021	0.127	0.000	18.180	0.006	13,333.705	4.290	
Grove Rough Terrain Hyd Crane 36 MT 105' Boom, 165 HP (Diesel)	1253	3.06	33.157	0.223	111.882	0.754	0.214	0.001	18.204	0.123	22,404.817	150.943	
Hand Held Rammer - 4" to 13", 3180 lb/blow, 4 HP (Gas)	455	1.11	21.161	0.052	50.846	0.125	0.088	0.000	7.767	0.019	9,248.938	22.648	
Hand Held Vibratory Plate Compactor, 25", 6k-9k lb/blow, 11 HP, Gas Powered	455	1.11	2.276	0.006	11.937	0.029	0.030	0.000	0.556	0.001	1,954.951	4.787	
Hydro-Ax 721E, Rubber Tired Brush Cutter, 8' Cutter size, 210 HP (Diesel)	22	0.05	64.220	0.008	205.360	0.024	0.420	0.000	32.970	0.004	43,901.000	5.193	
I.C. Self Propelled Scissor Lift, 1500# cap., 72"x132" deck, 25 HP, <30' (Diesel)	1461	3.56	3.390	0.027	39.910	0.313	0.080	0.001	1.490	0.012	8,267.000	64.937	
Large Engine Generator, 100KW, Diesel, Enclosed, 160 HP	371	0.90	46.042	0.092	332.945	0.664	0.724	0.001	19.912	0.040	64,342.907	128.293	
Large Engine Generator, 20.0KW, Diesel, 34HP	1197	2.92	10.890	0.070	36.619	0.236	0.101	0.001	3.472	0.022	7,990.295	51.420	
Off-Highway Water Tanker, 5000 Gal, 175 HP (Diesel)	2387	5.82	30.036	0.386	95.585	1.227	0.301	0.004	15.635	0.201	31,570.801	405.255	
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	29610	72.22	36.879	5.872	390.525	62.178	0.725	0.115	16.062	2.557	75,915.404	12,086.928	
On-Highway Light Duty Truck/Pickup - 4X4, 1/2T, Conventional, 191 HP (Gas)	59	0.14	30.036	0.010	95.585	0.031	0.301	0.000	15.635	0.005	31,570.801	10.084	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	1037	2.53	30.036	0.167	95.585	0.533	0.301	0.002	15.635	0.087	31,570.801	176.015	
On-Highway Water Truck, 3000 Gal, 210 HP (Gas)	25	0.06	37.596	0.005	126.672	0.017	0.400	0.000	16.741	0.002	41,838.390	5.642	
Rear Discharge Concrete Transit Mixer - 8cy - 60kgw, 235 HP (Diesel)	679	1.66	37.596	0.137	126.672	0.463	0.400	0.001	16.741	0.061	41,838.390	152.817	
Skid Steer Loader, Bobcat, 2400 lb Capacity, 73 HP (Diesel)	11	0.03	26.181	0.002	75.635	0.004	0.154	0.000	17.613	0.001	16,088.868	0.952	
Small Engine Generator, 1.5KW, Gas, 3.5 HP	328	0.80	5.886	0.010	29.484	0.052	0.072	0.000	2.182	0.004	4,625.962	8.152	
Small Engine Generator, 6.5KW, Diesel, 13HP	118	0.29	5.886	0.004	29.484	0.019	0.072	0.000	2.182	0.001	4,625.962	2.928	
Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)	2275	5.55	64.216	0.786	205.356	2.512	0.419	0.005	32.966	0.403	43,901.277	537.058	
Truck Chassis, 25k lbs, 4x2, 295 HP (Gas)	267	0.65	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Job pickup	3590	8.76	30.036	0.580	95.585	1.845	0.301	0.006	15.635	0.302	0.000	0.000	
Total	52857			9.457		76.512		0.152		4.361		14,929.491	
Grading Equipment													
Dozer	2275												
Grader	0												

Shasta Lake Water Resources Investigation

TSC - 4												
Outlet Works - 18.5 ft raise	Start	Finish										
	4/23/2019	4/30/2020										
	Planned Construction Period											
	Planned Duration (days)	260										
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	11872	46	30.036	3.024	95.585	9.622	0.301	0.030	15.635	1.574	31,570.801	3,178.120
Centrifugal Pump, Gas, 200 gpm, 2" size, 8 HP (Gas)	11	0.0	4.801	0.000	21.443	0.002	0.052	0.000	1.735	0.000	3,364.335	0.311
Portable Welder, 300 Amp, Trailer Mounted, AC/DC-CC/CV, 20 HP (Diesel)	308	1.2	7.711	0.020	23.440	0.061	0.065	0.000	2.322	0.006	5,114.701	13.358
Large Engine Generator, 20.0KW, Diesel, 34HP	2529	9.7	10.890	0.234	36.619	0.785	0.101	0.002	3.472	0.074	7,990.295	171.339
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	1905	7.3	28.657	0.463	143.317	2.315	0.250	0.004	15.373	0.248	21,277.144	343.728
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	298	1.1	30.661	0.078	182.249	0.461	0.370	0.001	12.996	0.033	38,767.435	98.092
Rear Discharge Concrete Transit Mixer - 8cy - 60kgw, 235 HP (Diesel)	13	0.1	37.596	0.004	126.672	0.014	0.400	0.000	16.741	0.002	41,838.390	4.720
Large Engine Generator, 100KW, Diesel, Enclosed, 160 HP	11	0.0	46.042	0.004	332.945	0.031	0.724	0.000	19.912	0.002	64,342.907	5.949
Morgan Trailer Moundtd Concrete Pump, 93 yph, 177 HP (Diesel)	88	0.3	47.797	0.036	333.673	0.249	0.715	0.001	20.623	0.015	63,501.811	47.384
On-Highway Truck Tractor - 6X4, 45K gw, 380 HP (Diesel)	1189	4.6	34.958	0.352	249.537	2.515	0.463	0.005	15.912	0.160	48,508.330	488.898
Manitowoc Crawler Mntd Lattice Boom Crane, 127MT, 60' Boom, 287HP (Diesel)	238	0.9	40.757	0.082	163.592	0.330	0.313	0.001	20.938	0.042	32,759.889	66.001
600 CFM Port. RS Air Compressor Diesel Powered 150 psi 275 HP	575	2.2	38.577	0.188	124.265	0.606	0.669	0.003	11.819	0.058	59,466.905	289.938
Grove Rough Terrain Hyd Crane 68 MT 138' Boom, 250 HP (Diesel)	751	2.9	40.757	0.259	163.592	1.041	0.313	0.002	20.938	0.133	32,759.889	208.562
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	136	0.5	36.879	0.043	390.525	0.451	0.725	0.001	16.062	0.019	75,915.404	87.713
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	238	0.9	44.891	0.090	252.851	0.509	0.484	0.001	22.580	0.045	50,634.394	102.012
Total	20161			4.877		18.994		0.051		2.412		5,106.125
Grading Equipment												
Dozer	0											
Grader	0											

TSC - 5													
Pit River Bridge Pier 3 and 4 Prot - 18.5 ft raise	Start	Finish											
	5/2/2016	9/6/2017											
Planned Construction Period	342												
Planned Duration (days)													
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	987	3	28.657	0.182	143.317	0.911	0.250	0.002	15.373	0.098	21,277.144	135.315	
600 CFM Port. RS Air Compressor Diesel Powered 150 psi 275 HP	1361	4.0	38.577	0.339	124.265	1.091	0.669	0.006	11.819	0.104	59,466.905	521.883	
Grove 8x4x4 Truck Mounted Hyd Crane, Singel Engine, 50MT, 110' Boom, 450 HP (Diesel)	113	0.3	44.891	0.033	252.851	0.184	0.484	0.000	22.580	0.016	50,634.394	36.830	
Grove Rough Terrain Hyd Crane 36 MT 105' Boom, 165 HP (Diesel)	280	0.8	33.157	0.060	111.882	0.202	0.214	0.000	18.204	0.033	22,404.817	40.432	
Grove Rough Terrain Hyd Crane 68 MT 138' Boom, 250 HP (Diesel)	220	0.6	40.757	0.058	163.592	0.232	0.313	0.000	20.938	0.030	32,759.889	46.459	
Ingersol Rand Hyd Track Drill, 4" hole max, Long Guide, 215 HP (Diesel)	1931	5.6	31.416	0.391	360.357	4.485	0.857	0.011	13.590	0.169	89,697.851	1,116.434	
Large Engine Generator, 15.0KW, Diesel, 26.5HP	26	0.1	5.886	0.001	29.484	0.005	0.072	0.000	2.182	0.000	4,625.962	0.787	
Large Engine Generator, 20.0KW, Diesel, 34HP	3291	9.6	10.890	0.231	36.619	0.777	0.101	0.002	3.472	0.074	7,990.295	169.522	
Large Engine Generator, 60KW, Diesel, Enclosed, 88 HP	1361	4.0	37.238	0.327	216.406	1.899	0.414	0.004	19.867	0.174	35,325.511	310.018	
Manitowoc Crawler Mntd Lattice Boom Crane, 127MT, 60' Boom, 287HP (Diesel)	3260	9.5	40.757	0.857	163.592	3.438	0.313	0.007	20.938	0.440	32,759.889	688.451	
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	5845	17.1	44.891	1.691	252.851	9.526	0.484	0.018	22.580	0.851	50,634.394	1,907.717	
Morgan Trailer Mounded Concrete Pump, 122 yph, 177 HP (Diesel)	220	0.6	47.797	0.068	333.673	0.473	0.715	0.001	20.623	0.029	63,501.811	90.057	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	13513	39.5	30.036	2.616	95.585	8.326	0.301	0.026	15.635	1.362	31,570.801	2,750.094	
Small Engine Generator, 3.0KW, Diesel, 5.5HP	119	0.3	5.886	0.005	29.484	0.023	0.072	0.000	2.182	0.002	4,625.962	3.558	
Small Engine Generator, 6.5KW, Diesel, 13HP	220	0.6	5.886	0.008	29.484	0.042	0.072	0.000	2.182	0.003	4,625.962	6.560	
Total	32748			6.866		31.615		0.077		3.385		7,824.118	
Grading Equipment													
Dozer	0												
Grader	0												

TSC - 7												
Railroad Realignment - 18.5 ft raise												
	Start	Finish										
Planned Construction Period	8/3/2016	8/8/2017										
Planned Duration (days)	256											
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	712	3	28.657	0.176	143.317	0.879	0.250	0.002	15.373	0.094	21,277.144	130.509
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	505	2.0	30.661	0.133	182.249	0.793	0.370	0.002	12.996	0.057	38,767.435	168.702
Bomag Manually Vibratory Compactor - 30" Smooth Drum, 30" wide (Diesel)	138	0.5	20.522	0.024	104.325	0.124	0.158	0.000	13.790	0.016	16,510.744	19.551
Cat 730 Articulated Rear Dump Truck - 28.1 MT, 17.1-22.1 CY, 6x6, 317 HP (Diesel)	724	2.8	34.958	0.218	249.537	1.556	0.463	0.003	15.912	0.099	48,508.330	302.528
Cat Single Drum Self Propelled Vibratory Compactor Padfoot - 66" wide drum, padfoot, 96 HP (Diesel)	138	0.5	20.522	0.024	104.325	0.124	0.158	0.000	13.790	0.016	16,510.744	19.551
Cat Tractor-Loader-Backhoe, 4WD, 1 CY Bucket, Fixed Stick, 72 HP (Diesel)	1376	5.4	17.151	0.203	75.359	0.893	0.154	0.002	12.059	0.143	16,091.489	190.725
Crawler Mounted Hydraulic Excavator - Cat 2.25 cy bucket - 222 HP (Diesel)	356	1.4	22.896	0.070	212.598	0.652	0.417	0.001	9.661	0.030	43,667.789	133.924
Crawler Mounted Hydraulic Excavator - Cat 2.5 cy bucket - 321 HP (Diesel)	227	0.9	22.896	0.045	212.598	0.415	0.417	0.001	9.661	0.019	43,667.789	85.318
Hand Held Rammer - 4" to13", 3180 lb/blow, 4 HP (Gas)	322	1.3	21.161	0.059	50.846	0.141	0.088	0.000	7.767	0.022	9,248.938	25.620
Hand Held Vibratory Plate Compactor, 25", 6k-9k lb/blow, 11 HP, Gas Powered	459	1.8	2.276	0.009	11.937	0.047	0.030	0.000	0.556	0.002	1,954.951	7.730
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	2718	10.6	36.879	0.863	390.525	9.140	0.725	0.017	16.062	0.376	75,915.404	1,776.671
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	712	2.8	30.036	0.184	95.585	0.586	0.301	0.002	15.635	0.096	31,570.801	193.648
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, Crew, 285 HP (Gas)	1650	6.4	37.596	0.534	126.672	1.800	0.400	0.006	16.741	0.238	41,838.390	594.502
On-Highway Truck Tractor - 6X4, 45K gw, 380 HP (Diesel)	667	2.6	34.958	0.201	249.537	1.433	0.463	0.003	15.912	0.091	48,508.330	278.561
On-Highway Water Truck, 4000 Gal, 250 HP (Diesel)	459	1.8	37.596	0.149	126.672	0.501	0.400	0.002	16.741	0.066	41,838.390	165.436
Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)	54	0.2	64.216	0.030	205.356	0.096	0.419	0.000	32.966	0.015	43,901.277	20.517
Standard Crawler Loader - Cat 963C, 3.20 cy bucket - 158 HP - EROPS (Diesel)	55	0.2	26.181	0.012	75.635	0.036	0.154	0.000	17.613	0.008	16,088.868	7.620
Total	11272			2.935		19.216		0.040		1.389		4,121.113
Grading Equipment												
Dozer	54											
Grader	0											

Shasta Lake Water Resources Investigation

TSC - 8													
Right Wing Dam - 18.5 ft raise													
Planned Construction Period		Start	Finish										
		8/9/2016	4/22/2019										
Planned Duration (days)		683											
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
175 CFM Rotary Screw Port Air Compressor Gas 125 psi 90 HP	33	0.05	28.657	0.003	143.317	0.015	0.250	0.000	15.373	0.002	21,277.144	2.269	
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	1027	1.50	28.657	0.095	143.317	0.475	0.250	0.001	15.373	0.051	21,277.144	70.511	
4WD Articulated Wheel Loader - Cat 3.65 cy bucket - 160 HP - EROPS (Diesel)	256	0.38	32.104	0.027	133.153	0.110	0.270	0.000	17.328	0.014	28,323.951	23.432	
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	395	0.58	30.661	0.039	182.249	0.232	0.370	0.000	12.996	0.017	38,767.435	49.375	
600 CFM Port. RS Air Compressor Diesel Powered 150 psi 250 HP	319	0.47	52.301	0.054	226.848	0.234	0.715	0.001	21.720	0.022	74,925.493	77.150	
Barber-Greene Wheel Mounted Asphalt Paver, BG-240C, Pavemaster 10B, 2 wheel drive, 139 HP (Diesel)	16	0.02	29.785	0.002	202.541	0.010	0.328	0.000	15.909	0.001	34,379.976	1.780	
Cat Self Propelled Pneumatic Compactor - 7 wheel, 85 HP (Diesel)	16	0.02	20.522	0.001	104.325	0.005	0.158	0.000	13.790	0.001	16,510.744	0.855	
Cat Self Propelled Tandem Vibratory Comactor - 84" wide Smooth drum, 138 HP (Diesel)	32	0.05	20.522	0.002	104.325	0.011	0.158	0.000	13.790	0.001	16,510.744	1.710	
Cat Single Drum Self Propelled Vibratory Compactor Padfoot - 66" wide drum, padfoot, 96 HP (Diesel)	174	0.25	20.522	0.012	104.325	0.059	0.158	0.000	13.790	0.008	16,510.744	9.263	
Cat Tractor-Loader-Backhoe, 4WD, 1.5 CY Bucket, Fixed Stick, 101 HP (Diesel)	3	0.00	17.151	0.000	75.359	0.001	0.154	0.000	12.059	0.000	16,091.489	0.168	
Centrifugal Pump, Gas, 200 gpm, 2" size, 8 HP (Gas)	394	0.58	4.801	0.006	21.443	0.027	0.052	0.000	1.735	0.002	3,364.335	4.276	
Concrete Saw - 10.625" max depth, 26" Blade Dia. (not incl), 65 HP (Gas)	19	0.03	31.942	0.002	121.248	0.007	0.177	0.000	8.449	0.001	13,690.344	0.833	
Core drill, 3-inch chuck, 24" feed stroke, 40 hp, diesel	11	0.02	17.955	0.001	47.458	0.002	0.113	0.000	7.551	0.000	11,812.980	0.419	
Crawler Mounted Hydraulic Excavator - Cat 1.25 cy bucket - 168 HP (Diesel)	37	0.05	20.870	0.002	142.100	0.017	0.279	0.000	11.199	0.001	29,187.403	3.454	
Crawler Mounted Hydraulic Excavator - Cat 2.25 cy bucket - 222 HP (Diesel)	88	0.13	22.896	0.007	212.598	0.060	0.417	0.000	9.661	0.003	43,667.789	12.404	
Grove 4x2x4 Hyd Yard Crane Diesel 9.1 MT 24' Boom, 80 HP	678	0.99	30.944	0.068	66.584	0.146	0.127	0.000	18.180	0.040	13,333.705	29.163	
Grove Rough Terrain Hyd Crane 36 MT 105' Boom, 165 HP (Diesel)	187	0.27	33.157	0.020	111.882	0.067	0.214	0.000	18.204	0.011	22,404.817	13.495	
Large Engine Generator, 100KW, Diesel, Enclosed, 160 HP	410	0.60	46.042	0.061	332.945	0.441	0.724	0.001	19.912	0.026	64,342.907	85.204	
Large Engine Generator, 15.0KW, Diesel, 26.5HP	157	0.23	5.886	0.003	29.484	0.015	0.072	0.000	2.182	0.001	4,625.962	2.339	
Large Engine Generator, 20.0KW, Diesel, 26.5HP	1361	1.99	10.890	0.048	36.619	0.161	0.101	0.000	3.472	0.015	7,990.295	35.095	
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	827	1.21	44.891	0.120	252.851	0.675	0.484	0.001	22.580	0.060	50,634.394	135.132	
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel) Standby	49	0.07	44.891	0.007	252.851	0.040	0.484	0.000	22.580	0.004	50,634.394	8.001	
Off-Highway Water Tanker, 5000 Gal, 175 HP (Diesel)	163	0.24	30.036	0.016	95.585	0.050	0.301	0.000	15.635	0.008	31,570.801	16.590	
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	3656	5.35	36.879	0.435	390.525	4.608	0.725	0.009	16.062	0.190	75,915.404	895.796	
On-Highway Flatbed Truck, 4x2, 15k GVW, 210 HP (Gas)	176	0.26	37.596	0.021	126.672	0.072	0.400	0.000	16.741	0.010	41,838.390	23.830	
On-Highway Light Duty Truck/Pickup - 4X4, 1/2T, Conventional, 191 HP (Gas)	32	0.05	30.036	0.003	95.585	0.010	0.301	0.000	15.635	0.002	31,570.801	3.269	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	7390	10.82	30.036	0.716	95.585	2.280	0.301	0.007	15.635	0.373	31,570.801	753.059	
On-Highway Truck Tractor - 6X4, 45K gw, 380 HP (Diesel)	62	0.09	34.958	0.007	249.537	0.050	0.463	0.000	15.912	0.003	48,508.330	9.677	
On-Highway Truck Tractor - 6X6, 70K gw, 450 HP (Diesel)	121	0.18	36.879	0.014	390.525	0.152	0.725	0.000	16.062	0.006	75,915.404	29.542	
On-Highway Water Truck, 3000 Gal, 210 HP (Gas)	11	0.02	37.596	0.001	126.672	0.004	0.400	0.000	16.741	0.001	41,838.390	1.486	
Rear Discharge Concrete Transit Mixer - 8cy - 60kgw, 235 HP (Diesel)	1466	2.15	37.596	0.178	126.672	0.599	0.400	0.002	16.741	0.079	41,838.390	197.996	
Screen Plant, Single Deck, 24"X60' Conveyor, 5'x10' Screen Size, 51 HP (Diesel)	88	0.13	26.105	0.007	42.740	0.012	0.078	0.000	8.385	0.002	8,198.480	2.329	
Skid Steer Loader, Bobcat, 2400 lb Capacity, 73 HP (Diesel)	17	0.02	26.181	0.001	75.635	0.004	0.154	0.000	17.613	0.001	16,088.868	0.857	
Small Engine Generator, 6.5KW, Diesel, 13HP	349	0.51	5.886	0.007	29.484	0.033	0.072	0.000	2.182	0.002	4,625.962	5.209	
Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)	182	0.27	64.216	0.038	205.356	0.121	0.419	0.000	32.966	0.019	43,901.277	25.837	
Truck Chassis, 25k lbs, 4x2, 295 HP (Gas)	17	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Truck Chassis, 50k lbs, 6x4, 255 HP (Diesel)	11	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Total	20226			2.024		10.806		0.025		0.977		2,531.805	
Grading Equipment													
Dozer	182												
Grader	0												

Shasta Dam 6.5' Raise - Feasibility Estimate - Most Probable - April 2010 Price Level													
TSC - 9													
Sacramento River UPRR 2nd Crossing - 18.5 ft raise	Start	Finish											
Planned Construction Period	1/4/2016	12/22/2017											
Planned Duration (days)	501												
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
1150 CFM Port. RS Air Compressor Diesel 150 psi 525 HP	1294	2.58	63.849	0.364	214.313	1.221	1.031	0.006	19.444	0.111	105,021.813	598.203	
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	20400	40.72	28.657	2.572	143.317	12.865	0.250	0.022	15.373	1.380	21,277.144	1,909.986	
4WD Articulated Wheel Loader - Cat 3.65 cy bucket - 160 HP - EROPS (Diesel)	825	1.63	32.104	0.117	133.153	0.483	0.270	0.001	17.328	0.063	28,323.951	102.788	
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	740	1.48	30.661	0.100	182.249	0.593	0.370	0.001	12.996	0.042	38,767.435	126.175	
600 CFM Port. RS Air Compressor Diesel Powered 150 psi 275 HP	3652	7.29	38.577	0.620	124.265	1.997	0.669	0.011	11.819	0.190	59,466.905	955.650	
AmPiledr-VibrtryHmnr625HP	673	1.34	60.870	0.180	417.401	1.237	0.736	0.002	29.879	0.089	77,032.518	228.200	
Cat Self Propelled Tandem Vibratory Compactor - 56" Wide Smooth, 70 HP (Diesel)	40	0.08	20.522	0.004	104.325	0.018	0.158	0.000	13.790	0.002	16,510.744	2.892	
Cat Tractor-Loader-Backhoe, 4WD, 1 CY Bucket, Fixed Stick, 72 HP (Diesel)	1194	2.38	17.151	0.090	75.359	0.396	0.154	0.001	12.059	0.063	16,091.489	84.537	
Centrifugal Pump, Gas, 100 gpm, 1.5" Size, 3 HP (Gas)	11195	22.35	4.801	0.237	21.443	1.056	0.052	0.003	1.735	0.085	3,364.335	165.758	
Centrifugal Pump, Gas, 300 gpm, 3" Size, 7 HP (Gas)	5065	10.11	4.801	0.107	21.443	0.478	0.052	0.001	1.735	0.035	3,364.335	74.999	
Concrete pump & boom Schwing 2525H-5/S-47 on 255 hp chassis, 181 cy/hr & 155 ft boom	887	1.77	46.019	0.180	176.973	0.691	1.027	0.004	15.541	0.061	91,257.575	356.087	
Core drill, 3-inch chuck, 24" feed stroke, 40 hp, diesel	243	0.49	17.958	0.019	47.458	0.051	0.113	0.000	7.551	0.008	11,812.980	12.635	
Crawler Mounted Hydraulic Excavator - Cat 2.25 cy bucket - 222 HP (Diesel)	498	0.99	22.896	0.050	212.598	0.465	0.417	0.001	9.661	0.021	43,667.789	95.606	
Crawler Mounted Hydraulic Excavator - Cat 2.5 cy bucket - 321 HP (Diesel)	2217	4.42	22.896	0.223	212.598	2.074	0.417	0.004	9.661	0.094	43,667.789	425.928	
Grove 4x2x4 Hyd Yard Crane Diesel 9.1 MT 24' Boom, 80 HP	3326	6.64	30.944	0.453	66.584	0.975	0.127	0.002	18.180	0.266	13,333.705	195.174	
Grove Rough Terrain Hyd Crane 36 MT 105' Boom, 165 HP (Diesel)	2226	4.44	33.157	0.325	111.882	1.095	0.214	0.002	18.204	0.173	22,404.817	219.506	
Hand Held Rammer - 4" to13", 3180 lb/blow, 4 HP (Gas)	40	0.08	21.161	0.004	50.846	0.009	0.088	0.000	7.767	0.000	9,248.938	1.620	
Hand Held Vibratory Plate Compactor, 25", 6k-9k lb/blow, 11 HP, Gas Powered	40	0.08	2.275	0.000	11.937	0.002	0.030	0.000	0.555	0.000	1,954.951	0.342	
I.C. Self Propelled Scissor Lift, 2500# Cap., 90"x170" deck, 50 HP (Diesel)	3238	6.46	3.390	0.043	39.910	0.569	0.080	0.001	1.490	0.021	8,267.000	117.808	
Inland Tug Boat 250HP 26ft	5360	10.70	20.001	0.472	112.351	2.650	112.351	2.650	8.611	0.203	23,309.646	549.841	
Large Engine Generator, 100KW, Diesel, Enclosed, 160 HP	1650	3.29	46.042	0.334	332.945	2.417	0.724	0.005	19.912	0.145	64,342.907	467.177	
Large Engine Generator, 20.0KW, Diesel, 34HP	6653	13.28	10.890	0.319	36.619	1.072	0.101	0.003	3.472	0.102	7,990.295	233.918	
Large Engine Generator, 60KW, Diesel, Enclosed, 88 HP	5180	10.34	37.238	0.849	216.406	4.933	0.414	0.009	19.867	0.433	35,325.511	805.254	
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	13682	27.31	44.891	2.703	252.851	15.223	0.484	0.029	22.540	1.359	50,634.394	3,048.469	
Manitowoc Crawler Mntd Lattice Boom Crane, 90.70 MT, 40' Boom, 230HP (Diesel)	9852	19.69	40.737	1.769	163.592	7.100	0.313	0.014	20.938	0.909	32,759.889	1,421.741	
Off-Highway Water Tanker, 5000 Gal, 175 HP (Diesel)	40	0.08	30.036	0.005	95.585	0.017	0.301	0.000	15.635	0.003	31,570.801	5.531	
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	3497	6.98	36.879	0.567	390.525	6.009	0.725	0.011	16.062	0.247	75,915.404	1,168.128	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	38889	77.62	30.086	5.140	95.585	16.358	0.301	0.052	15.635	2.676	31,570.801	5,402.719	
On-Highway Truck Tractor - 4X2, 30K gw, 210 HP (Diesel)	88	0.18	34.958	0.014	249.587	0.097	0.463	0.000	15.912	0.006	48,508.380	18.784	
On-Highway Truck Tractor - 6X4, 45K gw, 380 HP (Diesel)	1386	2.77	34.958	0.213	249.587	1.522	0.463	0.003	15.912	0.097	48,508.380	295.853	
Portable Welder, 600 Amp, Trailer Mounted, DC-CC/CV, 42 HP (Diesel)	6290	12.55	32.697	0.905	113.219	3.134	0.152	0.004	8.318	0.230	11,763.806	325.590	
Small Engine Generator, 6.5KW, Diesel, 13HP	1479	2.95	5.886	0.088	29.434	0.192	0.072	0.000	2.132	0.014	4,625.952	30.098	
Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)	36	0.07	64.216	0.010	205.356	0.032	0.419	0.000	32.956	0.005	43,901.277	6.856	
Vacuum, 5 cy capacity, PTO operated, truck included.	237	0.47	37.596	0.039	126.672	0.132	0.400	0.000	16.741	0.017	41,838.390	43.550	
Total	152122			19.070		87.162		2.844		9.182		19,497.425	
Grading Equipment													
Dozer		36											
Grader		0											

TSC - 11													
TCD Mods - 18.5 ft raise	Start	Finish											
Planned Construction Period	10/17/2017	3/18/2019											
Planned Duration (days)	170												
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	2704	15.91	28.657	1.005	143.317	5.026	0.250	0.009	15.373	0.539	21,277.144	746.112	
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	189	1.11	30.661	0.075	182.249	0.447	0.370	0.001	12.996	0.032	38,767.435	95.120	
600 CFM Port. RS Air Compressor Diesel Powered 150 psi 250 HP	37	0.22	52.301	0.025	226.848	0.110	0.715	0.000	21.720	0.011	74,925.493	36.279	
Grove 4x4x4 Hyd Yard Crane Diesel 13.6MT 52' Boom	144	0.85	33.157	0.062	111.882	0.209	0.214	0.000	18.204	0.034	22,404.817	41.781	
Grove Rough Terrain Hyd Crane 68 MT 138' Boom, 250 HP (Diesel)	2010	11.82	40.757	1.062	163.592	4.265	0.313	0.008	20.938	0.546	32,759.889	854.000	
Grove T60 Manlift, Telescopic Boom, 60' Max Ht, 500# Cap, 4WD, 60 HP (Diesel)	174	1.02	3.388	0.008	39.912	0.090	0.079	0.000	1.487	0.003	8,266.857	18.670	
Inland Tug Boat 250HP 26ft	70	0.41	20.001	0.018	112.351	0.102	112.351	0.102	8.611	0.008	23,309.646	21.125	
Large Engine Generator, 20.0KW, Diesel, 26.5HP	3577	21.04	10.890	0.505	36.619	1.699	0.101	0.005	3.472	0.161	7,990.295	370.674	
Low Ground Pressure Crawler Dozer - Cat 238 hp - EROPS - Straight (Diesel)	36	0.21	64.216	0.030	205.356	0.095	0.419	0.000	32.966	0.015	43,901.277	20.353	
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	2608	15.34	44.891	1.518	252.851	8.551	0.484	0.016	22.580	0.764	50,634.394	1,712.415	
On-Highway Flatbed Truck, 4x2, 15k GVW, 210 HP (Gas)	2350	13.83	37.596	1.146	126.672	3.861	0.400	0.012	16.741	0.510	41,838.390	1,275.235	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	12646	74.39	30.036	4.926	95.585	15.676	0.301	0.049	15.635	2.564	31,570.801	5,177.580	
On-Highway Truck Tractor - 6X4, 45K gw, 380 HP (Diesel)	2568	15.11	34.958	1.164	249.537	8.310	0.463	0.015	15.912	0.530	48,508.330	1,615.429	
Portable Welder, 300 Amp, Trailer Mounted, AC/DC-CC/CV, 20 HP (Diesel)	4	0.03	7.711	0.000	23.440	0.001	0.065	0.000	2.322	0.000	5,114.701	0.292	
Portable Welder, 600 Amp, Trailer Mounted, DC-CC/CV, 42 HP (Diesel)	191	1.12	32.697	0.081	113.219	0.280	0.152	0.000	8.318	0.021	11,763.806	29.117	
Small Engine Generator, 6.5KW, Diesel, 13HP	49	0.29	5.886	0.004	29.484	0.019	0.072	0.000	2.182	0.001	4,625.962	2.956	
Total	29358			11.630		48.740		0.219		5.739		12,017.138	
Grading Equipment													
Dozer	36												
Grader													

Shasta Lake Water Resources Investigation

MWH - 2												
Reservoir Clearing - 18.5 ft raise		Start	Finish									
Planned Construction Period		5/14/2018	1/25/2019									
Construction Duration (days)		177										
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)
220 hp Bulldozer (Cat D7)	614	3.47	64.216	0.491	205.356	1.570	0.419	0.003	32.966	0.252	43,901.277	335.634
3.5 CY Loader (Cat 950)	1602	9.05	32.104	0.640	133.153	2.656	0.270	0.005	17.328	0.346	28,323.951	565.027
4.5 CY Loader (Cat 966)	614	3.47	32.104	0.245	133.153	1.018	0.270	0.002	17.328	0.132	28,323.951	216.542
1.5 CY Backhoe (Cat 325)	614	3.47	17.151	0.131	75.359	0.576	0.154	0.001	12.059	0.092	16,091.489	123.022
20 Ton (10 CY) Tandem Truck	614	3.47	37.596	0.287	126.672	0.968	0.400	0.003	16.741	0.128	41,838.390	319.862
140 hp Wheel Skidder (Cat 515)	2167	12.24	17.893	0.483	187.211	5.053	0.279	0.008	10.229	0.276	29,259.636	789.749
210 hp Harvester (Cat 580)	2167	12.24	34.815	0.940	229.129	6.184	0.422	0.011	15.365	0.415	44,156.690	1,191.837
Cat 330 LC Log Loader	288	1.63	17.893	0.064	187.211	0.672	0.279	0.001	10.229	0.037	29,259.636	105.042
Chipper - clearing	1602	9.05	1.573	0.031	9.008	0.180	11.412	0.228	0.847	0.017	1,434.720	28.621
DT-320 Tree Mulcher	2215	12.52	33.882	0.935	106.607	2.942	0.188	0.005	23.056	0.636	19,674.653	542.901
Tower 4-Lights 12 hp	288	1.63	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Helicopter 5000lbs	1742	9.84	510.000	11.068	610.000	13.239	3,360.000	72.920	91.000	1.975	893,115.194	19,382.808
Truck Mounted Post Hole Auger	0	0.00	21.038	0.000	217.595	0.000	0.517	0.000	8.893	0.000	54,162.283	0.000
100 hp Harbour Master	1782	10.07	140.005	3.108	786.456	17.456	2,225.269	49.391	60.278	1.338	163,167.522	3,621.619
1/2 Ton Pickup Truck 2x2	11880	67.12	30.036	4.444	95.585	14.144	0.301	0.045	15.635	2.314	31,570.801	4,671.576
3/4 Ton Crew Cab Truck	1320	7.46	37.596	0.618	126.672	2.083	0.400	0.007	16.741	0.275	41,838.390	687.876
1- Ton Mechanic Truck	4400	24.86	37.596	2.060	126.672	6.942	0.400	0.022	16.741	0.917	41,838.390	2,292.920
logging Truck (Kenworth C500)	1153	6.51	37.596	0.540	126.672	1.819	0.400	0.006	16.741	0.240	41,838.390	600.797
30" Chain Saw	20523	115.95	1.885	0.482	3.409	0.871	0.030	0.008	0.005	0.001	9.215	2.356
Total	55584			26.569		78.373		122.666		9.392		35,478.189
Grading Equipment												
Dozer	614											
Grader	0											

MWH - 9														
Gravel Augmentation - 18.5 ft raise			Start	Finish	Adjusted End ¹									
Planned Construction Period			6/9/2016	10/1/2025	7/14/2021									
Construction Duration (days)			1441											
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)		
170 hp Bulldozer (Cat D6)	254	0.18	59.946	0.023	145.210	0.056	0.296	0.000	33.475	0.013	31043.262	12.069		
1/2 Ton Pickup Truck 4x4	724	0.50	30.036	0.033	95.585	0.106	0.301	0.000	15.635	0.017	31570.801	34.953		
80 hp Bulldozer (Cat D4)	337	0.23	40.772	0.021	79.992	0.041	0.163	0.000	27.083	0.014	17100.816	8.804		
3/4 Ton Crew Cab Truck 4x4	4	0.00	37.596	0.000	126.672	0.001	0.400	0.000	16.741	0.000	41838.390	0.246		
110 hp Bulldozer (Cat D5)	171	0.12	40.772	0.011	79.992	0.021	0.163	0.000	27.083	0.007	17100.816	4.463		
9 Ton Compactor 100 hp (DynCA15)	171	0.12	20.522	0.005	104.325	0.027	0.158	0.000	13.790	0.004	16510.744	4.309		
1000 Gallon Watertruck	171	0.12	37.596	0.010	126.672	0.033	0.400	0.000	16.741	0.004	41838.390	10.920		
200 hp Grader (Cat 14G)	15	0.01	34.815	0.001	229.129	0.005	0.422	0.000	15.365	0.000	44156.690	1.023		
13 Ton Compactor 72" (Cat 553)	14	0.01	20.522	0.000	104.325	0.002	0.158	0.000	13.790	0.000	16510.744	0.353		
10 Ton Compactor 120 hp (Dyn CA25)	6	0.00	20.522	0.000	104.325	0.001	0.158	0.000	13.790	0.000	16510.744	0.144		
2.6 CY Backhoe (Cat 350)	257	0.18	21.606	0.009	128.999	0.051	0.263	0.000	11.773	0.005	27545.365	10.843		
Total	2123			0.114		0.345		0.001		0.065		88.127		
Grading Equipment														
Dozer	761													
Grader	15													

Shasta Lake Water Resources Investigation

TSC - 2													
Left Wing Dam - 18.5 ft raise		Start	Finish										
Planned Construction Period		8/8/2016	3/23/2018										
Planned Duration (days)		410											
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
175 CFM Rotary Screw Port Air Compressor Gas 125 psi 90 HP	367	0.90	28.657	0.057	143.317	0.283	0.250	0.000	15.373	0.030	21,277.144	41.992	
20" Gas Chain Saw	22	0.05	1.885	0.000	3.409	0.000	0.030	0.000	0.005	0.000	9.215	0.001	
4WD Articulated Wheel Loader - Cat 3.65 cy bucket - 160 HP - EROPS (Diesel)	1870	4.56	32.104	0.323	133.153	1.339	0.270	0.003	17.328	0.174	28,323.951	284.804	
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	2176	5.31	30.661	0.359	182.249	2.132	0.370	0.004	12.996	0.152	38,767.435	453.544	
Bandit 1990XP, Trailer Mounted Brush Chipper, 20" Capacity, 250 HP (Diesel)	22	0.05	2.207	0.000	8.368	0.001	24.873	0.003	0.742	0.000	4,200.444	0.497	
Barber-Greene Wheel Mounted Asphalt Paver, BG-240C, Pavemaster 10B, 2 wheel drive, 139 HP (Diesel)	30	0.07	29.785	0.005	202.541	0.032	0.328	0.000	15.909	0.003	34,379.976	5.491	
Cat Self Propelled Pneumatic Compactor - 7 wheel, 85 HP (Diesel)	30	0.07	20.522	0.003	104.325	0.017	0.158	0.000	13.790	0.002	16,510.744	2.637	
Cat Self Propelled Tandem Vibratory Comactor - 84" wide Smooth drum, 138 HP (Diesel)	59	0.14	20.522	0.007	104.325	0.033	0.158	0.000	13.790	0.004	16,510.744	5.274	
Cat Self Propelled Tandem Vibratory Compactor - 56" Wide Smooth, 70 HP (Diesel)	455	1.11	20.522	0.050	104.325	0.255	0.158	0.000	13.790	0.034	16,510.744	40.431	
Cat Single Drum Self Propelled Vibratory Compactor Padfoot - 66" wide drum, padfoot, 96 HP (Diesel)	64	0.16	20.522	0.007	104.325	0.036	0.158	0.000	13.790	0.005	16,510.744	5.664	
Centrifugal Pump, Gas, 200 gpm, 2" size, 8 HP (Gas)	371	0.90	4.801	0.010	21.443	0.043	0.052	0.000	1.735	0.003	3,364.335	6.708	
Centrifugal Pump, Gas, 400 gpm, 3" Size, 7 HP (Gas)	39	0.09	4.801	0.001	21.443	0.004	0.052	0.000	1.735	0.000	3,364.335	0.703	
Concrete Saw - 10.625" max depth, 26" Blade Dia. (not incl), 65 HP (Gas)	24	0.06	31.942	0.004	121.248	0.016	0.177	0.000	8.449	0.001	13,690.344	1.781	
Crawler Mounted Hydraulic Excavator - Cat 1.25 cy bucket - 168 HP (Diesel)	1667	4.07	20.870	0.187	142.100	1.274	0.279	0.002	11.199	0.100	29,187.403	261.622	
Grove 4x2x4 Hyd Yard Crane Diesel 9.1 MT 24' Boom, 80 HP	60	0.15	30.944	0.010	66.584	0.021	0.127	0.000	18.180	0.006	13,333.705	4.290	
Grove Rough Terrain Hyd Crane 36 MT 105' Boom, 165 HP (Diesel)	1253	3.06	33.157	0.223	111.882	0.754	0.214	0.001	18.204	0.123	22,404.817	150.943	
Hand Held Rammer - 4" to 13", 3180 lb/blow, 4 HP (Gas)	455	1.11	21.161	0.052	50.846	0.125	0.088	0.000	7.767	0.019	9,248.938	22.648	
Hand Held Vibratory Plate Compactor, 25", 6k-9k lb/blow, 11 HP, Gas Powered	455	1.11	2.276	0.006	11.937	0.029	0.030	0.000	0.556	0.001	1,954.951	4.787	
Hydro-Ax 721E, Rubber Tired Brush Cutter, 8' Cutter size, 210 HP (Diesel)	22	0.05	64.220	0.008	205.360	0.024	0.420	0.000	32.970	0.004	43,901.000	5.193	
I.C. Self Propelled Scissor Lift, 1500# cap., 72"x132" deck, 25 HP, <30' (Diesel)	1461	3.56	3.390	0.027	39.910	0.313	0.080	0.001	1.490	0.012	8,267.000	64.937	
Large Engine Generator, 100KW, Diesel, Enclosed, 160 HP	371	0.90	46.042	0.092	332.945	0.664	0.724	0.001	19.912	0.040	64,342.907	128.293	
Large Engine Generator, 20.0KW, Diesel, 34HP	1197	2.92	10.890	0.070	36.619	0.236	0.101	0.001	3.472	0.022	7,990.295	51.420	
Off-Highway Water Tanker, 5000 Gal, 175 HP (Diesel)	2387	5.82	30.036	0.386	95.585	1.227	0.301	0.004	15.635	0.201	31,570.801	405.255	
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	29610	72.22	36.879	5.872	390.525	62.178	0.725	0.115	16.062	2.557	75,915.404	12,086.928	
On-Highway Light Duty Truck/Pickup - 4X4, 1/2T, Conventional, 191 HP (Gas)	59	0.14	30.036	0.010	95.585	0.031	0.301	0.000	15.635	0.005	31,570.801	10.084	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	1037	2.53	30.036	0.167	95.585	0.533	0.301	0.002	15.635	0.087	31,570.801	176.015	
On-Highway Water Truck, 3000 Gal, 210 HP (Gas)	25	0.06	37.596	0.005	126.672	0.017	0.400	0.000	16.741	0.002	41,838.390	5.642	
Rear Discharge Concrete Transit Mixer - 8cy - 60kgw, 235 HP (Diesel)	679	1.66	37.596	0.137	126.672	0.463	0.400	0.001	16.741	0.061	41,838.390	152.817	
Skid Steer Loader, Bobcat, 2400 lb Capacity, 73 HP (Diesel)	11	0.03	26.181	0.002	75.635	0.004	0.154	0.000	17.613	0.001	16,088.868	0.952	
Small Engine Generator, 1.5KW, Gas, 3.5 HP	328	0.80	5.886	0.010	29.484	0.052	0.072	0.000	2.182	0.004	4,625.962	8.152	
Small Engine Generator, 6.5KW, Diesel, 13HP	118	0.29	5.886	0.004	29.484	0.019	0.072	0.000	2.182	0.001	4,625.962	2.928	
Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)	2275	5.55	64.216	0.786	205.356	2.512	0.419	0.005	32.966	0.403	43,901.277	537.058	
Truck Chassis, 25k lbs, 4x2, 295 HP (Gas)	267	0.65	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Job pickup	3590	8.76	30.036	0.580	95.585	1.845	0.301	0.006	15.635	0.302	0.000	0.000	
Total	52857			9.457		76.512		0.152		4.361		14,929.491	
Grading Equipment													
Dozer	2275												
Grader	0												

TSC - 3													
Main Concrete Dam - 18.5 ft raise		Start	Finish										
Planned Construction Period		8/9/2016	4/22/2019										
Planned Duration (days)		683											
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	10885	16	28.657	1.007	143.317	5.035	0.250	0.009	15.373	0.540	21,277.144	747.566	
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	2786	4.1	30.661	0.276	182.249	1.639	0.370	0.003	12.996	0.117	38,767.435	348.648	
600 CFM Port. RS Air Compressor Diesel Powered 150 psi 275 HP	2004	2.9	38.577	0.250	124.265	0.804	0.669	0.004	11.819	0.076	59,466.905	384.764	
Cat Tractor-Loader-Backhoe, 4WD, 1.5 CY Bucket, Fixed Stick, 101 HP (Diesel)	358	0.5	17.151	0.020	75.359	0.087	0.154	0.000	12.059	0.014	16,091.489	18.574	
Centrifugal Pump, Gas, 200 gpm, 2" size, 8 HP (Gas)	2710	4.0	4.801	0.042	21.443	0.188	0.052	0.000	1.735	0.015	3,364.335	29.433	
Concrete Saw - 10.625" max depth, 26" Blade Dia. (not incl), 65 HP (Gas)	937	1.4	31.942	0.097	121.248	0.367	0.177	0.001	8.449	0.026	13,690.344	41.428	
Core drill, 3-inch chuck, 24" feed stroke, 40 hp, diesel	589	0.9	17.955	0.034	47.458	0.090	0.113	0.000	7.551	0.014	11,812.980	22.470	
Crawler Mounted Hydraulic Excavator - Cat 2.25 cy bucket - 222 HP (Diesel)	22	0.0	22.896	0.002	212.598	0.015	0.417	0.000	9.661	0.001	43,667.789	3.101	
Grove 4x2x4 Hyd Yard Crane Diesel 9.1 MT 24' Boom, 80 HP	528	0.8	30.944	0.053	66.584	0.113	0.127	0.000	18.180	0.031	13,333.705	22.725	
Grove 4x4x4 Hyd Yard Crane Diesel 13.6MT 52' Boom	333	0.5	33.157	0.036	111.882	0.120	0.214	0.000	18.204	0.020	22,404.817	24.056	
Grove A60J Manlift, Articulating Boom, 60' Max Ht, 500# Cap, 85 HP (Diesel)	208	0.3	3.952	0.003	57.607	0.039	0.114	0.000	2.553	0.002	11,931.823	8.007	
Grove Rough Terrain Hyd Crane 36 MT 105' Boom, 165 HP (Diesel)	3382	5.0	33.157	0.362	111.882	1.221	0.214	0.002	18.204	0.199	22,404.817	244.599	
Grove T80 Manlift, Telescopic Boom, 80' Max Ht, 600# Cap, 4wd, 85 HP (Diesel)	21	0.0	3.952	0.000	57.607	0.004	0.114	0.000	2.553	0.000	11,931.823	0.797	
I.C. Self Propelled Scissor Lift, 2500# Cap., 90"x170" deck, 50 HP (Diesel)	209	0.3	3.390	0.002	39.910	0.027	0.080	0.000	1.490	0.001	8,267.000	5.577	
Ingersol Rand Hyd Track Drill, 5" hole max, Extendable, 260 HP (Diesel)	2431	3.6	31.416	0.247	360.357	2.828	0.857	0.007	13.590	0.107	89,697.851	703.851	
Large Engine Generator, 100KW, Diesel, Enclosed, 160 HP	2971	4.3	46.042	0.441	332.945	3.193	0.724	0.007	19.912	0.191	64,342.907	616.970	
Large Engine Generator, 15.0KW, Diesel, 26.5HP	1395	2.0	5.886	0.027	29.484	0.133	0.072	0.000	2.182	0.010	4,625.962	20.832	
Large Engine Generator, 20.0KW, Diesel, 34HP	3870	5.7	10.890	0.136	36.619	0.457	0.101	0.001	3.472	0.043	7,990.295	99.804	
Large Engine Generator, 60KW, Diesel, Enclosed, 88 HP	4608	6.7	37.238	0.554	216.406	3.219	0.414	0.006	19.867	0.295	35,325.511	525.428	
Manitowoc Crawler Mntd Lattice Boom Crane, 127MT, 60' Boom, 287HP (Diesel)	6033	8.8	40.757	0.794	163.592	3.185	0.313	0.006	20.938	0.408	32,759.889	637.903	
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	8469	12.4	44.891	1.227	252.851	6.912	0.484	0.013	22.580	0.617	50,634.394	1,384.110	
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	13584	19.9	36.879	1.617	390.525	17.123	0.725	0.032	16.062	0.704	75,915.404	3,328.665	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	25086	36.7	30.036	2.432	95.585	7.740	0.301	0.024	15.635	1.266	31,570.801	2,556.439	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, Crew, 285 HP (Gas)	2739	4.0	37.596	0.332	126.672	1.120	0.400	0.004	16.741	0.148	41,838.390	369.897	
On-Highway Truck Tractor - 6X4, 45K gvw, 380 HP (Diesel)	1382	2.0	34.958	0.156	249.537	1.113	0.463	0.002	15.912	0.071	48,508.330	216.375	
On-Highway Truck Tractor - 6X6, 70K gvw, 450 HP (Diesel)	765	1.1	36.879	0.091	390.525	0.964	0.725	0.002	16.062	0.040	75,915.404	187.358	
Portable Welder, 300 Amp, Trailer Mounted, AC/DC-CC/CV, 20 HP (Diesel)	208	0.3	7.711	0.005	23.440	0.016	0.065	0.000	2.322	0.002	5,114.701	3.438	
Portable Welder, 600 Amp, Trailer Mounted, DC-CC/CV, 42 HP (Diesel)	4051	5.9	32.697	0.428	113.219	1.480	0.152	0.002	8.318	0.109	11,763.806	153.811	
Rear Discharge Concrete Transit Mixer - 8cy - 60kgw, 235 HP (Diesel)	9448	13.8	37.596	1.147	126.672	3.863	0.400	0.012	16.741	0.511	41,838.390	1,275.980	
Skid Steer Loader, Bobcat, 2400 lb Capacity, 73 HP (Diesel)	330	0.5	26.181	0.028	75.635	0.081	0.154	0.000	17.613	0.019	16,088.868	17.138	
Small Engine Generator, 3.0KW, Diesel, 5.5HP	529	0.8	5.886	0.010	29.484	0.050	0.072	0.000	2.182	0.004	4,625.962	7.895	
Small Engine Generator, 6.5KW, Diesel, 13HP	2596	3.8	5.886	0.049	29.484	0.247	0.072	0.001	2.182	0.018	4,625.962	38.760	
Total	115466			11.902		63.474		0.140		5.617		14,046.400	
Grading Equipment													
Dozer	0												
Grader	0												

Shasta Lake Water Resources Investigation

TSC - 4													
Outlet Works - 18.5 ft raise	Start	Finish											
Planned Construction Period	4/23/2019	4/30/2020											
Planned Duration (days)	260												
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	11872	46	30.036	3.024	95.585	9.622	0.301	0.030	15.635	1.574	31,570.801	3,178.120	
Centrifugal Pump, Gas, 200 gpm, 2" size, 8 HP (Gas)	11	0.0	4.801	0.000	21.443	0.002	0.052	0.000	1.735	0.000	3,364.335	0.311	
Portable Welder, 300 Amp, Trailer Mounted, AC/DC-CC/CV, 20 HP (Diesel)	308	1.2	7.711	0.020	23.440	0.061	0.065	0.000	2.322	0.006	5,114.701	13.358	
Large Engine Generator, 20.0KW, Diesel, 34HP	2529	9.7	10.890	0.234	36.619	0.785	0.101	0.002	3.472	0.074	7,990.295	171.339	
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	1905	7.3	28.657	0.463	143.317	2.315	0.250	0.004	15.373	0.248	21,277.144	343.728	
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	298	1.1	30.661	0.078	182.249	0.461	0.370	0.001	12.996	0.033	38,767.435	98.092	
Rear Discharge Concrete Transit Mixer - 8cy - 60kgw, 235 HP (Diesel)	13	0.1	37.596	0.004	126.672	0.014	0.400	0.000	16.741	0.002	41,838.390	4.720	
Large Engine Generator, 100KW, Diesel, Enclosed, 160 HP	11	0.0	46.042	0.004	332.945	0.031	0.724	0.000	19.912	0.002	64,342.907	5.949	
Morgan Trailer Mounded Concrete Pump, 93 yph, 177 HP (Diesel)	88	0.3	47.797	0.036	333.673	0.249	0.715	0.001	20.623	0.015	63,501.811	47.384	
On-Highway Truck Tractor - 6X4, 45K gww, 380 HP (Diesel)	1189	4.6	34.958	0.352	249.537	2.515	0.463	0.005	15.912	0.160	48,508.330	488.898	
Manitowoc Crawler Mntd Lattice Boom Crane, 127MT, 60' Boom, 287HP (Diesel)	238	0.9	40.757	0.082	163.592	0.330	0.313	0.001	20.938	0.042	32,759.889	66.001	
600 CFM Port. RS Air Compressor Diesel Powered 150 psi 275 HP	575	2.2	38.577	0.188	124.265	0.606	0.669	0.003	11.819	0.058	59,466.905	289.938	
Grove Rough Terrain Hyd Crane 68 MT 138' Boom, 250 HP (Diesel)	751	2.9	40.757	0.259	163.592	1.041	0.313	0.002	20.938	0.133	32,759.889	208.562	
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	136	0.5	36.879	0.043	390.525	0.451	0.725	0.001	16.062	0.019	75,915.404	87.713	
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	238	0.9	44.891	0.090	252.851	0.509	0.484	0.001	22.580	0.045	50,634.394	102.012	
Total	20161			4.877		18.994		0.051		2.412		5,106.125	
Grading Equipment													
Dozer	0												
Grader	0												

TSC - 5														
Pit River Bridge Pier 3 and 4 Prot - 18.5 ft raise		Start	Finish											
Planned Construction Period		5/2/2016	9/6/2017											
Planned Duration (days)		342												
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)		
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	987	3	28.657	0.182	143.317	0.911	0.250	0.002	15.373	0.098	21,277.144	135.315		
600 CFM Port. RS Air Compressor Diesel Powered 150 psi 275 HP	1361	4.0	38.577	0.339	124.265	1.091	0.669	0.006	11.819	0.104	59,466.905	521.883		
Grove 8x4x4 Truck Mounted Hyd Crane, Singel Engine, 50MT, 110' Boom, 450 HP (Diesel)	113	0.3	44.891	0.033	252.851	0.184	0.484	0.000	22.580	0.016	50,634.394	36.830		
Grove Rough Terrain Hyd Crane 36 MT 105' Boom, 165 HP (Diesel)	280	0.8	33.157	0.060	111.882	0.202	0.214	0.000	18.204	0.033	22,404.817	40.432		
Grove Rough Terrain Hyd Crane 68 MT 138' Boom, 250 HP (Diesel)	220	0.6	40.757	0.058	163.592	0.232	0.313	0.000	20.938	0.030	32,759.889	46.459		
Ingersol Rand Hyd Track Drill, 4" hole max, Long Guide, 215 HP (Diesel)	1931	5.6	31.416	0.391	360.357	4.485	0.857	0.011	13.590	0.169	89,697.851	1,116.434		
Large Engine Generator, 15.0KW, Diesel, 26.5HP	26	0.1	5.886	0.001	29.484	0.005	0.072	0.000	2.182	0.000	4,625.962	0.787		
Large Engine Generator, 20.0KW, Diesel, 34HP	3291	9.6	10.890	0.231	36.619	0.777	0.101	0.002	3.472	0.074	7,990.295	169.522		
Large Engine Generator, 60KW, Diesel, Enclosed, 88 HP	1361	4.0	37.238	0.327	216.406	1.899	0.414	0.004	19.867	0.174	35,325.511	310.018		
Manitowoc Crawler Mntd Lattice Boom Crane, 127MT, 60' Boom, 287HP (Diesel)	3260	9.5	40.757	0.857	163.592	3.438	0.313	0.007	20.938	0.440	32,759.889	688.451		
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	5845	17.1	44.891	1.691	252.851	9.526	0.484	0.018	22.580	0.851	50,634.394	1,907.717		
Morgan Trailer Mounded Concrete Pump, 122 yph, 177 HP (Diesel)	220	0.6	47.797	0.068	333.673	0.473	0.715	0.001	20.623	0.029	63,501.811	90.057		
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	13513	39.5	30.036	2.616	95.585	8.326	0.301	0.026	15.635	1.362	31,570.801	2,750.094		
Small Engine Generator, 3.0KW, Diesel, 5.5HP	119	0.3	5.886	0.005	29.484	0.023	0.072	0.000	2.182	0.002	4,625.962	3.558		
Small Engine Generator, 6.5KW, Diesel, 13HP	220	0.6	5.886	0.008	29.484	0.042	0.072	0.000	2.182	0.003	4,625.962	6.560		
Total	32748			6.866		31.615		0.077		3.385		7,824.118		
Grading Equipment														
Dozer	0													
Grader	0													

TSC - 7														
Railroad Realignment - 18.5 ft raise	Planned Construction Period		Start	Finish										
	Planned Duration (days)		8/3/2016	8/8/2017										
	Planned Duration (days)		256											
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)		
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	712	3	28.657	0.176	143.317	0.879	0.250	0.002	15.373	0.094	21,277.144	130.509		
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	505	2.0	30.661	0.133	182.249	0.793	0.370	0.002	12.996	0.057	38,767.435	168.702		
Bomag Manually Vibratory Compactor - 30" Smooth Drum, 30" wide (Diesel)	138	0.5	20.522	0.024	104.325	0.124	0.158	0.000	13.790	0.016	16,510.744	19.551		
Cat 730 Articulated Rear Dump Truck - 28.1 MT, 17.1-22.1 CY, 6x6, 317 HP (Diesel)	724	2.8	34.958	0.218	249.537	1.556	0.463	0.003	15.912	0.099	48,508.330	302.528		
Cat Single Drum Self Propelled Vibratory Compactor Padfoot - 66" wide drum, padfoot, 96 HP (Diesel)	138	0.5	20.522	0.024	104.325	0.124	0.158	0.000	13.790	0.016	16,510.744	19.551		
Cat Tractor-Loader-Backhoe, 4WD, 1 CY Bucket, Fixed Stick, 72 HP (Diesel)	1376	5.4	17.151	0.203	75.359	0.893	0.154	0.002	12.059	0.143	16,091.489	190.725		
Crawler Mounted Hydraulic Excavator - Cat 2.25 cy bucket - 222 HP (Diesel)	356	1.4	22.896	0.070	212.598	0.652	0.417	0.001	9.661	0.030	43,667.789	133.924		
Crawler Mounted Hydraulic Excavator - Cat 2.5 cy bucket - 321 HP (Diesel)	227	0.9	22.896	0.045	212.598	0.415	0.417	0.001	9.661	0.019	43,667.789	85.318		
Hand Held Rammer - 4" to13", 3180 lb/blow, 4 HP (Gas)	322	1.3	21.161	0.059	50.846	0.141	0.088	0.000	7.767	0.022	9,248.938	25.620		
Hand Held Vibratory Plate Compactor, 25", 6k-9k lb/blow, 11 HP, Gas Powered	459	1.8	2.276	0.009	11.937	0.047	0.030	0.000	0.556	0.002	1,954.951	7.730		
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	2718	10.6	36.879	0.863	390.525	9.140	0.725	0.017	16.062	0.376	75,915.404	1,776.671		
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	712	2.8	30.036	0.184	95.585	0.586	0.301	0.002	15.635	0.096	31,570.801	193.648		
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, Crew, 285 HP (Gas)	1650	6.4	37.596	0.534	126.672	1.800	0.400	0.006	16.741	0.238	41,838.390	594.502		
On-Highway Truck Tractor - 6X4, 45K gvw, 380 HP (Diesel)	667	2.6	34.958	0.201	249.537	1.433	0.463	0.003	15.912	0.091	48,508.330	278.561		
On-Highway Water Truck, 4000 Gal, 250 HP (Diesel)	459	1.8	37.596	0.149	126.672	0.501	0.400	0.002	16.741	0.066	41,838.390	165.436		
Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)	54	0.2	64.216	0.030	205.356	0.096	0.419	0.000	32.966	0.015	43,901.277	20.517		
Standard Crawler Loader - Cat 963C, 3.20 cy bucket - 158 HP - EROPS (Diesel)	55	0.2	26.181	0.012	75.635	0.036	0.154	0.000	17.613	0.008	16,088.868	7.620		
Total	11272			2.935		19.216		0.040		1.389		4,121.113		
Grading Equipment														
Dozer	54													
Grader	0													

Shasta Lake Water Resources Investigation

TSC - 8													
Right Wing Dam - 18.5 ft raise													
Planned Construction Period		Start	Finish										
		8/9/2016	4/22/2019										
Planned Duration (days)		683											
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
175 CFM Rotary Screw Port Air Compressor Gas 125 psi 90 HP	33	0.05	28.657	0.003	143.317	0.015	0.250	0.000	15.373	0.002	21,277.144	2.269	
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	1027	1.50	28.657	0.095	143.317	0.475	0.250	0.001	15.373	0.051	21,277.144	70.511	
4WD Articulated Wheel Loader - Cat 3.65 cy bucket - 160 HP - EROPS (Diesel)	256	0.38	32.104	0.027	133.153	0.110	0.270	0.000	17.328	0.014	28,323.951	23.432	
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	395	0.58	30.661	0.039	182.249	0.232	0.370	0.000	12.996	0.017	38,767.435	49.375	
600 CFM Port. RS Air Compressor Diesel Powered 150 psi 250 HP	319	0.47	52.301	0.054	226.848	0.234	0.715	0.001	21.720	0.022	74,925.493	77.150	
Barber-Greene Wheel Mounted Asphalt Paver, BG-240C, Pavemaster 10B, 2 wheel drive, 139 HP (Diesel)	16	0.02	29.785	0.002	202.541	0.010	0.328	0.000	15.909	0.001	34,379.976	1.780	
Cat Self Propelled Pneumatic Compactor - 7 wheel, 85 HP (Diesel)	16	0.02	20.522	0.001	104.325	0.005	0.158	0.000	13.790	0.001	16,510.744	0.855	
Cat Self Propelled Tandem Vibratory Compactor - 84" wide Smooth drum, 138 HP (Diesel)	32	0.05	20.522	0.002	104.325	0.011	0.158	0.000	13.790	0.001	16,510.744	1.710	
Cat Single Drum Self Propelled Vibratory Compactor Padfoot - 66" wide drum, padfoot, 96 HP (Diesel)	174	0.25	20.522	0.012	104.325	0.059	0.158	0.000	13.790	0.008	16,510.744	9.263	
Cat Tractor-Loader-Backhoe, 4WD, 1.5 CY Bucket, Fixed Stick, 101 HP (Diesel)	3	0.00	17.151	0.000	75.359	0.001	0.154	0.000	12.059	0.000	16,091.489	0.168	
Centrifugal Pump, Gas, 200 gpm, 2" size, 8 HP (Gas)	394	0.58	4.801	0.006	21.443	0.027	0.052	0.000	1.735	0.002	3,364.335	4.276	
Concrete Saw - 10.625" max depth, 26" Blade Dia. (not incl), 65 HP (Gas)	19	0.03	31.942	0.002	121.248	0.007	0.177	0.000	8.449	0.001	13,690.344	0.833	
Core drill, 3-inch chuck, 24" feed stroke, 40 hp, diesel	11	0.02	17.955	0.001	47.458	0.002	0.113	0.000	7.551	0.000	11,812.980	0.419	
Crawler Mounted Hydraulic Excavator - Cat 1.25 cy bucket - 168 HP (Diesel)	37	0.05	20.870	0.002	142.100	0.017	0.279	0.000	11.199	0.001	29,187.403	3.454	
Crawler Mounted Hydraulic Excavator - Cat 2.25 cy bucket - 222 HP (Diesel)	88	0.13	22.896	0.007	212.598	0.060	0.417	0.000	9.661	0.003	43,667.789	12.404	
Grove 4x2x4 Hyd Yard Crane Diesel 9.1 MT 24' Boom, 80 HP	678	0.99	30.944	0.068	66.584	0.146	0.127	0.000	18.180	0.040	13,333.705	29.163	
Grove Rough Terrain Hyd Crane 36 MT 105' Boom, 165 HP (Diesel)	187	0.27	33.157	0.020	111.882	0.067	0.214	0.000	18.204	0.011	22,404.817	13.495	
Large Engine Generator, 100KW, Diesel, Enclosed, 160 HP	410	0.60	46.042	0.061	332.945	0.441	0.724	0.001	19.912	0.026	64,342.907	85.204	
Large Engine Generator, 15.0KW, Diesel, 26.5HP	157	0.23	5.886	0.003	29.484	0.015	0.072	0.000	2.182	0.001	4,625.962	2.339	
Large Engine Generator, 20.0KW, Diesel, 26.5HP	1361	1.99	10.890	0.048	36.619	0.161	0.101	0.000	3.472	0.015	7,990.295	35.095	
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	827	1.21	44.891	0.120	252.851	0.675	0.484	0.001	22.580	0.060	50,634.394	135.132	
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel) Standby	49	0.07	44.891	0.007	252.851	0.040	0.484	0.000	22.580	0.004	50,634.394	8.001	
Off-Highway Water Tanker, 5000 Gal, 175 HP (Diesel)	163	0.24	30.036	0.016	95.585	0.050	0.301	0.000	15.635	0.008	31,570.801	16.590	
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	3656	5.35	36.879	0.435	390.525	4.608	0.725	0.009	16.062	0.190	75,915.404	895.796	
On-Highway Flatbed Truck, 4x2, 15k GVW, 210 HP (Gas)	176	0.26	37.596	0.021	126.672	0.072	0.400	0.000	16.741	0.010	41,838.390	23.830	
On-Highway Light Duty Truck/Pickup - 4X4, 1/2T, Conventional, 191 HP (Gas)	32	0.05	30.036	0.003	95.585	0.010	0.301	0.000	15.635	0.002	31,570.801	3.269	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	7390	10.82	30.036	0.716	95.585	2.280	0.301	0.007	15.635	0.373	31,570.801	753.059	
On-Highway Truck Tractor - 6X4, 45K gww, 380 HP (Diesel)	62	0.09	34.958	0.007	249.537	0.050	0.463	0.000	15.912	0.003	48,508.330	9.677	
On-Highway Truck Tractor - 6X6, 70K gww, 450 HP (Diesel)	121	0.18	36.879	0.014	390.525	0.152	0.725	0.000	16.062	0.006	75,915.404	29.542	
On-Highway Water Truck, 3000 Gal, 210 HP (Gas)	11	0.02	37.596	0.001	126.672	0.004	0.400	0.000	16.741	0.001	41,838.390	1.486	
Rear Discharge Concrete Transit Mixer - 8cy - 60kgww, 235 HP (Diesel)	1466	2.15	37.596	0.178	126.672	0.599	0.400	0.002	16.741	0.079	41,838.390	197.996	
Screen Plant, Single Deck, 24"X60' Conveyor, 5'x10' Screen Size, 51 HP (Diesel)	88	0.13	26.105	0.007	42.740	0.012	0.078	0.000	8.385	0.002	8,198.480	2.329	
Skid Steer Loader, Bobcat, 2400 lb Capacity, 73 HP (Diesel)	17	0.02	26.181	0.001	75.635	0.004	0.154	0.000	17.613	0.001	16,088.868	0.857	
Small Engine Generator, 6.5KW, Diesel, 13HP	349	0.51	5.886	0.007	29.484	0.033	0.072	0.000	2.182	0.002	4,625.962	5.209	
Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)	182	0.27	64.216	0.038	205.356	0.121	0.419	0.000	32.966	0.019	43,901.277	25.837	
Truck Chassis, 25k lbs, 4x2, 295 HP (Gas)	17	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Truck Chassis, 50k lbs, 6x4, 255 HP (Diesel)	11	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Total	20226			2.024		10.806		0.025		0.977		2,531.805	
Grading Equipment													
Dozer	182												
Grader	0												

Shasta Dam 6.5' Raise - Feasibility Estimate - Most Probable - April 2010 Price Level													
TSC - 9													
Sacramento River UPRR 2nd Crossing - 18.5 ft raise		Start	Finish										
Planned Construction Period		1/4/2016	12/22/2017										
Planned Duration (days)		501											
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
1150 CFM Port. RS Air Compressor Diesel 150 psi 525 HP	1294	2.58	63.849	0.364	214.313	1.221	1.031	0.006	19.444	0.111	105,021.813	598.203	
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	20400	40.72	28.657	2.572	143.317	12.865	0.250	0.022	15.373	1.380	21,277.144	1,909.986	
4WD Articulated Wheel Loader - Cat 3.65 cy bucket - 160 HP - EROPS (Diesel)	825	1.65	32.104	0.117	133.153	0.483	0.270	0.001	17.328	0.063	28,323.951	102.788	
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	740	1.48	30.661	0.100	182.249	0.593	0.370	0.001	12.996	0.042	38,767.435	126.175	
600 CFM Port. RS Air Compressor Diesel Powered 150 psi 275 HP	3652	7.29	38.577	0.620	124.265	1.997	0.669	0.011	11.819	0.190	59,466.905	955.650	
AmPiledr-VibtryHmnr625HP	673	1.34	60.870	0.180	417.401	1.237	0.736	0.002	29.879	0.089	77,032.518	228.200	
Cat Self Propelled Tandem Vibratory Compactor - 56" Wide Smooth, 70 HP (Diesel)	40	0.08	20.522	0.004	104.325	0.018	0.158	0.000	13.790	0.002	16,510.744	2.892	
Cat Tractor-Loader-Backhoe, 4WD, 1 CY Bucket, Fixed Stick, 72 HP (Diesel)	1194	2.38	17.151	0.090	75.359	0.396	0.154	0.001	12.059	0.063	16,091.489	84.537	
Centrifugal Pump, Gas, 100 gpm, 1.5" Size, 3 HP (Gas)	11196	22.35	4.801	0.237	21.443	1.056	0.052	0.003	1.735	0.085	3,364.335	165.758	
Centrifugal Pump, Gas, 300 gpm, 3" Size, 7 HP (Gas)	5066	10.11	4.801	0.107	21.443	0.478	0.052	0.001	1.735	0.039	3,364.335	74.995	
Concrete pump & boom Schwing 2525H-5/S-47 on 255 hp chassis, 181 cy/hr & 155 ft boom	887	1.77	46.019	0.180	176.972	0.691	1.027	0.004	15.541	0.061	91,257.575	356.087	
Core drill, 3-inch chuck, 24" feed stroke, 40 hp, diesel	243	0.49	17.955	0.019	47.458	0.051	0.113	0.000	7.551	0.008	11,812.980	12.635	
Crawler Mounted Hydraulic Excavator - Cat 2.25 cy bucket - 222 HP (Diesel)	493	0.99	22.896	0.050	212.598	0.465	0.417	0.001	9.661	0.021	43,667.789	95.608	
Crawler Mounted Hydraulic Excavator - Cat 2.5 cy bucket - 321 HP (Diesel)	2217	4.42	22.896	0.223	212.598	2.074	0.417	0.004	9.661	0.094	43,667.789	425.928	
Grove 4x2x4 Hyd Yard Crane Diesel 9.1 MT 24' Boom, 80 HP	3326	6.64	30.944	0.453	66.584	0.975	0.127	0.002	18.180	0.266	13,333.705	195.174	
Grove Rough Terrain Hyd Crane 36 MT 105' Boom, 165 HP (Diesel)	2226	4.44	33.157	0.325	111.882	1.096	0.214	0.002	18.204	0.178	22,404.817	219.506	
Hand Held Rammer - 4" to 13", 3180 lb/blow, 4 HP (Gas)	40	0.08	21.161	0.004	50.846	0.009	0.088	0.000	7.767	0.001	9,248.938	1.620	
Hand Held Vibratory Plate Compactor, 25", 6k-9k lb/blow, 11 HP, Gas Powered	40	0.08	2.275	0.000	11.937	0.002	0.030	0.000	0.555	0.000	1,954.951	0.342	
I.C. Self Propelled Scissor Lift, 2500# Cap., 90"x170" deck, 50 HP (Diesel)	3238	6.46	3.390	0.048	39.910	0.569	0.080	0.001	1.490	0.021	8,267.000	117.808	
Inland Tug Boat 250HP 26ft	5360	10.70	20.001	0.472	112.351	2.650	112.351	2.650	8.611	0.203	23,309.646	549.841	
Large Engine Generator, 100KW, Diesel, Enclosed, 160 HP	1650	3.29	46.042	0.334	332.945	2.417	0.724	0.005	19.912	0.145	64,342.907	467.177	
Large Engine Generator, 20.0KW, Diesel, 34HP	6653	13.28	10.890	0.319	36.619	1.072	0.101	0.003	3.472	0.102	7,990.295	233.918	
Large Engine Generator, 60KW, Diesel, Enclosed, 88 HP	5180	10.34	37.238	0.849	216.406	4.933	0.414	0.009	19.867	0.493	35,325.511	805.254	
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	13682	27.31	44.851	2.703	252.851	15.223	0.484	0.029	22.580	1.389	50,634.354	3,048.469	
Manitowoc Crawler Mntd Lattice Boom Crane, 90.70 MT, 40' Boom, 230HP (Diesel)	9862	19.69	40.747	1.769	163.592	7.100	0.313	0.014	20.938	0.909	32,759.889	1,421.751	
Off-Highway Water Tanker, 5000 Gal, 175 HP (Diesel)	40	0.08	30.036	0.005	95.585	0.017	0.301	0.000	15.635	0.003	31,570.801	5.531	
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	3497	6.98	36.879	0.567	390.525	6.009	0.725	0.011	16.062	0.247	75,915.404	1,168.128	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	38889	77.62	30.036	5.140	95.585	16.338	0.301	0.052	15.635	2.676	31,570.801	5,402.719	
On-Highway Truck Tractor - 4X2, 30K gvw, 210 HP (Diesel)	88	0.18	34.958	0.014	249.537	0.097	0.463	0.000	15.912	0.006	48,508.330	18.784	
On-Highway Truck Tractor - 6X4, 45K gvw, 380 HP (Diesel)	1386	2.77	34.958	0.213	249.537	1.522	0.463	0.003	15.912	0.097	48,508.330	295.853	
Portable Welder, 600 Amp, Trailer Mounted, DC-CC/CV, 42 HP (Diesel)	6290	12.55	32.687	0.905	113.219	3.134	0.152	0.004	8.318	0.280	11,763.806	325.590	
Small Engine Generator, 6.5KW, Diesel, 13HP	1479	2.95	5.886	0.038	29.484	0.192	0.072	0.000	2.132	0.014	4,625.952	30.098	
Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)	36	0.07	64.216	0.010	205.356	0.032	0.419	0.000	32.956	0.005	43,901.277	6.856	
Vacuum, 5 cy capacity, PTO operated, truck included.	237	0.47	37.596	0.039	126.672	0.132	0.400	0.000	16.741	0.017	41,838.390	43.550	
Total	152122			19.070		87.162		2.844		9.182		19,497.425	
Grading Equipment													
Dozer		36											
Grader		0											

Shasta Lake Water Resources Investigation

TSC - 10													
Spillway - 18.5 ft raise	Planned Construction Period	Start	Finish										
		1/3/2017	4/22/2019										
	Planned Duration (days)	583											
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
175 CFM Rotary Screw Port Air Compressor Gas 125 psi 90 HP	3804	6.53	28.657	0.412	143.317	2.062	0.250	0.004	15.373	0.221	21,277.144	306.092	
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	8716	14.95	28.657	0.945	143.317	4.723	0.250	0.008	15.373	0.507	21,277.144	701.260	
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	1758	3.02	30.661	0.204	182.249	1.212	0.370	0.002	12.996	0.086	0.000	0.000	
600 CFM Port. RS Air Compressor Diesel Powered 150 psi 275 HP	6348	10.89	38.577	0.926	124.265	2.983	0.669	0.016	11.819	0.284	0.000	0.000	
Centrifugal Pump, Gas, 200 gpm, 2" size, 8 HP (Gas)	1518	2.60	4.801	0.028	21.443	0.123	0.052	0.000	1.735	0.010	3,364.335	19.317	
Concrete Saw - 10.625" max depth, 26" Blade Dia. (not incl), 65 HP (Gas)	462	0.79	31.942	0.056	121.248	0.212	0.177	0.000	8.449	0.015	13,690.344	23.918	
Concrete Street & Highway Slipform Paver, Gomaco, 12'-32' Paving Width, 4 track, 335 HP (Diesel)	325	0.56	19.794	0.024	273.909	0.336	0.444	0.001	9.219	0.011	46,494.289	57.085	
Core drill, 3-inch chuck, 24" feed stroke, 40 hp, diesel	9671	16.59	17.955	0.657	47.458	1.736	0.113	0.004	7.551	0.276	11,812.980	432.006	
Grove 4x2x4 Hyd Yard Crane Diesel 9.1 MT 24' Boom, 80 HP	1789	3.07	30.944	0.209	66.584	0.450	0.127	0.001	18.180	0.123	13,333.705	90.197	
Grove A125J Manlift, Articulating boom, 125' Max Ht, 500# Cap, 100 HP (Diesel)	132	0.23	3.952	0.002	57.607	0.029	0.114	0.000	2.553	0.001	11,931.823	5.956	
Grove All Terrain Hyd Crane, Dual Engine, 227 MT, 236' Boom, 165 HP (Diesel)	528	0.91	33.157	0.066	111.882	0.223	0.214	0.000	18.204	0.036	22,404.817	44.734	
Grove Rough Terrain Hyd Crane 36 MT 105' Boom, 165 HP (Diesel)	1423	2.44	33.157	0.178	111.882	0.602	0.214	0.001	18.204	0.098	22,404.817	120.578	
I.C. Self Propelled Scissor Lift, 2500# Cap., 90"x170" deck, 50 HP (Diesel)	1833	3.14	3.390	0.023	39.910	0.277	0.080	0.001	1.490	0.010	8,267.000	57.290	
Ingersol Rand Hyd Track Drill, 5" hole max, Extendable, 260 HP (Diesel)	1892	3.25	31.416	0.225	360.357	2.578	0.857	0.006	13.590	0.097	89,697.851	641.755	
Inland Tug Boat 250HP 26ft	1100	1.89	20.001	0.083	112.351	0.467	112.351	0.467	8.611	0.036	23,309.646	96.960	
Job pickup	35138	60.27	30.036	3.991	95.585	12.701	0.301	0.040	15.635	2.077	31,570.801	4,195.016	
Large Engine Generator, 100KW, Diesel, Enclosed, 160 HP	1518	2.60	46.042	0.264	332.945	1.912	0.724	0.004	19.912	0.114	64,342.907	369.434	
Large Engine Generator, 15.0KW, Diesel, 26.5HP	216	0.37	5.886	0.005	29.484	0.024	0.072	0.000	2.182	0.002	4,625.962	3.784	
Large Engine Generator, 20.0KW, Diesel, 34HP	11263	19.32	10.890	0.464	36.619	1.560	0.101	0.004	3.472	0.148	7,990.295	340.308	
Large Engine Generator, 60KW, Diesel, Enclosed, 88 HP	16658	28.57	37.238	2.346	216.406	13.632	0.414	0.026	19.867	1.251	35,325.511	2,225.263	
Manitowoc Crawler Mntd Lattice Boom Crane, 127MT, 60' Boom, 287HP (Diesel)	7343	12.59	40.757	1.132	163.592	4.542	0.313	0.009	20.938	0.581	32,759.889	909.604	
Manitowoc Crawler Mntd Lattice Boom Crane, 200 UST, 60' Boom, 340 HP (Diesel) OPERATING COSTS	1100	1.89	44.891	0.187	252.851	1.052	0.484	0.002	22.580	0.094	50,634.394	210.622	
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	7939	13.62	44.891	1.348	252.851	7.591	0.484	0.015	22.580	0.678	50,634.394	1,520.061	
Manitowoc Crawler Mntd Lattice Boom Crane, 90.7 MT, 40' Boom, 230HP Ownership costs	550	0.94	44.891	0.093	252.851	0.526	0.484	0.001	22.580	0.047	50,634.394	105.311	
Manitowoc Crawler Mntd Lattice Boom Crane, 90.70 MT, 40' Boom, 230HP Operating cost	550	0.94	40.757	0.085	163.592	0.340	0.313	0.001	20.938	0.044	32,759.889	68.135	
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	13539	23.22	36.879	1.888	390.525	19.995	0.725	0.037	16.062	0.822	75,915.404	3,886.802	
On-Highway Flatbed Truck, 4x2, 15k GVW, 210 HP (Gas)	5544	9.51	37.596	0.788	126.672	2.655	0.400	0.008	16.741	0.351	41,838.390	877.082	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	19334	33.16	30.036	2.196	95.585	6.989	0.301	0.022	15.635	1.143	31,570.801	2,308.254	
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, Crew, 285 HP (Gas)	2046	3.51	37.596	0.291	126.672	0.980	0.400	0.003	16.741	0.130	41,838.390	323.703	
On-Highway Truck Tractor - 6X4, 45K gww, 380 HP (Diesel)	2261	3.88	34.958	0.299	249.537	2.134	0.463	0.004	15.912	0.136	48,508.330	414.810	
On-Highway Truck Tractor - 6X6, 70K gww, 450 HP (Diesel)	308	0.53	36.879	0.043	390.525	0.455	0.725	0.001	16.062	0.019	75,915.404	88.419	
Portable Welder, 600 Amp, Trailer Mounted, DC-CC/CV, 42 HP (Diesel)	22664	38.88	32.697	2.802	113.219	9.704	0.152	0.013	8.318	0.713	11,763.806	1,008.227	
Rear Discharge Concrete Transit Mixer - 8cy - 60kgww, 235 HP (Diesel)	5234	8.98	37.596	0.744	126.672	2.507	0.400	0.008	16.741	0.331	41,838.390	828.127	
Small Engine Generator, 6.5KW, Diesel, 13HP	5459	9.36	5.886	0.121	29.484	0.609	0.072	0.001	2.182	0.045	4,625.962	95.488	
	199963			23.125		107.919		0.712		10.539		22,375.600	
Grading Equipment													
Dozer	0												
Grader	0												

Shasta Lake Water Resources Investigation

TSC - 12													
Visitor Center Replacement - 18.5 ft raise		Start	Finish										
Planned Construction Period		5/15/2020	7/14/2021										
Planned Duration (days)		297											
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
4WD Articulated Wheel Loader - Cat 3.65 cy bucket - 160 HP - EROPS (Diesel)	153	0.51	32.104	0.036	133.153	0.151	0.270	0.000	17.328	0.020	28,323.951	32.089	
Art Frm Grader-Cat-165hp	31	0.10	51.239	0.012	167.322	0.038	0.308	0.000	28.023	0.006	32,245.462	7.335	
Atlantic Truck Mounted Vertical Earth Drill, 80' Depth, 6" Kelly Bar, 177 HP (Diesel)	22	0.07	21.038	0.003	217.595	0.036	0.517	0.000	8.893	0.001	54,162.283	8.845	
Cat PM 565 b Cold planer - 82" cutting width	22	0.07	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Cat Self Propelled Pneumatic Compactor - 9 wheels, 100 HP (Diesel)	24	0.08	20.522	0.004	104.325	0.018	0.158	0.000	13.790	0.002	16,510.744	2.894	
Cat Single Drum Self Propelled Vibratory Compactor - 84" pad foot 142 HP (Diesel)	102	0.34	20.522	0.015	104.325	0.079	0.158	0.000	13.790	0.010	16,510.744	12.454	
Cat Tractor-Loader-Backhoe, 4WD, 1 CY Bucket, Fixed Stick, 72 HP (Diesel)	64	0.21	17.151	0.008	75.359	0.036	0.154	0.000	12.059	0.006	16,091.489	7.602	
Cedarapids Wheel Mounted Asphalt Paver, CR552RX, Fastach 10', 2 wheel drive, 240 HP (Diesel)	24	0.08	19.794	0.003	273.909	0.048	0.444	0.000	9.219	0.002	46,494.289	8.148	
Crawler Mounted Chain Trencher, Vermeer, 24" Trench Width, 96" Deep Trench, 140 HP (Diesel)	28	0.09	44.074	0.009	208.543	0.043	0.358	0.000	23.694	0.005	37,481.773	7.651	
Crawler Mounted Hydraulic Excavator - Cat 1.25 cy bucket - 138 HP (Diesel)	31	0.10	20.870	0.005	142.100	0.033	0.279	0.000	11.199	0.003	29,187.403	6.715	
Finn T280 Seed Sprayer (for Truck Mounting), Not including Truck, 2500 gal Working Capacity, 115 HP (Diesel)	6	0.02	21.219	0.001	87.888	0.004	0.163	0.000	14.730	0.001	17,084.849	0.698	
Fork Lift	83	0.28	12.526	0.008	47.128	0.029	0.083	0.000	8.614	0.005	8,648.626	5.296	
Grove 4x2x4 Hyd Yard Crane Diesel 9.1 MT 24' Boom, 80 HP	91	0.31	30.944	0.021	66.584	0.045	0.127	0.000	18.180	0.012	13,333.705	9.036	
Grove 4x4x4 Hyd Yard Crane Diesel 13.6MT 52' Boom	88	0.30	33.157	0.022	111.882	0.073	0.214	0.000	18.204	0.012	22,404.817	14.635	
Grove 8x4x4 Truck Mounted Hyd Crane, Single Engine, 50MT, 110' Boom, 450 HP (Diesel)	135	0.46	44.891	0.045	252.851	0.254	0.484	0.000	22.580	0.023	50,634.394	50.910	
Grove Rough Terrain Hyd Crane 36 MT 105' Boom, 165 HP (Diesel)	6	0.02	33.157	0.001	111.882	0.005	0.214	0.000	18.204	0.001	22,404.817	0.915	
Grove T80 Manlift, Telescopic Boom, 80' Max Ht, 600# Cap, 4wd, 85 HP (Diesel)	87	0.29	3.952	0.003	57.607	0.037	0.114	0.000	2.553	0.002	11,931.823	7.745	
Hand Held Vibratory Plate Compactor, 25", 6k-9k lb/blow, 11 HP, Gas Powered	33	0.11	2.276	0.001	11.937	0.003	0.030	0.000	0.556	0.000	1,954.951	0.472	
I.C. Self Propelled Scissor Lift, 1500# cap., 72"x132" deck, 25 HP, <30' (Diesel)	299	1.01	3.390	0.008	39.910	0.089	0.080	0.000	1.490	0.003	8,267.000	18.374	
Job pickup	5415	18.23	30.036	1.207	95.585	3.842	0.301	0.012	15.635	0.629	31,570.801	1,269.107	
Large Engine Generator, 20.0KW, Diesel, 34HP	104	0.35	10.890	0.008	36.619	0.028	0.101	0.000	3.472	0.003	7,990.295	6.165	
Large Engine Generator, 60KW, Diesel, Enclosed, 88 HP	33	0.11	37.238	0.009	216.406	0.053	0.414	0.000	19.867	0.005	35,325.511	8.653	
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	135	0.45	36.879	0.037	390.525	0.391	0.725	0.001	16.062	0.016	75,915.404	76.075	
On-Highway Flatbed Truck, 4x2, 15k GVW, 210 HP (Gas)	73	0.24	37.596	0.020	126.672	0.068	0.400	0.000	16.741	0.009	41,838.390	22.547	
On-Highway Light Duty Truck/Pickup - 4X4, 1/2T, Conventional, 160 HP (Diesel)	22	0.07	37.596	0.006	126.672	0.021	0.400	0.000	16.741	0.003	41,838.390	6.832	
On-Highway Truck Tractor - 4X2, 30K gvw, 217 HP (Diesel)	6	0.02	34.958	0.001	249.537	0.010	0.463	0.000	15.912	0.001	48,508.330	1.980	
On-Highway Truck Tractor - 6X6, 70K gvw, 450 HP (Diesel)	167	0.56	36.879	0.046	390.525	0.483	0.725	0.001	16.062	0.020	75,915.404	93.827	
On-Highway Water Truck, 4000 Gal, 250 HP (Diesel)	157	0.53	37.596	0.044	126.672	0.148	0.400	0.000	16.741	0.020	41,838.390	48.812	
Portable Welder, 300 Amp, Trailer Mounted, AC/DC-CC/CV, 20 HP (Diesel)	154	0.52	7.711	0.009	23.440	0.027	0.065	0.000	2.322	0.003	5,114.701	5.847	
Rear Discharge Concrete Transit Mixer - 10cy - 66kgvw, 285 HP (Diesel)	6	0.02	37.596	0.002	126.672	0.006	0.400	0.000	16.741	0.001	41,838.390	2.007	
Skid Steer Loader, Bobcat, 3000 lb Capacity, 105 HP (Diesel)	40	0.14	26.181	0.008	75.635	0.023	0.154	0.000	17.613	0.005	16,088.868	4.791	
Small Engine Generator, 10.0KW, Gas, 21HP	135	0.46	5.886	0.006	29.484	0.030	0.072	0.000	2.182	0.002	4,625.962	4.651	
Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)	161	0.54	64.216	0.077	205.356	0.245	0.419	0.001	32.966	0.039	43,901.277	52.476	
Truck Chassis, 25k lbs, 4x2, 295 HP (Gas)	6	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Truck Chassis, 50k lbs, 6x4, 255 HP (Diesel)	5	0.02	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Total	7944			1.684		6.394		0.017		0.868		1,805.586	
Grading Equipment													
Dozer	161												
Grader	31												

Shasta Lake Water Resources Investigation

MWH - 2												
Reservoir Clearing - 18.5 ft raise												
Planned Construction Period	Start	Finish										
Construction Duration (days)	177	1/25/2019										
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)
220 hp Bulldozer (Cat D7)	614	3.47	64.216	0.491	205.356	1.570	0.419	0.003	32.966	0.252	43,901.277	335.634
3.5 CY Loader (Cat 950)	1602	9.05	32.104	0.640	133.153	2.656	0.270	0.005	17.328	0.346	28,323.951	565.027
4.5 CY Loader (Cat 966)	614	3.47	32.104	0.245	133.153	1.018	0.270	0.002	17.328	0.132	28,323.951	216.542
1.5 CY Backhoe (Cat 325)	614	3.47	17.151	0.131	75.359	0.576	0.154	0.001	12.059	0.092	16,091.489	123.022
20 Ton (10 CY) Tandem Truck	614	3.47	37.596	0.287	126.672	0.968	0.400	0.003	16.741	0.128	41,838.390	319.862
140 hp Wheel Skidder (Cat 515)	2167	12.24	17.893	0.483	187.211	5.053	0.279	0.008	10.229	0.276	29,259.636	789.749
210 hp Harvester (Cat 580)	2167	12.24	34.815	0.940	229.129	6.184	0.422	0.011	15.365	0.415	44,156.690	1,191.837
Cat 330 LC Log Loader	288	1.63	17.893	0.064	187.211	0.672	0.279	0.001	10.229	0.037	29,259.636	105.042
Chipper - clearing	1602	9.05	1.573	0.031	9.008	0.180	11.412	0.228	0.847	0.017	1,434.720	28.621
DT-320 Tree Mulcher	2215	12.52	33.882	0.935	106.607	2.942	0.188	0.005	23.056	0.636	19,674.653	542.901
Tower 4-Lights 12 hp	288	1.63	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Helicopter 5000lbs	1742	9.84	510.000	11.068	610.000	13.239	3,360.000	72.920	91.000	1.975	893,115.194	19,382.808
Truck Mounted Post Hole Auger	0	0.00	21.038	0.000	217.595	0.000	0.517	0.000	8.893	0.000	54,162.283	0.000
100 hp Harbour Master	1782	10.07	140.005	3.108	786.456	17.456	2,225.269	49.391	60.278	1.338	163,167.522	3,621.619
1/2 Ton Pickup Truck 2x2	11880	67.12	30.036	4.444	95.585	14.144	0.301	0.045	15.635	2.314	31,570.801	4,671.576
3/4 Ton Crew Cab Truck	1320	7.46	37.596	0.618	126.672	2.083	0.400	0.007	16.741	0.275	41,838.390	687.876
1- Ton Mechanic Truck	4400	24.86	37.596	2.060	126.672	6.942	0.400	0.022	16.741	0.917	41,838.390	2,292.920
logging Truck (Kenworth C500)	1153	6.51	37.596	0.540	126.672	1.819	0.400	0.006	16.741	0.240	41,838.390	600.797
30" Chain Saw	20523	115.95	1.885	0.482	3.409	0.871	0.030	0.008	0.005	0.001	9.215	2.356
Total	55584			26.569		78.373		122.666		9.392		35,478.189
Grading Equipment												
Dozer	614											
Grader	0											

MWH - 3													
Dikes - 18.5 ft raise	Start	Finish											
Planned Construction Period	2/5/2016	1/30/2017											
Construction Duration (days)	247												
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)	
220 hp Bulldozer (Cat D7)	1096	4.44	64.216	0.628	205.356	2.008	0.419	0.004	32.966	0.322	43,901.277	429.312	
3.5 CY Loader (Cat 950)	124	0.50	32.104	0.036	133.153	0.147	0.270	0.000	17.328	0.019	28,323.951	31.349	
4.5 CY Loader (Cat 966)	483	1.96	32.104	0.139	133.153	0.575	0.270	0.001	17.328	0.075	28,323.951	122.230	
125 hp Grader (Cat 120)	3678	14.89	46.432	1.524	100.328	3.293	0.185	0.006	29.005	0.952	19,334.700	634.667	
1.5 CY Backhoe (Cat 325)	80	0.33	17.151	0.012	75.359	0.054	0.154	0.000	12.059	0.009	16,091.489	11.533	
2.0 CY Backhoe (Cat 330)	1543	6.25	21.606	0.298	128.999	1.777	0.263	0.004	11.773	0.162	27,545.365	379.467	
4.1 CY Backhoe (Hitachi EX400)	2832	11.47	21.606	0.546	128.999	3.261	0.263	0.007	11.773	0.298	27,545.365	696.359	
20 Ton (10 CY) Tandem Truck	1985	8.03	37.596	0.666	126.672	2.244	0.400	0.007	16.741	0.297	41,838.390	741.099	
24 Ton (12 CY) Tandem Truck	11219	45.42	37.596	3.765	126.672	12.685	0.400	0.040	16.741	1.676	41,838.390	4,189.696	
15 Ton Compactor 84" (Cat 563)	3242	13.13	20.522	0.594	104.325	3.019	0.158	0.005	13.790	0.399	16,510.744	477.832	
140 hp Wheel Skidder (Cat 515)	122	0.50	17.893	0.020	187.211	0.204	0.279	0.000	10.229	0.011	29,259.636	31.959	
210 hp Harvester (Cat 580)	122	0.50	34.815	0.038	229.129	0.250	0.422	0.000	15.365	0.017	44,156.690	48.231	
Cat 330 LC Log Loader	29	0.12	17.893	0.005	187.211	0.049	0.279	0.000	10.229	0.003	29,259.636	7.693	
Chipper - clearing	124	0.50	1.573	0.002	9.008	0.010	11.412	0.013	0.847	0.001	1,434.720	1.588	
DT-320 Tree Mulcher□	124	0.50	33.882	0.038	106.607	0.118	0.188	0.000	23.056	0.026	19,674.653	21.776	
Truck Mounted Post Hole Auger	68	0.27	21.038	0.013	217.595	0.131	0.517	0.000	8.893	0.005	54,162.283	32.704	
1/2 Ton Pickup Truck 2x2	19800	80.16	30.036	5.308	95.585	16.892	0.301	0.053	15.635	2.763	31,570.801	5,579.412	
3/4 Ton Pickup Truck 2x2	3568	14.45	37.596	1.197	126.672	4.034	0.400	0.013	16.741	0.533	41,838.390	1,332.531	
3/4 Ton Crew Cab Truck	9240	37.41	37.596	3.101	126.672	10.447	0.400	0.033	16.741	1.381	41,838.390	3,450.520	
1- Ton Mechanic Truck	4400	17.81	37.596	1.476	126.672	4.975	0.400	0.016	16.741	0.657	41,838.390	1,643.105	
logging Truck (Kenworth C500)	59	0.24	37.596	0.020	126.672	0.067	0.400	0.000	16.741	0.009	41,838.390	21.999	
30" Chain Saw	367	1.49	1.885	0.006	3.409	0.011	0.030	0.000	0.005	0.000	9.215	0.030	
Total	64307			19.430		66.253		0.203		9.615		19,885.093	
Grading Equipment													
Dozer	1096												
Grader	3678												

Shasta Lake Water Resources Investigation

MWH - 7												
Utilities - 18.5 ft raise	Start	Finish										
Planned Construction Period	1/4/2016	2/2/2018										
Construction Duration (days)	529											
Equipment	Hours (w/ 10%)	Hours/day	ROG (g/hr)	ROG (lb/day)	CO (gr/hr)	CO (lb/day)	NOX (gr/hr)	NOX (lb/day)	PM10 (gr/hr)	PM10 (lb/day)	CO2 (gr/hr)	CO2 (lb/day)
3.5 CY Loader (Cat 950)	2717	5.14	32.104	0.363	133.153	1.508	0.270	0.003	17.328	0.196	28,323.951	320.685
3.0 CY Track Loader (Cat 963)	167	0.316	32.104	0.022	133.153	0.093	0.270	0.000	17.328	0.012	28,323.951	19.736
1.5 CY Backhoe (Cat 225)	873	1.651	17.151	0.062	75.359	0.274	0.154	0.001	12.059	0.044	16,091.489	58.553
2.3 CY Backhoe (Cat 235)	2028	3.834	21.606	0.183	128.999	1.090	0.263	0.002	11.773	0.100	27,545.365	232.853
1.0 CY Backhoe Loader (Case 580)	6490	12.268	37.596	1.017	126.672	3.426	0.400	0.011	16.741	0.453	41,838.390	1,131.550
5 Ton Flatbed Truck	1311	2.479	37.596	0.205	126.672	0.692	0.400	0.002	16.741	0.091	41,838.390	228.625
12 Ton Flatbed Truck	88	0.166	37.596	0.014	126.672	0.046	0.400	0.000	16.741	0.006	41,838.390	15.344
16 Ton (8 CY) Tandem Truck	46	0.087	37.596	0.007	126.672	0.024	0.400	0.000	16.741	0.003	41,838.390	8.056
20 Ton (10 CY) Tandem Truck	302	0.571	37.596	0.047	126.672	0.159	0.400	0.001	16.741	0.021	41,838.390	52.668
90 Kg Plate Tamper	88	0.166	2.276	0.001	11.937	0.004	0.030	0.000	0.556	0.000	1,954.951	0.717
5 Ft Wheel Mounted Chain Trencher	256	0.483	44.074	0.047	208.543	0.222	0.358	0.000	23.694	0.025	37,481.773	39.933
Acetylene Cutting Torch	213	0.403	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000
Grout Pump	145	0.275	47.797	0.029	333.673	0.202	0.715	0.000	20.623	0.012	63,501.811	38.441
10 KW Generator Set (Gas)	405	0.765	30.036	0.051	95.585	0.161	0.301	0.001	15.635	0.026	31,570.801	53.260
Knuckboom Manlift 36 Ft	23	0.043	3.388	0.000	39.912	0.004	0.079	0.000	1.487	0.000	8,266.857	0.777
Hoe Hammer 4X	79	0.150	88.486	0.029	694.256	0.229	1.224	0.000	42.483	0.014	128,126.723	42.291
Hoe Hammer 10X	9	0.017	88.486	0.003	694.256	0.025	1.224	0.000	42.483	0.002	128,126.723	4.699
3/4 Ton Pickup Truck 2x2	34091	64.444	37.596	5.341	126.672	17.997	0.400	0.057	16.741	2.378	41,838.390	5,944.190
5 Ton Flat Bed Truck	6229	11.775	37.596	0.976	126.672	3.288	0.400	0.010	16.741	0.435	41,838.390	1,086.081
2-Ton Mechanic Truck	275	0.520	37.596	0.043	126.672	0.145	0.400	0.000	16.741	0.019	41,838.390	47.950
Electrical Service truck	4399	8.315	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10 Ton Boomtruck	624	1.179	34.958	0.091	249.537	0.649	0.463	0.001	15.912	0.041	48,508.330	126.114
15 Ton Pitman Boom Truck	275	0.520	34.958	0.040	249.537	0.286	0.463	0.001	15.912	0.018	48,508.330	55.594
20 Ton Boomtruck	387	0.732	34.958	0.056	249.537	0.403	0.463	0.001	15.912	0.026	48,508.330	78.276
Tractor & Trailer	624	1.179	34.960	0.091	249.540	0.649	0.460	0.001	15.910	0.041	48,508.000	126.113
60 Ton Lowboy	4400	8.318	52.301	0.959	226.848	4.160	0.715	0.013	21.720	0.398	74,925.493	1,373.919
Total	66544			9.680		35.738		0.106		4.364		11,086.425
Grading Equipment												
Dozer	0											
Grader	0											

13. Off-Road Dust Emissions																			
1. Aggregate Storage Piles		CP1									CP2								
Construction Activity	Imported Fill (CY)	Imported Fill (tons)	Aggregate (lbs)	Aggregate (tons)	Excavation (CY)	Excavation (tons)	Activity Total (tons)	Material (Tons/day)	PM10 (lbs/day) ¹	Imported Fill (CY)	Imported Fill (tons)	Aggregate (lbs)	Aggregate (tons)	Excavation (CY)	Excavation (tons)	Activity Total (tons)	Material (Tons/day)	PM10 (lbs/day) ¹	
Vehicular Bridges	1,908.00	3,052.80	0.00	0.00	3,085.00	4,936.00	7,988.80	19.82	8.45	1,908.00	3,052.80	0.00	0.00	3,085.00	4,936.00	7,988.80	19.82	8.45	
Doney Creek Bridge	2,200.00	3,520.00	0.00	0.00	3,246.00	5,193.60	8,713.60	18.90	8.05	2,200.00	3,520.00	0.00	0.00	3,246.00	5,193.60	8,713.60	18.90	8.05	
Sacramento River UPRR 2nd Crossing	1,900.00	3,040.00	0.00	0.00	5,053.00	8,084.80	11,124.80	22.21	9.46	1,900.00	3,040.00	0.00	0.00	5,053.00	8,084.80	11,124.80	22.21	9.46	
Pit River Bridge Pier 3 and 4 Protection	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Railroad Realignment	7,500.00	12,000.00	0.00	0.00	42,400.00	67,840.00	79,840.00	311.88	132.89	7,500.00	12,000.00	0.00	0.00	42,400.00	67,840.00	79,840.00	311.88	132.89	
Road Relocations	242,856.00	388,569.60	86,200,600.00	43,100.30	0.00	0.00	431,669.90	1,308.09	557.39	397,814.00	636,502.40	122,280,500.00	61,140.25	0.00	0.00	697,642.65	2,114.07	900.83	
Utilities & Buildings/Facilities - Non Recreation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Buildings/Facilities - Recreation	236,182.00	377,891.20	213,982,000.00	106,991.00	592,276.00	947,641.60	1,432,523.80	3,402.67	1,449.92	384,191.00	614,705.60	219,526,000.00	109,763.00	430,584.00	688,934.40	1,413,403.00	3,357.25	1,430.57	
Main Dam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Outlet Works	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Spillway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
TCD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
PP & Penstocks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Right Wing Dam	17,500.00	28,000.00	2,200,000.00	1,100.00	190.00	304.00	29,404.00	65.20	27.78	17,500.00	28,000.00	2,200,000.00	1,100.00	190.00	304.00	29,404.00	65.20	27.78	
Left Wing Dam	41,650.00	66,640.00	6,300,000.00	3,150.00	0.00	0.00	69,790.00	321.61	137.04	74,850.00	119,760.00	6,300,000.00	3,150.00	0.00	0.00	122,910.00	566.41	241.35	
Visitor Center Replacement	2,070.00	3,312.00	12,028,500.00	6,014.25	1,420.00	2,272.00	11,598.25	40.70	17.34	2,070.00	3,312.00	12,028,500.00	6,014.25	1,420.00	2,272.00	11,598.25	40.70	17.34	
Dikes	149,186.00	238,697.60	9,342,000.00	4,671.00	17,040.00	27,264.00	270,632.60	2,034.83	867.07	173,476.00	277,561.60	13,797,000.00	6,898.50	24,068.00	38,508.80	322,968.90	2,428.34	1,034.75	
Reservoir Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Gravel Augmentation	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Restore Riparian and Floodplain Habitat	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Shoreline Enhancement & Tributary Aquatic Habitat Enhancement	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Recreation Enhancement Facilities	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
<u>Conversion Rates</u>				<u>Source</u>															
		2000 lbs/ton		google.com															
		1.6 cy/ton		calculatorsoup.com															
<u>Notes</u>																			
1. Calculation using emission factor for PM10 shown on "Fugitive Dust Emission Factors" worksheet.																			
2. Gravel Augmentation would occur under CP4 and CP5 and would occur for approximately 1 month each year for a 10 year period. Therefore, the total material was divided by 10 to result in a yearly import quantity that was used to normalize the 10 year period to the same duration (5 years) of the entire construction activities. For calculation																			
Emission estimates for fugitive dust from material movement were based on the material totals for all material import, aggregate, and waste exported. These are the activities that would result in on-site fugitive dust emissions. Values of 0.0 indicate that no material import/export would be required for that particular construction activity. Values of NA indicate that a particular construction activity is Not Applicable to the respective CP.																			

Shasta Lake Water Resources Investigation

CP3									CP4								
Imported Fill (CY)	Imported Fill (tons)	Aggregate (lbs)	Aggregate (tons)	Excavation (CY)	Excavation (tons)	Activity Total (tons)	Material (Tons/day)	PM10 (lbs/day) ¹	Imported Fill (CY)	Imported Fill (tons)	Aggregate (lbs)	Aggregate (tons)	Excavation (CY)	Excavation (tons)	Activity Total (tons) ²	Material (Tons/day)	PM10 (lbs/day) ¹
1,663.00	2,660.80	800,000.00	400.00	3,008.00	4,812.80	7,873.60	12.78	5.45	1,663.00	2,660.80	800,000.00	400.00	3,008.00	4,812.80	7,873.60	12.78	5.45
2,200.00	3,520.00	0.00	0.00	3,117.00	4,987.20	8,507.20	18.45	7.86	2,200.00	3,520.00	0.00	0.00	3,117.00	4,987.20	8,507.20	18.45	7.86
1,900.00	3,040.00	0.00	0.00	5,053.00	8,084.80	11,124.80	22.21	9.46	1,900.00	3,040.00	0.00	0.00	5,053.00	8,084.80	11,124.80	22.21	9.46
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7,500.00	12,000.00	0.00	0.00	42,400.00	67,840.00	79,840.00	311.88	132.89	7,500.00	12,000.00	0.00	0.00	42,400.00	67,840.00	79,840.00	311.88	132.89
427,563.00	684,100.80	142,288,600.00	71,144.30	0.00	0.00	755,245.10	1,051.87	448.22	427,563.00	684,100.80	142,288,600.00	71,144.30	0.00	0.00	755,245.10	1,051.87	448.22
0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
647,633.00	1,036,212.80	225,730,000.00	112,865.00	315,396.00	504,633.60	1,653,711.40	3,096.84	1,319.60	647,633.00	1,036,212.80	225,730,000.00	112,865.00	315,396.00	504,633.60	1,653,711.40	3,096.84	1,319.60
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17,500.00	28,000.00	2,200,000.00	1,100.00	190.00	304.00	29,404.00	43.05	18.34	17,500.00	28,000.00	2,200,000.00	1,100.00	190.00	304.00	29,404.00	43.05	18.34
110,900.00	177,440.00	6,300,000.00	3,150.00	0.00	0.00	180,590.00	440.46	187.69	110,900.00	177,440.00	6,300,000.00	3,150.00	0.00	0.00	180,590.00	440.46	187.69
2,070.00	3,312.00	12,028,500.00	6,014.25	1,420.00	2,272.00	11,598.25	39.05	16.64	2,070.00	3,312.00	12,028,500.00	6,014.25	1,420.00	2,272.00	11,598.25	39.05	16.64
371,680.00	594,688.00	110,535,300.00	55,267.65	56,721.00	90,753.60	740,709.25	2,998.82	1,277.84	371,680.00	594,688.00	110,535,300.00	55,267.65	56,721.00	90,753.60	740,709.25	2,998.82	1,277.84
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NA	NA	NA	NA	NA	NA	NA	NA	NA	6,375.00	10,200.00	65,636,667.00	32,818.33	0.00	0.00	4,301.83	2.98	1.27
NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

CP5								
<u>Imported Fill (CY)</u>	<u>Imported Fill (tons)</u>	<u>Aggregate (lbs)</u>	<u>Aggregate (tons)</u>	<u>Excavation (CY)</u>	<u>Excavation (tons)</u>	<u>Activity Total (tons)²</u>	<u>Material (Tons/day)</u>	<u>PM10 (lbs/day)¹</u>
1,663.00	2,660.80	800,000.00	400.00	3,008.00	4,812.80	7,873.60	12.78	5.45
2,200.00	3,520.00	0.00	0.00	3,117.00	4,987.20	8,507.20	18.45	7.86
1,900.00	3,040.00	0.00	0.00	5,053.00	8,084.80	11,124.80	22.21	9.46
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7,500.00	12,000.00	0.00	0.00	42,400.00	67,840.00	79,840.00	311.88	132.89
427,563.00	684,100.80	142,288,600.00	71,144.30	0.00	0.00	755,245.10	1,051.87	448.22
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
647,633.00	1,036,212.80	225,730,000.00	112,865.00	315,396.00	504,633.60	1,653,711.40	3,096.84	1,319.60
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17,500.00	28,000.00	2,200,000.00	1,100.00	190.00	304.00	29,404.00	43.05	18.34
110,900.00	177,440.00	6,300,000.00	3,150.00	0.00	0.00	180,590.00	440.46	187.69
2,070.00	3,312.00	12,028,500.00	6,014.25	1,420.00	2,272.00	11,598.25	39.05	16.64
371,680.00	594,688.00	110,535,300.00	55,267.65	56,721.00	90,753.60	740,709.25	2,998.82	1,277.84
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6,375.00	10,200.00	65,636,667.00	32,818.33	0.00	0.00	4,301.83	2.98	1.27
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	126,843,000.00	63,421.50	5,369.00	8,590.40	72,011.90	2,000.33	852.37
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Shasta Lake Water Resources Investigation

2. Construction Activity (grading and earthmoving)																
	Grading Equipment	CP1			CP2			CP3			CP4			CP5		
		Equipment Hours		Dust Emissions	Equipment Hours		Dust Emissions	Equipment Hours		Dust Emissions	Equipment Hours		Dust Emissions	Equipment Hours		Dust Emissions
		Total Hours	Daily Hours (avg)	PM10 (lbs/day)	Total Hours	Daily Hours (avg)	PM10 (lbs/day)	Total Hours	Daily Hours (avg)	PM10 (lbs/day)	Total Hours	Daily Hours (avg)	PM10 (lbs/day)	Total Hours	Daily Hours (avg)	PM10 (lbs/day)
UPRR Doney Creek Bridge																
	Bulldozer	11	0.023	0.01	11	0.02	0.01	11	0.02	0.01	11	0.02	0.01	11	0.02	0.01
	Grader	0.0	0.0	0.00	0.0	0.0	0.00	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Total				0.01			0.01			0.01			0.01			0.01
Left Wing Dam																
	Bulldozer	1151	5.302	2.52	1642	5.37	2.55	2275	5.55	2.64	2275	5.55	2.64	2275	5.55	2.64
	Grader	64	0.294	0.14	64	0.21	0.10	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Total				2.66			2.65			2.64			2.64			2.64
Main Dam																
	Bulldozer	0.0	0.0	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
	Grader	0.0	0.0	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Total				0.00			0.00			0.00			0.00			0.00
Outlet Works																
	Bulldozer	0.0	0.0	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
	Grader	0.0	0.0	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Total				0.00			0.00			0.00			0.00			0.00
Pit River Bridge Pier 3 and 4 Protection																
	Bulldozer	0.0	0.0	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
	Grader	0.0	0.0	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Total				0.00			0.00			0.00			0.00			0.00
PP & Penstocks																
	Bulldozer	0.0	0.0	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
	Grader	0.0	0.0	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Total				0.00			0.00			0.00			0.00			0.00
Rail Realignment																
	Bulldozer	54	0.212	0.10	54	0.21	0.10	54	0.21	0.10	54	0.21	0.10	54	0.21	0.10
	Grader	0.0	0.0	0.00	0.0	0.0	0.00	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Total				0.10			0.10			0.10			0.10			0.10
Right Wing Dam																
	Bulldozer	120.3	0.3	0.13	182.3	0.27	0.13	182	0.27	0.13	182	0.27	0.13	182	0.27	0.13
	Grader	0.0	0.0	0.00	0.0	0.0	0.00	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Total				0.13			0.13			0.13			0.13			0.13
Sacramento River UPRR Crossing																
	Bulldozer	36	0.071	0.03	36	0.07	0.03	36	0.07	0.03	36	0.07	0.03	36	0.07	0.03
	Grader	0.0	0.0	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Total				0.03			0.03			0.03			0.03			0.03
Spillway																
	Bulldozer	0.0	0.0	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
	Grader	0.0	0.0	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Total				0.00			0.00			0.00			0.00			0.00
TCD Mods																
	Bulldozer	36	0.214	0.10	36	0.21	0.10	36	0.21	0.10	36	0.21	0.10	36	0.21	0.10
	Grader	0.0	0.0	0.00	0.0	0.0	0.00	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Total				0.10			0.10			0.10			0.10			0.10
Visitor Center Replacement																
	Bulldozer	161	0.565	0.27	161	0.54	0.26	161	0.54	0.26	161	0.54	0.26	161	0.54	0.26
	Grader	31	0.108	0.05	31	0.10	0.05	31	0.10	0.05	31	0.10	0.05	31	0.10	0.05
Total				0.32			0.31			0.31			0.31			0.31
Vehicular Bridges																
	Bulldozer	53	0.132	0.06	48	0.12	0.06	81	0.13	0.06	81	0.13	0.06	81	0.13	0.06
	Grader	81	0.201	0.10	73	0.18	0.09	124	0.20	0.10	124	0.20	0.10	124	0.20	0.10
Total				0.16			0.14			0.16			0.16			0.16

Reservoir Clearing																
	Bulldozer	138	3.453	1.64	218	3.46	1.64	614	3.47	1.65	614	3.47	1.65	614	3.47	1.65
	Grader	0.0	0.0	0.00	0.0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Total				1.64			1.64			1.65			1.65			1.65
Dikes																
	Bulldozer	590	4.436	2.11	674	4.4	2.11	1096	4.44	2.11	1096	4.44	2.11	1096	4.44	2.11
	Grader	1980	14.889	7.07	2263	14.9	7.07	3678	14.89	7.07	3678	14.89	7.07	3678	14.89	7.07
Total				9.18			9.18			9.18			9.18			9.18
Buildings/Facilities-Recreation																
	Bulldozer	2347	5.575	2.65	5224	9.8	4.65	5899	11.05	5.25	5899	11.05	5.25	5899	11.05	5.25
	Grader	4503	10.696	5.08	5053	9.5	4.49	5706	10.69	5.08	5706	10.69	5.08	5706	10.69	5.08
Total				7.73			9.14			10.32			10.32			10.32
Road Relocation																
	Bulldozer	132	0.401	0.19	9617	19.8	9.42	14233	19.82	9.41	14233	19.82	9.41	14233	19.82	9.41
	Grader	2985	9.045	4.30	4389	9.1	4.30	6496	9.05	4.30	6496	9.05	4.30	6496	25.38	12.05
Total				4.49			13.72			13.71			13.71			21.47
Utilities																
	Bulldozer	0.0	0.0	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
	Grader	0.0	0.0	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Total				0.00			0.00			0.00			0.00			0.00
Gravel Augmentation																
	Bulldozer	0.0	0.0	0.00	0.0	0.0	0.00	0.0	0.00	0.00	761	0.53	0.25	761	0.53	0.25
	Grader	0.0	0.0	0.00	0.0	0.0	0.00	0.0	0.00	0.00	15	0.01	0.00	15	0.01	0.00
Total				0.00			0.00			0.00			0.26			0.26
Restore Riparian and Floodplain Habitat																
	Bulldozer	0.0	0.0	0.00	0.0	0.0	0.00	0.0	0.00	0.00	921	34.46	16.37	921	34.46	16.37
	Grader	0.0	0.0	0.00	0.0	0.0	0.00	0.0	0.00	0.00	489	18.29	8.69	489	18.29	8.69
Total				0.00			0.00			0.00			25.05			25.05
Shoreline Enhancement & Tributary Aquatic																
	Bulldozer	0.0	0.0	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0	0.00	0.00	1	0.04	0.02
	Grader	0.0	0.0	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Total				0.00			0.00			0.00			0.00			0.02
Recreation Enhancement Facilities																
	Bulldozer	0.0	0.0	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0	0.00	0.00	94	0.37	0.18
	Grader	0.0	0.0	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0	0.00	0.00	68	0.27	0.13
Total				0.00			0.00			0.00			0.00			0.30

Shasta Lake Water Resources Investigation

3. Summary of Off-Road Fugitive Dust Emissions (lbs/day)											
Construction Activity	PM 10 Fugitive Dust (lbs/day)					PM2.5 Fugitive Dust (lbs/day) ³					
	CP1	CP2	CP3	CP4	CP5	CP1	CP2	CP3	CP4	CP5	
Vehicular Bridges	8.6	8.6	5.6	5.6	5.6	0.86	0.9	0.56	0.56	0.56	
Doney Creek Bridge	8.1	8.1	7.9	7.9	7.9	0.81	0.8	0.79	0.79	0.79	
Sacramento River UPRR 2nd Crossing	9.5	9.5	9.5	9.5	9.5	0.95	0.9	0.95	0.95	0.95	
Pit River Bridge Pier 3 and 4 Protection	0.0	0.0	0.0	0.0	0.0	0.00	0.0	0.00	0.00	0.00	
Railroad Realignment	133.0	133.0	133.0	133.0	133.0	13.30	13.3	13.30	13.30	13.30	
Road Relocations	561.9	914.5	461.9	461.9	469.7	56.19	91.5	46.19	46.19	46.97	
Utilities	0.0	0.0	0.0	0.0	0.0	0.00	0.0	0.00	0.00	0.00	
Buildings/Facilities - Recreation	1457.7	1439.7	1319.6	1329.9	1329.9	145.77	144.0	131.96	132.99	132.99	
Main Dam	0.0	0.0	0.0	0.0	0.0	0.00	0.0	0.00	0.00	0.00	
Outlet Works	0.0	0.0	0.0	0.0	0.0	0.00	0.0	0.00	0.00	0.00	
Spillway	0.0	0.0	0.0	0.0	0.0	0.00	0.0	0.00	0.00	0.00	
TCD	0.1	0.1	0.1	0.1	0.1	0.01	0.0	0.01	0.01	0.01	
PP & Penstocks	0.0	0.0	0.0	0.0	0.0	0.00	0.0	0.00	0.00	0.00	
Right Wing Dam	27.9	27.9	18.5	18.5	18.5	2.79	2.8	1.85	1.85	1.85	
Left Wing Dam	139.7	244.0	190.3	190.3	190.3	13.97	24.4	19.03	19.03	19.03	
Visitor Center Replacement	17.7	17.6	16.9	16.9	16.9	1.77	1.8	1.69	1.69	1.69	
Dikes	876.2	1043.9	1287.0	1287.0	1287.0	87.62	104.4	128.70	128.70	128.70	
Reservoir Clearing	1.6	1.6	1.6	1.6	1.6	0.16	0.2	0.16	0.16	0.16	
Gravel Augmentation	0.0	0.0	0.0	1.5	1.5	0.00	0.0	0.00	0.15	0.15	
Restore Riparian and Floodplain Habitat	0.0	0.0	0.0	25.1	25.1	0.00	0.0	0.00	2.51	2.51	
Shoreline Enhancement & Tributary Aquatic Habitat Enhancement	0.0	0.0	0.0	0.0	852.4	0.00	0.0	0.00	0.00	85.24	
Recreation Enhancement Facilities	0.0	0.0	0.0	0.0	0.3	0.00	0.0	0.00	0.00	0.03	
Activity Work Days (used for above calculations)											
Activity	Work Days										
	CP1	CP2	CP3	CP4	CP5						
Vehicular Bridges	403	403	616	616	616						
Doney Creek Bridge	461	461	461	461	461						
Sacramento River UPRR 2nd Crossing	501	501	501	501	501						
Pit River Bridge Pier 3 and 4 Protection	189	257	342	342	342						
Railroad Realignment	256	256	256	256	256						
Road Relocations	330	485	718	718	718						
Utilities & Buildings/Facilities - Non Recreation	427	444	529	529	529						
Buildings/Facilities - Recreation	421	534	534	534	534						
Main Dam	573	674	683	683	683						
Outlet Works	260	260	260	260	260						
Spillway	591	565	583	583	583						
TCD	167	169	170	170	170						
PP & Penstocks	50	50	50	50	50						
Right Wing Dam	451	683	683	683	683						
Left Wing Dam	217	306	410	410	410						
Visitor Center Replacement	285	297	297	297	297						
Dikes	133	152	247	247	247						
Reservoir Clearing	40	63	177	177	177						
Gravel Augmentation ^{1,2}	NA	NA	NA	1441	1441						
Restore Riparian and Floodplain Habitat	NA	NA	NA	27	27						
Shoreline Enhancement & Tributary Aquatic Habitat Enhancement	NA	NA	NA	NA	36						
Recreation Enhancement Facilities	NA	NA	NA	NA	252						
Notes											
1 Gravel Augmentation would occur each year for a 10 year period. The total duration of this activity was reduced to 1,441 work days as indicated on the Component Summary worksheet to coincide with the 5 year construction period for all all CPs.											
2 For max daily dust emissions, gravel augmentation was assumed to occur throughout the 5 year construction period as this is the time when it would overlap with other construction activities and result in the greatest emissions											
3 Fugitive Dust PM2.5 was calculated based on a 0.1 ratio of PM2.5/PM10 as indicated in EPA 2006 AP-42 Background Document for Revisions to Fine Fraction Ratios used for AP-42 Fugitive Dust Emission Factors											

14. On-Road Emissions											
Truck Hauling (Dust)											
Emission factor used is equation for travel on paved roads shown on worksheet "Fugitive Dust Em. Rts."											
Daily Truck Hauling Trips ^{1,2}					Borrow Site ³					PM10	PM2.5
CP	Import	Export	Total	Round Trips	Bridge Bay (50% of trips)	Lakshore (50% of trips)	Bridge Bay (30 miles)	Lakeshore (43 miles)	Total Daily VMT	(lbs/day)	(lbs/day)
CP1	95	75	170	340	170	170	5,100	7,310	12,410	22.10	3.31
CP2	118	56	174	348	174	174	5,220	7,482	12,702	22.62	3.39
CP3	168	52	220	440	220	220	6,600	9,460	16,060	28.59	4.29
CP4	175	53	228	456	228	228	6,840	9,804	16,644	29.63	4.45
CP5	177	54	231	462	231	231	6,930	9,933	16,863	30.02	4.50
Truck Hauling (Exhaust)											
Exhaust emission rates shown on "Haul Truck Exhaust Em. Rts." worksheet											
CP	Total Daily VMT	ROG (lbs/day)	NOX (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)	CO (lbs/day)	CO2 (lbs/day)				
CP1	12,410	7.20	133.59	2.49	2.29	32.95	45,720.81				
CP2	12,702	7.37	136.73	2.55	2.34	33.72	46,796.60				
CP3	16,060	9.32	172.88	3.22	2.96	42.64	59,168.11				
CP4	16,644	9.66	179.17	3.34	3.07	44.19	61,319.68				
CP5	16,863	9.79	181.53	3.38	3.11	44.77	62,126.52				
Worker Commute Trips (Dust)											
Emission factor used is equation for travel on paved roads shown on worksheet "Fugitive Dust Emission Factors"											
CP	# Workers/day	Average Trip Length	Daily VMT (miles)	PM10 (lbs/day)	PM2.5 (lbs/day)						
CP1	300	16.8	10,080	3.7	0.6						
CP2	300	16.8	10,080	3.7	0.6						
CP3	350	16.8	11,760	4.3	0.6						
CP4	350	16.8	11,760	4.3	0.6						
CP5	360	16.8	12,096	4.4	0.7						
Worker Commute Trips (Exhaust)											
Exhaust emission rates shown on "Worker Trip Exhaust Em. Rts." worksheet											
CP	# Workers/day	Daily VMT (miles)	ROG (lbs/day)	NOx (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)	CO (lbs/day)	CO2 (lbs/day)			
CP1	300	10,080	1.364	4.471	0.002	0.001	1.155	217.441			
CP2	300	10,080	1.364	4.471	0.002	0.001	1.155	217.441			
CP3	350	11,760	1.592	5.216	0.002	0.002	1.347	253.681			
CP4	350	11,760	1.592	5.216	0.002	0.002	1.347	253.681			
CP5	360	12,096	1.637	5.365	0.002	0.002	1.386	260.929			
Notes											
1 Daily Truck Hauling trips based on total material import/export required for each alternative											
2 Based on aerials of the site it was assumed that all truck hauling and worker commute trips would occur on paved roads											
3 Borrow sites were identified in the project description with distances of up to 30 miles from Bridge Bay and 43 miles from Lakeshore. The maximum distance was assumed for both sites. All trips were divided equally among the two locations											
4 Average trip length obtained from CalEEMod 2011											
5 Daily VMT by workers = # workers * trips per worker * trip length											

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15. Equipment Exhaust Emission Factors												
Provided Equipment	Equipment Category	Power Rating (HP)	Capacity	Unit	ROG (g/hr)	CO (g/hr)	NOX (g/hr)	PM (g/hr)	CO2 (g/hr)	Comparable OFFROAD Equipment	Equipment/Source Used to Determine Approximate Power Rating (HP)	
0.8 CY Backhoe (Cat 320)	Backhoe	74	0.8	cy	17.15	75.36	0.15	12.06	16,091	tractors/loaders/backhoes	zieglercat.com	
1 Ton Mechanic Truck	Truck	285	1	ton	37.60	126.67	0.40	16.74	41,838	off-highway truck	On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, Crew, 285 HP (Gas)	
1.4 CY Backhoe Loader (JD 410)	Backhoe	89	1.4	cy	17.15	75.36	0.15	12.06	16,091	tractors/loaders/backhoes	zieglercat.com	
1.7 CY Backhoe Loader (Case680)	Backhoe	124	1.7	cy	21.61	129.00	0.26	11.77	27,545	tractors/loaders/backhoes	zieglercat.com	
1/2 Ton Pickup Truck 2x2	Truck, Pickup	191	1/2	ton	30.04	96.59	0.30	15.63	31,571	off-highway truck	On-Highway Light Duty Truck/Pickup - 4X4, 1/2T, Conventional, 191 HP (Gas)	
1/2 Ton Pickup Truck 4x4	Truck, Pickup	191	1/2	ton	30.04	96.59	0.30	15.63	31,571	off-highway truck	On-Highway Light Duty Truck/Pickup - 4X4, 1/2T, Conventional, 191 HP (Gas)	
10 Ton Boomtruck	truck, boom	380	10	ton	34.96	249.54	0.46	15.91	48,508	off-highway tractor	On-Highway Truck Tractor - 6X4, 45K gww, 380 HP (Diesel)	
10 Ton Compactor 120 hp (Dyn CA25)	Compactor	120			20.52	104.32	0.16	13.79	16,511	paving equipment	Provided	
100 hp Harbour Master	Marine Workboat	100			140.01	786.46	2,225.27	60.28	163,168	NA	NA	
100 KW Diesel Generator Set	Generator, diesel	160	100	kw	46.04	332.95	0.72	19.91	64,343	Generator Sets	Provided	
100 Ton Crawler Crane (Linkbelt218)	crane, crawler	375			60.87	417.40	0.74	29.88	77,033	crawler tractor	Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	
100,000 Ft-Lb Pile Hammer (Kobelco 60)	Pile Hammer	625	100000	ft-lb	88.49	694.26	1.22	42.48	128,127	crawler tractor	AmPiledr-VibrtryHmrr625HP	
1000 Gallon Watertruck	truck, water	210	1000	gallon	37.60	126.67	0.40	16.74	41,838	water truck	On-Highway Water Truck, 3000 Gal, 210 HP (Gas)	
110 hp Bulldozer (Cat D5)	Bulldozer	110			40.77	79.99	0.16	27.08	17,101	rubber tired dozer	Provided	
1150 CFM Port. RS Air Compressor Diesel 150 psi 525 HP	Air Compressor, diesel	525			63.85	214.31	1.03	19.44	105,022	Air Compressor	Provided	
12 Ton Flatbed Truck	truck, flatbed	210	12	ton	37.60	126.67	0.40	16.74	41,838	off-highway truck	On-Highway Flatbed Truck, 4x2, 15k GVW, 210 HP (Gas)	
1200LB Skid Steer Loader (Bobcat 543)	Loader, skid steer	158			17.89	187.21	0.28	10.23	29,260	skid steer loader	Standard Crawler Loader - Cat 963C, 3.20 cy bucket - 158 HP - EROPS (Diesel)	
125 CFM Diesel Compressor	air compressor, diesel	80	125	CFM	28.66	143.32	0.25	15.37	21,277	Air Compressor	250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	
125 hp Grader (Cat 120)	Grader	125			46.43	100.33	0.18	29.00	19,335	graders	Provided	
125 hp Marine Workboat	Marine Workboat	125			50.00	280.88	794.74	21.53	58,274	NA	NA	
125 Ton Towed Packer (SWMB125)	Towed Packer	NA	125	ton	0.00	0.00	0.00	0.00	0	NA	NA	
13 Ton Compactor 72" (Cat 553)	Compactor	142	13	ton	20.52	104.32	0.16	13.79	16,511	paving equipment	Cat Single Drum Self Propelled Vibratory Compactor - 84" Smooth Drum, 142 HP (Diesel)	
1300LB Skid Steer Loader (Bobcat 743)	Loader, skid steer	158	1300	lbs	17.89	187.21	0.28	10.23	29,260	skid steer loader	Standard Crawler Loader - Cat 963C, 3.20 cy bucket - 158 HP - EROPS (Diesel)	
140 hp Grader (Cat 140)	Grader	140			51.24	167.32	0.31	28.02	32,245	graders	Provided	
140 hp Wheel Skidder (Cat 515)	Wheel Skidder	140			17.89	187.21	0.28	10.23	29,260	skid steer loader	Provided	
15 Ton Compactor 84" (Cat 563)	Compactor	142	15	ton	20.52	104.32	0.16	13.79	16,511	paving equipment	Cat Single Drum Self Propelled Vibratory Compactor - 84" Smooth Drum, 142 HP (Diesel)	
15 Ton Pitman Boom Truck	truck, boom	380	15	ton	34.96	249.54	0.46	15.91	48,508	off-highway tractor	On-Highway Truck Tractor - 6X4, 45K gww, 380 HP (Diesel)	
150 CFM Electric Compressor	Air Compressor, electric	NA	150	CFM	0.00	0.00	0.00	0.00	0	Air Compressor	Provided	
150 hp Grapple (Cat 527)	Grapple	150			51.24	167.32	0.31	28.02	32,245	crawler tractor	Provided	
150 Ton Crawler Crane (American 9260)	crane, crawler	375			60.87	417.40	0.74	29.88	77,033	crawler tractor	Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	
1500 Ton Marine Dump Scow	Marine Dump Scow	NA	1500	ton	0.00	0.00	0.00	0.00	0	NA	NA	
16 Ton (8 CY) Tandem Truck	truck, tandem	380	8	cy	37.60	126.67	0.40	16.74	41,838	off-highway truck	On-Highway Truck Tractor - 6X4, 45K gww, 380 HP (Diesel)	
170 hp Bulldozer (Cat D6)	Bulldozer	170			59.95	145.21	0.30	33.47	31,043	rubber tired dozer	Provided	
175 CFM Rotary Screw Port Air Compressor Gas 125 psi 90 HP	Air Compressor, gas	90	125	psi	28.66	143.32	0.25	15.37	21,277	Air Compressor	Provided	
185 CFM Diesel Compressor	Air Compressor, diesel	80	185	CFM	28.66	143.32	0.25	15.37	21,277	Air Compressor	250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	
1-CY Concrete Bucket (Gravity)	Concrete Bucket	NA	1	cy	0.00	0.00	0.00	0.00	0.00	NA	NA	
1-Ton Chain Hoist	Chain Hoist	NA	1	ton	0.00	0.00	0.00	0.00	0.00	NA	NA	
1-Ton Come-A-Long	Come-A-Long	NA	1	ton	0.00	0.00	0.00	0.00	0.00	NA	NA	
2" Gas Water Pump 8,000 gph	pump, water	4	8000	gph	4.80	21.44	0.05	1.73	3,364	pump	ziegler.com	
2.0 CY Backhoe (Cat 330)	Backhoe	158	2	cy	21.61	129.00	0.26	11.77	27,545	tractors/loaders/backhoes	Standard Crawler Loader - Cat 963C, 3.20 cy bucket - 158 HP - EROPS (Diesel)	
2.3 CY Backhoe (Cat 235)	Backhoe	158	2.3	cy	21.61	129.00	0.26	11.77	27,545	tractors/loaders/backhoes	Standard Crawler Loader - Cat 963C, 3.20 cy bucket - 158 HP - EROPS (Diesel)	
2.6 CY Backhoe (Cat 350)	Backhoe	158	2.6	cy	21.61	129.00	0.26	11.77	27,545	tractors/loaders/backhoes	Standard Crawler Loader - Cat 963C, 3.20 cy bucket - 158 HP - EROPS (Diesel)	
2.7 CY Loader (JD644)	Loader	158	2.7	cy	32.10	133.15	0.27	17.33	28,324	tractors/loaders/backhoes	Standard Crawler Loader - Cat 963C, 3.20 cy bucket - 158 HP - EROPS (Diesel)	
20 Ton (10 CY) Tandem Truck	truck, tandem	380	10	cy	37.60	126.67	0.40	16.74	41,838	off-highway truck	On-Highway Truck Tractor - 6X4, 45K gww, 380 HP (Diesel)	
20 Ton Boomtruck	truck, boom	380	20	ton	34.96	249.54	0.46	15.91	48,508	off-highway tractor	On-Highway Truck Tractor - 6X4, 45K gww, 380 HP (Diesel)	
20 Ton Compactor 190 hp (Bomag 217)	Compactor	190			20.51	173.68	0.26	11.30	27,488	paving equipment	Provided	
20 Ton Hydraulic Crane (Grove58)	Crane, hydraulic	250			40.76	163.59	0.31	20.94	32,760	crawler tractor	Grove Rough Terrain Hyd Crane 68 MT 138' Boom, 250 HP (Diesel)	
20" Gas Chain Saw	Chain Saw	3.7	20	inch	1.89	3.41	0.03	0.01	9.22	NA	northerntool.com	
200 hp Grader (Cat 14G)	Grader	200			34.81	229.13	0.42	15.36	44,157	graders	Provided	
2000 PSI Pressure Washer	Pressure Washer	6.5	2000	psi	2.82	14.13	0.03	1.05	2,216	pressure washer	ziegler.com	
210 hp Harvester (Cat 580)	Harvester	210			34.81	229.13	0.42	15.36	44,157	crawler tractor	Provided	
22" Smooth Drum Manual (Bomag 55)	compactor, vibratory	142	22	inch	20.52	104.32	0.16	13.79	16,511	paving equipment	Cat Single Drum Self Propelled Vibratory Compactor - 84" Smooth Drum, 142 HP (Diesel)	
220 hp Bulldozer (Cat D7)	Bulldozer	220			64.22	205.36	0.42	32.97	43,901	rubber tired dozer	Provided	
225 Ton Crawler Crane (American 9310)	crane, crawler	375			60.87	417.40	0.74	29.88	77,033	crawler tractor	Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	
23 Ton Compactor 220 hp (Cat 815)	Compactor	220			23.81	253.09	0.38	11.31	40,055	paving equipment	Provided	
24 Ton (12 CY) Tandem Truck	Truck	380	12	cy	37.60	126.67	0.40	16.74	41,838	off-highway truck	On-Highway Truck Tractor - 6X4, 45K gww, 380 HP (Diesel)	
24" Smooth Drum Manual (Bomag 60)	compactor, vibratory	96	24	inch	20.52	104.32	0.16	13.79	16,511	paving equipment	Cat Single Drum Self Propelled Vibratory Compactor Padfoot - 66" wide drum, padfoot, 96 HP (Diesel)	
250 Amp Diesel Welder	Welder, diesel	20	250	amp	7.71	23.44	0.06	2.32	5,115	welder	Portable Welder, 300 Amp, Trailer Mounted, AC/DC-CC/CV, 20 HP (Diesel)	
250 CFM Port. RS Air Compressor Diesel 100 psi 80 HP	Air Compressor, diesel	80			28.66	143.32	0.25	15.37	21,277	Air Compressor	Provided	
250 hp Marine Workboat	Marine Workboat	250			50.00	280.88	794.74	21.53	58,274	NA	NA	
2-Ton Mechanic Truck	Truck	380	2	ton	37.60	126.67	0.40	16.74	41,838	off-highway truck	On-Highway Truck Tractor - 6X4, 45K gww, 380 HP (Diesel)	
3" Electric Submerge Pump	pump, submerge	NA	3	inch	0.00	0.00	0.00	0.00	0	pump	Provided	
3.0 CY Track Loader (Cat 963)	Loader	158	3	cy	32.10	133.15	0.27	17.33	28,324	tractors/loaders/backhoes	Standard Crawler Loader - Cat 963C, 3.20 cy bucket - 158 HP - EROPS (Diesel)	
3.5 CY Loader (Cat 950)	loader	158	3.5	cy	32.10	133.15	0.27	17.33	28,324	tractors/loaders/backhoes	Standard Crawler Loader - Cat 963C, 3.20 cy bucket - 158 HP - EROPS (Diesel)	
3/4 Ton Crew Cab Truck	truck	285	3/4	ton	37.60	126.67	0.40	16.74	41,838	off-highway truck	On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, Crew, 285 HP (Gas)	
3/4 Ton Pickup Truck 2x2	truck	285	3/4	ton	37.60	126.67	0.40	16.74	41,838	off-highway truck	On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, Crew, 285 HP (Gas)	
30 KW Diesel Generator Set	Generator, diesel	34	30	kw	10.89	36.62	0.10	3.47	7,990	Generator Sets	Large Engine Generator, 20.0KW, Diesel, 34HP	
30 Ton Hydraulic Crane (Grove500)	Crane, hydraulic	250			40.76	163.59	0.31	20.94	32,760	crawler tractor	Grove Rough Terrain Hyd Crane 68 MT 138' Boom, 250 HP (Diesel)	
30" Chain Saw	Chain Saw	3.7	30	inches	1.89	3.41	0.03	0.01	9.22	NA	northerntool.com	
30" Smooth Drum Manual (Bomag 75)	compactor, vibratory	142	30	inches	20.52	104.32	0.16	13.79	16,511	paving equipment	Cat Single Drum Self Propelled Vibratory Compactor - 84" Smooth Drum, 142 HP (Diesel)	
3000 Gallon Watertruck	truck, water	210	3000	gallon	37.60	126.67	0.40	16.74	41,838	water truck	Provided	
305 hp Bulldozer (Cat D8)	Bulldozer	305			64.22	205.36	0.42	32.97	43,901	rubber tired dozer	Provided	
32 Ton (16 CY) Triaxle Truck-Operated	truck	380	16	cy	34.96	249.54	0.46	15.91	48,508	off-highway tractor	On-Highway Truck Tractor - 6X4, 45K gww, 380 HP (Diesel)	
350 Amp Diesel Welder	Welder, diesel	20	350	amp	7.71	23.44	0.06	2.32	5,115	welder	Portable Welder, 300 Amp, Trailer Mounted, AC/DC-CC/CV, 20 HP (Diesel)	
4.1 CY Backhoe (Hitachi EX400)	Backhoe	158	4.1	cy	21.61	129.00	0.26	11.77	27,545	tractors/loaders/backhoes	Standard Crawler Loader - Cat 963C, 3.20 cy bucket - 158 HP - EROPS (Diesel)	
4.5 CY Loader (Cat 966)	Loader	158	4.5	cy	32.10	133.15	0.27	17.33	28,324	tractors/loaders/backhoes	Standard Crawler Loader - Cat 963C, 3.20 cy bucket - 158 HP - EROPS (Diesel)	
40 ft x 80 ft x 7 ft Material Deck Barge	Barge	NA			0.00	0.00	0.00	0.00	0.00	NA	NA	
40 Ton Hydraulic Crane (Grove700)	Crane, hydraulic	250			40.76	163.59	0.31	20.94	32,760	crawler tractor	Grove Rough Terrain Hyd Crane 68 MT 138' Boom, 250 HP (Diesel)	

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40' X 10' X 5' barge - 360 day rental include freight in/out	Barge	NA			0.00	0.00	0.00	0.00	0.00	0.00	NA	NA
40' X 10' X 7' barge - 360 day rental include freight in/out	Barge	NA			0.00	0.00	0.00	0.00	0.00	0.00	NA	NA
400 Amp Diesel Welder	Welder, diesel	20	400	amp	7.71	23.44	0.06	2.32	5,115	28,324	welder	Portable Welder, 300 Amp, Trailer Mounted, AC/DC-CC/CV, 20 HP (Diesel)
4WD Articulated Wheel Loader - Cat 3.65 cy bucket - 160 HP - EROPS (Diesel)	Loader	160			32.10	133.15	0.27	17.33	28,324	28,324	tractors/loaders/backhoes	Provided
4WD Articulated Wheel Loader - Cat 5.0 cy bucket - 246 HP - EROPS (Diesel)	loader	246			30.66	182.25	0.37	13.00	38,767	38,767	tractors/loaders/backhoes	Provided
5 Ft Wheel Mounted Chain Trencher	Trencher	140	5	foot	44.07	208.54	0.36	23.69	37,482	37,482	trencher	Crawler Mounted Chain Trencher, Vermeer, 24" Trench Width, 96" Deep Trench, 140 HP (Diesel)
5 Ton Boomtruck	truck, boom	380	5	ton	34.96	249.54	0.46	15.91	48,508	48,508	off-highway tractor	On-Highway Truck Tractor - 6X4, 45K gvw, 380 HP (Diesel)
5 Ton Flat Bed Truck	truck, flatbed	210	5	ton	37.60	126.67	0.40	16.74	41,838	41,838	off-highway truck	On-Highway Flatbed Truck, 4x2, 15k GVW, 210 HP (Gas)
5.2 CY Backhoe (Cat 365)	Backhoe	158	5.2	cy	21.61	129.00	0.26	11.77	27,545	27,545	tractors/loaders/backhoes	Standard Crawler Loader - Cat 963C, 3.20 cy bucket - 158 HP - EROPS (Diesel)
50 Ton Crawler Crane (Linkbelt108)	crane, crawler	375			60.87	417.40	0.74	29.88	77,033	77,033	crawler tractor	Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)
50 Ton Truck Crane (Linkbelt 108)	crane, truck	375			52.30	226.85	0.72	21.72	74,925	74,925	off-highway truck	Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)
50,000 Ft-Lb Pile Hammer (ICE 660)	Pile Hammer	625	50000	ft-lb	88.49	694.26	1.22	42.48	128,127	128,127	crawler tractor	AmPiledr-VibtryHm625HP
500 Ton Marine Barge	Barge	NA	500	ton	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA
5000 Gallon Watertanker	Water tanker	175	5000	gallon	30.04	95.59	0.30	15.63	31,571	31,571	water truck	Off-Highway Water Tanker, 5000 Gal, 175 HP (Diesel)
5-Ton Chain Hoist	Chain Hoist	NA	5	ton	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA
6 KW Generator Set (Gas)	Generator	13	6	kw	5.89	29.48	0.07	2.18	4,626	4,626	Generator Sets	Small Engine Generator, 6.5KW, Diesel, 13HP
6 Ton Compactor 48"(Cat 323)	Compactor	142	6	ton	20.52	104.32	0.16	13.79	16,511	16,511	paving equipment	Cat Single Drum Self Propelled Vibratory Compactor - 84" Smooth Drum, 142 HP (Diesel)
6.5 CY Loader (Cat 980)	Loader	158	6.5	cy	32.10	133.15	0.27	17.33	28,324	28,324	tractors/loaders/backhoes	Standard Crawler Loader - Cat 963C, 3.20 cy bucket - 158 HP - EROPS (Diesel)
60 LB Jackhammer	Jackhammer	NA	60	lbs	0.00	0.00	0.00	0.00	0	0	NA	NA
60 Ton Hydraulic Crane (Grove)	Crane, hydraulic	250			40.76	163.59	0.31	20.94	32,760	32,760	crawler tractor	Grove Rough Terrain Hyd Crane 68 MT 138" Boom, 250 HP (Diesel)
60 Ton Lowboy	Lowboy	380	60	ton	52.30	226.85	0.72	21.72	74,925	74,925	off-highway truck	On-Highway Truck Tractor - 6X4, 45K gvw, 380 HP (Diesel)
600 CFM Port. RS Air Compressor Diesel Powered 150 psi 275 HP	Air Compressor, diesel	275	150	psi	38.58	124.26	0.67	11.82	59,467	59,467	Air Compressor	Provided
60-Ton Jack	Jack	NA	60	ton	0.00	0.00	0.00	0.00	0	0	NA	NA
7 KW Generator Set (Gas)	Generator, gas	13	7	kw	5.89	29.48	0.07	2.18	4,626	4,626	Generator Sets	Small Engine Generator, 6.5KW, Diesel, 13HP
70 x 80 x 7 Crane Barge with anchors, air, lights	Barge	NA			0.00	0.00	0.00	0.00	0.00	0.00	NA	NA
700 hp Marine Inland Tugboat	Tugboat	700			25.00	140.44	140.44	10.76	29,137	29,137	NA	Provided
75 Ton Crawler Crane (Linkbelt138)	crane, crawler	375			60.87	417.40	0.74	29.88	77,033	77,033	crawler tractor	Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)
75 Ton Truck Crane (Linkbelt 138)	crane, truck	375			52.30	226.85	0.72	21.72	74,925	74,925	off-highway truck	Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)
80 hp Bulldozer (Cat D4)	Bulldozer	80			40.77	79.99	0.16	27.08	17,101	17,101	rubber tired dozer	Provided
80 LB Jackhammer	Jackhammer	NA	80	lbs	0.00	0.00	0.00	0.00	0	0	NA	NA
80 Ton Lowboy	Lowboy	380	80	ton	52.30	226.85	0.72	21.72	74,925	74,925	off-highway truck	On-Highway Truck Tractor - 6X4, 45K gvw, 380 HP (Diesel)
80 Ton Vibratory Pile Extractor (ICE 815V)	Vibratory Pile Extractor	625	80	ton	60.87	417.40	0.74	29.88	77,033	77,033	crawler tractor	AmPiledr-VibtryHm625HP
8000 Gallon Watertanker	Water tanker	175	8000	gallon	30.04	95.59	0.30	15.63	31,571	31,571	water truck	Off-Highway Water Tanker, 5000 Gal, 175 HP (Diesel)
9 Ton Compactor 100 hp (DymCA15)	Compactor	100	9	ton	20.52	104.32	0.16	13.79	16,511	16,511	paving equipment	Provided
90 Kg Plate Tamper	Plate Tamper	5.5	90	kg	2.28	11.94	0.03	0.56	1,955	1,955	plate compactor	northerntool.com
90 YPH Trailer Mounted Concrete Pump	pump, concrete	177	90	yph	47.80	333.67	0.71	20.62	63,502	63,502	pump	Morgan Trailer Mounded Concrete Pump, 93 yph, 177 HP (Diesel)
Acetylene Cutting Torch	Acetylene Cutting Torch				0.00	0.00	0.00	0.00	0.002	0.002	NA	NA
AmPiledr-VibtryHm625HP	Vibratory Hammer	625			60.87	417.40	0.74	29.88	77,033	77,033	crawler tractor	Provided
Art Frm Grader-Cat-165hp	Grader	165			51.24	167.32	0.31	28.02	32,245	32,245	graders	Provided
Asphalt 7 Ton Roller (Cat CB434)	Roller	142	7	ton	19.07	152.24	0.27	10.63	28,198	28,198	roller	Cat Single Drum Self Propelled Vibratory Compactor - 84" Smooth Drum, 142 HP (Diesel)
Asphalt Broom-Ride On (Ten215)	Asphalt Broom-Ride on	137			21.80	112.75	0.23	12.07	23,730	23,730	Surfacing Equipment	Provided
Asphalt Spreader Rubber (AP 1000)	Asphalt Spreader	137			21.80	112.75	0.23	12.07	23,730	23,730	Surfacing Equipment	ziegler.com
Asphalt Steel Roller (Ferguson)	Roller	142			19.07	152.24	0.27	10.63	28,198	28,198	roller	Cat Single Drum Self Propelled Vibratory Compactor - 84" Smooth Drum, 142 HP (Diesel)
Atlantic Truck Mounted Vertical Earth Drill, 80' Depth, 6" Kelly Bar, 177 HP (Diesel)	Drill	177			21.04	217.59	0.52	8.89	54,162	54,162	bore/drill rigs	Provided
Bandit 1990XP, Trailer Mounted Brush Chipper, 20" Capacity, 250 HP (Diesel)	Chipper	250			2.21	8.37	24.87	0.74	4,200	4,200	NA	Provided
Barber-Greene Wheel Mounted Asphalt Paver, BG-240C, Pavemaster 10B, 2 wheel drive, 139 HP (Diesel)	Paver	139			29.79	202.54	0.33	15.91	34,380	34,380	Paver	Provided
Bidwell Deck Finisher	Deck Finisher	25			12.82	45.02	0.07	4.99	7,124	7,124	paving equipment	alleneng.com
Bomag Manually Vibratory Compactor - 30" Smooth Drum, 30" wide (Diesel)	Compactor, vibratory	96	30	inch	20.52	104.32	0.16	13.79	16,511	16,511	paving equipment	Cat Single Drum Self Propelled Vibratory Compactor Padfoot - 66" wide drum, padfoot, 96 HP (Diesel)
Cat 330 LC Log Loader	Log Loader	158			17.89	187.21	0.28	10.23	29,260	29,260	skid steer loader	Standard Crawler Loader - Cat 963C, 3.20 cy bucket - 158 HP - EROPS (Diesel)
Cat 730 Articulated Rear Dump Truck - 28.1 MT, 17.1-22.1 CY, 6x6, 317 HP (Diesel)	truck, dump	317			34.96	249.54	0.46	15.91	48,508	48,508	off-highway tractor	Provided
Cat 815 F Pad Foot Compactor, Self-Propelled	Compactor	96			20.52	104.32	0.16	13.79	16,511	16,511	paving equipment	Cat Single Drum Self Propelled Vibratory Compactor Padfoot - 66" wide drum, padfoot, 96 HP (Diesel)
Cat PM 565 b Cold planer - 82" cutting width	Planer	NA	82	inch	0.00	0.00	0.00	0.00	0	0	NA	NA
Cat Self Propelled Pneumatic Compactor - 7 wheel, 85 HP (Diesel)	Compactor	85			20.52	104.32	0.16	13.79	16,511	16,511	paving equipment	Provided
Cat Self Propelled Pneumatic Compactor - 9 wheels, 100 HP (Diesel)	Compactor, pneumatic	100			20.52	104.32	0.16	13.79	16,511	16,511	paving equipment	Provided
Cat Self Propelled Tandem Vibratory Compactor - 56" Wide Smooth, 70 HP (Diesel)	Compactor, vibratory	70	56	inch	20.52	104.32	0.16	13.79	16,511	16,511	paving equipment	Provided
Cat Self Propelled Tandem Vibratory Compactor - 84" wide Smooth drum, 138 HP (Diesel)	Compactor, vibratory	138	84	inch	20.52	104.32	0.16	13.79	16,511	16,511	paving equipment	Provided
Cat Single Drum Self Propelled Vibratory Compactor - 84" Smooth Drum, 142 HP (Diesel)	Compactor, vibratory	142	84	inch	20.52	104.32	0.16	13.79	16,511	16,511	paving equipment	Provided
Cat Single Drum Self Propelled Vibratory Compactor Padfoot - 66" wide drum, padfoot, 96 HP (Diesel)	Compactor, vibratory	96	66	inch	20.52	104.32	0.16	13.79	16,511	16,511	paving equipment	Provided
Cat TK723 Feller Buncher	feller buncher	220			22.90	212.60	0.42	9.66	43,668	43,668	Excavator	deere.com
Cat Tractor-Loader-Backhoe, 4WD, 1 CY Bucket, Fixed Stick, 72 HP (Diesel)	Backhoe	72	1	cy	17.15	75.36	0.15	12.06	16,091	16,091	tractors/loaders/backhoes	Provided
Cat Tractor-Loader-Backhoe, 4WD, 1.5 CY Bucket, Fixed Stick, 101 HP (Diesel)	Backhoe	101	1.5	cy	17.15	75.36	0.15	12.06	16,091	16,091	tractors/loaders/backhoes	Provided
Cedarapids Wheel Mounted Asphalt Paver, CR552RX, Fastach 10', 2 wheel drive, 240 HP (Diesel)	Paver	240			19.79	273.91	0.44	9.22	46,494	46,494	Paver	Provided
Centrifugal Pump, Gas, 100 gpm, 1.5" Size, 3 HP (Gas)	Pump	3			4.80	21.44	0.05	1.73	3,364	3,364	pump	Provided
Centrifugal Pump, Gas, 200 gpm, 2" size, 8 HP (Gas)	Pump	8			4.80	21.44	0.05	1.73	3,364	3,364	pump	Provided
Centrifugal Pump, Gas, 300 gpm, 3" size, 7 HP (Gas)	Pump	7			4.80	21.44	0.05	1.73	3,364	3,364	pump	Provided
Chipper - clearing	Chipper	125			1.57	9.01	11.41	0.85	1,435	1,435	NA	ziegler.com
Clam Bucket	Clam bucket	NA			0.00	0.00	0.00	0.00	0.00	0.00	NA	NA
Concrete pump & boom Schwing 2525H-5/S-47 on 255 hp chassis, 181 cy/hr & 155 ft boom	pump	225			46.02	176.97	1.03	15.54	91,258	91,258	pump	Provided
Concrete Pump Truck	Truck	225			34.96	249.54	0.46	15.91	48,508	48,508	off-highway tractor	Concrete pump & boom Schwing 2525H-5/S-47 on 255 hp chassis, 181 cy/hr & 155 ft boom
Concrete Saw - 10.625" max depth, 26" Blade Dia. (not incl), 65 HP (Gas)	Concrete Saw	65			31.94	121.25	0.18	8.45	13,690	13,690	concrete saws	Provided
Concrete Street & Highway Slipform Paver, Gomaco, 12'-32' Paving Width, 4 track, 335 HP (Diesel)	Paver	335			19.79	273.91	0.44	9.22	46,494	46,494	Paver	Provided
Concrete Vibrator-Heavy	Concrete Vibrator, heavy	3.1			2.28	11.94	0.03	0.56	1,955	1,955	plate compactor	ziegler.com
Concrete Vibrator-Normal	Concrete Vibrator, normal	3.1			2.28	11.94	0.03	0.56	1,955	1,955	plate compactor	ziegler.com
Core drill, 3-inch chuck, 24" feed stroke, 40 hp, diesel	Drill	40			17.96	47.46	0.11	7.55	11,813	11,813	bore/drill rigs	Provided
Crawler Mounted Chain Trencher, Vermeer, 24" Trench Width, 96" Deep Trench, 140 HP (Diesel)	Trencher	140			44.07	208.54	0.36	23.69	37,482	37,482	trencher	Provided
Crawler Mounted Hydraulic Excavator - Cat 1.25 cy bucket - 138 HP (Diesel)	Excavator	138			20.87	142.10	0.28	11.20	29,187	29,187	Excavator	Provided
Crawler Mounted Hydraulic Excavator - Cat 1.25 cy bucket - 168 HP (Diesel)	Excavator	168			20.87	142.10	0.28	11.20	29,187	29,187	Excavator	Provided
Crawler Mounted Hydraulic Excavator - Cat 2.25 cy bucket - 222 HP (Diesel)	Excavator	222			22.90	212.60	0.42	9.66	43,668	43,668	Excavator	Provided
Crawler Mounted Hydraulic Excavator - Cat 2.5 cy bucket - 321 HP (Diesel)	Excavator	321			22.90	212.60	0.42	9.66	43,668	43,668	Excavator	Provided
Diamond Core Drill (Hilti)	Drill	40			17.96	47.46	0.11	7.55	11,813	11,813	bore/drill rigs	Core drill, 3-inch chuck, 24" feed stroke, 40 hp, diesel
Dozer Winch (American)	bulldozer	238			64.22	205.36	0.42	32.97	43,901	43,901	rubber tired dozer	Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)
DT-320 Tree Mulcher	Tree Mulcher	125			33.88	106.61	0.19	23.06	19,675	19,675	crawler tractor	ziegler.com
Electrical Service truck	Truck, electric	NA										

Engine Hoist	Engine Hoist	NA			0.00	0.00	0.00	0.00	0	NA	NA
Farm Tractor-4 Wheel Drive	Tractor	238			34.96	249.54	0.46	15.91	48,508	off-highway tractor	Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)
Finn T280 Seed Sprayer (for Truck Mounting), Not including Truck, 2500 gal Working Capacity, 115 HP (Diesel)	Seed Sprayer	115			21.22	87.89	0.16	14.73	17,085	off-highway tractor	Provided
Flexible Shaft Concrete Vibrator, 2.5" Dia., 10' Shaft Length, 3 HP (Electric)	Concrete Vibrator	3	Electric		0.00	0.00	0.00	0.00	0.00	NA	NA
Fork Lift	Fork Lift	83			12.53	47.13	0.08	8.61	8,649	Fork Lifts	zieglerscat.com
Fuel Truck (Single Axle)	Truck, fuel	191			30.04	95.59	0.30	15.63	31,571	off-highway truck	On-Highway Light Duty Truck/Pickup - 4X4, 1/2T, Conventional, 191 HP (Gas)
General Service Truck	Truck, service	191			30.04	95.59	0.30	15.63	31,571	off-highway truck	On-Highway Light Duty Truck/Pickup - 4X4, 1/2T, Conventional, 191 HP (Gas)
Gradall 888 - Truck Mounted	Gradall	250			34.81	229.13	0.42	15.36	44,157	graders	zieglerscat.com
Grout Pump	Pump, grout	177			47.80	333.67	0.71	20.62	63,502	pump	Morgan Trailer Mounted Concrete Pump, 122 yph, 177 HP (Diesel)
Grove 4x2x4 Hyd Yard Crane Diesel 9.1 MT 24' Boom, 80 HP	Crane	80	24	ft	30.94	66.58	0.13	18.18	13,334	crane	Provided
Grove 4x4x4 Hyd Yard Crane Diesel 13.6MT 52' Boom	Crane	160	52	ft	33.16	111.88	0.21	18.20	22,405	crane	Grove 4x2x4 Hyd Yard Crane Diesel 9.1 MT 24' Boom, 80 HP
Grove 8x4x4 Truck Mounted Hyd Crane, Single Engine, 50MT, 110' Boom, 450 HP (Diesel)	crane	450			44.89	252.85	0.48	22.58	50,634	crane	Provided
Grove A125J Manlift, Articulating boom, 125' Max Ht, 500# Cap, 100 HP (Diesel)	manlift	100			3.95	57.61	0.11	2.55	11,932	aerial lift	Provided
Grove A60J Manlift, Articulating Boom, 60' Max Ht, 500# Cap, 85 HP (Diesel)	manlift	85			3.95	57.61	0.11	2.55	11,932	aerial lift	Provided
Grove All Terrain Hyd Crane, Dual Engine, 227 MT, 236' Boom, 165 HP (Diesel)	crane	165			33.16	111.88	0.21	18.20	22,405	crane	Provided
Grove Rough Terrain Hyd Crane 36 MT 105' Boom, 165 HP (Diesel)	crane	165			33.16	111.88	0.21	18.20	22,405	crane	Provided
Grove Rough Terrain Hyd Crane 68 MT 138' Boom, 250 HP (Diesel)	crane	250			40.76	163.59	0.31	20.94	32,760	crane	Provided
Grove T60 Manlift, Telescopic Boom, 60' Max Ht, 500# Cap, 4WD, 60 HP (Diesel)	manlift	60			3.39	39.91	0.08	1.49	8,267	aerial lift	Provided
Grove T80 Manlift, Telescopic Boom, 80' Max Ht, 600# Cap, 4wd, 85 HP (Diesel)	manlift	85			3.95	57.61	0.11	2.55	11,932	aerial lift	Provided
Hand Held Rammer - 4" to13", 3180 lb/blow, 4 HP (Gas)	Rammer	4			21.16	50.85	0.09	7.77	9,249	other construction equipment	Provided
Hand Held Vibratory Plate Compactor, 25", 6k-9k lb/blow, 11 HP, Gas Powered	Vibratory Plate Compactor	11			2.28	11.94	0.03	0.56	1,955	plate compactor	Provided
Heavy Duty Bottom Dump Concrete Bucket - Air 8 CY	Concrete Bucket	NA			0.00	0.00	0.00	0.00	0.00	NA	NA
Helicopter 5000lbs	Helicopter	NA	5000	lbs	510.00	610.00	3,360.00	91.00	893,115	NA	Provided
Hoe Hammer 10X	Hoe Hammer	625			88.49	694.26	1.22	42.48	128,127	crawler tractor	AmPiledr-VibrtryHmnr625HP
Hoe Hammer 4X	Hoe Hammer	625			88.49	694.26	1.22	42.48	128,127	crawler tractor	AmPiledr-VibrtryHmnr625HP
Hydraulic Hoe Ram	Hoe Ram	625			88.49	694.26	1.22	42.48	128,127	crawler tractor	AmPiledr-VibrtryHmnr625HP
Hydro Blaster 1 Nozzle	Hydro Blaster	6.5			2.82	14.13	0.03	1.05	2,216	pressure washer	ziegler.com
Hydro-Ax 721E, Rubber Tired Brush Cutter, 8' Cutter size, 210 HP (Diesel)	Rubber Tired Brush Cutter	210			64.22	205.36	0.42	32.97	43,901	rubber tired dozer	Provided
I.C. Self Propelled Scissor Lift, 1500# cap., 72"x132" deck, 25 HP, <30' (Diesel)	Scissor Lift	25			3.39	39.91	0.08	1.49	8,267	aerial lift	Provided
I.C. Self Propelled Scissor Lift, 2500# Cap., 90"x170" deck, 50 HP (Diesel)	Scissor Lift	50			3.39	39.91	0.08	1.49	8,267	aerial lift	Provided
Ingersol Rand Hyd Track Drill, 4" hole max, Long Guide, 215 HP (Diesel)	drill	215			31.42	360.36	0.86	13.59	89,698	bore/drill rigs	Provided
Ingersol Rand Hyd Track Drill, 5" hole max, Extendable, 260 HP (Diesel)	drill	260			31.42	360.36	0.86	13.59	89,698	bore/drill rigs	Provided
Inland Tug Boat 250HP 26ft	Tugboat	250			20.00	112.35	112.35	8.61	23,310	NA	Provided
Job pickup	Job pickup	191			30.04	95.59	0.30	15.63	31,571	off-highway truck	On-Highway Light Duty Truck/Pickup - 4X4, 1/2T, Conventional, 191 HP (Gas)
Knuckleboom Manlift 36 Ft	manlift	60			3.39	39.91	0.08	1.49	8,267	aerial lift	Grove T60 Manlift, Telescopic Boom, 60' Max Ht, 500# Cap, 4WD, 60 HP (Diesel)
Large Engine Generator, 100KW, Diesel, Enclosed, 160 HP	Generator, diesel	160	100	kw	46.04	332.95	0.72	19.91	64,343	Generator Sets	Provided
Large Engine Generator, 15.0KW, Diesel, 26.5HP	Generator, diesel	26.5	15	kw	5.89	29.48	0.07	2.18	4,626	Generator Sets	Provided
Large Engine Generator, 20.0KW, Diesel, 26.5HP	Generator, diesel	26.5	20	kw	10.89	36.62	0.10	3.47	7,990	Generator Sets	Provided
Large Engine Generator, 20.0KW, Diesel, 34HP	Generator, diesel	34	20	kw	10.89	36.62	0.10	3.47	7,990	Generator Sets	Provided
Large Engine Generator, 60KW, Diesel, Enclosed, 88 HP	Generator	88	60	kw	37.24	216.41	0.41	19.87	35,326	Generator Sets	Provided
logging Truck (Kenworth C500)	truck, logging	380			37.60	126.67	0.40	16.74	41,838	off-highway truck	On-Highway Truck Tractor - 6X4, 45K gvw, 380 HP (Diesel)
Low Ground Pressure Crawler Dozer - Cat 238 hp - EROPS - Straight (Diesel)	bulldozer	238			64.22	205.36	0.42	32.97	43,901	rubber tired dozer	Provided
Lube Truck	truck, lube	191			30.04	95.59	0.30	15.63	31,571	off-highway truck	On-Highway Light Duty Truck/Pickup - 4X4, 1/2T, Conventional, 191 HP (Gas)
Manitowoc Crawler Mntd Lattice Boom Crane, 127MT, 60' Boom, 287HP (Diesel)	Crane	287			40.76	163.59	0.31	20.94	32,760	crane	Provided
Manitowoc Crawler Mntd Lattice Boom Crane, 200 UST, 60' Boom, 340 HP (Diesel) OPERATING COSTS ONLY	Crane	340			44.89	252.85	0.48	22.58	50,634	crane	Provided
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel)	Crane	375			44.89	252.85	0.48	22.58	50,634	crane	Provided
Manitowoc Crawler Mntd Lattice Boom Crane, 275 UST, 60' Boom, 375 HP (Diesel) Standby	Crane	375			44.89	252.85	0.48	22.58	50,634	crane	Provided
Manitowoc Crawler Mntd Lattice Boom Crane, 90.70 MT, 40' Boom, 230HP (Diesel)	crane	230			40.76	163.59	0.31	20.94	32,760	crane	Provided
Manitowoc Crawler Mntd Lattice Boom Crane, 90.70 MT, 40' Boom, 230HP Operating cost	Crane	230			40.76	163.59	0.31	20.94	32,760	crane	Provided
Midland Wheel Mounted Asphalt Paver, Mix-Paver 800, Extendable, 2 wheel drive, 250 HP (Diesel)	Paver	250			19.79	273.91	0.44	9.22	46,494	Paver	Provided
Morgan Trailer Mounted Concrete Pump, 122 yph, 177 HP (Diesel)	pump, concrete	177			47.80	333.67	0.71	20.62	63,502	pump	Provided
Morgan Trailer Mounted Concrete Pump, 93 yph, 177 HP (Diesel)	pump, concrete	177			47.80	333.67	0.71	20.62	63,502	pump	Provided
Off-Highway Water Tanker, 5000 Gal, 175 HP (Diesel)	Water tanker	175			30.04	95.59	0.30	15.63	31,571	water truck	Provided
Office Trailer (12x50)	office trailer	NA			0.00	0.00	0.00	0.00	0	NA	NA
Office Trailer-10'X32'	office trailer	NA			0.00	0.00	0.00	0.00	0	NA	NA
On Highway Rear Dump Truck, 6x4, 10-12 CY, 50k GVW, 400 HP (Diesel)	truck, dump	400	3	axle	36.88	390.53	0.72	16.06	75,915	off-highway tractor	Provided
On-Highway Flatbed Truck, 4x2, 15k GVW, 210 HP (Gas)	truck, flatbed	210	2	axle	37.60	126.67	0.40	16.74	41,838	off-highway truck	NA
On-Highway Light Duty Truck/Pickup - 4X4, 1/2T, Conventional, 191 HP (Gas)	truck, LD pickup	191	2	axle	30.04	95.59	0.30	15.63	31,571	off-highway truck	Provided
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, CREW, 160 HP (Diesel)	truck, LD pickup	160	2	axle	30.04	95.59	0.30	15.63	31,571	off-highway truck	Provided
On-Highway Light Duty Truck/Pickup - 4X4, 3/4T, Crew, 285 HP (Gas)	truck, LD pickup	285	2	axle	37.60	126.67	0.40	16.74	41,838	off-highway truck	Provided
On-Highway Truck Tractor - 4X2, 30K gvw, 210 HP (Diesel)	truck	210	2	axle	34.96	249.54	0.46	15.91	48,508	off-highway tractor	Provided
On-Highway Truck Tractor - 4X2, 30K gvw, 217 HP (Diesel)	truck	217	2	axle	34.96	249.54	0.46	15.91	48,508	off-highway tractor	Provided
On-Highway Truck Tractor - 6X4, 45K gvw, 380 HP (Diesel)	truck	380	3	axle	34.96	249.54	0.46	15.91	48,508	off-highway tractor	Provided
On-Highway Truck Tractor - 6X6, 70K gvw, 450 HP (Diesel)	truck	450	3	axle	36.88	390.53	0.72	16.06	75,915	off-highway tractor	Provided
On-Highway Water Truck, 3000 Gal, 210 HP (Gas)	truck, water	210	3000	gallons	37.60	126.67	0.40	16.74	41,838	water truck	Provided
On-Highway Water Truck, 4000 Gal, 250 HP (Diesel)	truck, water	250	4000	gallons	37.60	126.67	0.40	16.74	41,838	water truck	Provided
Portable Welder, 300 Amp, Trailer Mounted, AC/DC-CC/CV, 20 HP (Diesel)	Welder	20	300	amp	7.71	23.44	0.06	2.32	5,115	welder	Provided
Portable Welder, 600 Amp, Trailer Mounted, DC-CC/CV, 42 HP (Diesel)	Welder	42	600	amp	32.70	113.22	0.15	8.32	11,764	welder	Provided
Rear Discharge Concrete Transit Mixer - 10cy - 66kgw, 285 HP (Diesel)	Concrete Mixer	285			37.60	126.67	0.40	16.74	41,838	off-highway truck	Provided
Rear Discharge Concrete Transit Mixer - 8cy - 60kgw, 235 HP (Diesel)	Concrete Mixer	235			37.60	126.67	0.40	16.74	41,838	off-highway truck	Provided
Screen Plant, Single Deck, 24"X60' Conveyor, 5'x10' Screen Size, 51 HP (Diesel)	Conveyor	51			26.10	42.74	0.08	8.38	8,198	other material handling equipment	Provided
Skid Steer Loader, Bobcat, 2400 lb Capacity, 73 HP (Diesel)	Loader	73			26.18	75.64	0.15	17.61	16,089	tractors/loaders/backhoes	Provided
Skid Steer Loader, Bobcat, 3000 lb Capacity, 105 HP (Diesel)	Loader	105			26.18	75.64	0.15	17.61	16,089	tractors/loaders/backhoes	Provided
Small Engine Generator, 1.5KW, Gas, 3.5 HP	Generator, gas	3.5	1.5	kw	5.89	29.48	0.07	2.18	4,626	Generator Sets	Provided
Small Engine Generator, 10.0KW, Gas, 21HP	Generator, gas	21	10	kw	5.89	29.48	0.07	2.18	4,626	Generator Sets	Provided
Small Engine Generator, 3.0KW, Diesel, 5.5HP	Generator, diesel	5.5	3	kw	5.89	29.48	0.07	2.18	4,626	Generator Sets	Provided
Small Engine Generator, 6.5KW, Diesel, 13HP	Generator, deisel	13	6.5	kw	5.89	29.48	0.07	2.18	4,626	Generator Sets	Provided
Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)	bulldozer	238			64.22	205.36	0.42	32.97	43,901	rubber tired dozer	Standard Crawler Dozer
Standard Crawler Loader - Cat 963C, 3.20 cy bucket - 158 HP - EROPS (Diesel)	Loader	158			26.18	75.64	0.15	17.61	16,089	skid steer loader	Provided
Tire Truck	truck, tire	191			30.04	95.59	0.30	15.63	31,571	off-highway truck	On-Highway Light Duty Truck/Pickup - 4X4, 1/2T, Conventional, 191 HP (Gas)
Tower 4-Lights 12 hp	Tower Lights	12			0.00	0.00	0.00	0.00	0	NA	NA
Tractor & Hi-Trailer	Tractor	238			34.96	249.54	0.46	15.91	48,508	off-highway tractor	Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)
Tractor & Trailer	Tractor	238			34.96	249.54	0.46	15.91	48,508	off-highway tractor	Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)

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Tree Stumper	Tree Stumper	238			40.85	247.06	0.44	20.28	45,596	crawler tractor	Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)
Truck Chassis, 25k lbs, 4x2, 295 HP (Gas)	Truck, chassis	NA			0.00	0.00	0.00	0.00	0	NA	NA
Truck Chassis, 50k lbs, 6x4, 255 HP (Diesel)	Truck, chassis	NA			0.00	0.00	0.00	0.00	0	NA	NA
Truck Mounted Post Hole Auger	Auger	238			21.04	217.59	0.52	8.89	54,162	bore/drill rigs	Standard Crawler Dozer - Cat 238 hp - EROPS - Semi U (Diesel)
Vacuum, 5 cy capacity, PTO operated, truck included.	Vacuum	380	5	cy	37.60	126.67	0.40	16.74	41,838	water truck	On-Highway Truck Tractor - 6X4, 45K gvw, 380 HP (Diesel)
<p>Notes: Helicopter emissions for CO2 were calculated based on fuel consumption and are presented as CO2e not CO2. See Supplement Equipment Emfacs worksheet for calculations. Emission factors of "0" represent either electric equipment which have no direct exhaust emissions or auxiliary equipment such as trails, barges, etc that are pulled, towed, or somehow attached to another piece of equipment which does have exhaust emissions</p>											

16. Supplement Equipment Exhaust Emission Factors										
Boats										
<u>Marine Engine Emission Factor and Fuel Consumption Algorithm</u>										
	Pollutant			Coefficient			Exponent			Intercept
				(a)			(x)			(b)
	HC\ROG			0.0667			1.5			NA
	NOx			0.1255			1.5			10.4496
	PM			0.0059			1.5			0.2551
	CO			0.8378			1.5			NA
	CO2			44.1			1.5			648.6
<u>Source:</u> Factors are provided by EPA 2000, p. 5-2. Emission factors developed with this data are considered to be conservative because ARB has passed new										
<u>Emission Factor Algorithm</u>										
	symbology:	E	=	a	*	(Fractional Load)	^	(-x)	+	b
	HC\ROG			0.0667		20%		-1.5		0
	NOx			0.1255		20%		-1.5		10.4496
	PM			0.0059		20%		-1.5		0.2551
	CO			0.8378		20%		-1		0
	CO2			44.1		20%		-1		648.6
<u>Source:</u> Equation is provided by EPA 2000, p. 5-2										
<u>Emission Factors</u>										
		<u>g/kW-hr</u>		<u>g/bhp-hr</u>						
	HC\ROG	0.75		1.00						
	NOx	11.85		15.89						
	PM10	0.32		0.43						
	CO	4.19		5.62						
	CO2	869.10		1165.48						
<u>Project Boats</u>										
	<u>Equipment</u>	<u>Power (HP)</u>		<u>HC\ROG</u>	<u>NOx</u>	<u>PM10</u>	<u>CO</u>	<u>CO2</u>		<u>units</u>
	Tugboat	700		140.01	2225.26869	60.3	786.5	163,167.5		g/bhp-hr
	Tugboat	250		50.00	794.738817	21.5	280.9	58,274.1		g/bhp-hr
	Marine Workboat	250		50.00	794.738817	21.5	280.9	58,274.1		g/bhp-hr
	Marine Workboat	125		25.00	140.438539	10.8	140.4	29,137.1		g/bhp-hr
	Marine Workboat	100		20.00	112.350831	8.6	112.4	23,309.6		g/bhp-hr
				<u>value</u>		<u>units</u>		<u>source</u>		
		mass conversion rate		1.34102209		hp/kW		onlineconversion.com/power.htm		
		Ratio of PM2.5 to PM10		0.97		none		See Note 1		
		Load Factor		0.2				EPA 2000, Table 4-2 on p. 4-13		
<u>Source:</u> EPA 2000, p. 5-2. Emission factors are calculated using the Emission Factor Algorithm and pollutant factors. 20% is the fractional load for many harborcraft when maneuvering. See Table 4-2 on p. 4-13. It is assumed that all of the PM emissions are PM10.										

Shasta Lake Water Resources Investigation

Chainsaws/Chippers							
<u>OFFROAD 2007 Emission Rates (tons/day)</u>							
	<u>HP</u>	<u>ROG</u>	<u>CO</u>	<u>NOX</u>	<u>CO2</u>	<u>PM</u>	<u>Activity</u>
Chainsaws	2	1.38E-02	2.50E-02	2.21E-04	6.76E-02	3.93E-05	277.09
Chipper	120	6.45E-05	3.69E-04	4.68E-04	5.88E-02	3.47E-05	1.55
Chipper	250	1.46E-06	5.53E-06	1.64E-05	2.78E-03	4.91E-07	0.02
<u>Project Equipment (g/hr)</u>							
	<u>HP</u>	<u>ROG</u>	<u>CO</u>	<u>NOX</u>	<u>CO2</u>	<u>PM</u>	
Chainsaw	3.7	1.89E+00	3.41E+00	3.01E-02	9.22E+00	5.36E-03	
Chainsaw	3.7	1.89E+00	3.41E+00	3.01E-02	9.22E+00	5.36E-03	
Chipper	120	1.57E+00	9.01E+00	1.14E+01	1.43E+03	8.47E-01	
Chipper	250	2.21E+00	8.37E+00	2.49E+01	4.20E+03	7.42E-01	
<u>Conversion Rates</u>							
		<u>value</u>	<u>unit</u>	<u>source</u>			
		2,000	lb/ton	onlineconversion.com/weight_common.htm			
		24	hr/day				
		453.592	g/lb				
Source: OFFROAD 2007 Emissions Output for Shasta County, 2016							
Helicopter							
<u>Emission Rates of KMAX K-100 helicopter</u>							
		<u>HC/ROG</u>	<u>NOx</u>	<u>PM</u>	<u>CO</u>	<u>Fuel</u>	<u>Units</u>
		0.51	3.36	0.091	0.61	284	kg/hr
		<u>HC/ROG</u>	<u>NOx</u>	<u>PM</u>	<u>CO</u>	<u>CO2e</u>	<u>Units</u>
		510	3,360	91	610	893,115	g/hr
<u>Conversion Rate</u>							
		<u>value</u>	<u>units</u>	<u>source</u>			
		1,000	g/hr	onlineconversion.com/weight.htm			
<u>GHG Emissions Rate for Helicopter</u>							
		<u>value</u>	<u>units</u>	<u>source</u>			
rate of fuel consumption by helicopter		284	kg/hr	Federal Office of Civil Aviation of Switzerland			
density of jet A-1 fuel		0.804	kg/L	British Petroleum 2000			
volume conversion rate		3.79	L/gal	onlineconversion.com/volume.htm			
density of jet fuel		3.04	kg/gal	conversion calculation			
jet A-1 fuel consumption rate		93.31	gal/hr	calculation			
CO2 emission factor for jet fuel		9.57	kg/gal	CCAR 2009, Table C.3, p. 96			
CO2 emission rate for jet fuel		893.0	kg/hr	calculation			
N2O emission factor for jet fuel		0.31	g/gal	CCAR 2009, Table C.6, p. 100			
CH4 emission factor for jet fuel		0.27	g/gal	CCAR 2009, Table C.6, p. 100			
mass conversion rate		1,000	g/kg	onlineconversion.com/weight			
global warming potential of CO2		1	unitless	CCAR 2009, Table A-1, p.722-723			
global warming potential of N2O		310	unitless	CCAR 2009, Table A-1, p.722-723			
global warming potential of CH4		21	unitless	CCAR 2009, Table A-1, p.722-723			
CO2e emission rate for jet fuel		893.1	kg/hr	summation			
mass conversion rate		2.205	lb/kg	onlineconversion.com/weight.htm			
CO2e emission rate for jet fuel		1,969.0	lb/hr	conversion calculation			
mass conversion rate		453.592	g/hr	onlineconversion.com/weight.htm			
CO2e emission rate for jet fuel		893,115	g/hr	calculation			
Notes: A KMAX K-1200 was assumed as it has an approximate 5,000 lb weight and is commonly used for lifting operations such as removing trees and transporting materials. Source: Federal Office of Civil Aviation (Switzerland). 2009 (March). Guidance on the Determination of Helicopter Emissions. Reference: 0 / 3/33/33-05-20. Available: www.bafu.admin.ch.							

Acetylene Torch									
Emission Factor									
			<u>Unit</u>	<u>Source</u>					
Acetylene	0.1043		<u>kg CO2/cubic foot fuel</u>	CCAR 2009					
fuel consump	20		cy/hour	Ian Buck, personal communication, MHW 2012					
EF	2.086		kg co2/hr	calculation					
EF	0.002086		g/hour	calculation					
<u>Conversion Rate</u>									
	1000		g/kg	google.com					
California Climate Action Registry (CCAR) General Reporting Protocol. 2009 (January). Reporting Entity-Wide Greenhouse Gas Emissions. Version 3.1									

17.Fugitive Dust Emission Factors				
1	<u>Aggregate Storage Piles</u> ¹			
	Emissions result from several distinct processes within the stockpiling cycle: 1. loading in of materials through batch or drop operations, 2. equipment traffic in storage areas, 3. wind erosion of piles, 4. loadout of material through batch or drop operations			
	$E(\text{lb/ton})=(k)(0.0032)(U/5)^{1.3}/(M/2)^{1.4}$			
	Where:	PM10	<u>Unit</u>	<u>Source</u>
	k= Particle Size Multiplier:	0.35	lbs/ton	AP-42 Chapter 13.2.4-3, PM10 emissions
	U=mean wind speed	6	mph	CalEEMod for Shasta County
	M=moisture content (%)	0.034	constant	AP-42 Chapter 13.2.4-3, Table 13.2.4-1, exposed ground
		0.43	lbs/ton	
2	<u>Travel on Unpaved Roads (Heavy Duty Trucks)</u> ²			(THIS EQUATION WAS NOT USED FOR ANY CALCULATIONS)
	$E(\text{lbs/VMT})=(k)(s/12)^a (W/3)^b$			
	Where:	PM10	<u>Unit</u>	<u>Source</u>
	k= Particle Size Multiplier:	1.5	lbs/VMT	AP-42 Chapter 13.2.2-2, PM10 emissions; industrial roads
	s= Silt Content	0.043	constant	AP-42 Chapter 13.2.2-2, service roads
	a=	0.9	constant	AP-42 Chapter 13.2.2-2, industrial roads
	b=	0.45	constant	AP-42 Chapter 13.2.2-2, industrial roads
	W=Vehicle Weight	10	tons	Average weight of loaded and unloaded truck: assumed empty truck weights 2 tons, 10 CY truck capacity and 1 CY of fill equals 1.6 tons $((2+(10\text{cy truck capacity}*1.6\text{ tons}+2))/2)$
		0.02	lbs/VMT	
2a	<u>Correction for Natural Precipitation</u> ³			
	$E(\text{ext})=E[(365-P)/365]$			
	Where:		<u>Unit</u>	<u>Source</u>
	P=#days/yr with >=0.01 precip	83	inches	CalEEMod for Shasta County
		0.0	lbs/VMT	
3	<u>Travel on Paved Roads (Heavy Duty Trucks)</u> ⁴			
	$E(\text{lbs/VMT})=(k)(sL)^{.91} (W)^{1.02-C}$			
	Where:	PM10	<u>Unit</u>	<u>Source</u>
	k= Particle Size Multiplier:	0.0022	lbs/VMT	AP-42 Chapter 13.2.1, Table 13.2.1-1, PM10 emissions
	sL= road surface silt loading	0.06	g/m ²	AP-42 Chapter 13.2.1, Table 13.2.1-2
	C= exhaust, break, tire wear	0.00047	lbs/VMT	AP-42 Chapter 13.2.1, Background Documentation Pg 2-5
	W=Vehicle Weight	2.1	tons	Worker Commute Vehicles
	W=Vehicle Weight	10	tons	Average weight of loaded and unloaded truck: assumed empty truck weights 2 tons, 10 CY truck capacity and 1 CY of fill equals 1.6 tons $((2+(10\text{cy truck capacity}*1.6\text{ tons}+2))/2)$
		0.002	lbs/VMT	Heavy Duty Haul Trucks
		0.00037	lbs/VMT	Worker Commute Vehicles
3a	<u>Correction for Natural Precipitation</u> ⁵			
	$E(\text{ext})=E[(1-P/4N)]$			
	Where:		<u>Unit</u>	<u>Source</u>
	P=#days/yr with >=0.01 precip	83	inches	CalEEMod for Shasta County
	N=# days in averaging period	365	days	
		0.002	lbs/VMT	Heavy Duty Haul Trucks
		0.0003	lbs/VMT	Worker Commute Vehicles

Worker Commute Vehicle Weight Calculation				
Parameters and Calculations for Worker Commute Trips (i.e., passenger vehicles)				
				<u>Source</u>
	Vehicle class for worker trips	LDA, LDT1, LDT2		default value in CalEEMod's tab for Trips and VMT in the Construction module
	Weight	4230 lb		average of vehicle category weight (LDA-3,190 lbs, LDT1-3,750 lbs, LDT2-5,750 lbs) from EMFAC2011
	Mass conversion	2000 lb/ton		google.com
	Weight	2.12 ton		calculation
4	<u>Bulldozing</u> ⁶			
	Equation is applied to graders and dozers to estimate fugitive dust from grading activity			
	Emissions factors for P10 from bulldozing are scaled from those of PM15			
	$E(\text{lbs/hr})=C(\text{PM15}) \cdot s^{1.5}/M^{1.5}$			
	Where			
	$E(\text{PM10})=E(\text{PM15}) \cdot F(\text{PM10})$			
	Where:		PM15	
			<u>Unit</u>	<u>Source</u>
	C=	coefficient	1 constant	AP-42 Table 11.9-1, PM15,overburden
	M=	material moisture content	0.079 %	AP-42 Table 11.9-3,Overburden
	s=	material silt content	0.069 %	AP-42 Table 11.9-3,Overburden
	F=	scaling factor	0.75 constant	AP-42 Table 11.9-1, PM10
			0.63 lbs/hr	
			PM10	
			0.47 lbs/hr	
	<u>Sources</u>			
	1	EPA 2006. AP-42, Chapter 13.2.4 Miscellaneous Sources, Aggregate Storage Piles, Equation 1		
	2	EPA 2006. AP-42, Chapter 13.2.4 Miscellaneous Sources, Upaved Roads, Equation 1a		
	3	EPA 2006. AP-42, Chapter 13.2.4 Miscellaneous Sources, Upaved Roads, Equation 2		
	4	EPA 2011. AP-42, Chapter 13.2.4 Miscellaneous Sources, Paved Roads, Equation 1		
	5	EPA 2011. AP-42, Chapter 13.2.4 Miscellaneous Sources, Paved Roads, Equation 2		
	6	EPA 1998. AP-42 Chapter 11.9 Mineral Products Industry, Western Surface Coal Mining, Equation 11.9-1 Bulldozing		

18. Worker Trip Exhaust Emission Factors											
Raw Emission Factors from EMFAC2011											
Veh	Fuel	Pop (Vehicles)	VMT (Miles/day)	Trips (Trips/day)	Running Exhaust Emission Rates (g/mile)						
					ROG_RUNEX	NOX_RUNEX	PM10_RUNEX	PM2_5_RUNEX	CO_RUNEX	SOX_RUNEX	CO2_RUNEX(Pavley I+LCFS)
LDA	GAS	55,963	1,926,926	351,412	0.043	0.131	0.002	0.002	1.321	0.004	284.116
LDA	DSL	361	11,439	2,169	0.033	0.557	0.023	0.021	0.209	0.003	279.469
LDT1	GAS	6,163	203,562	37,506	0.169	0.321	0.004	0.003	3.518	0.004	342.314
LDT1	DSL	14	436	78	0.053	0.536	0.044	0.040	0.252	0.003	274.605
LDT2	GAS	30,362	1,051,117	188,608	0.075	0.302	0.003	0.002	2.201	0.005	408.566
LDT2	DSL	12	410	71	0.039	0.546	0.030	0.027	0.220	0.003	287.466
Total			3,193,890								
Source: wksht: EMFAC11output											
Exhaust Emission Rates for Composite Light Duty Vehicles											
ROG_RUNEX	NOX_RUNEX	PM10_RUNEX	PM2_5_RUNEX	CO_RUNEX	SOX_RUNEX	CO2_RUNEX(Pavley I+LCFS)					
(gms/mile)	(gms/mile)	(gms/mile)	(gms/mile)	(gms/mile)	(gms/mile)	(gms/mile)					
0.061	0.201	0.002	0.002	1.746	0.004	328.765					
Source: EMFAC2011 emission factors (above) and weighted mix of passenger vehicle fleet (also above)											
ROG	NOX	PM10	PM2.5	CO	SOX	CO2	Units				
0.00014	0.00044	0.000005	0.000005	0.00385	0.00001	0.72480	lbs/mile				
Exhaust Emissions per Worker Per Day											
ROG	NOx	PM10	PM2.5	CO	SOx	CO2e	units				
0.0045	0.0149	0.0002	0.0002	0.1293	0.0003	24.3533	lb/worker-day				
Source: Exhaust emissions are based on trip length and the Exhaust Emission Rates for Composite Light Duty Vehicles (above).											
Notes											
1	It is conservatively assumed that all workers would drive alone and none would make trips during break periods due to the remoteness of the work sites.										
2	Daily VMT by workers = # workers * trips per worker * trip length										

19.Haul Truck Emission Factors									
Exhaust Emission Factors for Haul Trucks	<u>ROG</u>	<u>NOx</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO</u>	<u>SOx</u>	<u>CO2e</u>	<u>units</u>	<u>source</u>
Running Exhaust Emission Factors	0.263	4.883	0.091	0.084	1.204	0.017	1671.121	g/mile	See Note 1 and Note 2
Idling Exhaust Emiss Factors	24.605	139.585	0.736	0.677	131.257	0.237	23948.585	g/truck/day	See Note 1 and Note 2
<u>Source: wksht EMFAC2011 output</u>									
Exhaust Emission Factors for Haul Trucks	ROG	NOx	PM10	PM2.5	CO	SOx	CO2e	Units	
	0.00058	0.01076	0.00020	0.00018	0.00266	0.00004	3.68419	lbs/mile	
	<u>value</u>	<u>unit</u>	<u>source</u>						
trip length	20	miles/trip	default value from CalEEMod						
portion of trip on paved surfaces	95%	%	See Note 3						
portion of trip on unpaved surfaces	5%	%	See Note 3						
mass conversion rate	453.59	g/lb	onlineconversion.com/weight_common.htm						
daily trips per truck	2	trips/truck	See Note 4						
<u>Notes</u>									
1	Emission rates are provided in wksht: EMFAC11 output								
2	CalEEMod assumes that Heavy-Heavy Diesel Trucks (HHDT) are used to haul materials and equipment during construction. Therefore, haul truck emissions are estimated using EMFAC2011 emission factors for a Heavy-Heavy Duty Diesel CA International Registration Plan Construction Truck (T7 CAIRP construction).								

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EMFAC 2011														20. EMFAC 2011 Output					
2016 Estimated Annual Emission Rates																			
EMFAC 2011 Vehicle Categories																			
Shasta COUNTY																			
Sacramento Valley AIR BASIN																			
Shasta County AQMD																			
		All Model Years		All Speeds		Season: Annual		Calendar Year: 2016											
Running Emission Rates														Idling Emission Rates					
Veh	Veh	Fuel	Pop	VMT	Trips	ROG_RUNEX	NOX_RUNEX	PM10_RUNEX	PM2_5_RUNEX	CO_RUNEX	SOX_RUNEX	CO2_RUNEX(Pavley I+LCFS)	ROG_IDLEX	NOX_IDLEX	PM10_IDLEX	PM2_5_IDLEX	CO_IDLEX	SOX_IDLEX	CO2_IDLEX(Pavley I+LCFS)
			(Vehicles)	(Miles/day)	(Trips/day)	(gms/mile)	(gms/mile)	(gms/mile)	(gms/mile)	(gms/mile)	(gms/mile)	(gms/mile)	(gms/vehicle/day)	(gms/vehicle/day)	(gms/vehicle/day)	(gms/vehicle/day)	(gms/vehicle/day)	(gms/vehicle/day)	(gms/vehicle/day)
LDA	LDA	GAS	55,963	1,926,926	351411.681	0.043	0.131	0.002	0.002	1.321	0.004	284.116	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LDA	LDA	DSL	361	11,439	2169.468	0.033	0.557	0.023	0.021	0.209	0.003	279.469	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LDT1	LDT1	GAS	6,163	203,562	37506.093	0.169	0.321	0.004	0.003	3.518	0.004	342.314	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LDT1	LDT1	DSL	14	436	77.539	0.053	0.536	0.044	0.040	0.252	0.003	274.605	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LDT2	LDT2	GAS	30,362	1,051,117	188608.396	0.075	0.302	0.003	0.002	2.201	0.005	408.566	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LDT2	LDT2	DSL	12	410	71.220	0.039	0.546	0.030	0.027	0.220	0.003	287.466	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LHD1	LHD1	GAS	5,427	194,893	80851.514	0.273	0.575	0.004	0.004	3.865	0.010	935.293	0.536	0.034	0.000	0.000	3.279	0.001	112.292
LHD1	LHD1	DSL	7,357	265,636	92540.079	0.229	4.185	0.050	0.046	1.121	0.005	506.286	0.110	2.596	0.030	0.028	0.910	0.001	136.792
LHD2	LHD2	GAS	309	11,254	4604.611	0.182	0.395	0.003	0.003	3.085	0.010	935.293	0.539	0.034	0.000	0.000	3.290	0.001	112.292
LHD2	LHD2	DSL	1,175	42,241	14779.351	0.203	3.868	0.045	0.042	1.078	0.005	503.036	0.110	2.596	0.027	0.025	0.910	0.001	136.792
MCY	MCY	GAS	6,448	48,210	12893.832	2.697	1.267	0.001	0.000	26.878	0.002	147.969	0.000	0.000	0.000	0.000	0.000	0.000	0.000
MDV	MDV	GAS	23,670	793,495	145411.757	0.143	0.578	0.003	0.003	3.889	0.006	543.327	0.000	0.000	0.000	0.000	0.000	0.000	0.000
MDV	MDV	DSL	20	705	119.354	0.034	0.388	0.027	0.025	0.179	0.003	304.043	0.000	0.000	0.000	0.000	0.000	0.000	0.000
MH	MH	GAS	1,740	20,042	174.118	0.211	1.016	0.003	0.003	6.505	0.007	661.149	0.000	0.000	0.000	0.000	0.000	0.000	0.000
MH	MH	DSL	413	4,664	41.290	0.245	8.346	0.214	0.197	0.754	0.012	1163.284	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Motor Coach	Motor Coa	DSL	19	2,632	0.000	0.229	6.915	0.091	0.084	1.033	0.017	1680.287	9.138	118.810	0.344	0.317	50.104	0.114	11480.362
OBUS	OBUS	GAS	75	3,142	3425.606	0.194	1.270	0.001	0.001	3.640	0.007	661.149	1.870	0.119	0.000	0.000	11.449	0.004	393.142
PTO	PTO	DSL	0	8,434	0.000	0.247	9.236	0.075	0.069	0.883	0.021	2074.911	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SBUS	SBUS	GAS	36	1,392	144.013	2.190	3.112	0.013	0.011	40.328	0.008	716.146	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SBUS	SBUS	DSL	165	6,070	0.000	0.223	10.463	0.115	0.106	0.667	0.012	1253.171	0.744	51.446	0.172	0.158	6.753	0.036	3619.858
T6 Ag	T6 Ag	DSL	102	3,384	0.000	0.459	6.517	0.272	0.250	1.366	0.011	1155.865	0.684	8.775	0.207	0.191	4.195	0.006	643.051
T6 CAIRP heavy	T6 CAIRP h	DSL	2	101	0.000	0.140	3.678	0.055	0.051	0.472	0.011	1149.822	0.162	6.785	0.014	0.013	1.881	0.007	712.850
T6 CAIRP small	T6 CAIRP s	DSL	5	332	0.000	0.170	2.230	0.079	0.073	0.579	0.011	1143.349	0.215	5.322	0.022	0.020	2.509	0.007	717.087
T6 instate construction heavy	T6 instate c	DSL	59	3,125	0.000	0.141	6.235	0.061	0.056	0.464	0.011	1158.372	0.121	8.876	0.015	0.014	1.381	0.007	705.608
T6 instate construction small	T6 instate c	DSL	127	8,164	0.000	0.237	3.551	0.133	0.123	0.790	0.011	1146.367	0.221	6.971	0.036	0.033	2.547	0.007	713.506
T6 instate heavy	T6 instate	DSL	283	15,509	0.000	0.140	5.571	0.059	0.054	0.463	0.011	1156.172	0.131	8.357	0.014	0.013	1.501	0.007	707.609
T6 instate small	T6 instate s	DSL	642	42,337	0.000	0.221	3.227	0.121	0.111	0.739	0.011	1145.293	0.220	6.636	0.033	0.030	2.540	0.007	714.148
T6 OOS heavy	T6 OOS he	DSL	1	58	0.000	0.140	3.678	0.055	0.051	0.472	0.011	1149.822	0.162	6.785	0.014	0.013	1.881	0.007	712.850
T6 OOS small	T6 OOS sm	DSL	3	190	0.000	0.170	2.230	0.079	0.073	0.579	0.011	1143.349	0.215	5.322	0.022	0.020	2.509	0.007	717.087
T6 Public	T6 Public	DSL	313	5,659	0.000	0.083	6.435	0.040	0.037	0.271	0.012	1167.281	0.122	8.857	0.017	0.016	1.288	0.007	692.815
T6 utility	T6 utility	DSL	17	333	0.000	0.083	3.796	0.032	0.029	0.285	0.011	1155.914	0.148	7.189	0.010	0.010	1.745	0.007	717.997
T6TS	T6TS	GAS	324	13,071	6487.376	0.247	1.028	0.002	0.002	5.034	0.007	661.149	1.143	0.073	0.000	0.000	13.380	0.003	242.775
T7 Ag	T7 Ag	DSL	371	24,858	0.000	0.430	10.353	0.263	0.242	1.979	0.017	1684.583	4.096	27.829	0.485	0.446	16.937	0.027	2701.336
T7 CAIRP	T7 CAIRP	DSL	599	140,932	0.000	0.262	4.679	0.090	0.083	1.198	0.017	1670.043	25.157	141.527	0.724	0.666	134.771	0.241	24341.320
T7 CAIRP construction	T7 CAIRP c	DSL	27	6,288	0.000	0.263	4.883	0.091	0.084	1.204	0.017	1671.121	24.605	139.585	0.736	0.677	131.257	0.237	23948.585
T7 NNOOS	T7 NNOOS	DSL	578	158,543	0.000	0.212	2.590	0.073	0.067	0.974	0.016	1659.763	36.903	194.629	0.813	0.748	202.656	0.338	34144.477
T7 NOOS	T7 NOOS	DSL	218	51,324	0.000	0.264	4.700	0.093	0.085	1.209	0.017	1669.943	31.269	174.084	0.937	0.862	166.712	0.298	30134.769
T7 other port	T7 other port	DSL	10	1,565	0.000	0.461	7.417	0.107	0.098	2.118	0.017	1705.888	6.263	32.524	0.091	0.084	35.332	0.057	5748.922
T7 POAK	T7 POAK	DSL	24	3,886	0.000	0.462	7.436	0.107	0.098	2.121	0.017	1706.103	10.507	54.567	0.153	0.141	59.278	0.095	9645.184
T7 POLA	T7 POLA	DSL	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
T7 Public	T7 Public	DSL	633	15,683	0.000	0.102	12.732	0.070	0.065	0.484	0.017	1718.716	4.154	105.605	0.326	0.300	20.098	0.079	8021.352
T7 Single	T7 Single	DSL	444	35,172	0.000	0.157	8.032	0.069	0.063	0.704	0.017	1678.821	2.850	30.259	0.082	0.076	15.693	0.034	3424.394
T7 single construction	T7 single c	DSL	208	16,266	0.000	0.157	8.307	0.069	0.064	0.701	0.017	1679.857	2.760	30.253	0.082	0.075	15.173	0.033	3366.691
T7 SWCV	T7 SWCV	DSL	176	8,802	0.000	0.120	9.333	0.058	0.053	0.549	0.017	1689.315	5.088	95.358	0.200	0.184	27.740	0.080	8137.550
T7 tractor	T7 tractor	DSL	593	93,605	0.000	0.242	7.615	0.095	0.088	1.093	0.017	1678.822	3.412	29.891	0.085	0.078	18.884	0.037	3760.440
T7 tractor construction	T7 tractor	DSL	158	12,127	0.000	0.238	8.399	0.097	0.090	1.071	0.017	1680.502	3.227	29.873	0.084	0.078	17.822	0.036	3642.736
T7 utility	T7 utility	DSL	23	576	0.000	0.109	7.010	0.044	0.041	0.491	0.017	1683.364	5.854	86.129	0.157	0.145	32.829	0.081	8185.738
T7IS	T7IS	GAS	21	1,971	412.885	0.952	5.594	0.001	0.001	30.854	0.006	560.249	0.000	0.000	0.000	0.000	0.000	0.000	0.000
All Other Buses	UBUS	GAS	7	847	29.539	1.711	8.124	0.005	0.005	24.660	0.008	718.141	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	UBUS	DSL	30.462591	3494.774102	121.850344	0.732239158	14.56568043	0.224182426	0.206247834	2.341341828	0.02386281	2412.122072	0	0	0	0	0	0	0
	All Other B	DSL	47.7410517	2575.259243	0	0.187462857	5.761448338	0.084761885	0.077980934	0.610089734	0.011424553	1155.571611	0.186358193	7.503027716	0.028031951	0.025789395	1.892737108	0.00694902	702.8800209

Shasta Lake Water Resources Investigation

21.OFFROAD 2007 Output																									
CY	Season	AvgDays	Code	Equipment	Fuel	MaxHP	Class	C/R	Pre	Hand	Port	County	Air Basin	Air Dist.	Population	Activity	Consumptio	ROG Exhaust	CO Exhaust	NOX Exhaust	CO2 Exhaust	SO2 Exhaust	PM Exhaust	N2O Exhaust	CH4 Exhaust
2016	Annual	Mon-Sun	2260001011	Off-Road Motorcycles Inactive	G2	15	Recreation	U	N	NHH	NP	Total	Total	Total	9.82E+01	3.64E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2016	Annual	Mon-Sun	2260001011	Off-Road Motorcycles Inactive	G2	25	Recreation	U	N	NHH	NP	Total	Total	Total	8.45E+01	3.13E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2016	Annual	Mon-Sun	2260001011	Off-Road Motorcycles Inactive	G2	50	Recreation	U	N	NHH	NP	Total	Total	Total	6.88E+02	2.55E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2016	Annual	Mon-Sun	2260001011	Off-Road Motorcycles Inactive	G2	120	Recreation	U	N	NHH	NP	Total	Total	Total	3.29E+02	1.22E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2016	Annual	Mon-Sun	2260001021	Snowmobiles Inactive	G2	25	Recreation	U	N	NHH	P	Total	Total	Total	1.63E+01	2.57E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2016	Annual	Mon-Sun	2260001021	Snowmobiles Inactive	G2	50	Recreation	U	N	NHH	P	Total	Total	Total	7.70E+01	1.21E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2016	Annual	Mon-Sun	2260001021	Snowmobiles Inactive	G2	120	Recreation	U	N	NHH	P	Total	Total	Total	1.40E+02	2.21E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2016	Annual	Mon-Sun	2260001031	All Terrain Vehicles (ATVs) Inactive	G2	15	Recreation	U	N	NHH	NP	Total	Total	Total	1.08E+02	3.99E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2016	Annual	Mon-Sun	2260001031	All Terrain Vehicles (ATVs) Inactive	G2	25	Recreation	U	N	NHH	NP	Total	Total	Total	7.01E+01	2.60E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2016	Annual	Mon-Sun	2260001031	All Terrain Vehicles (ATVs) Inactive	G2	50	Recreation	U	N	NHH	NP	Total	Total	Total	9.23E+01	3.42E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2016	Annual	Mon-Sun	2265001011	Off-Road Motorcycles Inactive	G4	15	Recreation	U	N	NHH	NP	Total	Total	Total	1.92E+02	7.09E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2016	Annual	Mon-Sun	2265001011	Off-Road Motorcycles Inactive	G4	25	Recreation	U	N	NHH	NP	Total	Total	Total	3.09E+02	1.14E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2016	Annual	Mon-Sun	2265001011	Off-Road Motorcycles Inactive	G4	50	Recreation	U	N	NHH	NP	Total	Total	Total	3.22E+02	1.19E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2016	Annual	Mon-Sun	2265001031	All Terrain Vehicles (ATVs) Inactive	G4	15	Recreation	U	N	NHH	NP	Total	Total	Total	8.79E+01	3.25E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2016	Annual	Mon-Sun	2265001031	All Terrain Vehicles (ATVs) Inactive	G4	25	Recreation	U	N	NHH	NP	Total	Total	Total	1.22E+03	4.53E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2016	Annual	Mon-Sun	2265001031	All Terrain Vehicles (ATVs) Inactive	G4	50	Recreation	U	N	NHH	NP	Total	Total	Total	5.52E+01	2.04E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2016	Annual	Mon-Sun	2260001010	Off-Road Motorcycles Active	G2	15	Recreation	U	N	NHH	NP	Total	Total	Total	2.45E+02	9.08E+02	3.44E+01	3.46E+02	5.42E-02	1.07E-05	1.15E-01	9.31E-05	4.20E-04	3.89E-05	2.15E-03
2016	Annual	Mon-Sun	2260001010	Off-Road Motorcycles Active	G2	25	Recreation	U	N	NHH	NP	Total	Total	Total	2.11E+02	7.81E+02	2.96E+01	2.98E-02	4.66E-02	9.23E-06	9.90E-02	1.50E-04	3.62E-04	3.34E-05	1.85E-03
2016	Annual	Mon-Sun	2260001010	Off-Road Motorcycles Active	G2	50	Recreation	U	N	NHH	NP	Total	Total	Total	1.72E+03	6.36E+03	2.41E+02	2.43E-01	3.79E-01	7.51E-05	8.06E-01	1.93E-03	2.94E-03	2.72E-04	1.51E-02
2016	Annual	Mon-Sun	2260001010	Off-Road Motorcycles Active	G2	120	Recreation	U	N	NHH	NP	Total	Total	Total	8.22E+02	3.04E+03	1.15E+02	1.16E-01	1.81E-01	3.59E-05	3.85E-01	1.36E-03	1.41E-03	1.30E-04	7.22E-03
2016	Annual	Mon-Sun	2260001020	Snowmobiles Active	G2	25	Recreation	U	N	NHH	P	Total	Total	Total	4.69E+01	7.39E+00	6.09E+00	3.96E-03	1.27E-02	2.34E-04	2.38E-02	4.15E-07	1.29E-04	2.12E-05	2.46E-04
2016	Annual	Mon-Sun	2260001020	Snowmobiles Active	G2	50	Recreation	U	N	NHH	P	Total	Total	Total	2.21E+02	3.48E+01	5.46E+01	3.55E-02	1.14E-01	2.10E-03	2.13E-01	3.71E-06	1.15E-03	1.41E-04	2.20E-03
2016	Annual	Mon-Sun	2260001020	Snowmobiles Active	G2	120	Recreation	U	N	NHH	P	Total	Total	Total	4.02E+02	6.34E+01	1.66E+02	1.05E-01	3.42E-01	6.66E-03	6.63E-01	1.16E-05	3.52E-03	3.45E-04	6.54E-03
2016	Annual	Mon-Sun	2260001030	All Terrain Vehicles (ATVs) Active	G2	15	Recreation	U	N	NHH	NP	Total	Total	Total	3.55E+02	1.31E+03	4.98E+01	5.01E-02	7.83E-02	1.55E-05	1.66E-01	1.66E-04	6.08E-04	5.62E-05	3.12E-03
2016	Annual	Mon-Sun	2260001030	All Terrain Vehicles (ATVs) Active	G2	25	Recreation	U	N	NHH	NP	Total	Total	Total	2.31E+02	8.55E+02	3.24E+01	3.26E-02	5.10E-02	1.01E-05	1.08E-01	1.48E-04	3.96E-04	3.66E-05	2.03E-03
2016	Annual	Mon-Sun	2260001030	All Terrain Vehicles (ATVs) Active	G2	50	Recreation	U	N	NHH	NP	Total	Total	Total	3.04E+02	1.13E+03	4.27E+01	4.30E-02	6.71E-02	1.33E-05	1.43E-01	2.55E-04	5.21E-04	4.82E-05	2.67E-03
2016	Annual	Mon-Sun	2260001050	Golf Carts	G2	15	Recreation	U	N	NHH	NP	Total	Total	Total	4.40E+02	1.33E+03	5.01E+02	2.30E-02	1.36E+00	1.76E-02	2.60E+00	1.07E-04	1.21E-03	2.40E-03	1.43E-03
2016	Annual	Mon-Sun	2260001060	Specialty Vehicles Carts	G2	15	Recreation	U	N	NHH	NP	Total	Total	Total	1.00E+03	1.82E+02	6.71E+01	2.41E-03	1.83E-01	1.87E-03	3.50E-01	1.44E-05	1.32E-04	2.88E-04	1.50E-04
2016	Annual	Mon-Sun	2260002006	Tampers/Rammers	G2	15	Constructi	U	P	NHH	NP	Total	Total	Total	2.32E+01	1.16E+01	2.34E+00	1.47E-04	6.32E-03	1.16E-04	1.21E-02	4.98E-07	1.01E-04	1.80E-05	9.15E-06
2016	Annual	Mon-Sun	2260002009	Plate Compactors	G2	15	Constructi	U	P	NHH	NP	Total	Total	Total	1.99E+00	1.13E+00	2.27E-01	1.43E-05	6.14E-04	1.12E-05	1.17E-03	4.83E-08	9.83E-06	1.75E-06	8.87E-07
2016	Annual	Mon-Sun	2260003040	Other General Industrial Equipmen	G2	15	Industrial E	U	N	NHH	NP	Total	Total	Total	2.58E-01	2.65E-01	1.04E-01	4.69E-06	2.84E-04	3.58E-06	5.42E-04	2.23E-08	2.52E-07	4.85E-07	2.92E-07
2016	Annual	Mon-Sun	2260004010	Lawn Mowers	G2	15	Lawn and C	U	N	NHH	NP	Total	Total	Total	1.95E+02	1.22E+02	1.38E+01	1.56E-03	2.81E-02	4.24E-04	8.33E-02	3.43E-06	2.63E-04	1.08E-04	9.72E-05
2016	Annual	Mon-Sun	2260004010	Lawn Mowers	G2	15	Lawn and C	R	N	NHH	NP	Total	Total	Total	1.47E+03	6.23E+01	8.21E+00	1.38E-03	2.01E-02	2.35E-04	4.24E-02	1.75E-06	1.31E-04	5.49E-05	8.55E-05
2016	Annual	Mon-Sun	2260004020	Chainsaws	G2	2	Lawn and C	U	N	HH	NP	Total	Total	Total	3.50E+02	2.77E+02	1.65E+01	1.38E-02	2.50E-02	2.21E-04	6.76E-02	2.78E-06	3.93E-05	1.12E-04	8.59E-04
2016	Annual	Mon-Sun	2260004020	Chainsaws	G2	2	Lawn and C	R	N	HH	NP	Total	Total	Total	3.93E+03	5.28E+01	2.68E+00	1.16E-03	5.44E-03	4.49E-05	1.29E-02	5.30E-07	1.70E-05	2.20E-05	7.18E-05
2016	Annual	Mon-Sun	2260004020	Chainsaws	G2	15	Lawn and C	U	N	HH	NP	Total	Total	Total	2.46E+02	1.95E+02	2.81E+01	2.35E-02	4.26E-02	3.76E-04	1.15E-01	4.74E-06	6.70E-05	1.26E-04	1.46E-03
2016	Annual	Mon-Sun	2260004020	Chainsaws	G2	15	Lawn and C	R	N	HH	NP	Total	Total	Total	2.77E+03	3.72E+01	4.45E+00	1.84E-03	8.92E-03	7.58E-05	2.19E-02	9.03E-07	3.11E-05	2.46E-05	1.14E-04
2016	Annual	Mon-Sun	2260004021	Chainsaws Preempt	G2	15	Lawn and C	U	P	HH	NP	Total	Total	Total	3.07E+02	2.43E+02	3.50E+01	2.93E-02	5.30E-02	4.68E-04	1.43E-01	5.90E-06	8.34E-05	1.57E-04	1.82E-03
2016	Annual	Mon-Sun	2260004021	Chainsaws Preempt	G2	15	Lawn and C	R	P	HH	NP	Total	Total	Total	3.45E+03	4.63E+01	6.14E+00	3.02E-03	1.30E-02	8.11E-05	2.73E-02	1.12E-06	2.75E-05	2.84E-05	1.88E-04
2016	Annual	Mon-Sun	2260004025	Trimmers/Edgers/Brush Cutters	G2	2	Lawn and C	U	N	HH	NP	Total	Total	Total	1.14E+03	3.79E+02	1.68E+01	9.08E-03	2.99E-02	2.64E-04	8.08E-02	3.33E-06	4.70E-05	1.43E-04	5.64E-04
2016	Annual	Mon-Sun	2260004025	Trimmers/Edgers/Brush Cutters	G2	2	Lawn and C	R	N	HH	NP	Total	Total	Total	1.27E+04	7.48E+02	3.18E+01	1.43E-02	5.90E-02	5.22E-04	1.59E-01	6.57E-06	9.28E-05	2.82E-04	8.90E-04
2016	Annual	Mon-Sun	2260004030	Leaf Blowers/Vacuums	G2	2	Lawn and C	U	N	HH	P	Total	Total	Total	1.70E+03	9.16E+02	4.88E+01	3.37E-02	8.02E-02	7.08E-04	2.17E-01	8.93E-06	1.26E-04	3.64E-04	2.10E-03
2016	Annual	Mon-Sun	2260004030	Leaf Blowers/Vacuums	G2	2	Lawn and C	R	N	HH	P	Total	Total	Total	4.39E+03	5.77E+01	2.84E+00	1.22E-03	5.78E-03	4.76E-05	1.37E-02	5.63E-07	1.81E-05	2.36E-05	7.59E-05
2016	Annual	Mon-Sun	2260004035	Snowblowers	G2	15	Lawn and C	U	N	HH	P	Total	Total	Total	1.36E+01	1.61E+00	3.01E-01	9.75E-05	5.93E-04	5.23E-06	1.60E-03	6.60E-08	9.33E-07	1.38E-06	6.06E-06
2016	Annual	Mon-Sun	2260004035	Snowblowers	G2	15	Lawn and C	R	N	HH	P	Total	Total	Total	1.23E+02	6.09E-01	1.21E-01	4.42E-05	2.49E-04	2.05E-06	6.06E-04	2.50E-08	9.34E-07	5.28E-07	2.75E-06
2016	Annual	Mon-Sun	2260004035	Snowblowers	G2	25	Lawn and C	U	N	HH	P	Total	Total	Total	3.74E-02	4.43E-03	2.21E-03	7.15E-07	4.34E-06	3.84E-08	1.17E-05	4.83E-10	6.83E-09	6.39E-09	4.44E-08
2016	Annual	Mon-Sun	2260004035	Snowblowers	G2	25	Lawn and C	R	N	HH	P	Total	Total	Total	1.12E-01	5.57E-04	2.93E-04	1.14E-07	5.81E-07	4.94E-09	1.48E-06	6.09E-11	2.27E-09	8.05E-10	7.10E-09
2016	Annual	Mon-Sun	2260004050	Shredders	G2	15	Lawn and C	U	P	NHH	NP	Total	Total	Total											

Year	Day	Activity ID	Equipment	Zone	Count	Type	Phase	Phase	Phase	Phase	Phase	Phase	Phase	Phase	Phase	Phase	Phase	Phase	Phase	Phase	Phase			
2016 Annual	Mon-Sun	2265002003	Asphalt Pavers	G4	120	Constructii	U	P	NHH	NP	Total	Total	Total	2.49E-01	2.68E-01	1.03E+00	1.68E-05	4.20E-04	4.72E-05	9.21E-03	8.89E-08	7.13E-07	1.58E-06	9.37E-07
2016 Annual	Mon-Sun	2265002006	Tampers/Rammers	G4	15	Constructii	U	P	NHH	NP	Total	Total	Total	1.07E+00	5.35E-01	2.61E-01	1.96E-05	7.58E-04	1.46E-05	1.25E-03	3.58E-08	1.05E-05	1.38E-06	1.09E-06
2016 Annual	Mon-Sun	2265002009	Plate Compactors	G4	5	Constructii	U	P	NHH	NP	Total	Total	Total	3.94E+01	1.94E+01	3.56E+00	5.06E-04	7.76E-03	2.28E-04	2.02E-02	6.99E-07	6.60E-06	3.20E-05	2.81E-05
2016 Annual	Mon-Sun	2265002015	Rollers	G4	5	Constructii	U	P	NHH	NP	Total	Total	Total	4.18E+01	2.36E+01	1.02E+01	7.69E-04	2.97E-02	5.72E-04	4.91E-02	1.40E-06	4.12E-04	5.71E-05	4.28E-05
2016 Annual	Mon-Sun	2265002015	Rollers	G4	15	Constructii	U	P	NHH	NP	Total	Total	Total	4.39E+00	9.98E-01	2.73E-01	3.29E-05	6.62E-04	1.49E-05	1.46E-03	5.06E-08	4.78E-07	1.86E-06	1.83E-06
2016 Annual	Mon-Sun	2265002015	Rollers	G4	25	Constructii	U	P	NHH	NP	Total	Total	Total	7.10E+00	6.03E+00	3.32E+00	2.50E-04	9.62E-03	1.86E-04	1.59E-02	4.54E-07	1.34E-04	1.66E-05	1.39E-05
2016 Annual	Mon-Sun	2265002015	Rollers	G4	50	Constructii	U	P	NHH	NP	Total	Total	Total	4.79E+00	4.07E+00	4.87E+00	3.76E-04	1.46E-02	2.45E-04	2.27E-02	5.76E-07	1.90E-04	1.60E-05	2.09E-05
2016 Annual	Mon-Sun	2265002015	Rollers	G4	50	Constructii	U	P	NHH	NP	Total	Total	Total	3.19E-01	5.44E-01	1.47E+00	5.25E-05	2.03E-03	6.65E-05	1.08E-02	1.31E-07	8.25E-07	2.92E-06	2.92E-06
2016 Annual	Mon-Sun	2265002015	Rollers	G4	120	Constructii	U	P	NHH	NP	Total	Total	Total	6.01E-01	1.02E+00	4.70E+00	1.23E-04	2.73E-03	2.94E-04	4.06E-02	3.92E-07	3.15E-06	8.11E-06	6.85E-06
2016 Annual	Mon-Sun	2265002021	Paving Equipment	G4	5	Constructii	U	P	NHH	NP	Total	Total	Total	5.51E+01	2.57E+01	5.07E+00	7.12E-04	1.11E-02	3.21E-04	2.87E-02	9.91E-07	9.36E-06	4.37E-05	3.96E-05
2016 Annual	Mon-Sun	2265002021	Paving Equipment	G4	15	Constructii	U	P	NHH	NP	Total	Total	Total	9.32E+01	5.11E+01	2.97E+01	2.23E-03	8.62E-02	1.66E-03	1.43E-01	4.07E-06	1.20E-03	1.45E-04	1.24E-04
2016 Annual	Mon-Sun	2265002021	Paving Equipment	G4	25	Constructii	U	P	NHH	NP	Total	Total	Total	2.07E+00	1.14E+00	1.50E+00	1.15E-04	4.48E-03	7.50E-05	6.98E-03	1.77E-07	5.85E-05	4.69E-06	6.40E-06
2016 Annual	Mon-Sun	2265002021	Paving Equipment	G4	50	Constructii	U	P	NHH	NP	Total	Total	Total	1.24E+00	5.95E-01	1.34E+00	1.98E-05	1.03E-03	3.16E-05	1.12E-02	1.36E-07	8.59E-07	2.05E-06	1.10E-06
2016 Annual	Mon-Sun	2265002021	Paving Equipment	G4	120	Constructii	U	P	NHH	NP	Total	Total	Total	3.19E-01	1.53E-01	5.52E-01	4.47E-06	1.36E-04	1.38E-05	5.10E-03	4.92E-08	3.95E-07	6.27E-07	2.49E-07
2016 Annual	Mon-Sun	2265002024	Surfacing Equipment	G4	5	Constructii	U	P	NHH	NP	Total	Total	Total	1.01E+01	5.55E+00	1.12E+00	1.67E-04	2.40E-03	7.37E-05	6.43E-03	2.22E-07	2.10E-06	9.74E-06	9.08E-06
2016 Annual	Mon-Sun	2265002024	Surfacing Equipment	G4	15	Constructii	U	P	NHH	NP	Total	Total	Total	3.01E+01	4.15E+01	1.60E+01	1.27E-03	4.65E-02	9.42E-04	7.69E-02	2.19E-06	6.45E-04	9.70E-05	7.04E-05
2016 Annual	Mon-Sun	2265002024	Surfacing Equipment	G4	25	Constructii	U	P	NHH	NP	Total	Total	Total	4.11E-01	5.67E-01	5.38E-01	4.34E-05	1.60E-03	2.83E-05	2.50E-03	6.34E-08	2.10E-05	2.02E-06	2.42E-06
2016 Annual	Mon-Sun	2265002027	Signal Boards	G4	5	Constructii	U	P	NHH	NP	Total	Total	Total	1.25E-01	4.45E-02	1.46E-02	1.88E-06	3.40E-05	8.49E-07	8.01E-05	2.77E-09	2.61E-08	9.47E-08	1.05E-07
2016 Annual	Mon-Sun	2265002027	Signal Boards	G4	15	Constructii	U	P	NHH	NP	Total	Total	Total	8.89E-01	6.92E-01	4.15E-01	3.10E-05	1.20E-03	2.31E-05	1.99E-03	5.68E-08	1.67E-05	1.99E-06	1.73E-06
2016 Annual	Mon-Sun	2265002030	Trenchers	G4	15	Constructii	U	P	NHH	NP	Total	Total	Total	8.22E+00	9.78E+00	6.37E+00	4.91E-04	1.85E-02	3.65E-04	3.06E-02	8.72E-07	2.56E-04	2.98E-05	2.73E-05
2016 Annual	Mon-Sun	2265002030	Trenchers	G4	25	Constructii	U	P	NHH	NP	Total	Total	Total	6.37E+00	7.58E+00	1.07E+01	8.43E-04	3.19E-02	5.50E-04	4.97E-02	1.26E-06	4.17E-04	3.29E-05	4.69E-05
2016 Annual	Mon-Sun	2265002030	Trenchers	G4	50	Constructii	U	P	NHH	NP	Total	Total	Total	2.91E+00	3.20E+00	7.10E+00	2.18E-04	8.18E-03	3.10E-04	5.48E-02	6.66E-07	4.20E-06	1.51E-05	1.21E-05
2016 Annual	Mon-Sun	2265002030	Trenchers	G4	120	Constructii	U	P	NHH	NP	Total	Total	Total	9.65E-01	1.06E+00	4.48E+00	9.74E-05	2.12E-03	2.71E-04	3.95E-02	3.82E-07	3.06E-06	7.79E-06	5.42E-06
2016 Annual	Mon-Sun	2265002033	Bore/Drill Rigs	G4	15	Constructii	U	P	NHH	P	Total	Total	Total	2.35E-01	7.99E-02	6.22E-02	4.52E-06	1.81E-04	3.36E-06	2.99E-04	8.52E-09	2.51E-06	2.59E-07	2.51E-07
2016 Annual	Mon-Sun	2265002033	Bore/Drill Rigs	G4	25	Constructii	U	P	NHH	NP	Total	Total	Total	1.17E+00	3.97E-01	5.73E-01	4.27E-05	1.71E-03	2.78E-05	2.67E-03	6.78E-08	2.24E-05	1.69E-06	2.37E-06
2016 Annual	Mon-Sun	2265002033	Bore/Drill Rigs	G4	50	Constructii	U	P	NHH	P	Total	Total	Total	1.41E-01	4.12E-02	1.09E-01	2.50E-06	8.77E-05	4.46E-06	9.00E-04	1.09E-08	6.90E-08	2.02E-07	1.39E-07
2016 Annual	Mon-Sun	2265002033	Bore/Drill Rigs	G4	120	Constructii	U	P	NHH	P	Total	Total	Total	6.45E-01	1.89E-01	1.24E+00	1.90E-05	3.95E-04	7.13E-05	1.12E-02	1.09E-07	8.71E-07	1.66E-06	1.06E-06
2016 Annual	Mon-Sun	2265002033	Bore/Drill Rigs	G4	175	Constructii	U	P	NHH	P	Total	Total	Total	1.60E-01	4.69E-02	4.24E-01	3.86E-06	1.28E-04	2.79E-05	3.87E-03	3.85E-08	3.09E-07	5.23E-07	2.15E-07
2016 Annual	Mon-Sun	2265002039	Concrete/Industrial Saws	G4	5	Constructii	U	P	NHH	NP	Total	Total	Total	4.31E+00	1.54E+00	4.13E-01	5.33E-05	9.64E-04	2.41E-05	2.27E-03	7.84E-08	7.40E-07	2.94E-06	2.96E-06
2016 Annual	Mon-Sun	2265002039	Concrete/Industrial Saws	G4	15	Constructii	U	P	NHH	NP	Total	Total	Total	1.94E+01	1.65E+01	1.14E+01	8.58E-04	3.31E-02	6.39E-04	5.48E-02	1.56E-06	4.59E-04	5.13E-05	4.78E-05
2016 Annual	Mon-Sun	2265002039	Concrete/Industrial Saws	G4	25	Constructii	U	P	NHH	NP	Total	Total	Total	6.07E+00	5.16E+00	6.95E+00	5.36E-04	2.08E-02	3.49E-04	3.24E-02	8.21E-07	2.71E-04	2.16E-05	2.98E-05
2016 Annual	Mon-Sun	2265002039	Concrete/Industrial Saws	G4	50	Constructii	U	P	NHH	NP	Total	Total	Total	5.24E-01	8.76E-01	2.44E+00	2.58E-05	1.75E-03	3.81E-05	2.07E-02	2.51E-07	1.58E-06	2.90E-06	1.44E-06
2016 Annual	Mon-Sun	2265002039	Concrete/Industrial Saws	G4	120	Constructii	U	P	NHH	NP	Total	Total	Total	3.00E-01	5.02E-01	2.37E+00	1.06E-05	4.77E-04	2.44E-05	2.21E-02	2.13E-07	1.71E-06	1.76E-06	5.90E-07
2016 Annual	Mon-Sun	2265002042	Cement and Mortar Mixers	G4	5	Constructii	U	P	NHH	NP	Total	Total	Total	7.83E+01	1.98E+01	5.07E+00	6.36E-04	1.20E-02	2.87E-04	2.76E-02	9.53E-07	8.99E-06	3.64E-05	3.54E-05
2016 Annual	Mon-Sun	2265002042	Cement and Mortar Mixers	G4	15	Constructii	U	P	NHH	NP	Total	Total	Total	1.33E+02	3.35E+01	1.60E+01	1.32E-03	4.72E-02	8.13E-04	7.48E-02	2.13E-06	6.23E-04	8.09E-05	7.34E-05
2016 Annual	Mon-Sun	2265002042	Cement and Mortar Mixers	G4	25	Constructii	U	P	NHH	NP	Total	Total	Total	5.58E-01	1.41E-01	2.14E-01	1.75E-05	6.48E-04	9.81E-06	9.84E-04	2.49E-08	8.20E-06	5.96E-07	9.74E-07
2016 Annual	Mon-Sun	2265002045	Cranes	G4	50	Constructii	U	P	NHH	P	Total	Total	Total	1.60E-01	1.82E-01	3.55E-01	1.10E-05	4.14E-04	1.55E-05	2.73E-03	3.32E-08	2.09E-07	8.00E-07	6.12E-07
2016 Annual	Mon-Sun	2265002045	Cranes	G4	120	Constructii	U	P	NHH	P	Total	Total	Total	3.19E-01	3.64E-01	1.22E+00	2.69E-05	5.88E-04	7.43E-05	1.08E-02	1.04E-07	8.36E-07	2.37E-06	1.50E-06
2016 Annual	Mon-Sun	2265002045	Cranes	G4	175	Constructii	U	P	NHH	P	Total	Total	Total	1.28E-02	1.45E-02	7.81E-02	9.26E-07	2.61E-05	5.65E-06	7.09E-04	7.05E-09	5.65E-08	1.33E-07	5.15E-08
2016 Annual	Mon-Sun	2265002054	Crushing/Proc. Equipment	G4	15	Constructii	U	P	NHH	P	Total	Total	Total	2.13E-01	1.69E-01	1.27E-01	9.53E-06	3.69E-04	7.10E-06	6.11E-04	1.74E-08	5.13E-06	5.48E-07	5.30E-07
2016 Annual	Mon-Sun	2265002054	Crushing/Proc. Equipment	G4	25	Constructii	U	P	NHH	P	Total	Total	Total	1.40E-01	1.11E-01	1.53E-01	1.17E-05	4.57E-04	7.64E-06	7.12E-04	1.81E-08	5.97E-06	4.68E-07	6.52E-07
2016 Annual	Mon-Sun	2265002054	Crushing/Proc. Equipment	G4	120	Constructii	U	P	NHH	P	Total	Total	Total	1.85E-01	1.22E-01	9.51E-01	1.74E-05	3.71E-04	5.61E-05	8.53E-03	8.24E-08	6.61E-07	1.21E-06	9.69E-07
2016 Annual	Mon-Sun	2265002057	Rough Terrain Forklifts	G4	50	Constructii	U	P	NHH	NP	Total	Total	Total	6.39E-02	7.24E-02	2.40E-01	7.44E-06	2.80E-04	1.05E-05	1.85E-03	2.25E-08	1.42E-07	4.23E-07	4.14E-07
2016 Annual	Mon-Sun	2265002057	Rough Terrain Forklifts	G4	120	Constructii	U	P	NHH	NP	Total	Total	Total	9.07E-01	1.03E+00	5.33E+00	1.17E-04	2.55E-03	3.23E-04	4.70E-02	4.54E-07	3.64E-06	8.42E-06	6.51E-06
2016 Annual	Mon-Sun	2265002057	Rough Terrain Forklifts																					

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2016 Annual	Mon-Sun	2265004030	Leaf Blowers/Vacuums	G4	5	Lawn and C	N	NHH	P	Total	Total	Total	5.38E+01	9.15E+00	6.09E-01	4.54E-05	1.64E-03	1.13E-05	3.12E-03	1.08E-07	7.32E-06	4.52E-06	2.53E-06
2016 Annual	Mon-Sun	2265004030	Leaf Blowers/Vacuums	G4	5	Lawn and R	N	NHH	P	Total	Total	Total	4.62E+01	6.08E-01	4.47E-02	3.70E-06	1.34E-04	9.59E-07	2.07E-04	7.15E-09	4.14E-07	3.31E-07	2.06E-07
2016 Annual	Mon-Sun	2265004035	Snowblowers	G4	5	Lawn and C	N	NHH	P	Total	Total	Total	1.47E+02	1.74E+01	2.35E+00	1.38E-04	6.75E-03	3.35E-05	1.16E-02	3.99E-07	2.32E-05	1.09E-05	7.66E-06
2016 Annual	Mon-Sun	2265004035	Snowblowers	G4	5	Lawn and R	N	NHH	P	Total	Total	Total	1.32E+02	6.58E+00	9.53E-01	6.78E-05	2.91E-03	1.80E-05	4.36E-03	1.51E-07	7.96E-06	4.81E-06	3.77E-06
2016 Annual	Mon-Sun	2265004035	Snowblowers	G4	15	Lawn and C	N	NHH	P	Total	Total	Total	1.11E+02	1.32E+01	4.03E+00	1.40E-04	1.19E-02	1.03E-04	1.97E-02	5.61E-07	6.85E-06	1.75E-05	7.77E-06
2016 Annual	Mon-Sun	2265004035	Snowblowers	G4	15	Lawn and R	N	NHH	P	Total	Total	Total	1.00E+03	4.98E+00	1.56E+00	6.75E-05	4.67E-03	4.61E-05	7.43E-03	2.12E-07	2.48E-06	7.17E-06	3.76E-06
2016 Annual	Mon-Sun	2265004035	Snowblowers	G4	25	Lawn and C	N	NHH	P	Total	Total	Total	3.36E-01	3.99E-02	2.23E-02	7.79E-07	6.77E-05	5.20E-07	1.06E-04	2.68E-09	3.68E-08	6.94E-08	4.33E-08
2016 Annual	Mon-Sun	2265004035	Snowblowers	G4	25	Lawn and R	N	NHH	P	Total	Total	Total	2.91E+00	1.45E-02	8.27E-03	3.58E-07	2.55E-05	2.17E-07	3.84E-05	9.74E-10	1.28E-08	2.70E-08	1.99E-08
2016 Annual	Mon-Sun	2265004040	Rear Engine Riding Mowers	G4	15	Lawn and C	N	NHH	NP	Total	Total	Total	6.33E+02	4.71E+02	1.57E+02	7.34E-03	4.60E-01	5.32E-03	7.62E-01	2.17E-05	3.54E-04	7.58E-04	4.09E-04
2016 Annual	Mon-Sun	2265004040	Rear Engine Riding Mowers	G4	15	Lawn and R	N	NHH	NP	Total	Total	Total	5.55E+02	4.29E+01	1.43E+01	6.21E-04	4.21E-02	4.44E-04	6.94E-02	1.98E-06	2.77E-05	6.56E-05	3.46E-05
2016 Annual	Mon-Sun	2265004040	Rear Engine Riding Mowers	G4	25	Lawn and C	N	NHH	NP	Total	Total	Total	2.89E+00	2.15E+00	1.39E+00	6.30E-05	4.22E-03	4.64E-05	6.58E-03	1.67E-07	3.05E-06	4.89E-06	3.51E-06
2016 Annual	Mon-Sun	2265004040	Rear Engine Riding Mowers	G4	25	Lawn and R	N	NHH	NP	Total	Total	Total	2.50E+00	1.93E-01	1.25E-01	5.39E-06	3.79E-04	3.62E-06	5.90E-04	1.50E-08	2.36E-07	4.05E-07	3.00E-07
2016 Annual	Mon-Sun	2265004045	Front Mowers	G4	15	Lawn and C	N	NHH	NP	Total	Total	Total	2.90E+01	2.16E+01	1.15E+01	5.37E-04	3.37E-02	3.89E-04	5.57E-02	1.59E-06	2.59E-05	4.46E-05	2.99E-05
2016 Annual	Mon-Sun	2265004045	Front Mowers	G4	15	Lawn and R	N	NHH	NP	Total	Total	Total	9.38E+02	7.25E+01	3.86E+01	1.68E-03	1.14E-01	1.20E-03	1.87E-01	5.34E-06	7.48E-05	1.42E-04	9.33E-05
2016 Annual	Mon-Sun	2265004045	Front Mowers	G4	25	Lawn and C	N	NHH	NP	Total	Total	Total	2.27E+01	1.69E+01	1.21E+01	5.47E-04	3.66E-02	4.03E-04	5.71E-02	1.45E-06	2.65E-05	4.05E-05	3.04E-05
2016 Annual	Mon-Sun	2265004045	Front Mowers	G4	25	Lawn and R	N	NHH	NP	Total	Total	Total	7.35E+02	5.68E+01	4.06E+01	1.75E-03	1.23E-01	1.18E-03	1.92E-01	4.86E-06	7.66E-05	1.26E-04	9.75E-05
2016 Annual	Mon-Sun	2265004050	Shredders	G4	5	Lawn and C	P	NHH	NP	Total	Total	Total	2.28E+01	8.47E+00	3.22E+00	3.05E-04	5.35E-03	1.38E-04	1.28E-02	4.43E-07	4.18E-06	1.66E-05	1.70E-05
2016 Annual	Mon-Sun	2265004050	Shredders	G4	5	Lawn and R	P	NHH	NP	Total	Total	Total	8.47E+02	2.09E+00	7.01E-01	6.12E-05	2.15E-03	2.22E-05	3.16E-03	1.09E-07	4.00E-06	3.26E-06	3.40E-06
2016 Annual	Mon-Sun	2265004055	Lawn & Garden Tractors	G4	15	Lawn and C	N	NHH	NP	Total	Total	Total	1.16E+02	4.09E+01	2.62E+01	1.03E-03	7.71E-02	7.55E-04	1.28E-01	3.64E-06	5.01E-05	8.56E-05	5.73E-05
2016 Annual	Mon-Sun	2265004055	Lawn & Garden Tractors	G4	15	Lawn and R	N	NHH	NP	Total	Total	Total	7.54E+02	3.01E+01	1.93E+01	7.58E-04	5.70E-02	5.51E-04	9.42E-02	2.69E-06	3.43E-05	6.25E-05	4.22E-05
2016 Annual	Mon-Sun	2265004055	Lawn & Garden Tractors	G4	25	Lawn and C	N	NHH	NP	Total	Total	Total	4.58E+01	1.61E+01	1.64E+01	6.39E-04	4.99E-02	4.47E-04	7.78E-02	1.97E-06	3.05E-05	4.19E-05	3.56E-05
2016 Annual	Mon-Sun	2265004055	Lawn & Garden Tractors	G4	25	Lawn and R	N	NHH	NP	Total	Total	Total	2.97E+02	1.19E+01	1.21E+01	4.77E-04	3.69E-02	3.16E-04	5.74E-02	1.46E-06	2.09E-05	3.01E-05	2.66E-05
2016 Annual	Mon-Sun	2265004055	Lawn & Garden Tractors	G4	50	Lawn and U	N	NHH	NP	Total	Total	Total	6.62E-01	1.89E-01	2.90E-01	4.38E-06	2.13E-04	8.61E-06	2.44E-03	2.97E-08	1.87E-07	6.07E-07	2.43E-07
2016 Annual	Mon-Sun	2265004060	Wood Splitters	G4	5	Lawn and C	N	NHH	NP	Total	Total	Total	3.90E+01	1.37E+01	4.05E+00	4.32E-04	9.55E-03	1.10E-04	2.24E-02	7.74E-07	6.59E-05	1.83E-05	2.40E-05
2016 Annual	Mon-Sun	2265004060	Wood Splitters	G4	5	Lawn and R	N	NHH	NP	Total	Total	Total	9.74E+02	2.94E+00	1.05E+00	7.17E-05	3.20E-03	2.02E-05	4.79E-03	1.66E-07	8.57E-06	3.50E-06	3.99E-06
2016 Annual	Mon-Sun	2265004065	Chippers/Stump Grinders	G4	15	Lawn and C	P	NHH	P	Total	Total	Total	5.49E-01	1.90E+00	1.62E+00	1.28E-04	4.73E-03	9.51E-05	7.71E-03	2.20E-07	6.47E-05	6.75E-06	7.06E-06
2016 Annual	Mon-Sun	2265004065	Chippers/Stump Grinders	G4	15	Lawn and R	P	NHH	P	Total	Total	Total	9.81E-01	4.43E-02	3.88E-02	2.74E-06	1.17E-04	1.55E-06	1.80E-04	5.14E-09	1.43E-06	1.30E-07	1.53E-07
2016 Annual	Mon-Sun	2265004065	Chippers/Stump Grinders	G4	25	Lawn and C	P	NHH	P	Total	Total	Total	3.12E+00	1.08E+01	1.55E+01	1.26E-03	4.67E-02	8.17E-04	7.17E-02	1.82E-06	6.01E-04	4.78E-05	6.93E-05
2016 Annual	Mon-Sun	2265004065	Chippers/Stump Grinders	G4	25	Lawn and R	P	NHH	P	Total	Total	Total	5.55E+00	2.51E-01	3.67E-01	2.51E-05	1.13E-03	1.31E-05	1.67E-03	4.23E-08	1.33E-05	9.14E-07	1.40E-06
2016 Annual	Mon-Sun	2265004070	Commercial Turf Equipment	G4	15	Lawn and C	N	NHH	NP	Total	Total	Total	4.11E+01	9.00E+01	4.85E+01	2.76E-03	1.42E-01	1.97E-03	2.34E-01	6.68E-06	1.31E-04	2.06E-04	1.53E-04
2016 Annual	Mon-Sun	2265004070	Commercial Turf Equipment	G4	25	Lawn and C	N	NHH	NP	Total	Total	Total	2.02E+01	4.43E+01	4.25E+01	2.28E-03	1.28E-01	1.76E-03	1.99E-01	5.05E-06	1.11E-04	1.39E-04	1.26E-04
2016 Annual	Mon-Sun	2265004070	Commercial Turf Equipment	G4	50	Lawn and U	N	NHH	NP	Total	Total	Total	8.16E+00	1.64E+01	2.75E+01	6.15E-04	4.13E-02	1.08E-03	1.98E-01	2.41E-06	1.52E-05	6.54E-05	3.42E-05
2016 Annual	Mon-Sun	2265004070	Commercial Turf Equipment	G4	120	Lawn and U	N	NHH	NP	Total	Total	Total	5.40E-02	1.08E-01	1.21E-06	6.58E-05	7.24E-06	2.45E-03	2.37E-08	1.90E-07	4.51E-07	6.72E-08	6.72E-08
2016 Annual	Mon-Sun	2265004075	Other Lawn & Garden Equipment	G4	5	Lawn and C	N	NHH	NP	Total	Total	Total	3.61E+01	6.78E+00	1.40E+00	1.25E-04	3.56E-03	3.16E-05	7.44E-03	2.57E-07	1.96E-05	6.77E-06	6.97E-06
2016 Annual	Mon-Sun	2265004075	Other Lawn & Garden Equipment	G4	5	Lawn and R	N	NHH	NP	Total	Total	Total	1.11E+01	1.30E+01	3.09E+00	2.50E-04	9.28E-03	6.54E-05	1.43E-02	4.94E-07	2.82E-05	1.32E-05	1.39E-05
2016 Annual	Mon-Sun	2265004075	Other Lawn & Garden Equipment	G4	15	Lawn and C	N	NHH	NP	Total	Total	Total	1.60E+01	3.01E+00	1.36E+00	5.40E-05	3.99E-03	3.95E-05	6.61E-03	1.89E-07	2.63E-06	5.26E-06	3.01E-06
2016 Annual	Mon-Sun	2265004075	Other Lawn & Garden Equipment	G4	15	Lawn and R	N	NHH	NP	Total	Total	Total	4.91E+02	5.78E+00	2.67E+00	1.24E-04	7.99E-03	8.15E-05	1.27E-02	3.62E-07	4.38E-06	1.04E-05	6.87E-06
2016 Annual	Mon-Sun	2265004075	Other Lawn & Garden Equipment	G4	25	Lawn and C	N	NHH	NP	Total	Total	Total	3.39E-01	6.36E-02	6.27E-02	2.47E-06	1.90E-04	1.73E-06	2.97E-04	7.52E-09	1.18E-07	1.64E-07	1.37E-07
2016 Annual	Mon-Sun	2265004075	Other Lawn & Garden Equipment	G4	25	Lawn and R	N	NHH	NP	Total	Total	Total	1.04E+01	1.23E-01	1.24E-01	5.68E-06	3.80E-04	3.36E-06	5.74E-04	1.45E-08	1.98E-07	3.16E-07	3.16E-07
2016 Annual	Mon-Sun	2265004075	Other Lawn & Garden Equipment	G4	50	Lawn and U	N	NHH	NP	Total	Total	Total	2.45E-02	4.10E-03	8.73E-03	1.48E-07	6.25E-06	3.00E-07	7.39E-05	8.98E-10	5.66E-09	1.67E-08	8.26E-09
2016 Annual	Mon-Sun	2265004075	Other Lawn & Garden Equipment	G4	120	Lawn and U	N	NHH	NP	Total	Total	Total	5.89E-02	9.84E-03	5.40E-02	5.59E-07	1.42E-05	2.70E-06	4.97E-04	4.80E-09	3.85E-08	8.03E-08	3.11E-08
2016 Annual	Mon-Sun	2265005010	2-Wheel Tractors	G4	5	Agricultura U	P	NHH	NP	Total	Total	Total	8.70E+00	3.82E+00	7.96E-01	1.10E-04	1.77E-03	4.98E-05	4.48E-03	1.55E-07	1.46E-06	6.64E-06	6.13E-06
2016 Annual	Mon-Sun	2265005010	2-Wheel Tractors	G4	15	Agricultura U	P	NHH	NP	Total	Total	Total	1.01E+01	9.22E+00	4.51E+00	3.41E-04	1.31E-02	2.54E-04	2.17E-02	6.17E-07	1.82E-04	2.39E-05	1.90E-05
2016 Annual	Mon-Sun	2265005010	2-Wheel Tractors	G4	25	Agricultura U	P	NHH	NP	Total	Total	Total	2.72E-01	2.47E-01	2.49E-01	1.93E-05	7.45E-04	1.26E-05	1.16E-03	2.95E-08	9.74E-06	8.90E-07	1.08E-06
2016 Annual	Mon-Sun	2265005015	Agricultural Tractors	G4	120	Agricultura U	P	NHH	NP	Total	Total	Total	3.32E+00	5.01E+00	2.50E+01	6.20E-04	1.37E-02	1.55E-03	2.18E-01	2.10E-06	1.69E-05	4.11E-05	3.45E-05
2016 Annual	Mon-Sun	2265005015	Agricultural Tractors	G4	175	Agricultura U	P	NHH	NP	Total	Total	Total	4.55E-01	6.87E-01	4.88E+00	6.37E-05	1.70E						

Year	Day	Activity ID	Activity Name	Category	Phase	Level	Mode	Phase	Phase	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total			
2016	Annual	Mon-Sun	2265006010	Pumps	G4	5	Light Comr C	P	NHH	P	Total	Total	Total	6.66E+01	4.71E+01	7.78E+00	1.26E-03	1.53E-02	5.61E-04	4.61E-02	1.59E-06	1.83E-05	7.81E-05	7.01E-05
2016	Annual	Mon-Sun	2265006010	Pumps	G4	5	Light Comr R	P	NHH	P	Total	Total	Total	5.24E+01	2.49E+01	4.36E+00	7.55E-04	9.40E-03	2.86E-04	2.44E-02	8.42E-07	2.22E-05	4.04E-05	4.20E-05
2016	Annual	Mon-Sun	2265006010	Pumps	G4	15	Light Comr C	P	NHH	P	Total	Total	Total	7.22E+01	5.10E+01	2.78E+01	2.13E-03	8.05E-02	1.59E-03	1.33E-01	3.80E-06	1.12E-03	1.41E-04	1.19E-04
2016	Annual	Mon-Sun	2265006010	Pumps	G4	15	Light Comr R	P	NHH	P	Total	Total	Total	5.67E+01	2.70E+01	1.48E+01	1.17E-03	4.31E-02	8.18E-04	7.04E-02	2.01E-06	5.90E-04	7.35E-05	6.51E-05
2016	Annual	Mon-Sun	2265006010	Pumps	G4	25	Light Comr C	P	NHH	P	Total	Total	Total	1.85E+01	1.31E+01	1.56E+01	1.21E-03	4.65E-02	7.91E-04	7.26E-02	1.84E-06	6.08E-04	5.15E-05	6.75E-05
2016	Annual	Mon-Sun	2265006010	Pumps	G4	25	Light Comr R	P	NHH	P	Total	Total	Total	1.45E+01	6.90E+00	8.23E+00	6.38E-04	2.46E-02	4.13E-04	3.83E-02	9.72E-07	3.21E-04	2.70E-05	3.55E-05
2016	Annual	Mon-Sun	2265006010	Pumps	G4	50	Light Comr U	P	NHH	P	Total	Total	Total	7.38E+00	4.46E+00	1.00E+01	1.74E-04	8.54E-03	2.77E-04	8.24E-02	1.00E-06	6.31E-06	1.66E-05	9.71E-06
2016	Annual	Mon-Sun	2265006010	Pumps	G4	120	Light Comr U	P	NHH	P	Total	Total	Total	9.35E+00	5.65E+00	3.38E+01	3.49E-04	9.84E-03	1.09E-03	3.10E-01	2.99E-06	2.40E-05	3.47E-05	1.94E-05
2016	Annual	Mon-Sun	2265006010	Pumps	G4	175	Light Comr U	P	NHH	P	Total	Total	Total	2.82E-01	1.70E-01	1.54E+00	9.94E-06	4.76E-04	5.61E-05	1.41E-02	1.40E-07	1.12E-06	1.38E-06	5.53E-07
2016	Annual	Mon-Sun	2265006015	Air Compressors	G4	5	Light Comr C	P	NHH	P	Total	Total	Total	2.41E+01	3.73E+01	8.25E+00	1.34E-03	1.60E-02	6.06E-04	4.94E-02	1.71E-06	1.61E-05	7.30E-05	7.47E-05
2016	Annual	Mon-Sun	2265006015	Air Compressors	G4	5	Light Comr R	P	NHH	P	Total	Total	Total	1.89E+01	1.97E+01	4.36E+00	7.09E-04	8.44E-03	3.20E-04	2.61E-02	9.01E-07	8.51E-06	3.86E-05	3.95E-05
2016	Annual	Mon-Sun	2265006015	Air Compressors	G4	15	Light Comr C	P	NHH	P	Total	Total	Total	1.22E+01	1.89E+01	7.30E+00	5.76E-04	4.29E-04	3.50E-02	9.98E-07	2.93E-04	4.41E-05	3.20E-05	3.20E-05
2016	Annual	Mon-Sun	2265006015	Air Compressors	G4	15	Light Comr R	P	NHH	P	Total	Total	Total	9.58E+00	9.97E+00	3.85E+00	2.97E-04	1.12E-02	2.21E-04	1.85E-02	5.27E-07	1.55E-04	2.30E-05	1.65E-05
2016	Annual	Mon-Sun	2265006015	Air Compressors	G4	25	Light Comr C	P	NHH	P	Total	Total	Total	1.64E+00	2.54E+00	2.46E+00	1.99E-04	7.35E-03	1.30E-04	1.15E-02	2.90E-07	9.60E-05	9.16E-06	1.11E-05
2016	Annual	Mon-Sun	2265006015	Air Compressors	G4	25	Light Comr R	P	NHH	P	Total	Total	Total	1.29E+00	1.34E+00	1.30E+00	1.03E-04	3.89E-03	6.74E-05	6.06E-03	1.54E-07	5.08E-05	4.80E-06	5.75E-06
2016	Annual	Mon-Sun	2265006015	Air Compressors	G4	50	Light Comr U	P	NHH	P	Total	Total	Total	2.80E+00	3.71E+00	8.22E+00	2.47E-04	9.90E-03	3.28E-04	6.29E-02	7.64E-07	4.82E-06	1.66E-05	1.38E-05
2016	Annual	Mon-Sun	2265006015	Air Compressors	G4	120	Light Comr U	P	NHH	P	Total	Total	Total	9.10E+00	1.20E+01	4.58E+01	9.65E-04	2.21E-02	2.48E-03	4.03E-01	3.89E-06	3.12E-05	7.82E-05	5.37E-05
2016	Annual	Mon-Sun	2265006015	Air Compressors	G4	175	Light Comr U	P	NHH	P	Total	Total	Total	6.12E-01	8.10E-01	5.56E+00	6.31E-05	1.87E-03	3.59E-04	5.05E-02	5.02E-07	4.02E-06	7.87E-06	3.51E-06
2016	Annual	Mon-Sun	2265006025	Welders	G4	15	Light Comr C	P	NHH	P	Total	Total	Total	4.71E+01	2.68E+01	1.50E+01	1.23E-03	4.40E-02	8.30E-04	7.12E-02	2.03E-06	5.95E-04	7.39E-05	6.85E-05
2016	Annual	Mon-Sun	2265006025	Welders	G4	25	Light Comr C	P	NHH	P	Total	Total	Total	1.70E+01	9.69E+01	8.55E+01	6.78E-03	2.56E-01	4.32E-03	3.98E-01	1.01E-05	3.33E-03	3.24E-04	3.77E-04
2016	Annual	Mon-Sun	2265006025	Welders	G4	50	Light Comr U	P	NHH	P	Total	Total	Total	1.47E+01	8.34E+00	2.03E+01	4.80E-04	1.82E-02	7.70E-04	1.65E-01	2.01E-06	1.27E-05	3.78E-05	2.67E-05
2016	Annual	Mon-Sun	2265006025	Welders	G4	120	Light Comr U	P	NHH	P	Total	Total	Total	1.50E+01	8.51E+00	2.87E+01	4.52E-04	9.95E-03	1.47E-03	2.59E-01	2.51E-06	2.01E-05	4.91E-05	2.52E-05
2016	Annual	Mon-Sun	2265006025	Welders	G4	175	Light Comr U	P	NHH	P	Total	Total	Total	1.03E+00	5.87E-01	3.54E+00	3.19E-05	1.09E-03	2.09E-04	3.23E-02	3.21E-07	2.57E-06	4.96E-06	1.77E-06
2016	Annual	Mon-Sun	2265006030	Pressure Washers	G4	5	Light Comr C	N	NHH	P	Total	Total	Total	5.05E+01	1.86E+01	6.39E+00	9.05E-04	1.33E-02	2.45E-04	3.73E-02	1.29E-06	1.27E-04	3.22E-05	5.04E-05
2016	Annual	Mon-Sun	2265006030	Pressure Washers	G4	5	Light Comr R	N	NHH	P	Total	Total	Total	3.97E+01	9.81E+00	3.62E+00	5.84E-04	8.27E-03	1.50E-04	1.97E-02	6.81E-07	6.68E-05	1.83E-05	3.25E-05
2016	Annual	Mon-Sun	2265006030	Pressure Washers	G4	15	Light Comr C	N	NHH	P	Total	Total	Total	4.50E+01	1.66E+01	9.69E+00	5.80E-04	2.84E-02	3.98E-04	4.66E-02	1.33E-06	2.45E-05	3.97E-05	3.23E-05
2016	Annual	Mon-Sun	2265006030	Pressure Washers	G4	15	Light Comr R	N	NHH	P	Total	Total	Total	3.54E+01	8.75E+00	5.25E+00	3.87E-04	1.56E-02	2.19E-04	2.46E-02	7.03E-07	1.29E-05	2.14E-05	2.15E-05
2016	Annual	Mon-Sun	2265006030	Pressure Washers	G4	25	Light Comr C	N	NHH	P	Total	Total	Total	8.46E+00	3.11E+00	4.79E+00	2.60E-04	1.45E-02	1.89E-04	2.25E-02	5.71E-07	1.18E-05	1.22E-05	1.45E-05
2016	Annual	Mon-Sun	2265006030	Pressure Washers	G4	25	Light Comr R	N	NHH	P	Total	Total	Total	6.64E+00	1.64E+00	2.57E+00	1.72E-04	7.82E-03	1.02E-04	1.19E-02	3.02E-07	6.18E-06	6.51E-06	9.59E-06
2016	Annual	Mon-Sun	2265006030	Pressure Washers	G4	50	Light Comr U	P	NHH	P	Total	Total	Total	8.25E-01	2.60E-01	6.53E-01	1.02E-05	4.71E-04	1.75E-05	5.53E-03	6.72E-08	4.23E-07	1.00E-06	5.69E-07
2016	Annual	Mon-Sun	2265007010	Shredders	G4	15	Logging Eq U	P	NHH	NP	Total	Total	Total	1.21E+03	8.02E+02	5.05E+02	3.73E-02	1.47E+00	2.78E-02	2.43E+00	6.92E-05	2.04E-02	2.35E-03	2.07E-03
2016	Annual	Mon-Sun	2265008010	Cargo Tractor	G4	120	Airport Grc U	N	NHH	NP	Total	Total	Total	8.20E-01	3.03E+00	1.57E+01	2.14E-04	1.15E-02	7.10E-04	1.33E-01	1.10E-06	1.03E-05	2.37E-05	1.19E-05
2016	Annual	Mon-Sun	2265008015	A/C Tug Narrow Body	G4	175	Airport Grc U	N	NHH	NP	Total	Total	Total	7.82E-02	1.56E-01	1.49E+00	1.49E-05	5.33E-04	9.10E-05	1.35E-02	1.34E-07	1.07E-06	1.92E-06	8.28E-07
2016	Annual	Mon-Sun	2265008020	A/C Tug Wide Body	G4	500	Airport Grc U	N	NHH	NP	Total	Total	Total	2.58E-02	3.64E-02	1.29E+00	4.55E-06	4.20E-04	3.84E-05	1.18E-02	1.20E-07	9.64E-07	6.58E-07	2.53E-07
2016	Annual	Mon-Sun	2265008025	Air Conditioner	G4	175	Airport Grc U	N	NHH	P	Total	Total	Total	2.47E-03	1.49E-04	1.32E-03	7.46E-09	3.84E-07	6.64E-08	1.21E-05	1.20E-10	9.61E-10	1.58E-09	4.15E-10
2016	Annual	Mon-Sun	2265008030	Air Start Unit	G4	175	Airport Grc U	N	NHH	P	Total	Total	Total	5.68E-02	1.18E-02	1.25E-01	7.50E-07	3.70E-05	6.39E-06	1.14E-03	1.13E-08	9.09E-08	1.39E-07	4.17E-08
2016	Annual	Mon-Sun	2265008035	Baggage Tug	G4	120	Airport Grc U	N	NHH	NP	Total	Total	Total	1.05E+00	2.53E+00	1.32E+01	7.35E-05	4.94E-03	3.96E-04	1.19E-01	1.15E-06	9.21E-06	1.65E-05	4.08E-06
2016	Annual	Mon-Sun	2265008040	Belt Loader	G4	120	Airport Grc U	N	NHH	NP	Total	Total	Total	4.98E-01	1.11E+00	3.63E+00	1.83E-05	1.23E-03	9.65E-05	2.84E-02	2.74E-07	2.20E-06	5.29E-06	1.02E-06
2016	Annual	Mon-Sun	2265008045	Bobtail	G4	120	Airport Grc U	N	NHH	NP	Total	Total	Total	1.69E-01	4.07E-01	2.12E+00	1.18E-05	7.95E-04	6.37E-05	1.91E-02	1.85E-07	1.48E-06	2.66E-06	6.56E-07
2016	Annual	Mon-Sun	2265008050	Cargo Loader	G4	120	Airport Grc U	N	NHH	NP	Total	Total	Total	1.33E-01	2.62E-01	8.68E-01	5.41E-06	3.41E-04	2.74E-05	7.82E-03	7.56E-08	6.06E-07	1.37E-06	3.01E-07
2016	Annual	Mon-Sun	2265008055	Cart	G4	15	Airport Grc U	N	NHH	NP	Total	Total	Total	4.52E-02	1.86E-02	1.09E-02	5.57E-07	3.19E-05	4.01E-07	5.29E-05	1.51E-09	2.67E-08	4.23E-08	3.10E-08
2016	Annual	Mon-Sun	2265008060	Deicer	G4	120	Airport Grc U	N	NHH	NP	Total	Total	Total	6.43E-02	3.88E-03	3.16E-02	2.81E-07	7.26E-06	1.46E-06	2.93E-04	2.83E-09	2.27E-08	3.76E-08	1.56E-08
2016	Annual	Mon-Sun	2265008065	Forklift	G4	50	Airport Grc U	N	NHH	NP	Total	Total	Total	1.25E-01	2.50E-01	4.08E-01	5.13E-06	4.36E-04	1.05E-05	3.24E-03	3.94E-08	2.48E-07	8.05E-07	2.85E-07
2016	Annual	Mon-Sun	2265008070	Fuel Truck	G4	175	Airport Grc U	N	NHH	NP	Total	Total	Total	7.75E-02	4.68E-03	1.38E-02	7.80E-08	4.01E-06	7.01E-07	1.26E-04	1.25E-09	1.01E-08	2.77E-08	4.34E-09
2016	Annual	Mon-Sun	2265008075	Ground Power Unit	G																			

Shasta Lake Water Resources Investigation

Year	Day	Equipment ID	Equipment Name	Category	Qty	Unit	N	NHH	NP	Total	Total	Total	3.81E-03	2.91E-03	7.18E-03	3.44E-09	5.95E-07	2.53E-07	4.96E-05	0.00E+00	4.41E-09	0.00E+00	2.89E-08
2016	Annual	Mon-Sun	2266008102 Sweeper	C4	50	Airport Grc U	N	NHH	NP	Total	Total	Total	3.81E-03	2.91E-03	7.18E-03	3.44E-09	5.95E-07	2.53E-07	4.96E-05	0.00E+00	4.41E-09	0.00E+00	2.89E-08
2016	Annual	Mon-Sun	2266008105 Service Truck	C4	250	Airport Grc U	N	NHH	NP	Total	Total	Total	4.37E-02	1.56E-01	6.26E-01	3.45E-07	1.47E-04	1.73E-05	4.17E-03	0.00E+00	3.71E-07	0.00E+00	2.89E-06
2016	Annual	Mon-Sun	2266008106 Catering Truck	C4	250	Airport Grc U	N	NHH	NP	Total	Total	Total	1.67E-02	2.07E-02	2.44E-01	1.26E-07	4.87E-05	8.64E-06	1.64E-03	0.00E+00	1.46E-07	0.00E+00	1.05E-06
2016	Annual	Mon-Sun	2270002003 Pavers	D	25	Constructii U	P	NHH	NP	Total	Total	Total	1.26E-01	2.83E-01	2.40E-01	3.25E-06	1.10E-05	2.05E-05	2.64E-03	3.35E-08	8.69E-07	0.00E+00	2.94E-07
2016	Annual	Mon-Sun	2270002003 Pavers	D	50	Constructii U	P	NHH	NP	Total	Total	Total	7.31E+00	1.67E+01	2.17E+01	9.30E-04	2.78E-03	2.24E-03	2.33E-01	3.01E-06	2.10E-04	0.00E+00	8.39E-05
2016	Annual	Mon-Sun	2270002003 Pavers	D	120	Constructii U	P	NHH	NP	Total	Total	Total	8.62E+00	1.97E+01	6.23E+01	1.14E-03	4.84E-03	6.90E-03	6.80E-01	7.97E-06	5.80E-04	0.00E+00	1.03E-04
2016	Annual	Mon-Sun	2270002003 Pavers	D	175	Constructii U	P	NHH	NP	Total	Total	Total	5.36E+00	1.22E+01	7.15E+01	9.30E-04	4.69E-03	6.88E-03	7.83E-01	8.81E-06	3.82E-04	0.00E+00	8.39E-05
2016	Annual	Mon-Sun	2270002003 Pavers	D	250	Constructii U	N	NHH	NP	Total	Total	Total	6.46E-01	1.47E+00	1.30E+01	1.29E-04	3.95E-04	1.14E-03	1.43E-01	1.61E-06	4.32E-05	0.00E+00	1.17E-05
2016	Annual	Mon-Sun	2270002003 Pavers	D	500	Constructii U	N	NHH	NP	Total	Total	Total	6.62E-01	1.51E+00	1.60E+01	1.48E-04	5.77E-04	1.26E-03	1.76E-01	1.73E-06	4.84E-05	0.00E+00	1.33E-05
2016	Annual	Mon-Sun	2270002009 Plate Compactors	D	15	Constructii U	P	NHH	NP	Total	Total	Total	2.70E+00	4.44E+00	8.74E-01	1.11E-05	5.84E-05	6.98E-05	9.57E-03	1.49E-07	2.72E-06	0.00E+00	1.01E-06
2016	Annual	Mon-Sun	2270002015 Rollers	D	15	Constructii U	P	NHH	NP	Total	Total	Total	5.07E+00	9.67E+00	2.79E+00	3.55E-05	1.86E-04	2.22E-04	3.05E-02	4.75E-07	8.69E-06	0.00E+00	3.21E-06
2016	Annual	Mon-Sun	2270002015 Rollers	D	25	Constructii U	P	NHH	NP	Total	Total	Total	2.12E+00	4.04E+00	2.45E+00	3.25E-05	1.11E-04	2.05E-04	2.69E-02	3.42E-07	7.78E-06	0.00E+00	2.93E-06
2016	Annual	Mon-Sun	2270002015 Rollers	D	50	Constructii U	P	NHH	NP	Total	Total	Total	6.60E+00	1.27E+01	1.53E+01	5.06E-04	1.70E-03	1.47E-03	1.65E-01	2.13E-06	1.21E-04	0.00E+00	4.56E-05
2016	Annual	Mon-Sun	2270002015 Rollers	D	120	Constructii U	P	NHH	NP	Total	Total	Total	3.54E+01	6.81E+01	1.84E+02	2.70E-03	1.35E-02	1.74E-02	2.01E+00	2.35E-05	1.41E-03	0.00E+00	2.44E-04
2016	Annual	Mon-Sun	2270002015 Rollers	D	175	Constructii U	P	NHH	NP	Total	Total	Total	1.42E+01	2.74E+01	1.35E+02	1.41E-03	1.09E-02	1.48E+00	1.66E-05	5.90E-04	0.00E+00	1.27E-04	
2016	Annual	Mon-Sun	2270002015 Rollers	D	250	Constructii U	N	NHH	NP	Total	Total	Total	2.02E+00	3.88E+00	2.69E+01	2.02E-04	6.72E-04	1.93E-03	2.97E-01	3.34E-06	6.47E-05	0.00E+00	1.82E-05
2016	Annual	Mon-Sun	2270002015 Rollers	D	500	Constructii U	N	NHH	NP	Total	Total	Total	1.42E+00	2.72E+00	2.70E+01	1.89E-04	7.24E-04	1.72E-03	2.98E-01	2.93E-06	6.02E-05	0.00E+00	1.71E-05
2016	Annual	Mon-Sun	2270002018 Scrapers	D	120	Constructii U	P	NHH	NP	Total	Total	Total	3.27E-01	9.95E-01	4.28E+00	7.78E-05	3.37E-04	4.62E-04	4.67E-02	5.47E-07	3.88E-05	0.00E+00	7.02E-06
2016	Annual	Mon-Sun	2270002018 Scrapers	D	175	Constructii U	P	NHH	NP	Total	Total	Total	2.99E+00	9.11E+00	6.15E+01	8.05E-04	4.09E-03	5.74E-03	6.74E-01	7.58E-06	3.23E-04	0.00E+00	7.26E-05
2016	Annual	Mon-Sun	2270002018 Scrapers	D	250	Constructii U	N	NHH	NP	Total	Total	Total	2.92E+00	8.88E+00	8.43E+01	8.48E-04	2.52E-03	7.13E-03	9.29E-01	1.05E-05	2.69E-04	0.00E+00	7.65E-05
2016	Annual	Mon-Sun	2270002018 Scrapers	D	500	Constructii U	N	NHH	NP	Total	Total	Total	8.03E+00	2.44E+01	3.56E+02	3.34E-03	1.23E-02	2.71E-02	3.92E+00	3.85E-05	1.04E-03	0.00E+00	3.01E-04
2016	Annual	Mon-Sun	2270002018 Scrapers	D	750	Constructii U	N	NHH	NP	Total	Total	Total	1.43E+00	4.34E+00	1.09E+02	1.03E-03	3.78E-03	8.48E-03	1.20E+00	1.21E-05	3.22E-04	0.00E+00	9.28E-05
2016	Annual	Mon-Sun	2270002021 Paving Equipment	D	25	Constructii U	P	NHH	NP	Total	Total	Total	2.18E-01	4.95E-01	2.85E-01	3.77E-06	1.29E-05	2.38E-05	3.13E-03	3.97E-08	9.02E-07	0.00E+00	3.40E-07
2016	Annual	Mon-Sun	2270002021 Paving Equipment	D	50	Constructii U	P	NHH	NP	Total	Total	Total	1.84E-01	4.23E-01	4.71E-01	2.01E-05	5.97E-05	4.85E-05	5.05E-03	6.53E-08	4.55E-06	0.00E+00	1.81E-06
2016	Annual	Mon-Sun	2270002021 Paving Equipment	D	120	Constructii U	P	NHH	NP	Total	Total	Total	2.66E+00	6.09E+00	1.52E+01	2.77E-04	1.17E-03	1.68E-03	1.66E-01	1.94E-06	1.42E-04	0.00E+00	2.50E-05
2016	Annual	Mon-Sun	2270002021 Paving Equipment	D	175	Constructii U	P	NHH	NP	Total	Total	Total	1.25E+00	2.86E+00	1.32E+01	1.70E-04	8.59E-04	1.27E-03	1.44E-01	1.63E-06	7.04E-05	0.00E+00	1.53E-05
2016	Annual	Mon-Sun	2270002021 Paving Equipment	D	250	Constructii U	N	NHH	NP	Total	Total	Total	3.52E-01	8.07E-01	4.47E+00	4.34E-05	1.33E-04	3.91E-04	4.93E-02	5.55E-07	1.45E-05	0.00E+00	3.92E-06
2016	Annual	Mon-Sun	2270002024 Surfacing Equipment	D	50	Constructii U	P	NHH	NP	Total	Total	Total	1.68E-01	2.08E-01	1.35E-01	3.90E-06	1.35E-05	1.27E-05	1.47E-03	1.89E-08	9.64E-07	0.00E+00	3.52E-07
2016	Annual	Mon-Sun	2270002024 Surfacing Equipment	D	120	Constructii U	P	NHH	NP	Total	Total	Total	3.35E-02	4.16E-02	1.21E-01	1.62E-06	8.57E-06	1.11E-05	1.33E-03	1.55E-08	8.37E-07	0.00E+00	1.46E-07
2016	Annual	Mon-Sun	2270002024 Surfacing Equipment	D	175	Constructii U	P	NHH	NP	Total	Total	Total	2.51E-02	3.12E-02	1.22E-01	1.14E-06	7.32E-06	9.55E-06	1.34E-03	1.50E-08	4.79E-07	0.00E+00	1.03E-07
2016	Annual	Mon-Sun	2270002024 Surfacing Equipment	D	250	Constructii U	N	NHH	NP	Total	Total	Total	5.03E-02	6.24E-02	3.81E-01	2.59E-06	9.39E-06	2.65E-05	4.20E-03	4.73E-08	8.72E-07	0.00E+00	2.34E-07
2016	Annual	Mon-Sun	2270002024 Surfacing Equipment	D	500	Constructii U	N	NHH	NP	Total	Total	Total	4.19E-01	5.20E-01	5.21E+00	3.27E-05	1.42E-04	3.26E-04	5.75E-02	5.64E-07	1.10E-05	0.00E+00	2.95E-06
2016	Annual	Mon-Sun	2270002024 Surfacing Equipment	D	750	Constructii U	N	NHH	NP	Total	Total	Total	2.72E-01	3.38E-01	5.31E+00	3.38E-05	1.45E-04	3.41E-04	5.86E-02	5.89E-07	1.14E-05	0.00E+00	3.05E-06
2016	Annual	Mon-Sun	2270002027 Signal Boards	D	15	Constructii U	P	NHH	NP	Total	Total	Total	2.36E+01	4.85E+01	1.37E+01	1.74E-04	9.13E-04	1.09E-03	1.50E-01	2.33E-06	4.26E-05	0.00E+00	1.57E-05
2016	Annual	Mon-Sun	2270002027 Signal Boards	D	50	Constructii U	P	NHH	NP	Total	Total	Total	1.17E-01	1.72E-01	2.87E-01	7.15E-06	2.70E-05	2.61E-05	3.11E-03	4.02E-08	1.88E-06	0.00E+00	6.45E-07
2016	Annual	Mon-Sun	2270002027 Signal Boards	D	120	Constructii U	P	NHH	NP	Total	Total	Total	1.92E+00	2.82E+00	1.03E+01	1.23E-04	7.14E-04	8.76E-04	1.13E-01	1.32E-06	6.56E-05	0.00E+00	1.11E-05
2016	Annual	Mon-Sun	2270002027 Signal Boards	D	175	Constructii U	P	NHH	NP	Total	Total	Total	1.19E+00	1.75E+00	1.23E+01	1.02E-04	7.23E-04	8.79E-04	1.35E-01	1.52E-06	4.34E-05	0.00E+00	9.20E-06
2016	Annual	Mon-Sun	2270002027 Signal Boards	D	250	Constructii U	N	NHH	NP	Total	Total	Total	2.51E-01	3.69E-01	4.26E+00	2.43E-05	9.21E-05	2.67E-04	4.71E-02	5.29E-07	7.82E-06	0.00E+00	2.19E-06
2016	Annual	Mon-Sun	2270002030 Trenchers	D	15	Constructii U	P	NHH	NP	Total	Total	Total	6.29E-01	1.07E+00	4.12E-01	5.24E-06	2.75E-05	3.28E-05	4.51E-03	7.01E-08	1.28E-06	0.00E+00	4.73E-07
2016	Annual	Mon-Sun	2270002030 Trenchers	D	25	Constructii U	P	NHH	NP	Total	Total	Total	6.62E-01	1.12E+00	1.68E+00	2.23E-05	7.60E-05	1.41E-04	1.85E-02	2.34E-07	5.25E-06	0.00E+00	2.01E-06
2016	Annual	Mon-Sun	2270002030 Trenchers	D	50	Constructii U	P	NHH	NP	Total	Total	Total	2.52E+01	4.35E+01	6.66E+01	2.83E-03	8.28E-03	6.82E-03	7.15E-01	9.24E-06	6.36E-04	0.00E+00	2.56E-04
2016	Annual	Mon-Sun	2270002030 Trenchers	D	120	Constructii U	P	NHH	NP	Total	Total	Total	3.42E+01	5.89E+01	1.75E+02	3.18E-03	1.34E-02	1.96E-02	1.91E+00	2.24E-05	1.62E-03	0.00E+00	2.87E-04
2016	Annual	Mon-Sun	2270002030 Trenchers	D	175	Constructii U	P	NHH	NP	Total	Total	Total	3.74E+00	6.45E+00	4.23E+01	5.40E-04	2.74E-03	4.13E-03	4.64E-01	5.22E-06	2.25E-04	0.00E+00	4.88E-05
2016	Annual	Mon-Sun	2270002030 Trenchers	D	250	Constructii U	N	NHH	NP	Total	Total	Total	3.35E-01	5.78E-01	5.85E+00	5.75E-05	1.81E-04	5.21E-04	6.44E-02	7.25E-07	2.00E-05	0.00E+00	5.19E-06
2016	Annual	Mon-Sun	2270002030 Trenchers	D	500	Constructii U	N	NHH	NP	Total	Total	Total	4.28E-01	7.37E-01	1.04E+01	9.43E-05	3.94E-04	8.38E-04	1.15E-01	1.13E-06	3.22E-05	0.00E+00	8.51E-06
2016	Annual	Mon-Sun																					

2016 Annual	Mon-Sun	2270002051	Off-Highway Trucks	D	500	Constructi	U	N	NHH	NP	Total	Total	Total	5.67E+00	3.08E+01	3.80E+02	2.86E-03	8.93E-03	1.93E-02	4.20E+00	4.12E-05	6.91E-04	0.00E+00	2.58E-04
2016 Annual	Mon-Sun	2270002051	Off-Highway Trucks	D	750	Constructi	U	N	NHH	NP	Total	Total	Total	5.71E+00	3.11E+01	6.22E+02	4.70E-03	1.46E-02	3.25E-02	6.86E+00	6.90E-05	1.15E-04	0.00E+00	4.24E-04
2016 Annual	Mon-Sun	2270002051	Off-Highway Trucks	D	1000	Constructi	U	N	NHH	NP	Total	Total	Total	2.68E+00	1.46E+01	4.12E+02	3.33E-03	1.03E-02	3.55E-02	4.55E+00	4.57E-05	9.88E-04	0.00E+00	3.00E-04
2016 Annual	Mon-Sun	2270002054	Crushing/Proc. Equipment	D	50	Constructi	U	P	NHH	P	Total	Total	Total	1.34E+00	3.51E+00	7.15E+00	2.16E-04	7.88E-04	6.80E-04	7.72E-02	9.98E-07	5.43E-05	0.00E+00	1.95E-05
2016 Annual	Mon-Sun	2270002054	Crushing/Proc. Equipment	D	120	Constructi	U	P	NHH	P	Total	Total	Total	3.78E+00	9.90E+00	3.76E+01	5.21E-04	2.77E-03	3.35E-03	4.11E-01	4.82E-06	2.74E-04	0.00E+00	4.70E-05
2016 Annual	Mon-Sun	2270002054	Crushing/Proc. Equipment	D	175	Constructi	U	P	NHH	P	Total	Total	Total	1.60E+00	4.19E+00	3.20E+01	3.17E-04	2.00E-03	2.39E-03	3.50E-01	3.94E-06	1.30E-04	0.00E+00	2.86E-05
2016 Annual	Mon-Sun	2270002054	Crushing/Proc. Equipment	D	250	Constructi	U	N	NHH	P	Total	Total	Total	1.59E-01	4.17E-01	4.62E+00	5.23E-05	1.06E-04	3.03E-04	5.10E-02	5.73E-07	9.44E-06	0.00E+00	2.92E-06
2016 Annual	Mon-Sun	2270002054	Crushing/Proc. Equipment	D	500	Constructi	U	N	NHH	P	Total	Total	Total	8.97E-01	2.35E+00	3.97E+01	2.63E-04	8.85E-04	2.26E-03	4.38E-01	4.30E-06	7.60E-05	0.00E+00	2.37E-05
2016 Annual	Mon-Sun	2270002054	Crushing/Proc. Equipment	D	750	Constructi	U	N	NHH	P	Total	Total	Total	4.54E-02	1.19E-01	3.17E+00	2.09E-05	7.02E-05	1.86E-04	3.50E-02	3.52E-07	6.11E-06	0.00E+00	1.89E-06
2016 Annual	Mon-Sun	2270002054	Crushing/Proc. Equipment	D	9999	Constructi	U	N	NHH	P	Total	Total	Total	4.54E-02	1.19E-01	7.04E+00	5.43E-05	1.74E-04	6.42E-04	7.77E-02	7.81E-07	1.74E-05	0.00E+00	4.90E-06
2016 Annual	Mon-Sun	2270002057	Rough Terrain Forklifts	D	50	Constructi	U	P	NHH	NP	Total	Total	Total	9.31E-01	2.89E+00	4.51E+00	1.21E-04	4.99E-04	4.26E-04	4.88E-02	6.31E-07	3.12E-05	0.00E+00	1.09E-05
2016 Annual	Mon-Sun	2270002057	Rough Terrain Forklifts	D	120	Constructi	U	P	NHH	NP	Total	Total	Total	4.46E+01	1.38E+02	3.94E+02	5.03E-03	2.92E-02	3.27E-02	4.31E+00	5.06E-05	2.55E-03	0.00E+00	4.54E-04
2016 Annual	Mon-Sun	2270002057	Rough Terrain Forklifts	D	175	Constructi	U	P	NHH	NP	Total	Total	Total	5.71E+00	1.77E+01	1.01E+02	9.55E-04	6.40E-03	6.89E-03	1.10E+00	1.24E-05	3.74E-04	0.00E+00	8.62E-05
2016 Annual	Mon-Sun	2270002057	Rough Terrain Forklifts	D	250	Constructi	U	N	NHH	NP	Total	Total	Total	3.19E-01	9.88E-01	7.64E+00	5.46E-05	1.77E-04	4.54E-04	8.43E-02	9.49E-07	1.49E-05	0.00E+00	4.93E-06
2016 Annual	Mon-Sun	2270002057	Rough Terrain Forklifts	D	500	Constructi	U	N	NHH	NP	Total	Total	Total	2.10E-01	6.50E-01	7.55E+00	5.16E-05	1.69E-04	3.92E-04	8.33E-02	8.18E-07	1.39E-05	0.00E+00	4.66E-06
2016 Annual	Mon-Sun	2270002060	Rubber Tired Loaders	D	25	Constructi	U	P	NHH	NP	Total	Total	Total	1.17E-01	3.08E-01	2.37E-01	3.14E-06	1.07E-05	1.99E-05	2.60E-03	3.30E-08	7.41E-07	0.00E+00	2.84E-07
2016 Annual	Mon-Sun	2270002060	Rubber Tired Loaders	D	50	Constructi	U	P	NHH	NP	Total	Total	Total	2.28E+00	6.09E+00	8.78E+00	2.74E-04	1.02E-03	8.47E-04	9.48E-02	1.23E-06	6.63E-05	0.00E+00	2.47E-05
2016 Annual	Mon-Sun	2270002060	Rubber Tired Loaders	D	120	Constructi	U	P	NHH	NP	Total	Total	Total	6.20E+01	1.66E+02	4.46E+02	6.39E-03	3.36E-02	3.99E-02	4.87E+00	5.72E-05	3.20E-03	0.00E+00	5.76E-04
2016 Annual	Mon-Sun	2270002060	Rubber Tired Loaders	D	175	Constructi	U	P	NHH	NP	Total	Total	Total	3.49E+01	9.33E+01	4.52E+02	4.76E-03	2.91E-02	3.40E-02	4.96E+00	5.58E-05	1.87E-03	0.00E+00	4.30E-04
2016 Annual	Mon-Sun	2270002060	Rubber Tired Loaders	D	250	Constructi	U	N	NHH	NP	Total	Total	Total	3.47E+01	9.28E+01	6.26E+02	4.90E-03	1.56E-02	4.12E-02	6.91E+00	7.77E-05	1.40E-03	0.00E+00	4.42E-04
2016 Annual	Mon-Sun	2270002060	Rubber Tired Loaders	D	500	Constructi	U	N	NHH	NP	Total	Total	Total	1.45E+01	3.86E+01	4.15E+02	3.07E-03	1.08E-02	2.43E-02	4.57E+00	4.49E-05	8.67E-04	0.00E+00	2.77E-04
2016 Annual	Mon-Sun	2270002060	Rubber Tired Loaders	D	750	Constructi	U	N	NHH	NP	Total	Total	Total	1.10E+00	2.93E+00	6.45E+01	4.81E-04	1.68E-03	3.88E-03	7.12E-01	7.16E-06	1.37E-04	0.00E+00	4.34E-05
2016 Annual	Mon-Sun	2270002060	Rubber Tired Loaders	D	1000	Constructi	U	N	NHH	NP	Total	Total	Total	1.18E-01	3.15E-01	8.48E+00	6.91E-05	2.45E-04	7.85E-04	9.34E-02	9.40E-07	2.24E-05	0.00E+00	6.24E-06
2016 Annual	Mon-Sun	2270002063	Rubber Tired Dozers	D	175	Constructi	U	P	NHH	NP	Total	Total	Total	8.38E-02	3.73E-01	2.21E+00	3.45E-05	1.54E-04	2.44E-04	2.41E-02	2.71E-07	1.38E-05	0.00E+00	3.11E-06
2016 Annual	Mon-Sun	2270002063	Rubber Tired Dozers	D	250	Constructi	U	N	NHH	NP	Total	Total	Total	2.05E+00	9.14E+00	7.62E+01	9.58E-04	2.77E-03	7.80E-03	8.38E-01	9.43E-06	3.23E-04	0.00E+00	8.65E-05
2016 Annual	Mon-Sun	2270002063	Rubber Tired Dozers	D	500	Constructi	U	N	NHH	NP	Total	Total	Total	3.16E+00	1.41E+01	1.69E+02	1.96E-03	8.21E-03	1.57E-02	1.86E+00	1.83E-05	6.43E-04	0.00E+00	1.77E-04
2016 Annual	Mon-Sun	2270002063	Rubber Tired Dozers	D	750	Constructi	U	N	NHH	NP	Total	Total	Total	1.21E+00	5.37E+00	9.75E+01	1.13E-03	4.72E-03	9.20E-03	1.07E+00	1.08E-05	3.73E-04	0.00E+00	1.02E-04
2016 Annual	Mon-Sun	2270002063	Rubber Tired Dozers	D	1000	Constructi	U	N	NHH	NP	Total	Total	Total	8.17E-02	3.63E-01	9.79E+00	1.19E-04	5.16E-04	1.19E-03	1.07E-01	1.08E-06	3.94E-05	0.00E+00	1.08E-05
2016 Annual	Mon-Sun	2270002066	Tractors/Loaders/Backhoes	D	25	Constructi	U	P	NHH	NP	Total	Total	Total	2.36E+00	6.11E+00	4.41E+00	5.85E-05	1.99E-04	3.71E-04	4.84E-02	6.14E-07	1.46E-05	0.00E+00	5.28E-06
2016 Annual	Mon-Sun	2270002066	Tractors/Loaders/Backhoes	D	50	Constructi	U	P	NHH	NP	Total	Total	Total	1.41E+01	3.73E+01	5.22E+01	1.16E-03	5.50E-03	4.73E-03	5.66E-01	7.32E-06	3.02E-04	0.00E+00	1.05E-04
2016 Annual	Mon-Sun	2270002066	Tractors/Loaders/Backhoes	D	120	Constructi	U	P	NHH	NP	Total	Total	Total	1.89E+02	4.99E+02	1.18E+03	1.31E-02	8.63E-02	8.80E-02	1.29E+01	1.51E-04	6.31E-03	0.00E+00	1.18E-03
2016 Annual	Mon-Sun	2270002066	Tractors/Loaders/Backhoes	D	175	Constructi	U	P	NHH	NP	Total	Total	Total	1.41E+01	3.73E+01	1.72E+02	1.47E-03	1.09E-02	1.04E-02	1.89E+00	2.12E-05	5.45E-04	0.00E+00	1.32E-04
2016 Annual	Mon-Sun	2270002066	Tractors/Loaders/Backhoes	D	250	Constructi	U	N	NHH	NP	Total	Total	Total	4.56E+00	1.21E+01	9.37E+01	6.17E-04	2.13E-03	4.76E-03	1.03E+00	1.16E-05	1.57E-04	0.00E+00	5.57E-05
2016 Annual	Mon-Sun	2270002066	Tractors/Loaders/Backhoes	D	500	Constructi	U	N	NHH	NP	Total	Total	Total	7.36E+00	1.95E+01	3.04E+02	1.93E-03	6.77E-03	1.37E-02	3.35E+00	3.77E-05	4.82E-04	0.00E+00	1.74E-04
2016 Annual	Mon-Sun	2270002066	Tractors/Loaders/Backhoes	D	750	Constructi	U	N	NHH	NP	Total	Total	Total	5.49E+00	1.45E+01	3.40E+02	2.17E-03	7.58E-03	1.58E-02	3.75E+00	4.22E-05	5.48E-04	0.00E+00	1.96E-04
2016 Annual	Mon-Sun	2270002069	Crawler Tractors	D	50	Constructi	U	P	NHH	NP	Total	Total	Total	1.17E-01	3.35E-01	3.88E-01	1.58E-05	5.05E-05	4.00E-05	4.17E-03	5.39E-08	3.59E-06	0.00E+00	1.43E-06
2016 Annual	Mon-Sun	2270002069	Crawler Tractors	D	120	Constructi	U	P	NHH	NP	Total	Total	Total	6.66E+01	1.90E+02	5.73E+02	1.02E-02	4.50E-02	6.06E-02	6.25E+00	7.34E-05	5.06E-03	0.00E+00	9.20E-04
2016 Annual	Mon-Sun	2270002069	Crawler Tractors	D	175	Constructi	U	P	NHH	NP	Total	Total	Total	2.25E+01	6.44E+01	3.56E+02	4.59E-03	2.37E-02	3.25E-02	3.90E+00	4.39E-05	1.82E-03	0.00E+00	4.14E-04
2016 Annual	Mon-Sun	2270002069	Crawler Tractors	D	250	Constructi	U	N	NHH	NP	Total	Total	Total	1.94E+01	5.53E+01	4.17E+02	4.13E-03	1.23E-02	3.43E-02	4.59E+00	5.17E-05	1.29E-03	0.00E+00	3.73E-04
2016 Annual	Mon-Sun	2270002069	Crawler Tractors	D	500	Constructi	U	N	NHH	NP	Total	Total	Total	1.33E+01	3.79E+01	4.46E+02	4.13E-03	1.50E-02	3.30E-02	4.91E+00	4.82E-05	1.27E-03	0.00E+00	3.73E-04
2016 Annual	Mon-Sun	2270002069	Crawler Tractors	D	750	Constructi	U	N	NHH	NP	Total	Total	Total	7.26E-01	2.08E+00	4.37E+01	4.07E-04	1.47E-03	3.31E-03	4.82E-01	4.84E-06	1.26E-04	0.00E+00	3.67E-05
2016 Annual	Mon-Sun	2270002069	Crawler Tractors	D	1000	Constructi	U	N	NHH	NP	Total	Total	Total	7.26E-01	2.07E+00	6.19E+01	6.18E-04	2.32E-03	6.55E-03	6.82E-01	6.85E-06	2.00E-04	0.00E+00	5.58E-05
2016 Annual	Mon-Sun	2270002072	Skid Steer Loaders	D	25	Constructi	U	P	NHH	NP	Total	Total	Total	1.61E+01	3.68E+01	2.31E+01	3.38E-04	1.09E-03	2.03E-03	2.54E-01	3.22E-06	9.78E-05	0.00E+00	3.05E-05
2016 Annual	Mon-Sun	2270002072	Skid Steer Loaders	D	50	Constructi	U	P	NHH	NP	Total	Total	Total	1.46E+02	3.40E+02	3.98E+02	5.49E-03	3.55E-02	3.32E-02	4.34E+00	5.61E-05	1.60E-03	0.00E+00	4.95E-04
2016 Annual	Mon-Sun	2270002072	Skid Steer Loaders	D	120	Constructi	U	P	NHH	NP	Total	Total	Total	7.65E+01	1.78E+02	3.47E+02	2.63E-03	2.40E-02	2.15E-02	3.81E+00	4.47E-05	1.23E-03	0.00E+00	2.37E-04
2016 Annual	Mon-Sun	2270002075	Off-Highway Tractors	D	120	Constructi	U	P	NHH	NP	Total	Total	Total	8.38E-03	2.56E-02	1.10E-01	2.31E-06	8.93E-06	1.35E-05	1.20E-03	1.41E-08	1.14E-06	0.00E+00	2.08E-07
2016 Annual	Mon-Sun	2270002075	Off-Highway Tractors	D	175	Constructi	U	P	NHH	NP	Total	Total	Total	1.03E+01	3.13E+01	1.86E+02	2.78E-03	1.28E-02	2.00E-02	2.04E+00	2.29E-05	1.13E-03	0.00E+00	2.51E-04
2016 Annual	Mon-Sun	2270002075	Off-Highway Tractors	D	250	Constructi	U	N	NHH	NP	Total	Total	Total	9.69E+00	2.96E+01	1.75E+02	2.09E-03	6.14E-03	1.74E-02	1.93E+00	2.17E-05	7.12E-04	0.00E+00	1.89E-04
2016 Annual	Mon-Sun	2270002075	Off-Highway Tractors	D	750	Constructi	U	N	NHH	NP	Total	Total	Total	4.56E+00	1.39E+01	3.59E+02	3.96E-03	1.64E-02	3.29E-02					

Shasta Lake Water Resources Investigation

2016 Annual	Mon-Sun	2270003050	Other Material Handling Equipment	D	50	Industrial E U	N	NHH	NP	Total	Total	Total	2.03E-02	7.32E-02	1.03E-01	3.46E-06	1.23E-05	1.01E-05	1.11E-03	1.43E-08	8.54E-07	0.00E+00	3.12E-07
2016 Annual	Mon-Sun	2270003050	Other Material Handling Equipment	D	120	Industrial E U	N	NHH	NP	Total	Total	Total	1.22E-01	4.39E-01	1.22E+00	1.87E-05	9.26E-05	1.14E-04	1.33E-02	1.56E-07	9.68E-06	0.00E+00	1.69E-06
2016 Annual	Mon-Sun	2270003050	Other Material Handling Equipment	D	175	Industrial E U	N	NHH	NP	Total	Total	Total	1.30E-01	4.71E-01	2.62E+00	2.90E-05	1.69E-04	2.07E-04	2.87E-02	3.23E-07	1.17E-05	0.00E+00	2.61E-06
2016 Annual	Mon-Sun	2270003050	Other Material Handling Equipment	D	250	Industrial E U	N	NHH	NP	Total	Total	Total	3.10E-01	1.12E+00	7.35E+00	5.79E-05	1.75E-04	5.15E-04	8.11E-02	9.12E-07	1.65E-05	0.00E+00	5.23E-06
2016 Annual	Mon-Sun	2270003050	Other Material Handling Equipment	D	500	Industrial E U	N	NHH	NP	Total	Total	Total	5.79E-02	2.09E-01	1.81E+00	1.35E-05	4.18E-05	1.10E-04	2.00E-02	1.97E-07	3.80E-06	0.00E+00	1.22E-06
2016 Annual	Mon-Sun	2270003050	Other Material Handling Equipment	D	9999	Industrial E U	N	NHH	NP	Total	Total	Total	1.74E-02	6.28E-02	2.11E+00	1.82E-05	5.42E-05	2.03E-04	2.32E-02	2.28E-07	5.66E-06	0.00E+00	1.64E-06
2016 Annual	Mon-Sun	2270004030	Leaf Blowers/Vacuums	D	15	Lawn and (U	N	NHH	P	Total	Total	Total	3.92E-02	1.29E-02	1.77E-03	2.01E-08	1.18E-07	1.41E-07	1.94E-05	3.02E-10	5.61E-09	0.00E+00	1.81E-09
2016 Annual	Mon-Sun	2270004030	Leaf Blowers/Vacuums	D	120	Lawn and (U	N	NHH	P	Total	Total	Total	3.43E-02	1.13E-02	2.50E-02	2.33E-07	1.58E-06	2.01E-06	2.74E-04	3.22E-09	1.24E-07	0.00E+00	2.10E-08
2016 Annual	Mon-Sun	2270004030	Leaf Blowers/Vacuums	D	250	Lawn and (U	N	NHH	P	Total	Total	Total	9.81E-03	3.23E-03	1.46E-02	6.14E-08	2.94E-07	8.77E-07	1.62E-04	1.82E-09	2.27E-08	0.00E+00	5.54E-09
2016 Annual	Mon-Sun	2270004035	Snowblowers	D	175	Lawn and (U	P	NHH	P	Total	Total	Total	3.74E-02	4.13E-02	2.50E-01	1.94E-06	1.43E-05	1.77E-05	2.74E-03	3.08E-08	8.37E-07	0.00E+00	1.75E-07
2016 Annual	Mon-Sun	2270004035	Snowblowers	D	250	Lawn and (U	N	NHH	P	Total	Total	Total	6.35E-01	7.02E-01	6.42E+00	3.50E-05	1.40E-04	4.02E-04	7.09E-02	7.98E-07	1.19E-05	0.00E+00	3.16E-06
2016 Annual	Mon-Sun	2270004035	Snowblowers	D	500	Lawn and (U	N	NHH	P	Total	Total	Total	1.90E+00	2.11E+00	2.85E+01	1.43E-04	6.11E-04	1.59E-03	3.15E-01	3.09E-06	4.98E-05	0.00E+00	1.29E-05
2016 Annual	Mon-Sun	2270004055	Lawn & Garden Tractors	D	15	Lawn and (U	N	NHH	NP	Total	Total	Total	9.47E+01	1.41E+02	5.98E+01	6.81E-04	4.00E-03	4.79E-03	6.55E-01	1.02E-05	1.94E-04	0.00E+00	6.15E-05
2016 Annual	Mon-Sun	2270004055	Lawn & Garden Tractors	D	25	Lawn and (U	N	NHH	NP	Total	Total	Total	7.41E+01	1.10E+02	7.18E+01	9.52E-04	3.25E-03	6.02E-03	7.89E-01	1.00E-05	2.33E-04	0.00E+00	8.59E-05
2016 Annual	Mon-Sun	2270004065	Chippers/Stump Grinders	D	25	Lawn and (U	P	NHH	P	Total	Total	Total	4.42E-02	5.62E-02	5.15E-02	6.83E-07	2.33E-06	4.31E-06	5.66E-04	7.18E-09	1.61E-07	0.00E+00	6.16E-08
2016 Annual	Mon-Sun	2270004065	Chippers/Stump Grinders	D	120	Lawn and (U	P	NHH	P	Total	Total	Total	1.22E+00	1.55E+00	5.37E+00	6.45E-05	3.69E-04	4.68E-04	5.88E-02	6.90E-07	3.47E-05	0.00E+00	5.82E-06
2016 Annual	Mon-Sun	2270004065	Chippers/Stump Grinders	D	175	Lawn and (U	P	NHH	P	Total	Total	Total	8.34E-02	1.06E-01	6.37E-01	5.29E-06	3.72E-05	4.70E-05	7.00E-03	7.87E-08	2.29E-06	0.00E+00	4.77E-07
2016 Annual	Mon-Sun	2270004065	Chippers/Stump Grinders	D	250	Lawn and (U	N	NHH	P	Total	Total	Total	1.96E-02	2.50E-02	2.51E-01	1.46E-06	5.53E-06	1.64E-05	2.78E-03	3.13E-08	4.91E-07	0.00E+00	1.32E-07
2016 Annual	Mon-Sun	2270004065	Chippers/Stump Grinders	D	500	Lawn and (U	N	NHH	P	Total	Total	Total	1.82E-01	2.31E-01	2.58E+00	1.37E-05	5.61E-05	1.48E-04	2.85E-02	2.80E-07	4.70E-06	0.00E+00	1.24E-06
2016 Annual	Mon-Sun	2270004065	Chippers/Stump Grinders	D	750	Lawn and (U	N	NHH	P	Total	Total	Total	2.06E-01	2.62E-01	7.06E+00	3.84E-05	1.53E-04	4.21E-04	7.80E-02	7.84E-07	1.31E-05	0.00E+00	3.47E-06
2016 Annual	Mon-Sun	2270004065	Chippers/Stump Grinders	D	1000	Lawn and (U	N	NHH	P	Total	Total	Total	3.92E-01	4.99E-01	1.91E+01	1.23E-04	4.54E-04	1.73E-03	2.11E-01	2.12E-06	4.39E-05	0.00E+00	1.11E-05
2016 Annual	Mon-Sun	2270004070	Commercial Turf Equipment	D	15	Lawn and (U	N	NHH	NP	Total	Total	Total	2.38E+00	6.98E+00	3.07E+00	3.49E-05	2.05E-04	2.45E-04	3.36E-02	5.24E-07	9.57E-06	0.00E+00	3.15E-06
2016 Annual	Mon-Sun	2270004070	Commercial Turf Equipment	D	25	Lawn and (U	N	NHH	NP	Total	Total	Total	4.48E+01	1.31E+02	8.64E+01	1.14E-03	3.91E-03	7.23E-03	9.49E-01	1.20E-05	2.70E-04	0.00E+00	1.03E-04
2016 Annual	Mon-Sun	2270004075	Other Lawn & Garden Equipment	D	15	Lawn and (U	N	NHH	NP	Total	Total	Total	3.43E-02	4.07E-02	2.27E-02	2.58E-07	1.52E-06	1.81E-06	2.49E-04	3.87E-09	7.08E-08	0.00E+00	2.33E-08
2016 Annual	Mon-Sun	2270004075	Other Lawn & Garden Equipment	D	25	Lawn and (U	N	NHH	NP	Total	Total	Total	4.91E-03	5.82E-03	4.32E-03	5.72E-08	1.95E-07	3.61E-07	4.74E-05	6.01E-10	1.35E-08	0.00E+00	5.16E-09
2016 Annual	Mon-Sun	2270005015	Agricultural Tractors	D	15	Agricultura U	P	NHH	NP	Total	Total	Total	1.05E+02	1.54E+02	7.40E+01	9.43E-04	4.95E-03	5.90E-03	8.10E-01	1.26E-05	2.31E-04	0.00E+00	8.51E-05
2016 Annual	Mon-Sun	2270005015	Agricultural Tractors	D	25	Agricultura U	P	NHH	NP	Total	Total	Total	1.30E+02	1.90E+02	1.74E+02	2.31E-03	7.88E-03	1.46E-02	1.91E+00	2.43E-05	5.53E-04	0.00E+00	2.08E-04
2016 Annual	Mon-Sun	2270005015	Agricultural Tractors	D	50	Agricultura U	P	NHH	NP	Total	Total	Total	3.03E+02	3.95E+02	6.23E+02	1.62E-02	5.88E-02	5.77E-02	6.76E+00	8.74E-05	4.27E-03	0.00E+00	1.46E-03
2016 Annual	Mon-Sun	2270005015	Agricultural Tractors	D	120	Agricultura U	P	NHH	NP	Total	Total	Total	3.51E+02	4.57E+02	1.52E+03	1.88E-02	1.05E-01	1.35E-01	1.66E+01	1.95E-04	1.00E-02	0.00E+00	1.70E-03
2016 Annual	Mon-Sun	2270005015	Agricultural Tractors	D	175	Agricultura U	P	NHH	NP	Total	Total	Total	1.97E+02	2.57E+02	1.46E+03	1.25E-02	8.55E-02	1.10E-01	1.60E+01	1.80E-04	5.33E-03	0.00E+00	1.13E-03
2016 Annual	Mon-Sun	2270005015	Agricultural Tractors	D	250	Agricultura U	N	NHH	NP	Total	Total	Total	1.28E+02	1.66E+02	1.34E+03	7.92E-03	2.96E-02	8.89E-02	1.48E+01	1.67E-04	2.64E-03	0.00E+00	7.15E-04
2016 Annual	Mon-Sun	2270005015	Agricultural Tractors	D	500	Agricultura U	N	NHH	NP	Total	Total	Total	2.53E+01	3.30E+01	4.35E+02	2.36E-03	9.55E-03	2.54E-02	4.81E+00	4.72E-05	7.99E-04	0.00E+00	2.13E-04
2016 Annual	Mon-Sun	2270005020	Combines	D	120	Agricultura U	P	NHH	NP	Total	Total	Total	7.40E+00	3.05E+00	1.32E+01	1.28E-04	8.42E-04	1.08E-03	1.44E-01	1.69E-06	6.74E-05	0.00E+00	1.16E-05
2016 Annual	Mon-Sun	2270005020	Combines	D	175	Agricultura U	P	NHH	NP	Total	Total	Total	1.10E+01	4.52E+00	2.56E+01	1.68E-04	1.39E-03	1.78E-03	2.82E-01	3.17E-06	7.26E-05	0.00E+00	1.52E-05
2016 Annual	Mon-Sun	2270005020	Combines	D	250	Agricultura U	N	NHH	NP	Total	Total	Total	1.17E+01	4.83E+00	3.83E+01	1.68E-04	7.79E-04	2.34E-03	4.24E-01	4.77E-06	6.09E-05	0.00E+00	1.52E-05
2016 Annual	Mon-Sun	2270005020	Combines	D	500	Agricultura U	N	NHH	NP	Total	Total	Total	4.69E-01	1.93E-01	2.11E+00	8.25E-06	4.28E-05	1.15E-04	2.33E-02	2.29E-07	3.18E-06	0.00E+00	7.45E-07
2016 Annual	Mon-Sun	2270005025	Balers	D	50	Agricultura U	P	NHH	NP	Total	Total	Total	1.40E-02	3.65E-03	6.07E-03	9.34E-08	4.17E-07	5.26E-07	6.63E-05	8.57E-10	3.03E-08	0.00E+00	8.42E-09
2016 Annual	Mon-Sun	2270005025	Balers	D	120	Agricultura U	P	NHH	NP	Total	Total	Total	9.86E+00	2.57E+00	6.39E+00	5.95E-05	4.03E-04	5.19E-04	7.00E-02	8.22E-07	3.11E-05	0.00E+00	5.37E-06
2016 Annual	Mon-Sun	2270005030	Agricultural Mowers	D	120	Agricultura U	P	NHH	NP	Total	Total	Total	4.62E-01	4.60E-01	7.36E-01	8.45E-06	4.96E-05	6.39E-05	8.06E-03	9.45E-08	4.48E-06	0.00E+00	7.63E-07
2016 Annual	Mon-Sun	2270005035	Sprayers	D	25	Agricultura U	P	NHH	NP	Total	Total	Total	2.17E+00	6.55E-01	3.56E-01	5.98E-06	1.81E-05	3.30E-05	3.90E-03	4.95E-08	1.78E-06	0.00E+00	5.40E-07
2016 Annual	Mon-Sun	2270005035	Sprayers	D	50	Agricultura U	P	NHH	NP	Total	Total	Total	4.90E-01	1.21E-01	1.25E-01	1.90E-06	8.54E-06	1.08E-05	1.36E-03	1.76E-08	6.21E-07	0.00E+00	1.72E-07
2016 Annual	Mon-Sun	2270005035	Sprayers	D	120	Agricultura U	P	NHH	NP	Total	Total	Total	4.69E+00	1.16E+00	3.01E+00	2.79E-05	1.90E-04	2.45E-04	3.30E-02	3.87E-07	1.46E-05	0.00E+00	2.52E-06
2016 Annual	Mon-Sun	2270005035	Sprayers	D	175	Agricultura U	P	NHH	NP	Total	Total	Total	1.97E+00	4.88E-01	2.10E+00	1.30E-05	1.12E-04	1.44E-04	2.31E-02	2.60E-07	5.62E-06	0.00E+00	1.17E-06
2016 Annual	Mon-Sun	2270005035	Sprayers	D	250	Agricultura U	N	NHH	NP	Total	Total	Total	1.23E+00	3.04E-01	2.14E+00	8.78E-06	4.27E-05	1.28E-04	2.36E-02	2.66E-07	3.24E-06	0.00E+00	7.93E-07
2016 Annual	Mon-Sun	2270005035	Sprayers	D	500	Agricultura U	N	NHH	NP	Total	Total	Total	2.10E-01	5.19E-02	3.98E-01	1.45E-06	7.95E-06	2.15E-05	4.40E-03	4.32E-08	5.76E-07	0.00E+00	1.31E-07
2016 Annual	Mon-Sun	2270005040	Tillers	D	15	Agricultura U	N	NHH	NP	Total	Total	Total	4.90E-02	3.54E-02	1.10E-02	1.25E-07	7.39E-07	8.82E-07	1.21E-04	1.88E-09	3.50E-08	0.00E+00	1.13E-08
2016 Annual	Mon-Sun	2270005040	Tillers	D	250	Agricultura U	N	NHH	NP	Total	Total	Total	7.00E-03	3.30E-03	3.58E-02	1.61E-07	7.32E-07	2.20E-06	3.96E-04	4.45E-09	5.78E-08	0.00E+00	1.45E-08
2016 Annual	Mon-Sun	2270005040	Tillers	D	500	Agricultura U	N	NHH	NP	Total	Total	Total	2.10E-02	9.91E-03	1.91E-01	7.70E-07	3.91E-06	1.05E-05	2.12E-03	2.08E-08	2.93E-07	0.00E+00	6.95E-08
2016 Annual	Mon-Sun	2270005045	Swathers	D	120	Agricultura U	P	NHH	NP	Total	Total	Total	5.33E+01	1.61E+01	3.94E+01	3.72E-04	2.50E-03	3.22E-03	4.32E-01	5.07E-06	1.95E-04	0.00E+00	3.36E-05
2016 Annual	Mon-Sun	2270005045	Swathers	D	175	Agricultura U	P	NHH	NP	Total	Total	Total	4.76E-01	1.44E-01	6.76E-01	4.26E-06	3.63E-05	4.66E-05	7.43E-03	8.36E-08	1.85E-06	0.00E+00	3.85E-07
2016 Annual	Mon-Sun	2270005050	Hydro Power Units	D	15	Agricultura U	P	NHH	NP	Total	Total	Total	4.06E-01	9.07E-01									

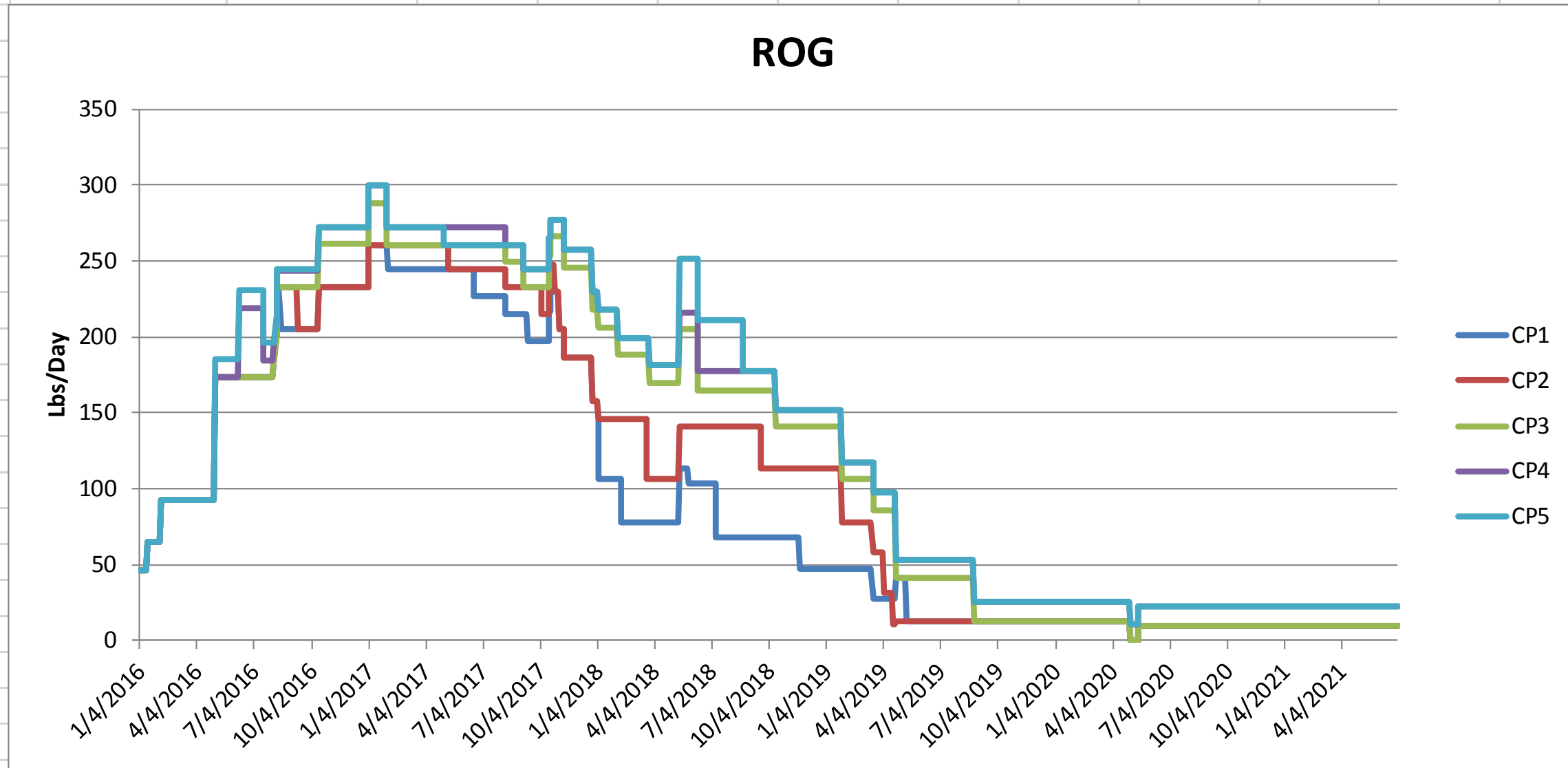
2016 Annual	Mon-Sun	2270006015	Air Compressors	D	175	Light Comr U	P	NHH	P	Total	Total	Total	1.60E+00	3.58E+00	1.44E+01	1.45E-04	8.93E-04	1.12E-03	1.58E-01	1.78E-06	6.08E-05	0.00E+00	1.31E-05
2016 Annual	Mon-Sun	2270006015	Air Compressors	D	250	Light Comr U	N	NHH	P	Total	Total	Total	2.26E+00	5.03E+00	2.99E+01	2.08E-04	6.85E-04	2.06E-03	3.30E-01	3.71E-06	6.38E-05	0.00E+00	1.88E-05
2016 Annual	Mon-Sun	2270006015	Air Compressors	D	500	Light Comr U	N	NHH	P	Total	Total	Total	2.94E+00	6.56E+00	6.88E+01	4.50E-04	1.54E-03	4.11E-03	7.59E-01	7.45E-06	1.37E-04	0.00E+00	4.06E-05
2016 Annual	Mon-Sun	2270006015	Air Compressors	D	750	Light Comr U	N	NHH	P	Total	Total	Total	1.10E+00	2.45E+00	3.98E+01	2.63E-04	8.92E-04	2.47E-03	4.39E-01	4.42E-06	8.11E-05	0.00E+00	2.37E-05
2016 Annual	Mon-Sun	2270006015	Air Compressors	D	1000	Light Comr U	N	NHH	P	Total	Total	Total	2.72E-02	6.06E-02	1.33E+00	9.92E-06	3.35E-05	1.26E-04	1.47E-02	1.48E-07	3.40E-06	0.00E+00	8.95E-07
2016 Annual	Mon-Sun	2270006025	Welders	D	15	Light Comr U	P	NHH	P	Total	Total	Total	1.17E+01	2.06E+01	5.86E+00	9.10E-05	4.08E-04	5.65E-04	6.40E-02	9.96E-07	3.26E-05	0.00E+00	8.21E-06
2016 Annual	Mon-Sun	2270006025	Welders	D	25	Light Comr U	P	NHH	P	Total	Total	Total	1.03E+01	1.82E+01	9.35E+00	1.54E-04	4.69E-04	8.65E-04	1.02E-01	1.30E-06	4.60E-05	0.00E+00	1.39E-05
2016 Annual	Mon-Sun	2270006025	Welders	D	50	Light Comr U	P	NHH	P	Total	Total	Total	3.18E+01	5.59E+01	6.70E+01	1.95E-03	6.87E-03	6.29E-03	7.25E-01	9.37E-06	4.95E-04	0.00E+00	1.76E-04
2016 Annual	Mon-Sun	2270006025	Welders	D	120	Light Comr U	P	NHH	P	Total	Total	Total	2.47E+01	4.34E+01	7.83E+01	1.05E-03	5.58E-03	7.06E-03	8.57E-01	1.01E-05	5.63E-04	0.00E+00	9.47E-05
2016 Annual	Mon-Sun	2270006025	Welders	D	175	Light Comr U	P	NHH	P	Total	Total	Total	1.22E-01	2.15E-01	9.62E-01	8.99E-06	5.81E-05	7.34E-05	1.06E-02	1.19E-07	3.83E-06	0.00E+00	8.11E-07
2016 Annual	Mon-Sun	2270006025	Welders	D	250	Light Comr U	N	NHH	P	Total	Total	Total	2.72E-02	4.78E-02	2.58E-01	1.65E-06	5.77E-06	1.74E-05	2.84E-03	3.20E-08	5.26E-07	0.00E+00	1.49E-07
2016 Annual	Mon-Sun	2270006025	Welders	D	500	Light Comr U	N	NHH	P	Total	Total	Total	6.79E-02	1.20E-01	9.06E-01	5.39E-06	2.00E-05	5.33E-05	1.00E-02	9.82E-08	1.73E-06	0.00E+00	4.86E-07
2016 Annual	Mon-Sun	2270006030	Pressure Washers	D	15	Light Comr U	N	NHH	P	Total	Total	Total	1.60E+00	6.36E-01	1.42E-01	1.97E-06	9.90E-06	1.36E-05	1.55E-03	2.42E-08	7.23E-07	0.00E+00	1.78E-07
2016 Annual	Mon-Sun	2270006030	Pressure Washers	D	25	Light Comr U	N	NHH	P	Total	Total	Total	3.74E-01	1.48E-01	4.83E-02	7.20E-07	2.42E-06	4.47E-06	5.29E-04	6.72E-09	2.28E-07	0.00E+00	6.50E-08
2016 Annual	Mon-Sun	2270006030	Pressure Washers	D	50	Light Comr U	P	NHH	P	Total	Total	Total	7.40E-01	2.94E-01	1.92E-01	3.18E-06	1.37E-05	1.67E-05	2.10E-03	2.71E-08	9.91E-07	0.00E+00	2.87E-07
2016 Annual	Mon-Sun	2270006030	Pressure Washers	D	120	Light Comr U	P	NHH	P	Total	Total	Total	3.06E-01	1.21E-01	1.33E-01	1.29E-06	8.49E-06	1.08E-05	1.46E-03	1.71E-08	6.77E-07	0.00E+00	1.16E-07
2016 Annual	Mon-Sun	2270007010	Shredders	D	175	Logging Eq U	P	NHH	NP	Total	Total	Total	1.65E-01	5.44E-02	1.74E-01	1.19E-06	9.39E-06	1.26E-05	1.91E-03	2.15E-08	5.22E-07	0.00E+00	1.08E-07
2016 Annual	Mon-Sun	2270007015	Skidders	D	120	Logging Eq U	P	NHH	NP	Total	Total	Total	4.50E+01	1.78E+02	7.68E+02	6.50E-03	5.53E-02	4.87E-02	8.41E+00	9.87E-05	3.02E-03	0.00E+00	5.86E-04
2016 Annual	Mon-Sun	2270007015	Skidders	D	175	Logging Eq U	P	NHH	NP	Total	Total	Total	7.19E+01	2.84E+02	1.81E+03	1.31E-02	1.15E-01	8.76E-02	1.99E+01	2.24E-04	4.75E-03	0.00E+00	1.18E-03
2016 Annual	Mon-Sun	2270007015	Skidders	D	250	Logging Eq U	N	NHH	NP	Total	Total	Total	2.65E+01	1.05E+02	9.97E+02	6.12E-03	2.16E-02	3.99E-02	1.10E+01	1.24E-04	1.45E-03	0.00E+00	5.52E-04
2016 Annual	Mon-Sun	2270007015	Skidders	D	500	Logging Eq U	N	NHH	NP	Total	Total	Total	1.49E+00	5.89E+00	6.67E+01	4.04E-04	1.38E-03	2.47E-03	7.37E-01	7.23E-06	9.55E-05	0.00E+00	3.65E-05
2016 Annual	Mon-Sun	2270007020	Fellers/Bunchers	D	120	Logging Eq U	P	NHH	NP	Total	Total	Total	9.77E+01	3.42E+02	1.43E+03	1.17E-02	1.02E-01	9.01E-02	1.57E+01	1.84E-04	5.55E-03	0.00E+00	1.05E-03
2016 Annual	Mon-Sun	2270007020	Fellers/Bunchers	D	175	Logging Eq U	P	NHH	NP	Total	Total	Total	1.21E+02	4.23E+02	2.60E+03	1.80E-02	1.63E-01	1.25E-01	2.86E+01	3.22E-04	6.67E-03	0.00E+00	1.63E-03
2016 Annual	Mon-Sun	2270007020	Fellers/Bunchers	D	250	Logging Eq U	N	NHH	NP	Total	Total	Total	7.38E+01	2.58E+02	2.28E+03	1.33E-02	4.87E-02	9.06E-02	2.51E+01	2.83E-04	3.25E-03	0.00E+00	1.20E-03
2016 Annual	Mon-Sun	2270007020	Fellers/Bunchers	D	500	Logging Eq U	N	NHH	NP	Total	Total	Total	2.17E+01	7.58E+01	1.00E+03	5.81E-03	2.06E-02	3.70E-02	1.11E+01	1.09E-04	1.41E-03	0.00E+00	5.24E-04
2016 Annual	Mon-Sun	2270007020	Fellers/Bunchers	D	750	Logging Eq U	N	NHH	NP	Total	Total	Total	1.65E+00	5.79E+00	1.52E+02	8.82E-04	3.12E-03	5.68E-03	1.68E+00	1.69E-05	2.15E-04	0.00E+00	7.96E-05
2016 Annual	Mon-Sun	2270008010	Cargo Tractor	D	120	Airport Grc U	N	NHH	NP	Total	Total	Total	6.54E-02	2.35E-01	6.41E-01	9.84E-06	4.88E-05	6.02E-05	7.00E-03	7.87E-08	5.09E-06	0.00E+00	8.88E-07
2016 Annual	Mon-Sun	2270008015	A/C Tug Narrow Body	D	250	Airport Grc U	N	NHH	NP	Total	Total	Total	3.54E-01	6.07E-01	4.93E+00	5.96E-05	1.79E-04	5.52E-04	5.42E-02	6.10E-07	2.22E-05	0.00E+00	5.38E-06
2016 Annual	Mon-Sun	2270008020	A/C Tug Wide Body	D	500	Airport Grc U	N	NHH	NP	Total	Total	Total	8.77E-02	1.83E-01	2.77E+00	3.14E-05	1.36E-04	2.83E-04	3.04E-02	2.98E-07	1.13E-05	0.00E+00	2.84E-06
2016 Annual	Mon-Sun	2270008025	Air Conditioner	D	175	Airport Grc U	N	NHH	P	Total	Total	Total	5.65E-02	1.25E-01	8.27E-01	4.00E-06	4.83E-05	3.49E-05	9.10E-03	1.02E-07	1.47E-06	0.00E+00	3.61E-07
2016 Annual	Mon-Sun	2270008025	Air Conditioner	D	250	Airport Grc U	N	NHH	P	Total	Total	Total	4.46E-03	9.89E-03	9.28E-02	3.73E-07	1.85E-06	2.97E-06	1.03E-03	1.15E-08	9.07E-08	0.00E+00	3.37E-08
2016 Annual	Mon-Sun	2270008025	Air Conditioner	D	500	Airport Grc U	N	NHH	P	Total	Total	Total	2.97E-03	6.60E-03	1.24E-01	4.91E-07	2.41E-06	3.72E-06	1.37E-03	1.54E-08	1.19E-07	0.00E+00	4.43E-08
2016 Annual	Mon-Sun	2270008030	Air Start Unit	D	175	Airport Grc U	N	NHH	P	Total	Total	Total	1.49E-03	1.36E-03	9.37E-03	6.70E-08	5.29E-07	6.44E-07	1.03E-04	1.01E-09	2.92E-08	0.00E+00	6.04E-09
2016 Annual	Mon-Sun	2270008030	Air Start Unit	D	250	Airport Grc U	N	NHH	P	Total	Total	Total	4.46E-03	4.08E-03	3.99E-02	1.98E-07	8.35E-07	2.42E-06	4.41E-04	4.33E-09	6.83E-08	0.00E+00	1.78E-08
2016 Annual	Mon-Sun	2270008030	Air Start Unit	D	500	Airport Grc U	N	NHH	P	Total	Total	Total	1.75E-01	1.60E-01	3.14E+00	1.40E-05	6.50E-05	1.68E-04	3.47E-02	3.41E-07	5.04E-06	0.00E+00	1.27E-06
2016 Annual	Mon-Sun	2270008030	Air Start Unit	D	750	Airport Grc U	N	NHH	P	Total	Total	Total	2.53E-02	2.31E-02	6.78E-01	3.13E-06	1.40E-05	3.75E-05	7.50E-03	7.36E-08	1.11E-06	0.00E+00	2.82E-07
2016 Annual	Mon-Sun	2270008035	Baggage Tug	D	120	Airport Grc U	N	NHH	NP	Total	Total	Total	7.12E-01	2.72E+00	6.10E+00	1.31E-04	4.93E-04	7.56E-04	6.65E-02	7.80E-07	6.70E-05	0.00E+00	1.19E-05
2016 Annual	Mon-Sun	2270008040	Belt Loader	D	120	Airport Grc U	N	NHH	NP	Total	Total	Total	3.43E-01	9.18E-01	1.43E+00	2.74E-05	1.11E-04	1.63E-04	1.56E-02	1.83E-07	1.43E-05	0.00E+00	2.48E-06
2016 Annual	Mon-Sun	2270008045	Boltail	D	120	Airport Grc U	N	NHH	NP	Total	Total	Total	2.53E-02	4.74E-02	1.69E-01	3.06E-06	1.27E-05	1.88E-05	1.84E-03	2.16E-08	1.61E-06	0.00E+00	2.76E-07
2016 Annual	Mon-Sun	2270008050	Cargo Loader	D	120	Airport Grc U	N	NHH	NP	Total	Total	Total	4.19E-01	1.04E+00	3.01E+00	4.68E-05	2.25E-04	2.92E-04	3.29E-02	3.86E-07	2.48E-05	0.00E+00	4.22E-06
2016 Annual	Mon-Sun	2270008065	Forklift	D	175	Airport Grc U	P	NHH	NP	Total	Total	Total	5.80E-02	1.18E-01	3.15E-01	2.92E-06	1.92E-05	2.33E-05	3.46E-03	3.89E-08	1.24E-06	0.00E+00	2.63E-07
2016 Annual	Mon-Sun	2270008070	Fuel Truck	D	250	Airport Grc U	N	NHH	NP	Total	Total	Total	3.12E-02	5.36E-02	1.43E-01	8.83E-07	3.18E-06	9.21E-06	1.58E-03	1.78E-08	2.83E-07	0.00E+00	7.97E-08
2016 Annual	Mon-Sun	2270008075	Ground Power Unit	D	175	Airport Grc U	N	NHH	P	Total	Total	Total	4.65E-01	1.24E+00	8.64E+00	8.03E-05	5.40E-04	6.11E-04	9.48E-02	1.07E-06	3.29E-05	0.00E+00	7.25E-06
2016 Annual	Mon-Sun	2270008085	Lav Truck	D	175	Airport Grc U	N	NHH	NP	Total	Total	Total	7.43E-03	2.67E-02	6.38E-02	6.75E-07	4.10E-06	4.83E-06	6.99E-04	7.87E-09	2.71E-07	0.00E+00	6.09E-08
2016 Annual	Mon-Sun	2270008090	Lift	D	120	Airport Grc U	N	NHH	NP	Total	Total	Total	7.73E-02	1.68E-01	5.53E-01	7.27E-06	4.00E-05	4.87E-05	6.05E-03	7.10E-08	3.90E-06	0.00E+00	6.56E-07
2016 Annual	Mon-Sun	2270008100	Other GSE	D	175	Airport Grc U	N	NHH	NP	Total	Total	Total	1.38E-01	3.50E-01	1.41E+00	1.88E-05	9.12E-05	1.40E-04	1.54E-02	1.99E-07	7.91E-06	0.00E+00	1.70E-06
2016 Annual	Mon-Sun	2270008101	Passenger Stand	D	120	Airport Grc U	N	NHH	NP	Total	Total	Total	1.19E-02	2.28E-03	7.72E-03	6.42E-08	4.81E-07	5.93E-07	8.47E-05	9.94E-10	3.45E-08	0.00E+00	5.80E-09
2016 Annual	Mon-Sun	2270008102	Sweeper	D	120	Airport Grc U	N	NHH	NP	Total	Total	Total	3.42E-02	2.71E-02	4.05E-02	2.42E-07	2.56E-06	2.59E-06	4.44E-04	5.00E-09	1.37E-07	0.00E+00	2.18E-08
2016 Annual	Mon-Sun	2270008103	Generator	D	120	Airport Grc U	N	NHH	P	Total	Total	Total	2.23E-02	9.97E-02	3.75E-01	5.52E-06	2.87E-05	3.38E-05	4.09E-03	4.61E-08	2.80E-06	0.00E+00	4.98E-07
2016 Annual	Mon-Sun	2270008103	Generator	D	175	Airport Grc U	N	NHH	P	Total	Total	Total	1.22E-01	5.45E-01	8.85E+00	4.21E-05	2.51E-04	2.93E-04	4.22E-02	4.75E-07	1.66E-05	0.00E+00	3.80E-06
2016 Annual	Mon-Sun	2270008103	Generator	D	250	Airport Grc U	N	NHH	P	Total	Total	Total	1.26E-01	5.65E-01	5.73E+00	4.63E-05	1.38E-04						

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Pollutant Summary Graphs

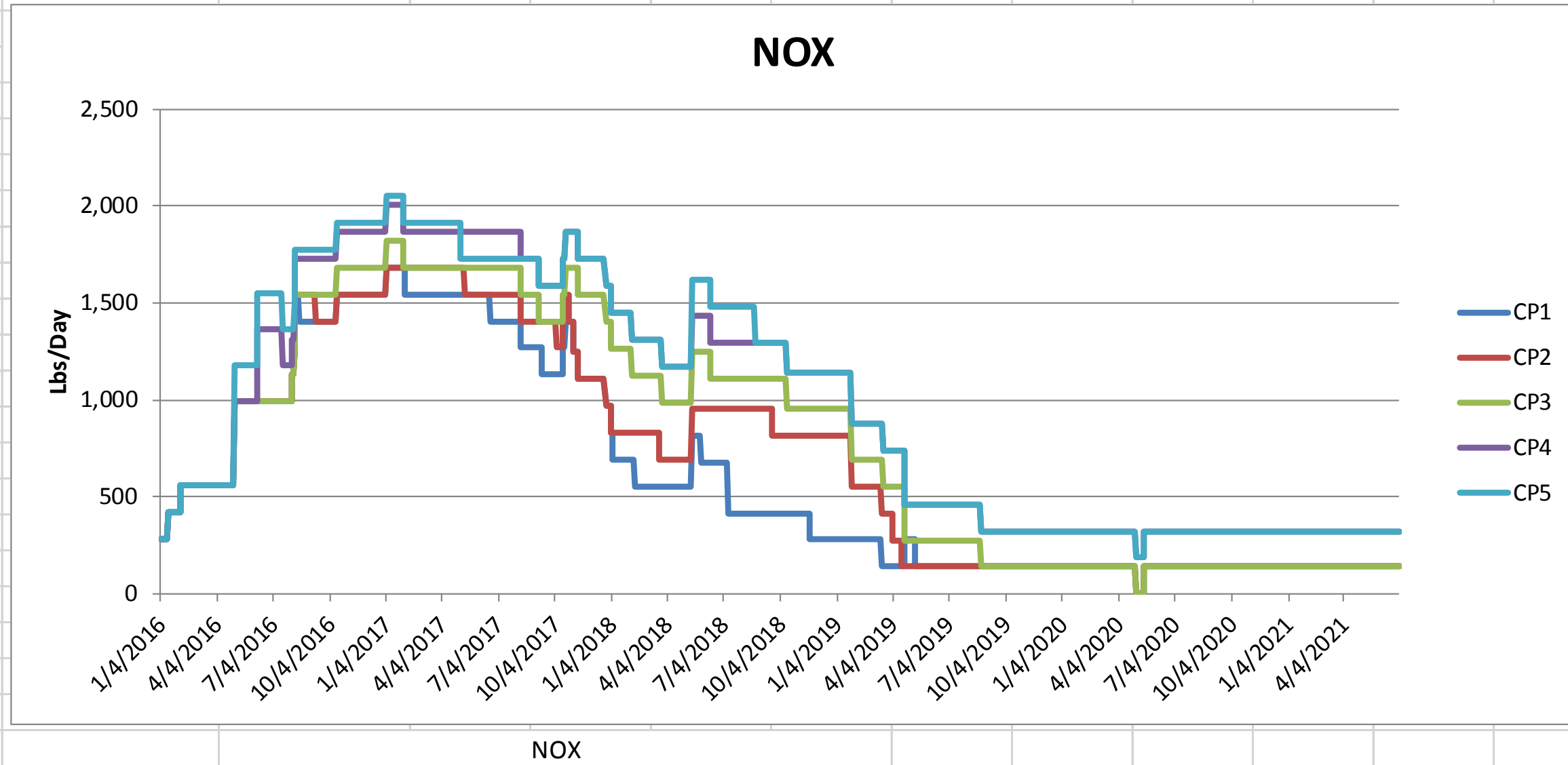
ROG Summary by CP

Data obtained from worksheet 2.CP1 Daily Emissions Summary through 6.CP 5 Daily Emissions Summary for each pollutant



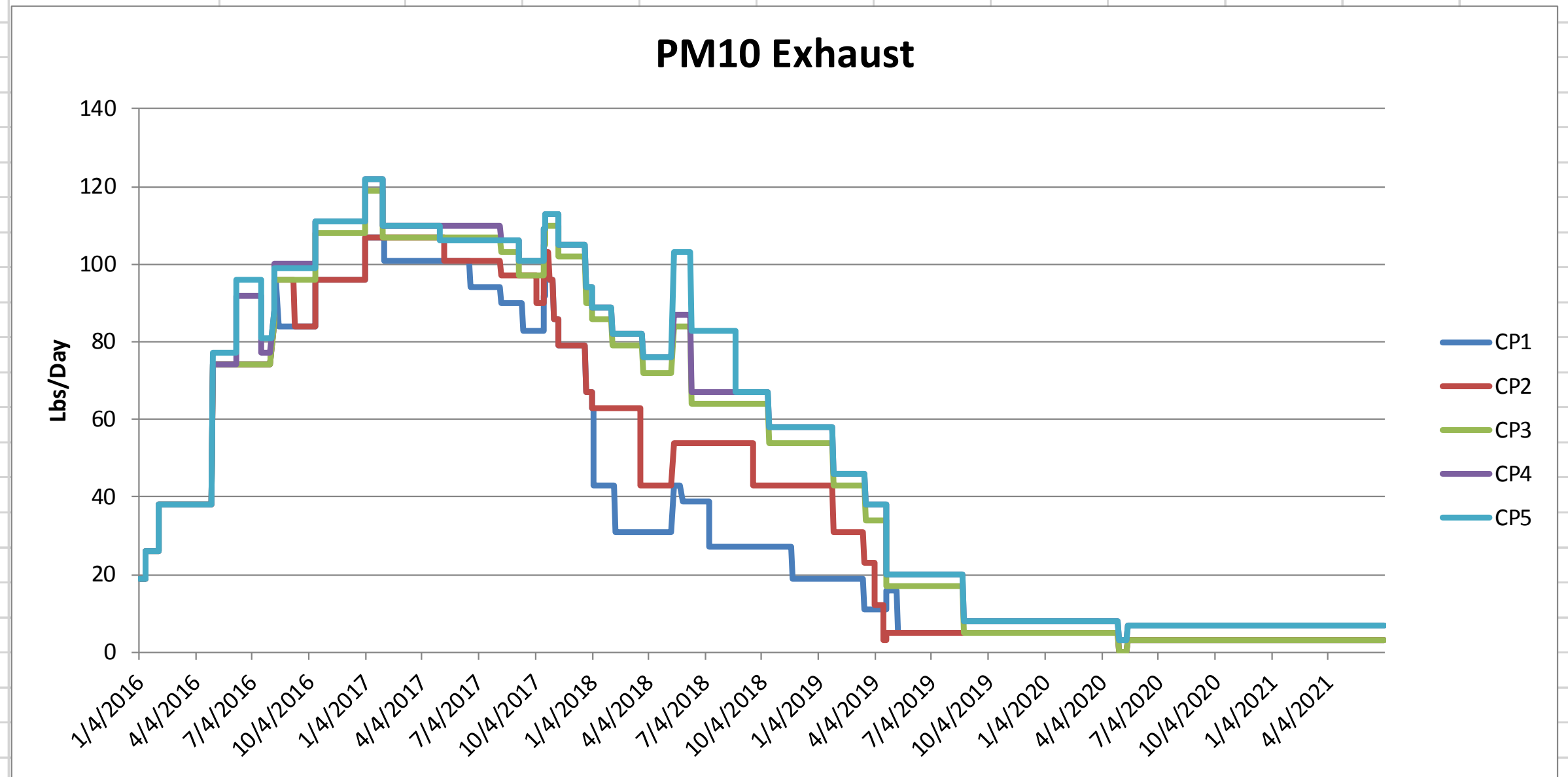
NOX Summary by CP

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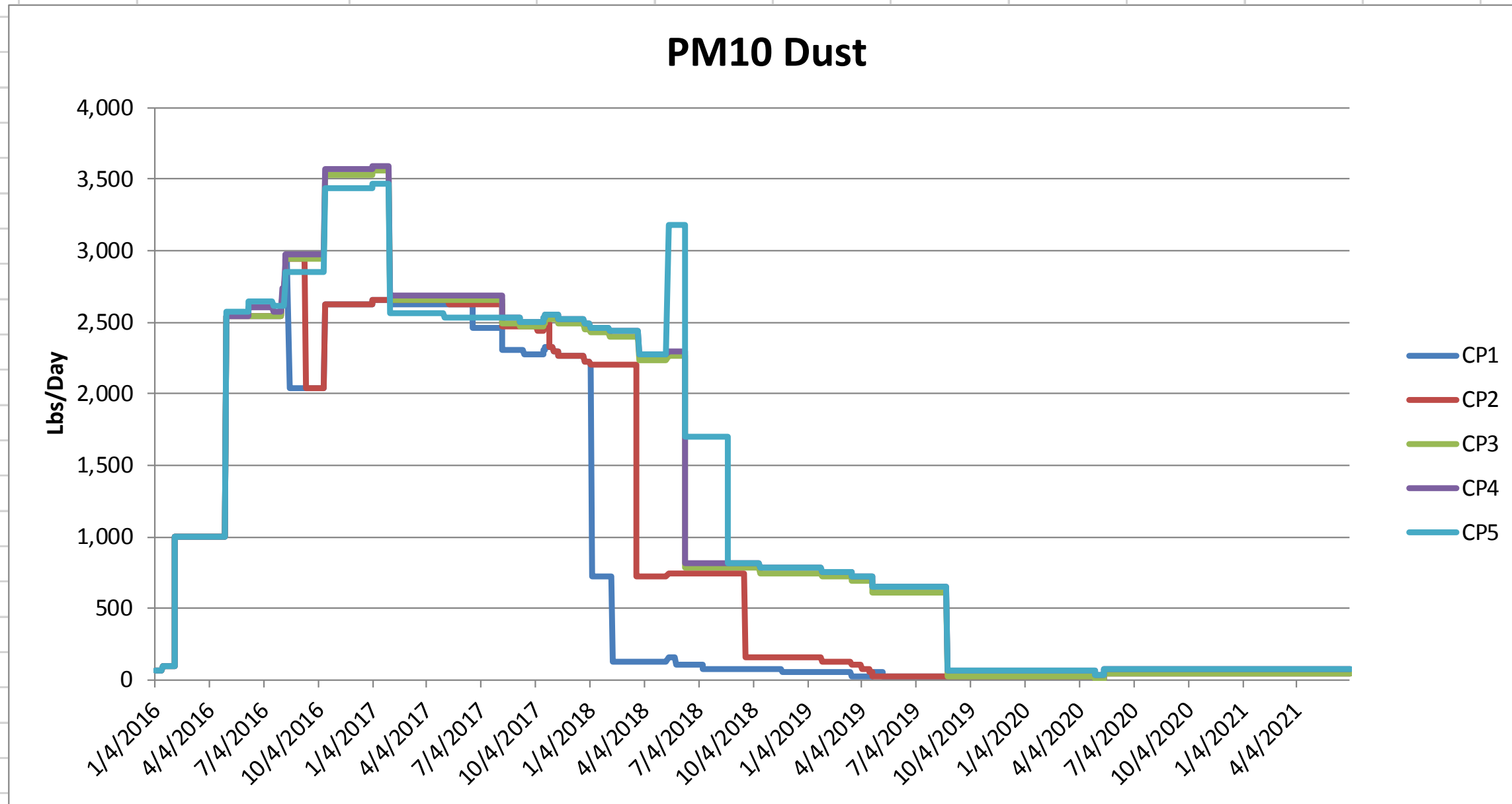
PM10 Exhaust Summary by CP

Data obtained from worksheet 2.CP1 Daily Emissions Summary through 6.CP 5 Daily Emissions Summary for each pollutant



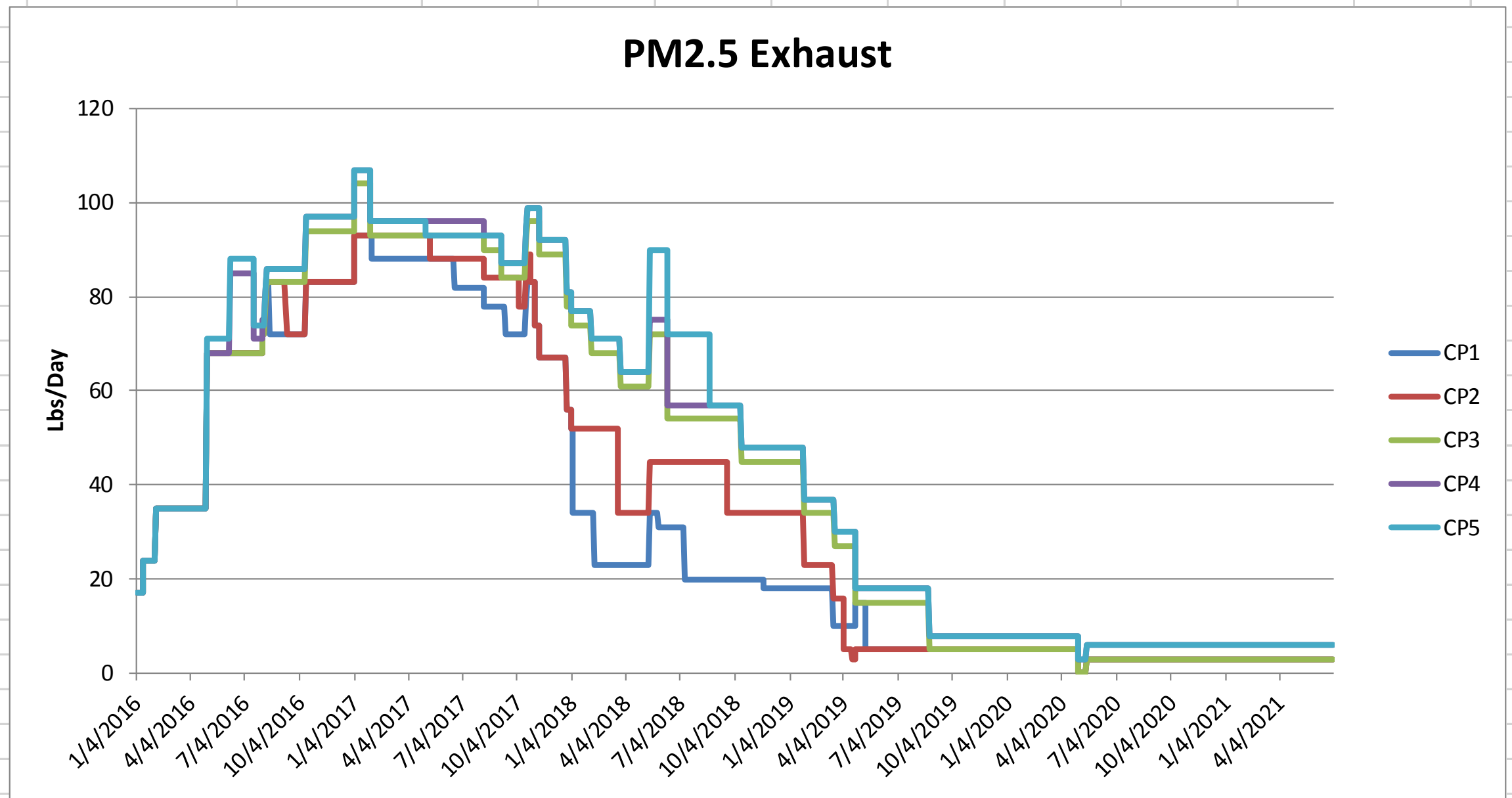
PM10 Dust Summary by CP

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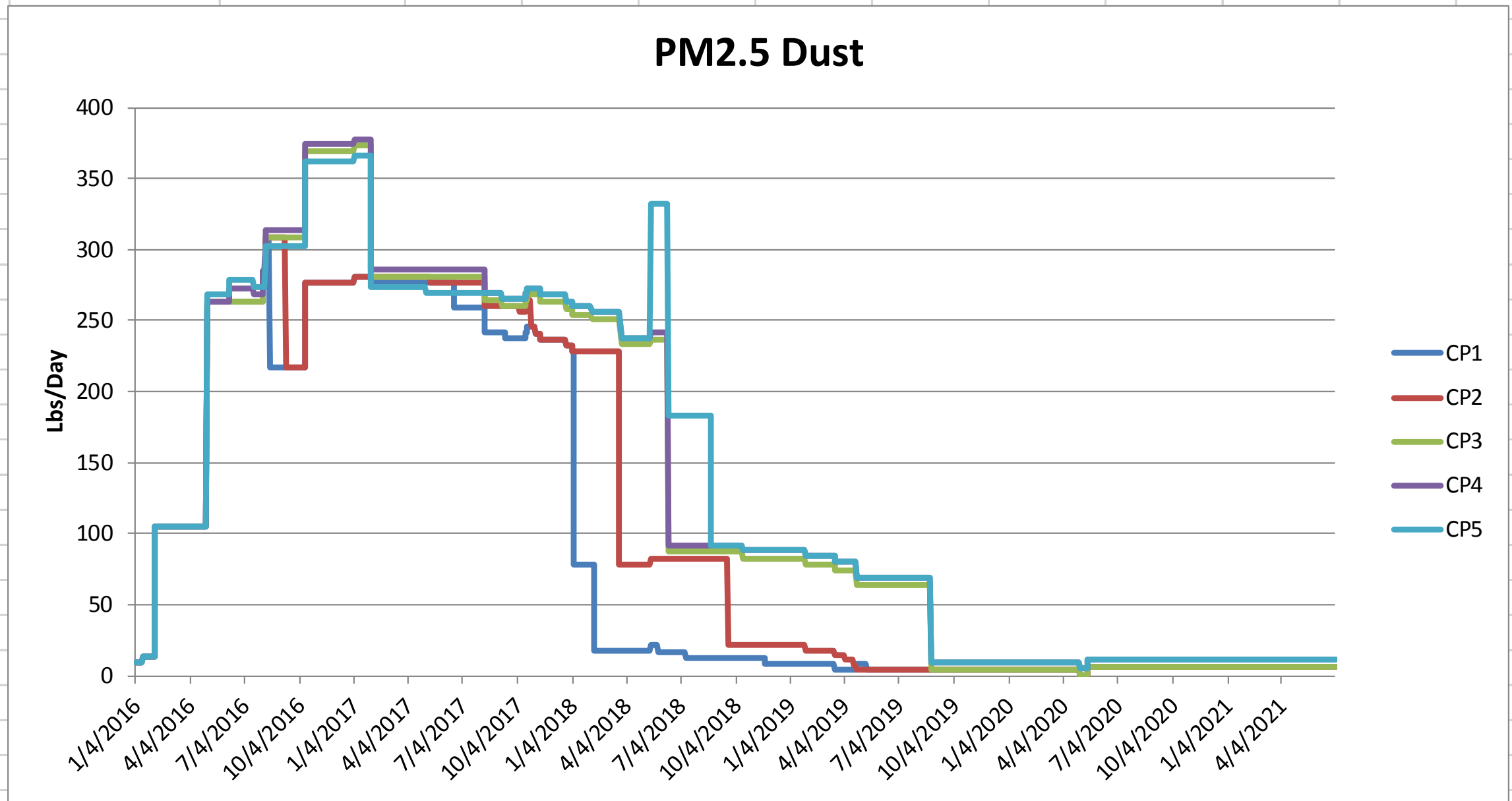
PM2.5 Exhaust Summary by CP

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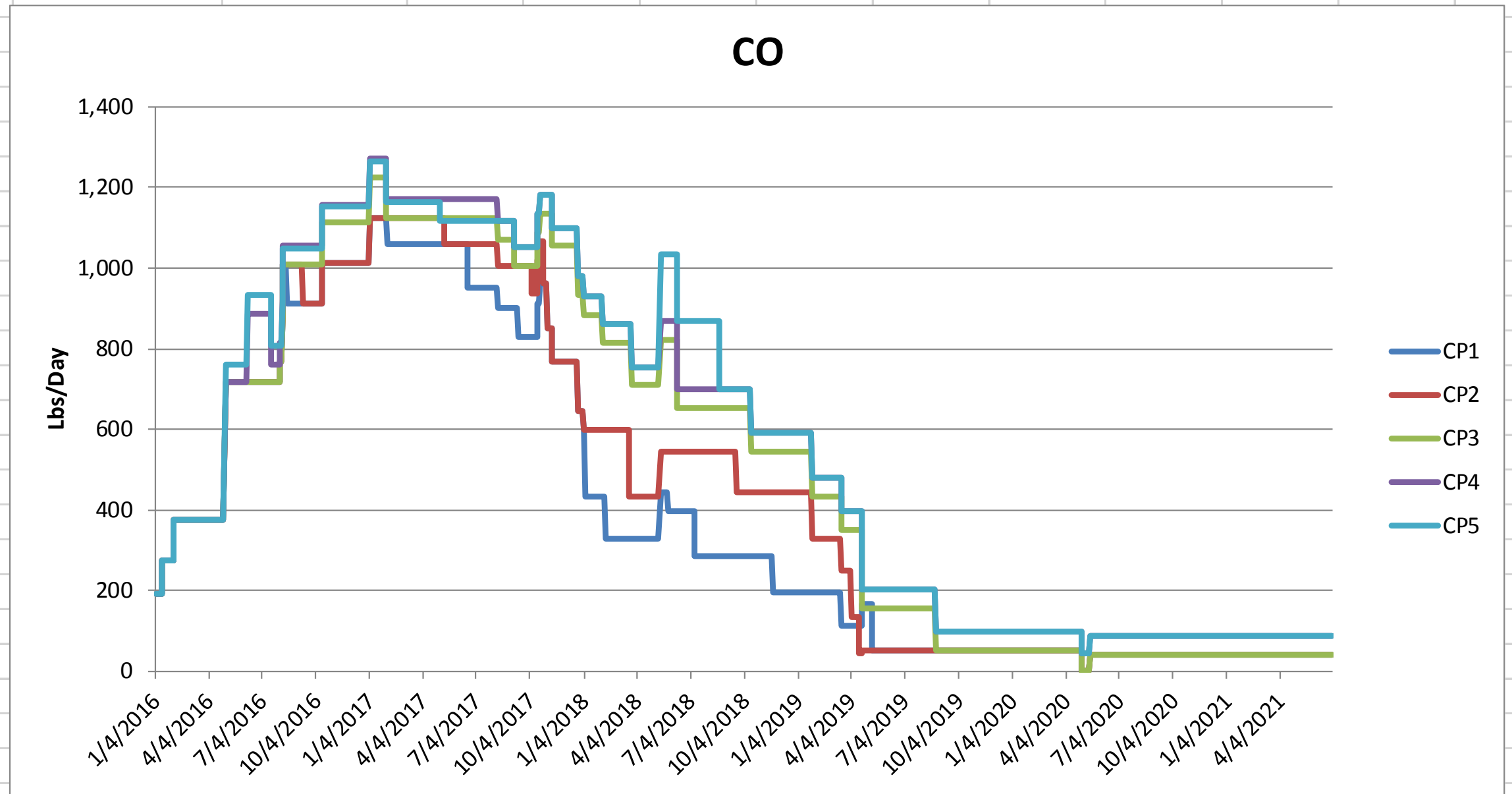
PM2.5 Dust Summary by CP

Data obtained from worksheet 2.CP1 Daily Emissions Summary through 6.CP 5 Daily Emissions Summary for each pollutant



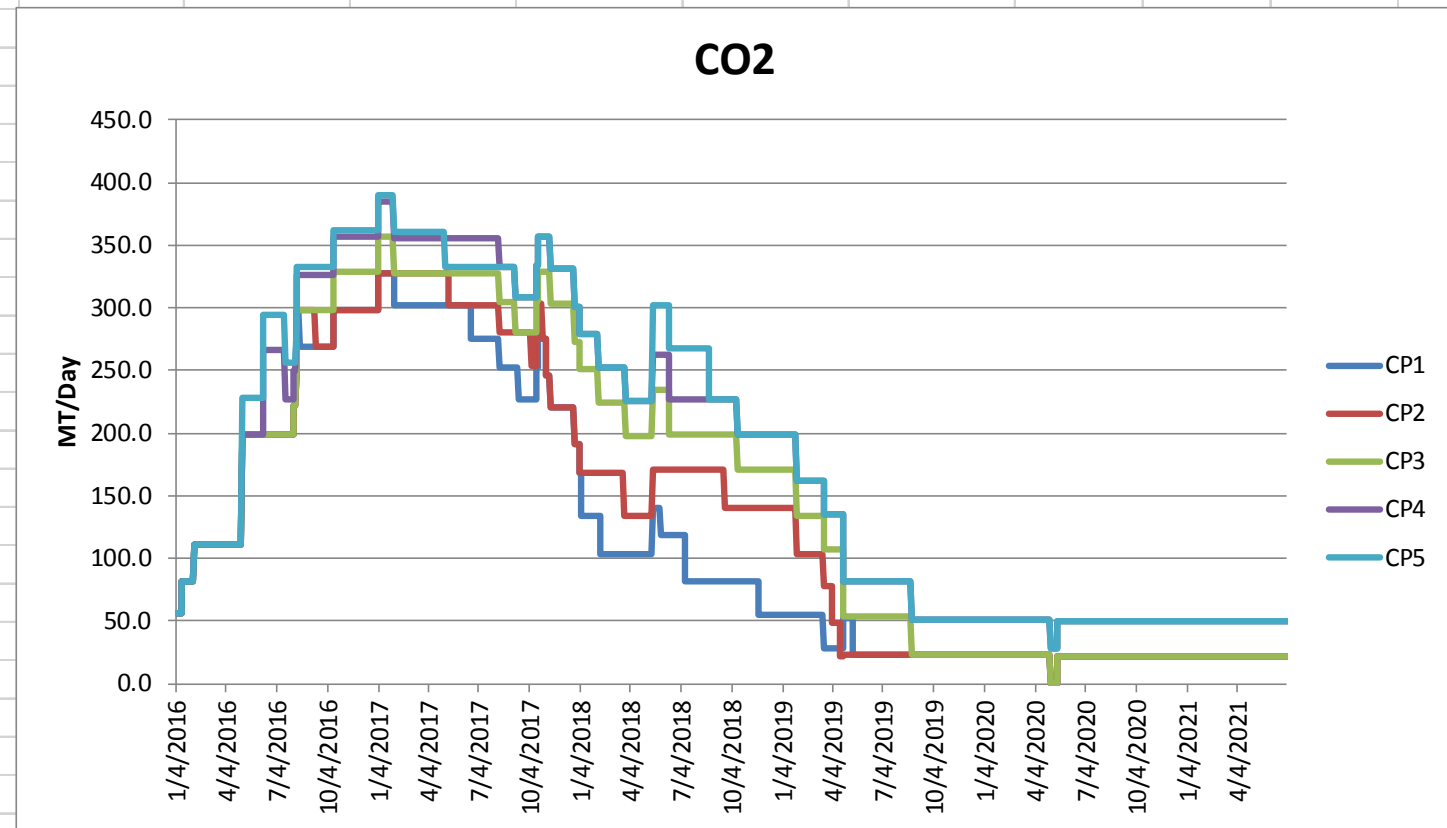
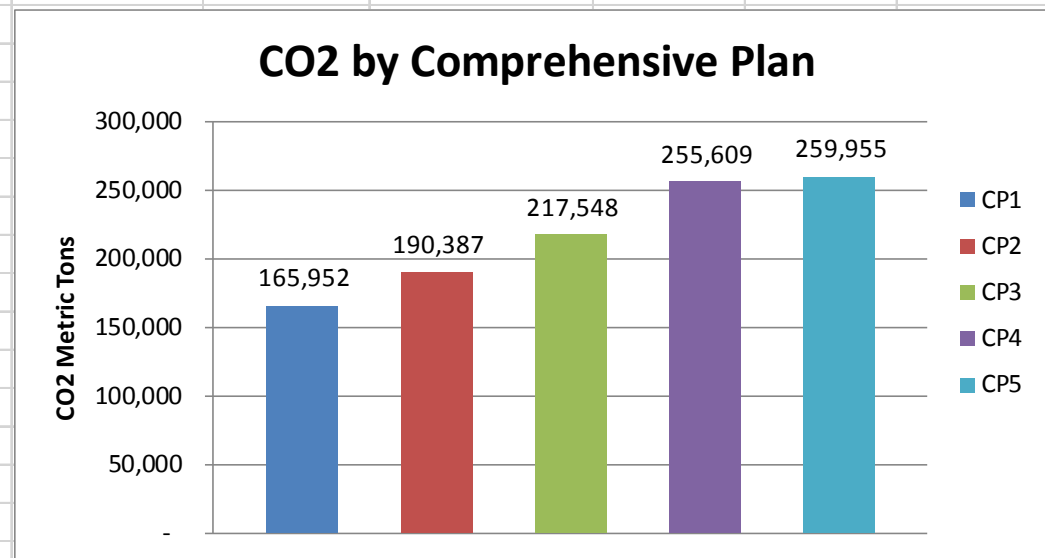
CO Summary by CP

Data obtained from worksheet 2.CP1 Daily Emissions Summary through 6.CP 5 Daily Emissions Summary for each pollutant



CO Summary by CP

Data obtained from worksheet 2.CP1 Daily Emissions Summary through 6.CP 5 Daily Emissions Summary for each pollutant



CO2 MT/CP

CP1	CP2	CP3	CP4	CP5
165,952	190,387	217,548	255,609	259,955

CO2 Average MT/YR

CP1	CP2	CP3	CP4	CP5
36,878	38,077	43,510	51,122	51,991

Conversion Rates

2204 lbs/metric ton google.com

Operational Mobile Emissions

Operational Visitation Trips			
<u>1. Assumptions</u>			
		<u>Existing Conditions</u>	<u>Future Conditions</u>
		<u>Increase in Visitation</u>	<u>Increase in Visitation</u>
	<u>CP</u>	<u>Days</u>	<u>Days</u>
	CP1	78,000	89,000
	CP2	164,000	134,000
	CP3	216,000	205,000
	CP4	363,000	370,000
	CP5	199,000	175,000
	2.5	people/vehicle	
	2.5	days/visit	
	180	day visit period/year	
	25	miles/trip	
<u>2. Formula</u>			
	Visitation Days =	$(X/2) * 2.5 \text{ people/vehicle} * 2.5 \text{ days/visit} * 180 \text{ visitation days}$	
	Where:		
	X =	Daily One Way Trips	
	Therefore:		
	Daily Trips (X) =	$(\text{Visitation Days} / (2.5 \text{ people/vehicle} * 2.5 \text{ days/visit} * 180 \text{ visitation days})) * 2$	

Shasta Lake Water Resources Investigation

<u>3. Trip Generation and Mobile Emissions -- Future Conditions</u>										
<i>Trip generation rates calculated based on above assumptions and air pollutant emissions estimated using CalEEMod 2011.</i>										
<u>CP</u>	<u>Visitor Days</u>	<u>Trip Gen.</u>	<u>ROG</u>	<u>NOX</u>	<u>PM10 Exh.</u>	<u>PM10 Dust</u>	<u>PM2.5 Exh.</u>	<u>PM2.5 Dust</u>	<u>CO¹</u>	<u>Unit</u>
CP1	89,000	158	1.18	4.11	0.12	2.2	0.12	0.03	8.94	lb/day
CP2	134,000	238	1.77	6.2	0.19	3.32	0.17	0.05	13.47	lb/day
CP3	205,000	364	2.71	9.48	0.29	5.07	0.27	0.08	20.59	lb/day
CP4	370,000	658	4.9	17.13	0.52	9.17	0.48	0.14	37.23	lb/day
CP5	175,000	311	2.32	8.1	0.24	4.33	0.23	0.07	17.6	lb/day
Notes:										
1 CO2 is presented in metric tons/year and the values are taken from the annual trip CalEEMod output files for CP1-CP5										
<u>4. Trip Generation and Mobile Emissions -- Existing Conditions</u>										
<i>Trip generation rates calculated based on above assumptions. Air pollutant emissions estimated from the above results.</i>										
<u>CP</u>	<u>Visitor Days</u>	<u>Trip Gen.</u>	<u>ROG³</u>	<u>NOX³</u>	<u>PM10 Exh.³</u>	<u>PM10 Dust³</u>	<u>PM2.5 Exh.³</u>	<u>PM2.5 Dust³</u>	<u>CO^{1,3}</u>	<u>Unit</u>
Multiplier ²	N/A	N/A	0.0132	0.0462	0.0014	0.0247	0.0013	0.0004	0.10	N/A
CP1	78,000	138	1.03	3.60	0.11	1.93	0.10	0.03	7.8	lb/day
CP2	164,000	291	2.16	7.58	0.23	4.05	0.21	0.07	16.5	lb/day
CP3	216,000	384	2.85	9.98	0.30	5.34	0.28	0.09	21.7	lb/day
CP4	363,000	646	4.79	16.77	0.51	8.97	0.47	0.15	36.5	lb/day
CP5	199,000	354	2.63	9.19	0.28	4.92	0.26	0.08	20.0	lb/day
Notes:										
1	CO2 is presented in metric tons/year									
2	Multipliers in the above table were calculated based on future condition results from CalEEMod 2011. Multipliers are equal to the future condition results for each parameter above divided by the increase in visitor days multiplied by 1000. Example: Multiplier for ROG (based on CP1 future conditions) = 1.18/89,000*1000 = 0.0132									
3	Existing condition values for ROG, NOX, PM10 Exh., PM10 Dust, PM2.5 Exh., PM2.5 Dust, and CO were estimated based on future condition results from CalEEMod 2011. Existing condition values were estimated as: (Multiplier)*(Visitor Days)/1000									

CalEEMod Version: CalEEMod.2011.1.1

Date: 12/5/2012

CP1- Shasta Operational Trips
Shasta County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
City Park	1	Acre

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)		Utility Company	Pacific Gas & Electric Company
Climate Zone	14		2.7		
		Precipitation Freq (Days)			

1.3 User Entered Comments

82

Project Characteristics -

Land Use - Land Use chosen is irrelevant as this model is only used to estimate operational trips based on project trip generation information

Construction Phase - Operation Only

Off-road Equipment - Operation Only

Vehicle Trips - 158 trips/day based on increased visitation days for CP1. 25 mile trip length based on project trip information. Ratios for pass-by as divert trip were calculated based on the ratios for default trip length values in CalEEMod

Water And Wastewater - Model run used for mobile emissions from CP1 only

Solid Waste - Model run used for mobile emissions from CP1 only

4.0 Mobile Detail

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	1.18	4.11	8.94	0.02	2.20	0.12	2.33	0.03	0.12	0.15		2,160.70		0.06		2,161.97
Unmitigated	1.18	4.11	8.94	0.02	2.20	0.12	2.33	0.03	0.12	0.15		2,160.70		0.06		2,161.97
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	158.00	158.00	158.00	661,757	661,757
Total	158.00	158.00	158.00	661,757	661,757

4.3 Trip Type Information

Land Use	Miles			Trip %		
	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
City Park	25.00	11.20	11.20	33.00	48.00	19.00

CP1-Shasta Operational Trips
Shasta County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
City Park	1	Acre

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	Utility Company
Climate Zone	14	2.7	Pacific Gas & Electric Company
		Precipitation Freq (Days)	

1.3 User Entered Comments

82

Project Characteristics -

Land Use - Land Use chosen is irrelevant as this model is only used to estimate operational trips based on project trip generation information

Construction Phase - Operation Only

Off-road Equipment - Operation Only

Vehicle Trips - 158 trips/day based on increased visitation days for CP1. 25 mile trip length based on project trip information. Ratios for pass-by as divert trip were calculated based on the ratios for default trip length values in CalEEMod

Water And Wastewater - Model run used for mobile emissions from CP1 only

Solid Waste - Model run used for mobile emissions from CP1 only

4.0 Mobile Detail

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	0.20	0.75	1.57	0.00	0.30	0.02	0.32	0.01	0.02	0.03	0.00	336.66	336.66	0.01	0.00	336.87
Unmitigated	0.20	0.75	1.57	0.00	0.30	0.02	0.32	0.01	0.02	0.03	0.00	336.66	336.66	0.01	0.00	336.87
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	158.00	158.00	158.00	661,757	661,757
Total	158.00	158.00	158.00	661,757	661,757

4.3 Trip Type Information

Land Use	Miles			Trip %		
	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
City Park	25.00	11.20	11.20	33.00	48.00	19.00

CP2-Shasta Operational Trips
Shasta County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
City Park	1	Acre

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	2.7	Utility Company	Pacific Gas & Electric Company
Climate Zone	14	Precipitation Freq (Days)	82		

1.3 User Entered Comments

Project Characteristics -

Land Use - Land Use chosen is irrelevant as this model is only used to estimate operational trips based on project trip generation information

Construction Phase - Operation Only

Off-road Equipment - Operation Only

Vehicle Trips - 238 trips/day based on increased visitation days for CP2. 25 mile trip length based on project trip information. Ratios for pass-by as divert trip were calculated based on the ratios for default trip length values in CalEEMod

Water And Wastewater - Model run used for mobile emissions from CP2 only

Solid Waste - Model run used for mobile emissions from CP2 only

4.0 Mobile Detail

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	1.77	6.20	13.47	0.03	3.32	0.19	3.50	0.05	0.17	0.23			3,254.72	0.09		3,256.63
Unmitigated	1.77	6.20	13.47	0.03	3.32	0.19	3.50	0.05	0.17	0.23	—	—	3,254.72	—	—	3,256.63
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	238.00	238.00	238.00	996,824	996,824
Total	238.00	238.00	238.00	996,824	996,824

4.3 Trip Type Information

Land Use	Miles			Trip %		
	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
City Park	25.00	11.20	11.20	33.00	48.00	19.00

CalEEMod Version: CalEEMod.2011.1.1

Date: 12/5/2012

CP2-Shasta Operational Trips
Shasta County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
City Park	1	Acre

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)		Utility Company	Pacific Gas & Electric Company
Climate Zone	14		2.7		
		Precipitation Freq (Days)			

1.3 User Entered Comments

82

Project Characteristics -

Land Use - Land Use chosen is irrelevant as this model is only used to estimate operational trips based on project trip generation information

Construction Phase - Operation Only

Off-road Equipment - Operation Only

Vehicle Trips - 238 trips/day based on increased visitation days for CP2. 25 mile trip length based on project trip information. Ratios for pass-by as divert trip were calculated based on the ratios for default trip length values in CalEEMod

Water And Wastewater - Model run used for mobile emissions from CP2 only

Solid Waste - Model run used for mobile emissions from CP2 only

4.0 Mobile Detail

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	0.30	1.13	2.37	0.01	0.45	0.03	0.48	0.01	0.03	0.04	0.00	507.12	507.12	0.02	0.00	507.44
Unmitigated	0.30	1.13	2.37	0.01	0.45	0.03	0.48	0.01	0.03	0.04	0.00	507.12	507.12	0.02	0.00	507.44
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	238.00	238.00	238.00	996,824	996,824
Total	238.00	238.00	238.00	996,824	996,824

4.3 Trip Type Information

Land Use	Miles			Trip %		
	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
City Park	25.00	11.20	11.20	33.00	48.00	19.00

CalEEMod Version: CalEEMod.2011.1.1

Date: 12/5/2012

CP3-Shasta Operational Trips
Shasta County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
City Park	1	Acre

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	Utility Company Pacific Gas & Electric Company
Climate Zone	14	2.7	
		Precipitation Freq (Days)	

1.3 User Entered Comments

82

Project Characteristics -

Land Use - Land Use chosen is irrelevant as this model is only used to estimate operational trips based on project trip generation information

Construction Phase - Operation Only

Off-road Equipment - Operation Only

Vehicle Trips - 364 trips/day based on increased visitation days for CP3. 25 mile trip length based on project trip information. Ratios for pass-by as divert trip were calculated based on the ratios for default trip length values in CalEEMod

Water And Wastewater - Model run used for mobile emissions from CP3 only

Solid Waste - Model run used for mobile emissions from CP3 only

4.0 Mobile Detail

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	2.71	9.48	20.59	0.05	5.07	0.29	5.36	0.08	0.27	0.35		4,977.81		0.14		4,980.73
Unmitigated	2.71	9.48	20.59	0.05	5.07	0.29	5.36	0.08	0.27	0.35		4,977.81		0.14		4,980.73
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	364.00	364.00	364.00	1,524,555	1,524,555
Total	364.00	364.00	364.00	1,524,555	1,524,555

4.3 Trip Type Information

Land Use	Miles			Trip %		
	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
City Park	25.00	11.20	11.20	33.00	48.00	19.00

CalEEMod Version: CalEEMod.2011.1.1

Date: 12/5/2012

CP3-Shasta Operational Trips
Shasta County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
City Park	1	Acre

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)		Utility Company	Pacific Gas & Electric Company
Climate Zone	14		2.7		
		Precipitation Freq (Days)			

1.3 User Entered Comments

82

Project Characteristics -

Land Use - Land Use chosen is irrelevant as this model is only used to estimate operational trips based on project trip generation information

Construction Phase - Operation Only

Off-road Equipment - Operation Only

Vehicle Trips - 364 trips/day based on increased visitation days for CP3. 25 mile trip length based on project trip information. Ratios for pass-by as divert trip were calculated based on the ratios for default trip length values in CalEEMod

Water And Wastewater - Model run used for mobile emissions from CP3 only

Solid Waste - Model run used for mobile emissions from CP3 only

4.0 Mobile Detail

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	0.46	1.72	3.62	0.01	0.68	0.05	0.74	0.01	0.05	0.06	0.00	775.59	775.59	0.02	0.00	776.08
Unmitigated	0.46	1.72	3.62	0.01	0.68	0.05	0.74	0.01	0.05	0.06	0.00	775.59	775.59	0.02	0.00	776.08
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	364.00	364.00	364.00	1,524,555	1,524,555
Total	364.00	364.00	364.00	1,524,555	1,524,555

4.3 Trip Type Information

Land Use	Miles			Trip %		
	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
City Park	25.00	11.20	11.20	33.00	48.00	19.00

CalEEMod Version: CalEEMod.2011.1.1

Date: 12/5/2012

CP4-Shasta Operational Trips
Shasta County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
City Park	1	Acre

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)		Utility Company	Pacific Gas & Electric Company
Climate Zone	14		2.7		
		Precipitation Freq (Days)			

1.3 User Entered Comments

82

Project Characteristics -

Land Use - Land Use chosen is irrelevant as this model is only used to estimate operational trips based on project trip generation information

Construction Phase - Operation Only

Off-road Equipment - Operation Only

Vehicle Trips - 658 trips/day based on increased visitation days for CP4. 25 mile trip length based on project trip information. Ratios for pass-by and divert trips

were calculated based on the ratios for default trip length values in CalEEMod

Water And Wastewater - Model run used for mobile emissions from CP4 only

Solid Waste - Model run used for mobile emissions from CP4 only

4.0 Mobile Detail

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	4.90	17.13	37.23	0.09	9.17	0.52	9.68	0.14	0.48	0.63		8,998.36		0.25		9,003.63
Unmitigated	4.90	17.13	37.23	0.09	9.17	0.52	9.68	0.14	0.48	0.63		8,998.36		0.25		9,003.63
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	658.00	658.00	658.00	2,755,926	2,755,926
Total	658.00	658.00	658.00	2,755,926	2,755,926

4.3 Trip Type Information

Land Use	Miles			Trip %		
	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
City Park	25.00	11.20	11.20	33.00	48.00	19.00

CP4-Shasta Operational Trips
Shasta County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
City Park	1	Acre

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	Utility Company
Climate Zone	14	2.7	Pacific Gas & Electric Company
		Precipitation Freq (Days)	

1.3 User Entered Comments

82

Project Characteristics -

Land Use - Land Use chosen is irrelevant as this model is only used to estimate operational trips based on project trip generation information

Construction Phase - Operation Only

Off-road Equipment - Operation Only

Vehicle Trips - 658 trips/day based on increased visitation days for CP4. 25 mile trip length based on project trip information. Ratios for pass-by and divert trips were calculated based on the ratios for default trip length values in CalEEMod

Water And Wastewater - Model run used for mobile emissions from CP4 only

Solid Waste - Model run used for mobile emissions from CP4 only

4.0 Mobile Detail

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	0.83	3.11	6.54	0.02	1.24	0.09	1.33	0.03	0.09	0.11	0.00	1,402.03	1,402.03	0.04	0.00	1,402.91
Unmitigated	0.83	3.11	6.54	0.02	1.24	0.09	1.33	0.03	0.09	0.11	0.00	1,402.03	1,402.03	0.04	0.00	1,402.91
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	658.00	658.00	658.00	2,755,926	2,755,926
Total	658.00	658.00	658.00	2,755,926	2,755,926

4.3 Trip Type Information

Land Use	Miles			Trip %		
	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
City Park	25.00	11.20	11.20	33.00	48.00	19.00

CalEEMod Version: CalEEMod.2011.1.1

Date: 12/5/2012

CP5-Shasta Operational Trips
Shasta County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
City Park	1	Acre

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	Utility Company
Climate Zone	14	2.7	Pacific Gas & Electric Company
		Precipitation Freq (Days)	

1.3 User Entered Comments

82

Project Characteristics -

Land Use - Land Use chosen is irrelevant as this model is only used to estimate operational trips based on project trip generation information

Construction Phase - Operation Only

Off-road Equipment - Operation Only

Vehicle Trips - 311 trips/day based on increased visitation days for CP5. 25 mile trip length based on project trip information. Ratios for pass-by and divert trips

were calculated based on the ratios for default trip length values in CalEEMod

Water And Wastewater - Model run used for mobile emissions from CP5 only

Solid Waste - Model run used for mobile emissions from CP5 only

4.0 Mobile Detail

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	2.32	8.10	17.60	0.04	4.33	0.24	4.58	0.07	0.23	0.30		4,253.02		0.12		4,255.52
Unmitigated	2.32	8.10	17.60	0.04	4.33	0.24	4.58	0.07	0.23	0.30		4,253.02		0.12		4,255.52
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	311.00	311.00	311.00	1,302,573	1,302,573
Total	311.00	311.00	311.00	1,302,573	1,302,573

4.3 Trip Type Information

Land Use	Miles			Trip %		
	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
City Park	25.00	11.20	11.20	33.00	48.00	19.00

CP5-Shasta Operational Trips
Shasta County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
City Park	1	Acre

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	Utility Company
Climate Zone	14	2.7	Pacific Gas & Electric Company
		Precipitation Freq (Days)	

1.3 User Entered Comments

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Project Characteristics -

Land Use - Land Use chosen is irrelevant as this model is only used to estimate operational trips based on project trip generation information

Construction Phase - Operation Only

Off-road Equipment - Operation Only

Vehicle Trips - 311 trips/day based on increased visitation days for CP5. 25 mile trip length based on project trip information. Ratios for pass-by and divert trips were calculated based on the ratios for default trip length values in CalEEMod

Water And Wastewater - Model run used for mobile emissions from CP5 only

Solid Waste - Model run used for mobile emissions from CP5 only

4.0 Mobile Detail

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	0.39	1.47	3.09	0.01	0.58	0.04	0.63	0.01	0.04	0.05	0.00	662.66	662.66	0.02	0.00	663.08
Unmitigated	0.39	1.47	3.09	0.01	0.58	0.04	0.63	0.01	0.04	0.05	0.00	662.66	662.66	0.02	0.00	663.08
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	311.00	311.00	311.00	1,302,573	1,302,573
Total	311.00	311.00	311.00	1,302,573	1,302,573

4.3 Trip Type Information

Land Use	Miles			Trip %		
	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
City Park	25.00	11.20	11.20	33.00	48.00	19.00

GHG Emissions Comparison

GHG Emissions Comparison										
Existing										
	CO2e MT/yr Construction	Acres Cleared	CO2e MT/yr Loss	GWh Produced	CO2e MT/yr "gain"	Trip Increase	CO2e MT/yr Mobile			
CP1	10000	473	4034	(2.2)	(1,900)	148	294			
CP2	10000	?	5910	0.9	800	251	500	CO2e MT/Acre Tree Removal Calculation		
CP3	10000	1000	8163	70.2	62,700	398	792	473 acres		
CP4	10000	1000	8163	76.1	67,900	398	792	4304 CO2e MT		
CP5	10000	?	8311	4.2	3,800	711	1415	8.5 CO2e MT/Acre Removed		
New -- Existing Conditions										
	CO2e MT/CP Construction	Acres Cleared	CO2e MT/yr Loss	GWh Produced	CO2e MT/yr "gain"	Trip Increase	CO2e MT/yr Mobile	Net Change in Operational CO2 MT/yr (sequestration loss + mobile - CO2 gained from Electricity)	CO2 Amortized over 50 years	Net Change CO2
CP1	165,952	370	3,156	2.7	2,400	138	296	1,052	3,319	4,371
CP2	190,387	590	5,031	15.0	13,400	291	622	(7,747)	3,807	(3,940)
CP3	217,548	840	7,164	71.2	63,600	384	819	(55,617)	4,350	(51,267)
CP4	255,610	840	7,164	81.1	72,400	646	1376	(63,860)	5,112	(58,748)
CP5	259,956	840	7,164	23.6	21,000	354	754	(13,082)	5,199	(7,883)
New -- Future Conditions										
	CO2e MT/CP Construction	Acres Cleared	CO2e MT/yr Loss	GWh Produced	CO2e MT/yr "gain"	Trip Increase	CO2e MT/yr Mobile	Net Change in Operational CO2 MT/yr (sequestration loss + mobile - CO2 gained from Electricity)	CO2 Amortized over 50 years	Net Change CO2
CP1	165,952	370	3,156	(2.2)	(1,900)	158	337	5,393	3,319	8,712
CP2	190,387	590	5,031	0.9	800	238	507	4,738	3,807	8,545
CP3	217,548	840	7,164	70.2	62,700	364	776	(54,760)	4,350	(50,410)
CP4	255,610	840	7,164	76.1	67,900	658	1,403	(59,333)	5,112	(54,221)
CP5	259,956	840	7,164	4.2	3,800	311	663	4,027	5,199	9,226

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