APPENDIX I

Air Quality General Conformity Analysis

This page intentionally left blank.

TECHNICAL MEMORANDUM CH2MHILL®

APPENDIX I

Air Quality General Conformity Analysis

PREPARED FOR: National Aeronautics and Space Administration

PREPARED BY: CH2M HILL

DATE: December 2013

This technical memorandum provides a detailed technical approach for the General Conformity screening analysis conducted in support of the *Environmental Impact Statement for Proposed Demolition and Environmental Cleanup Activities at Santa Susana Field Laboratory (SSFL)*, including supplemental information and a description of the methodologies and assumptions used for this study. The supplemental information and methodologies discussed are as follows:

- Compliance
- Threshold Values
- Methodology
- Results

Note that the methodology and results presented in this appendix pertain only to a screening analysis performed prior to the final emission calculations presented in the Environmental Impact Statement (EIS). This screening analysis was conducted to give a preliminary indication of the potential project impacts associated with the Excavation and Offsite Disposal technology (high soil removal estimate) described in Section 4.7 of the EIS. As discussed later within this appendix, this screening analysis was not redone as new information became available because the new information was fully captured in the final emission calculations presented in Section 4.7.

Compliance

To decide whether projects require a General Conformity analysis, the U.S. Environmental Protection Agency (EPA) has established General Conformity *de minimis*[1] threshold values (in tons per calendar year) for each of the criteria pollutants for each type of designated nonattainment and maintenance area. If the annual emissions generated by a project on an area-wide basis (i.e., per air basin) are less than these threshold values, a General Conformity analysis is not required. If the emissions are greater than these threshold values, compliance with the General Conformity Rule must be demonstrated.

Compliance with the General Conformity Rule can be demonstrated in one or more of the following ways and must be completed before construction begins:

- By reducing emissions to below the General Conformity *de minimis* threshold values
- By showing that the emissions are included in the area's emission budget for the state implementation plan (SIP)
- By demonstrating that the state agrees to include the emission increases in the area's SIP without exceeding emission budgets
- By offsetting the project's emissions in each year that the General Conformity *de minimis* threshold values are exceeded
- By an air quality modeling analysis demonstrating the project would not cause or exacerbate a national ambient air quality standard (NAAQS)

[1] Proposed Actions with emissions below the applicable *de minimis* threshold are those that are not considered to have a significant environmental impact per 40 *Code of Federal Regulations* (CFR) Parts 51 and 93. The *de minimis* thresholds correspond to the emission rates defined in 40 CFR 51.165-51.166 as "significant" (71 Federal Register [FR] 40420).

As discussed in Section 4.7 of the EIS and later in this appendix, NASA would need to demonstrate conformance for the Excavation and Offsite Disposal technology (high soil removal estimate)[2]. NASA plans to conform by purchasing criteria pollutant offsets for the affected counties. The quantity of criteria pollutant offsets purchased would equal the quantity by which the General Conformity *de minimis* threshold values are exceeded.

Threshold Values

As presented in Appendix H, multiple counties potentially might be affected by the Excavation and Offsite Disposal technology as a result of material and equipment hauling. The attainment statuses of these counties are presented in Appendix H. The associated General Conformity *de minimis* threshold values for each of these counties are summarized in Table I-1. Note that Table I-1 only presents the General Conformity *de minimis* threshold values for counties designated as nonattainment or maintenance for at least one criteria pollutant.

General Conformity is evaluated separately for each air basin and Table I-2 presents the threshold value for each criteria pollutant within each air basin potentially affected by the Excavation and Offsite Disposal technology. Similar to Table I-1, Table I-2 only presents the counties designated as nonattainment or maintenance areas for at least one criteria pollutant. If an air basin included multiple counties designated as nonattainment or maintenance, then the most stringent threshold for each criteria pollutant was considered.

Precursors are compounds known to contribute to the formation of established criteria pollutants and are evaluated against the General Conformity *de minimis* threshold values for the criteria pollutants they form. Nitrogen oxides (NOx) and volatile organic compounds (VOCs) are considered ozone precursors and sulfur dioxide (SO_2), NOx, and VOCs are considered precursors to particulate matter having an aerodynamic equivalent diameter of 2.5 microns or less ($PM_{2.5}$). For ozone, project NOx and VOC emissions are estimated and compared to the ozone General Conformity *de minimis* threshold value. Because NOx is also a $PM_{2.5}$ precursor, the General Conformity *de minimis* threshold value used for comparison against project NOx emissions would be the most conservative threshold (the minimum threshold) available. The threshold values presented in Table I-2 take precursors into consideration.

Methodology

To understand the potential impacts to air quality as a result of the Excavation and Offsite Disposal technology (high soil removal estimate), a screening analysis was performed to identify whether the General Conformity *de minimis* threshold values could be met given the project constraints (that is, pre-determined soil removal volumes and limited activity duration). This was done by back-calculating the soil volumes that feasibly could be removed within the allotted duration from the General Conformity *de minimis* threshold values. The resulting values were compared to the project's predetermined soil removal volumes. Note that this analysis was only performed for counties designated as nonattainment or maintenance areas for at least one criteria pollutant.

[2] Note that the low soil removal estimate or other remedial technologies requiring Excavation and Offsite Disposal also would warrant the need to conform, as discussed throughout Section 4.7.

TABLE I-1

General Conformity *De Minimis* Threshold Values

NASA SSFL EIS for Proposed Demolition and Environmental Cleanup

County	California Air Basin or State	General Conformity *De Minimis* Threshold Values (tpy) [a, b]						
		Ozone	PM_{10}	$PM_{2.5}$	CO	NO_2	SO_2	Lead
Ventura	SCCAB	50	N/A	N/A	N/A	N/A	N/A	N/A
Los Angeles	SCAB	10	100	100	100	N/A	N/A	25
San Bernardino	SCAB	10	100	100	100	N/A	N/A	N/A
	MDAB	100 [c]	100	N/A	N/A	N/A	N/A	N/A
Kern	SJVAB	10	70	100	N/A	N/A	N/A	N/A
Kings	SJVAB	10	100	100	N/A	N/A	N/A	N/A
Clark	Nevada	100 [d]	70	N/A	100	N/A	N/A	N/A
White Pine	Nevada	N/A	N/A	N/A	N/A	N/A	100	N/A
Tooele	Utah	N/A	N/A	N/A	N/A	N/A	100	N/A

Notes:
CO = carbon monoxide
MDAB = Mojave Desert Air Basin
N/A = Not applicable because the area is in attainment
NO_2 = nitrogen dioxide
$PM_{2.5}$ = particulate matter having an aerodynamic equivalent diameter of 2.5 microns or less
PM_{10} = particulate matter having an aerodynamic equivalent diameter of 10 microns or less
SCCAB = South Central Coast Air Basin
SCAB = South Coast Air Basin
SJVAB = San Joaquin Valley Air Basin
SO_2 = sulfur dioxide
tpy = tons per year
[a] General Conformity *de minimis* threshold values from 40 Code of Federal Regulations (CFR) Parts 51 and 93.
[b] Refer to Appendix H for details about which counties are in partial nonattainment, maintenance, or attainment areas, thus dictating the applicable threshold.
[c] California is not located in an ozone transportation region. As a result, the General Conformity *de minimis* threshold value for an ozone attainment status of "Moderate Nonattainment" was taken as 100 tpy.
[d] Per 76 *Federal Register* (FR) 17373, the designation status of the Clark County ozone nonattainment area remains nonattainment despite the EPA's determination that the area has attained the NAAQS. Because Clark County is not located in an ozone transportation region, the General Conformity *de minimis* threshold value of 100 tpy was used.

TABLE I-2

Threshold Values Applicable to the Project

NASA SSFL EIS for Proposed Demolition and Environmental Cleanup

	General Conformity *De Minimis* Threshold Values (tpy)						
California Air Basin or State	**VOC**	**CO**	**NOx**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**Lead**
SCCAB	50	N/A	50	N/A	N/A	N/A	N/A
SCAB [a]	10	100	10	100	100	100	25
MDAB	100	N/A	100	N/A	100	N/A	N/A
SJVAB [a]	10	N/A	10	100	70	100	N/A
Nevada [a]	100	100	100	100	70	N/A	N/A
Utah	N/A	N/A	N/A	100	N/A	N/A	N/A

Notes:
CO = carbon monoxide
MDAB = Mojave Desert Air Basin
N/A = Not applicable because the area is in attainment
NOx = nitrogen oxides
$PM_{2.5}$ = particulate matter having an aerodynamic equivalent diameter of 2.5 microns or less
PM_{10} = particulate matter having an aerodynamic equivalent diameter of 10 microns or less
SCCAB = South Central Coast Air Basin
SCAB = South Coast Air Basin
SJVAB = San Joaquin Valley Air Basin
SO_2 = sulfur dioxide
tpy = tons per year
VOC = volatile organic compound

[a] The minimum threshold value was assigned for each pollutant within air basins that have multiple affected counties.

The first step in the screening analysis was calculating the annual vehicle miles traveled (VMT) by material haul trucks and the annual number of material haul truck trips possible based on the General Conformity *de minimis* threshold values. This was computed using the following equations for each criteria pollutant:

$$Annual\ VMT\ (miles/year) = \frac{[Threshold\ Value\ (tpy) - \ Constant\ Emissions\ (tpy)]x\ 907{,}185\ (g/ton)}{Haul\ Truck\ Emission\ Factor\ \ (g/mile)}$$ [3]

$$Annual\ Truck\ Trips(trips/year) = \frac{Annual\ VMT\ (miles/year)}{Maximum\ Distance\ Traveled\ per\ Round\ Trip\ (miles/trip)}$$

The constant emissions included in the previous equation were estimated from the activities that would occur regardless of material hauling, which include emissions from onsite excavation activities, emissions from worker commutes, and fugitive dust emissions from earthmoving and stockpiles. Although road repair activities would not occur without material hauling, the magnitude of road repair activities would be independent of the magnitude of material hauling. As a result, emissions from road repair activities were considered to be constant emissions.

The second step in the screening analysis was calculating the annual material that could be hauled using the annual truck trips determined in the first step of the screening analysis. This was computed using the following equation for each criteria pollutant:

$$Annual\ Material\ Hauled\ (tons/year) = Annual\ Truck\ Trips\ (trips/year)\ x\ Truck\ Capacity\ (cy/truck)$$ [4]

Once estimated, the annual material hauled quantities for both years of environmental cleanup activities were summed, resulting in a total soil volume capable of being removed by the project based on the General Conformity *de minimis* threshold values. Because this value was determined separately for each criteria pollutant, the smallest number estimated, regardless of pollutant, was compared to the project's pre-determined soil removal volumes. If the total possible soil volume was greater than the pre-determined soil removal volumes, the General Conformity *de minimis* threshold values could be met with the project constraints. If the total possible soil volume was less than the pre-determined soil removal volumes, the General Conformity *de minimis* threshold values would not be met.

If the total possible soil volume capable of being removed by the project indicated an exceedance of the General Conformity *de minimis* threshold values, a secondary analysis was performed using the minimum distance hauled within each county instead of the maximum distance. If the resulting total possible soil volume was greater than the pre-determined soil volumes, some landfill destinations would be preferable to others. If the resulting total possible soil volume was less than the pre-determined soil volumes, the General Conformity *de minimis* threshold values would not be met regardless of landfill selected and the project would need to demonstrate conformance for at least each criteria pollutant causing an exceedance.

Results

The previous screening analysis was performed for the Excavation and Offsite Disposal technology (high soil removal estimate). The analysis results are described in the following subsections and summarized in Table I-3.

[3] Haul truck emission factors (grams [g] per mile) were taken from the California Air Resources Board's (ARB's) EMFAC2011-PL (Version 1.1) model (ARB, 2013) using the model parameters documented in Appendix H. The maximum California emission factor for each pollutant conservatively was used to represent Nevada and Utah vehicle emission factors.

[4] A truck capacity of 19 cubic yards was used, as consistent with the truck capacity reported in Table 4.7-3.

TABLE I-3
Screening Analysis Results
NASA SSFL EIS for Proposed Demolition and Environmental Cleanup

		General Conformity *De Minimis* Threshold Values Exceeded?
County	**California Air Basin or State**	**Excavation and Offsite Disposal Technology (High Soil Removal Estimate)**
Ventura	SCCAB	No
Los Angeles	SCAB	Yes, NOx
San Bernardino	SCAB	No
	MDAB	No
Kern	SJVAB	Yes, NOx
Kings	SJVAB	No
Clark	Nevada	No
White Pine	Nevada	No
Tooele	Utah	No

Notes:
MDAB = Mojave Desert Air Basin
NOx = nitrogen oxides
SCCAB = South Central Coast Air Basin
SCAB = South Coast Air Basin
SJVAB = San Joaquin Valley Air Basin

As listed in Table I-3, the South Coast Air Basin (SCAB) and San Joaquin Valley Air Basin (SJVAB) are the two air basins beyond the project site that potentially might be affected by material-hauling activities. This result led to the inclusion of the SCAB and SJVAB in the region of influence (ROI) defined in Section 3.5 of the EIS. Because SSFL physically is located in Ventura County, the South Central Coast Air Basin (SCCAB) also is included in the ROI so that the constant emissions (demolition, excavation, and fugitive dust) can be evaluated adequately.

NASA must demonstrate conformance for each air basin in which the NOx General Conformity *de minimis* threshold values are exceeded, in this case within the SCAB and SJVAB. As would be discussed with the air districts governing each of these air basins, NASA plans to conform by adhering to an annual truck limit based on the daily truck frequencies presented in Table 4.7-1 of the EIS and by purchasing NOx offsets for the affected counties. The quantity of NOx offsets purchased would equal the quantity by which the General Conformity *de minimis* threshold values are exceeded; for the Excavation and Offsite Disposal technology (high soil removal estimate), these values are presented in Table 4.7-4 of the EIS.

Excavation and Offsite Disposal Technology

The total possible soil volumes estimated for Ventura, San Bernardino, Kings, Clark, White Pine, and Tooele counties were greater than the soil removal volume defined for the Excavation and Offsite Disposal technology (high soil removal estimate); therefore, the General Conformity *de minimis* threshold values would be met in those counties. The total possible soil volumes estimated for Los Angeles and Kern counties were less than the soil removal volume defined for the high soil removal estimate (Attachment 1). The total possible soil volumes were re-estimated for Los Angeles and Kern counties using the minimum distance hauled within each county; however, this calculation also resulted in total possible soil volumes less than the soil removal volume defined for the high soil removal estimate. As a result, the General Conformity *de minimis* threshold values could not be met with implementation of the project constraints. For both counties, the limiting criteria pollutant was NOx.

Because the identified landfills require material haul trucks to pass through Los Angeles County, NASA must demonstrate conformance for the SCAB regardless of the landfill used for offsite disposal of excavated soil. However, only two of the identified landfills require material haul trucks to pass through Kern County. As a result,

NASA must only demonstrate conformance for the SJVAB if the Kettleman Hills Landfill or the Clean Harbors Buttonwillow Landfill is used for offsite disposal of excavated soil.

Disclaimer

As noted at the beginning of this appendix, the screening analysis was performed before the final emission calculations were prepared and presented in the EIS. The screening analysis was performed assuming that the backfill was provided using onsite sources. Since the screening analysis was performed, additional information was provided suggesting that backfill might be brought to SSFL from offsite aggregate suppliers located in Ventura and Los Angeles counties. The screening analysis was not redone to incorporate this new information because the conclusions would not change, per the following discussion:

- Using the screening analysis, the total possible soil volumes estimated for Ventura County are at least 500 times greater than the pre-determined soil removal volumes. Although increasing the maximum distance hauled in Ventura County and increasing the predetermined soil volumes to include backfill would decrease this margin by a factor of 100, the overall results of the screening analysis would remain unchanged. As a result, Ventura County would still have emissions less than the applicable General Conformity *de minimis* threshold values.
- Using the screening analysis, the total possible soil volumes estimated for Los Angeles County are at most 1.3 times smaller than the pre-determined soil removal volumes. Although increasing the maximum distance hauled in Los Angeles County and increasing the predetermined soil volumes to include backfill would increase this margin by a factor of 1, the overall results of the screening analysis would remain unchanged. As a result, Los Angeles County would still have emissions greater than the applicable General Conformity *de minimis* threshold values and NASA would still need to demonstrate conformance within the SCAB. Because accounting for the backfill material haul trips would increase the soil volume margin, the quantity of NOx offsets required for purchase would be greater than predicted under the original screening analysis.
- Kern County would not be affected by the inclusion of backfill material haul trips because the possible aggregate suppliers are located only within Ventura and Los Angeles counties. As a result, Kern County would still have emissions greater than the applicable General Conformity *de minimis* threshold values and NASA would still need to demonstrate conformance within the SJVAB if either Kettleman Hills Landfill or Clean Harbors Buttonwillow Landfill is used for offsite disposal of excavated soil.
- San Bernardino, Kings, Clark, White Pine, and Tooele counties would not be affected by the inclusion of backfill material haul trips because the possible aggregate suppliers are located only within Ventura and Los Angeles counties. As a result, these counties would still have emissions less than the applicable General Conformity *de minimis* threshold values.

Summary

This screening analysis was performed to help identify the potential project impacts, as related to General Conformity, given the project constraints (pre-determined soil removal volumes and limited activity duration). Based on this screening analysis, the Excavation and Offsite Disposal technology (high soil removal estimate) would cause an exceedance of the NOx General Conformity *de minimis* threshold values in both the SCAB and the SJVAB. This result is consistent with the information presented in Section 4.7. Although additional information was obtained after the screening analysis was performed, the screening analysis was not redone because the overall results did not change and the additional information was fully captured in the final emission calculations presented in Section 4.7of the EIS.

References

California Air Resources Board (ARB). 2013. EMFAC2011-PL (Version 1.1). January.

This page is intentionally left blank.

Attachment 1

This page is intentionally left blank.

ATTACHMENT 1-1

Summary of Hauling Routes

NASA SSFL EIS - Air Quality General Conformity Analysis

Introduction:

Shaded cells indicate that a General Conformity analysis is not necessary since the county is in attainment for all pollutants.

Italicized, bold cells indicate that the route presents the worst-case scenario for hauling.

The General Conformity analysis will be a hybrid of routes, using the maximum distance traveled in each county to identify the maximum number of trucks.

State or California Air Basin			South Central Coast	South Coast		Mojave Desert	San Joaquin Valley		Great Basin Valleys	Nevada					Utah
Landfill	Location	Total Roundtrip Distance (miles)	Roundtrip Distance (miles) per County												
			Ventura	Los Angeles	San Bernardino		Kern	Kings	Inyo	Nye	Clark	Lincoln	White Pine	Elko	Tooele
Kettleman Hills	Kettleman City, California	335	1	126			***170***	***38***							
Buttonwillow	Buttonwillow, California	252	1	126			125								
U.S. Ecology	Beatty, Nevada	828	1	144.2	88.8	277.8			98	69.4					
Antelope Valley	Lancaster, California	141	1	140											
Energy Solutions	Clive, Utah	1,428	***1***	***144.2***	***88.8***	***328.6***				78	***178***	200	***226***	112	***108***
Pollutant			**County Attainment Status**												
Ozone [a]			Serious N [b]	Extreme N [c]	Extreme N [d]	Moderate N [d]	Extreme N [e]	Extreme N [e]	A	A	Former Subpart I [i]	A	A	A	A
PM_{10}			A	M [c]	M [d]	Moderate N [d]	Serious N	M	A [h]	A	Serious N [i]	A	A	A	A
$PM_{2.5}$ (Direct Emissions)			A	N [c]	N [d]	A [d]	N [f]	N	A	A	A	A	A	A	A [j]
CO			A	Serious M [c]	Serious M [d]	A [d]	A [g]	A	A	A	Serious M [i]	A	A	A	A
NO_2			A	A	A	A	A	A	A	A	A	A	A	A	A
SO_2			A	A [c]	A	A	A	A	A	A	A	A	M	A	N [k]
Lead (2008 standard)			A	N [c]	A	A	A	A	A	A	A	A	A	A	A

Notes:

A = Attainment

M = Maintenance

N = Nonattainment

[a] These area designations are based on the 8-hour ozone standard. The 1-hour ozone standard no longer applies to the counties in nonattainment areas per the anti-backsliding provisions of 40 CFR 51.905(a)(3) and (4). The anti-backsliding provisions apply to areas that are designated attainment for the 8-hour ozone standard and were, at the time of the 8-hour designations, either attainment areas with maintenance plans for the 1-hour standard or nonattainment for the 1-hour standard. Specifically, the anti-backsliding provisions require these areas to submit a maintenance plan under section 110(a)(1) of the CAA. The counties in attainment for the 8-hour ozone standard were also in attainment for the 1-hour ozone standard and were not required to submit maintenance plans at the time of 8-hour designations.

[b] Ventura County has partial serious nonattainment for the 8-hour ozone standard. The portion of the project occurring within Ventura County will occur in the nonattainment portion.

[c] The portion of Los Angeles County located within the SCAB has extreme nonattainment for the 8-hour ozone standard, maintenance for PM_{10}, nonattainment for $PM_{2.5}$, serious maintenance for CO, and nonattainment for the 2008 lead standard. The portion of the project occurring within Los Angeles County will occur in the SCAB and, therefore, in the nonattainment or maintenance areas for these pollutants.

[d] The portion of San Bernardino County located in the SCAB has extreme nonattainment for the 8-hour ozone standard, maintenance for PM_{10}, nonattainment for $PM_{2.5}$, and maintenance for CO whereas the portion located in the MDAB has moderate nonattainment for the 8-hour ozone standard and PM_{10} and attainment for $PM_{2.5}$ and CO. The project will occur in both of these portions of San Bernardino County.

[e] Kern and Kings counties each have partial extreme nonattainment for the 8-hour ozone standard. The portion of the project occurring within Kern and Kings counties will occur in the nonattainment portions.

[f] Kern County has partial nonattainment for $PM_{2.5}$. The portion of the project occurring within Kern County will occur in the nonattainment portion.

[g] The metropolitan area of Bakersfield, located within Kern County, has partial maintenance for CO. The portion of the project occurring within Kern County will not occur within this metropolitan area and is, therefore, in attainment.

[h] Inyo County has PM_{10} nonattainment and maintenance for two specific areas: Owens Valley and Coso Junction, respectively. The portion of the project occurring within Inyo County would occur at least 100 miles from these areas.

[i] Clark County has partial Former Subpart 1 status for the 8-hour ozone standard, serious nonattainment for PM_{10}, and serious maintenance for CO. The portion of the project occurring within Clark County would occur in the nonattainment and maintenance portions for these pollutants.

[j] Tooele County has partial nonattainment for $PM_{2.5}$. The portion of the project occurring within Tooele County would not occur in this nonattainment portion.

[k] Tooele County has partial nonattainment for SO_2. Based on the available data, the portion of the project occurring within Tooele County may or may not occur in the nonattainment portion. As a conservative approach, it was assumed that the project would occur in the nonattainment portion.

ATTACHMENT 1-2
General Conformity *De Minimis* Threshold Values
NASA SSFL EIS - Air Quality General Conformity Analysis

Introduction:
The General Conformity *de minimis* threshold values are presented only for the counties which will be evaluated in the General Conformity analysis, as described on the Haul Route Summary tab.

State or California Air Basin	South Central Coast		South Coast				Mojave Desert		San Joaquin Valley				Nevada				Utah	
Pollutant	County Attainment Status / General Conformity *De Minimis* Threshold Values (tons/year) [a, b]																	
	Ventura		Los Angeles		San Bernardino				Kern		Kings		Clark		White Pine		Tooele	
Ozone	Serious N	50	Extreme N	10	Extreme N	10	Moderate N [c]	100	Extreme N	10	Extreme N	10	Former Subpart I [d]	100	A	N/A	A	N/A
Ozone Precursor (NOx)	Serious N	50	Extreme N	10	Extreme N	10	Moderate N [c]	100	Extreme N	10	Extreme N	10	Former Subpart I [d]	100	A	N/A	A	N/A
Ozone Precursor (VOC)	Serious N	50	Extreme N	10	Extreme N	10	Moderate N [c]	100	Extreme N	10	Extreme N	10	Former Subpart I [d]	100	A	N/A	A	N/A
PM_{10}	A	N/A	M	100	M	100	Moderate N	100	Serious N	70	M	100	Serious N	70	A	N/A	A	N/A
$PM_{2.5}$ (Direct Emissions)	A	N/A	N	100	N	100	A	N/A	N	100	N	100	A	N/A	A	N/A	A	N/A
$PM_{2.5}$ Precursor (SO_2)	A	N/A	N	100	N	100	A	N/A	N	100	N	100	A	N/A	A	N/A	A	N/A
$PM_{2.5}$ Precursor (NOx)	A	N/A	N	100	N	100	A	N/A	N	100	N	100	A	N/A	A	N/A	A	N/A
$PM_{2.5}$ Precursor (VOC)	A	N/A	N	100	N	100	A	N/A	N	100	N	100	A	N/A	A	N/A	A	N/A
CO	A	N/A	Serious M	100	Serious M	100	A	N/A	A	N/A	A	N/A	Serious M	100	A	N/A	A	N/A
NO_2	A	N/A	A	N/A	A	N/A	A	N/A	A	N/A	A	N/A	A	N/A	A	N/A	A	N/A
SO_2	A	N/A	A	N/A	A	N/A	A	N/A	A	N/A	A	N/A	A	N/A	M	100	N	100
Lead (2008 standard)	A	N/A	N	25	A	N/A	A	N/A	A	N/A	A	N/A	A	N/A	A	N/A	A	N/A

Notes:
A = Attainment
M = Maintenance
N = Nonattainment
N/A = Not Applicable

[a] General Conformity *de minimis* threshold values from 40 CFR Parts 51 and 93, EPA-HQ-OAR-2004-0491; FRL-8197-4.

[b] Refer to the notes on the 'Haul Route Summary' tab for details on which counties are in partial nonattainment, maintenance, or attainment areas.

[c] California is not located in an ozone transportation region (http://www.epa.gov/glo/fs20080317.html). As a result, the General Conformity *de minimis* threshold value for an ozone attainment status of "Moderate Nonattainment" was taken as 100 tons/year.

[d] Per 76 FR 17373, the designation status of the Clark County ozone nonattainment area remains nonattainment despite the EPA's determination that the area has attained the National Ambient Air Quality Standard. Since Clark County is not located in an ozone transportation region, the General Conformity *de minimis* threshold value of 100 tons/year was used.

ATTACHMENT 1-3

Truck Trip Analysis for the Maximum Distance Traveled in Ventura County (SCCAB)

NASA SSFL EIS - Air Quality General Conformity Analysis

Introduction:

This tab identifies whether the 2017 deadline can be met based on the county's General Conformity *de minimis* threshold values, the project emissions occurring regardless of hauling activities, and the maximum possible mileage traveled within the county.

Truck Trip Analysis

Pollutant	VOC	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	Pb
General Conformity *De Minimis* Threshold (tons/year)	50	N/A	50	N/A	N/A	N/A	N/A
Haul Year 2016							
Constant Emissions (tons/year) [a]	2	8	12	0	1,051	219	0
Road Repair Emissions (tons/year) [b]	0	0	0	0	0	0	0
Annual VMT Allowable (miles/year) [c]	281,234,417	N/A	5,485,195	N/A	N/A	N/A	N/A
Annual Truck Trips Allowed (trucks/year) [d]	281,234,417	N/A	5,485,195	N/A	N/A	N/A	N/A
Annual Material Hauled in Allowable Truck Trips (cy/year) [e]	5,343,453,925	N/A	104,218,700	N/A	N/A	N/A	N/A
Haul Year 2017							
Constant Emissions (tons/year) [a]	2	9	12	0	1,146	239	0
Road Repair Emissions (tons/year) [b]	0	0	0	0	0	0	0
Annual VMT Allowable (miles/year) [c]	303,340,753	N/A	6,209,226	N/A	N/A	N/A	N/A
Annual Truck Trips Allowed (trucks/year) [d]	303,340,753	N/A	6,209,226	N/A	N/A	N/A	N/A
Annual Material Hauled in Allowable Truck Trips (cy/year) [e]	5,763,474,301	N/A	117,975,300	N/A	N/A	N/A	N/A
Summary							
Total Material Hauled in Allowable Truck Trips (cy/project)	11,106,928,226	N/A	222,194,000	N/A	N/A	N/A	N/A
Soil Volume to be Removed from SSFL (cy/project)	502,381						
Is the 2017 Deadline Met (Yes/No)?	Yes						

Notes:

[a] Constant emissions are a result of onsite construction activities and worker commutes.

[b] Road repair emissions occur only in conjunction with material hauling activities.

[c] Conversion factor: 1 short ton: 907,185 grams

[d] Distance Traveled per Roundtrip: 1 VMT/trip

[e] Truck Capacity: 19 cy/truck

Vehicle Emission Factors

Vehicle Type	Emission Factors (g/mile) [a]						
	VOC	CO	NOx	SOx	PM_{10} [b]	$PM_{2.5}$ [b]	Pb [c]
2016 Offsite Emission Factors (55 mph)							
Heavy-Heavy Duty Trucks [d]	0.156	0.995	6.126	0.016	0.197	0.129	0.001
2017 Offsite Emission Factors (55 mph)							
Heavy-Heavy Duty Trucks [d]	0.144	0.944	5.420	0.016	0.184	0.116	0.001

Notes:

[a] Unless otherwise noted, emission factors are from EMFAC2011-PL.

[b] PM_{10} and $PM_{2.5}$ emission factors account for particulate emissions from running exhaust, tire wear, and break wear.

[c] A lead emission factor for stationary and portable internal combustion engines was assumed representative of on-road vehicles. This factor was obtained from Table B-2 of the *Supplemental Instructions: Reporting Procedures for AB2588 Facilities for Reporting their Quadrennial Air Toxics Emissions Inventory* (SCAQMD, 2010). Due to limited available data, this emission factor was assumed equal for all vehicle speeds and all construction years: 0.0083 lbs/1,000 gallons

[d] As calculated using the EMFAC2011 Web Based Emissions Database for California, the heavy-heavy duty truck (diesel) fuel economy is: 5.569 miles per gallon

ATTACHMENT 1-6

Truck Trip Analysis for the Maximum Distance Traveled in San Bernardino County (SCAB)

NASA SSFL EIS - Air Quality General Conformity Analysis

Introduction:

This tab identifies whether the 2017 deadline can be met based on the county's General Conformity *de minimis* threshold values, the project emissions occurring regardless of hauling activities, and the maximum possible mileage traveled within the county.

Truck Trip Analysis

Pollutant	VOC	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	Pb
General Conformity *De Minimis* Threshold (tons/year)	10	100	10	100	100	100	N/A
Haul Year 2016							
Constant and Road Repair Emissions (tons/year) [a]	0	0	0	0	0	0	0
Annual VMT Allowable (miles/year) [b]	52,392,517	78,194,102	1,625,191	5,497,775,277	457,472,398	703,011,437	N/A
Annual Truck Trips Allowed (trucks/year) [c]	590,006	880,564	18,302	61,911,884	5,151,716	7,916,795	N/A
Annual Material Hauled in Allowable Truck Trips (cy/year) [d]	11,210,111	16,730,720	347,732	1,176,325,791	97,882,608	150,419,114	N/A
Haul Year 2017							
Constant and Road Repair Emissions (tons/year) [a]	0	0	0	0	0	0	0
Annual VMT Allowable (miles/year) [b]	53,751,954	79,181,740	1,785,196	5,506,220,101	476,036,730	744,078,504	N/A
Annual Truck Trips Allowed (trucks/year) [c]	605,315	891,686	20,104	62,006,983	5,360,774	8,379,262	N/A
Annual Material Hauled in Allowable Truck Trips (cy/year) [d]	11,500,981	16,942,039	381,968	1,178,132,679	101,854,706	159,205,986	N/A
Summary							
Total Material Hauled in Allowable Truck Trips (cy/project)	22,711,092	33,672,759	729,700	2,354,458,471	199,737,313	309,625,100	N/A
Soil Volume to be Removed from SSFL (cy/project)	502,381						
Is the 2017 Deadline Met (Yes/No)?	Yes						

Notes:

[a] There are no constant, non-hauling emissions expected to occur in San Bernardino County. Additionally, road repair activities will not occur in San Bernardino County.

[b] Conversion factor: 1 short ton: 907,185 grams

[c] Distance Traveled per Roundtrip: 89 VMT/trip

[d] Truck Capacity: 19 cy/truck

Vehicle Emission Factors

Vehicle Type	Emission Factors (g/mile) [a]						
	VOC	CO	NOx	SOx	PM_{10} [b]	$PM_{2.5}$ [b]	Pb [c]
2016 Offsite Emission Factors (55 mph)							
Heavy-Heavy Duty Trucks [d]	0.173	1.160	5.582	0.017	0.198	0.129	0.001
2017 Offsite Emission Factors (55 mph)							
Heavy-Heavy Duty Trucks [d]	0.169	1.146	5.082	0.016	0.191	0.122	0.001

Notes:

[a] Unless otherwise noted, emission factors are from EMFAC2011-PL.

[b] PM_{10} and $PM_{2.5}$ emission factors account for particulate emissions from running exhaust, tire wear, and break wear.

[c] A lead emission factor for stationary and portable internal combustion engines was assumed representative of on-road vehicles. This factor was obtained from Table B-2 of the *Supplemental Instructions: Reporting Procedures for AB2588 Facilities for Reporting their Quadrennial Air Toxics Emissions Inventory* (SCAQMD, 2010). Due to limited available data, this emission factor was assumed equal for all vehicle speeds and all construction years: 0.0083 lbs/1,000 gallons

[d] As calculated using the EMFAC2011 Web Based Emissions Database for California, the heavy-heavy duty truck (diesel) fuel economy is: 5.569 miles per gallon

ATTACHMENT 1-7

Truck Trip Analysis for the Maximum Distance Traveled in San Bernardino County (MDAB)

NASA SSFL EIS - Air Quality General Conformity Analysis

Introduction:

This tab identifies whether the 2017 deadline can be met based on the county's General Conformity *de minimis* threshold values, the project emissions occurring regardless of hauling activities, and the maximum possible mileage traveled within the county.

Truck Trip Analysis

Pollutant	VOC	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	Pb
General Conformity *De Minimis* Threshold (tons/year)	100	N/A	100	N/A	100	N/A	N/A
Haul Year 2016							
Constant and Road Repair Emissions (tons/year) [a]	0	0	0	0	0	0	0
Annual VMT Allowable (miles/year) [b]	582,002,211	N/A	23,685,061	N/A	460,118,753	N/A	N/A
Annual Truck Trips Allowed (trucks/year) [c]	1,771,157	N/A	72,079	N/A	1,400,240	N/A	N/A
Annual Material Hauled in Allowable Truck Trips (cy/year) [d]	33,651,984	N/A	1,369,495	N/A	26,604,554	N/A	N/A
Haul Year 2017							
Constant and Road Repair Emissions (tons/year) [a]	0	0	0	0	0	0	0
Annual VMT Allowable (miles/year) [b]	617,447,333	N/A	27,689,578	N/A	486,748,885	N/A	N/A
Annual Truck Trips Allowed (trucks/year) [c]	1,879,024	N/A	84,265	N/A	1,481,281	N/A	N/A
Annual Material Hauled in Allowable Truck Trips (cy/year) [d]	35,701,459	N/A	1,601,041	N/A	28,144,336	N/A	N/A
Summary							
Total Material Hauled in Allowable Truck Trips (cy/project)	69,353,443	N/A	2,970,536	N/A	54,748,890	N/A	N/A
Soil Volume to be Removed from SSFL (cy/project)	502,381						
Is the 2017 Deadline Met (Yes/No)?	Yes						

Notes:

[a] There are no constant, non-hauling emissions expected to occur in San Bernardino County. Additionally, road repair activities will not occur in San Bernardino County.

[b] Conversion factor: 1 short ton: 907,185 grams

[c] Distance Traveled per Roundtrip: 329 VMT/trip

[d] Truck Capacity: 19 cy/truck

Vehicle Emission Factors

Vehicle Type	Emission Factors (g/mile) [a]						
	VOC	**CO**	**NOx**	**SOx**	**PM_{10} [b]**	**$PM_{2.5}$ [b]**	**Pb [c]**
2016 Offsite Emission Factors (55 mph)							
Heavy-Heavy Duty Trucks [d]	0.156	1.072	3.830	0.016	0.197	0.127	0.001
2017 Offsite Emission Factors (55 mph)							
Heavy-Heavy Duty Trucks [d]	0.147	1.020	3.276	0.016	0.186	0.117	0.001

Notes:

[a] Unless otherwise noted, emission factors are from EMFAC2011-PL.

[b] PM_{10} and $PM_{2.5}$ emission factors account for particulate emissions from running exhaust, tire wear, and break wear.

[c] A lead emission factor for stationary and portable internal combustion engines was assumed representative of on-road vehicles. This factor was obtained from Table B-2 of the *Supplemental Instructions: Reporting Procedures for AB2588 Facilities for Reporting their Quadrennial Air Toxics Emissions Inventory* (SCAQMD, 2010). Due to limited available data, this emission factor was assumed equal for all vehicle speeds and all construction years: 0.0083 lbs/1,000 gallons

[d] As calculated using the EMFAC2011 Web Based Emissions Database for California, the heavy-heavy duty truck (diesel) fuel economy is: 5.569 miles per gallon

ATTACHMENT 1-9

Truck Trip Analysis for the Minimum Distance Traveled in Kern County (SJVAB)

NASA SSFL EIS - Air Quality General Conformity Analysis

Introduction:

This tab identifies whether the 2017 deadline can be met based on the county's General Conformity *de minimis* threshold values, the project emissions occurring regardless of hauling activities, and the minimum possible mileage traveled within the county.

Truck Trip Analysis

Pollutant	VOC	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	Pb
General Conformity *De Minimis* Threshold (tons/year)	10	N/A	10	100	70	100	N/A
Haul Year 2016							
Constant and Road Repair Emissions (tons/year) [a]	0	0	0	0	0	0	0
Annual VMT Allowable (miles/year) [b]	56,605,856	N/A	1,827,796	5,491,312,228	312,893,953	684,560,067	N/A
Annual Truck Trips Allowed (trucks/year) [c]	452,847	N/A	14,622	43,930,498	2,503,152	5,476,481	N/A
Annual Material Hauled in Allowable Truck Trips (cy/year) [d]	8,604,090	N/A	277,825	834,679,459	47,559,881	104,053,130	N/A
Haul Year 2017							
Constant and Road Repair Emissions (tons/year) [a]	0	0	0	0	0	0	0
Annual VMT Allowable (miles/year) [b]	60,501,736	N/A	2,108,581	5,502,675,083	333,814,732	750,867,135	N/A
Annual Truck Trips Allowed (trucks/year) [c]	484,014	N/A	16,869	44,021,401	2,670,518	6,006,937	N/A
Annual Material Hauled in Allowable Truck Trips (cy/year) [d]	9,196,264	N/A	320,504	836,406,613	50,739,839	114,131,804	N/A
Summary							
Total Material Hauled in Allowable Truck Trips (cy/project)	17,800,354	N/A	598,329	1,671,086,071	98,299,720	218,184,935	N/A
Soil Volume to be Removed from SSFL (cy/project)	502,381						
Is the 2017 Deadline Met (Yes/No)?	Yes						
Duration Required to Complete Hauling (Years)	1.68						

Notes:

[a] There are no constant, non-hauling emissions expected to occur in Kern County. Additionally, road repair activities will not occur in Kern County.

[b] Conversion factor: 1 short ton: 907,185 grams

[c] Distance Traveled per Roundtrip: 125 VMT/trip

[d] Truck Capacity: 19 cy/truck

Vehicle Emission Factors

Vehicle Type	Emission Factors (g/mile) [a]						
	VOC	CO	NOx	SOx	PM_{10} [b]	$PM_{2.5}$ [b]	Pb [c]
2016 Offsite Emission Factors (55 mph)							
Heavy-Heavy Duty Trucks [d]	0.160	1.071	4.963	0.017	0.203	0.133	0.001
2017 Offsite Emission Factors (55 mph)							
Heavy-Heavy Duty Trucks [d]	0.150	1.021	4.302	0.016	0.190	0.121	0.001

Notes:

[a] Unless otherwise noted, emission factors are from EMFAC2011-PL.

[b] PM_{10} and $PM_{2.5}$ emission factors account for particulate emissions from running exhaust, tire wear, and break wear.

[c] A lead emission factor for stationary and portable internal combustion engines was assumed representative of on-road vehicles. This factor was obtained from Table B-2 of the *Supplemental Instructions: Reporting Procedures for AB2588 Facilities for Reporting their Quadrennial Air Toxics Emissions Inventory* (SCAQMD, 2010). Due to limited available data, this emission factor was assumed equal for all vehicle speeds and all construction years: 0.0083 lbs/1,000 gallons

[d] As calculated using the EMFAC2011 Web Based Emissions Database for California, the heavy-heavy duty truck (diesel) fuel economy is: 5.569 miles per gallon

ATTACHMENT 1-10

Truck Trip Analysis for the Maximum Distance Traveled in Kings County (SJVAB)

NASA SSFL EIS - Air Quality General Conformity Analysis

Introduction:

This tab identifies whether the 2017 deadline can be met based on the county's General Conformity *de minimis* threshold values, the project emissions occurring regardless of hauling activities, and the maximum possible mileage traveled within the county.

Truck Trip Analysis

Pollutant	VOC	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	Pb
General Conformity *De Minimis* Threshold (tons/year)	10	N/A	10	100	100	100	N/A
Haul Year 2016							
Constant and Road Repair Emissions (tons/year) [a]	0	0	0	0	0	0	0
Annual VMT Allowable (miles/year) [b]	56,605,856	N/A	1,827,796	5,491,312,228	446,991,362	684,560,067	N/A
Annual Truck Trips Allowed (trucks/year) [c]	1,489,628	N/A	48,100	144,508,217	11,762,931	18,014,739	N/A
Annual Material Hauled in Allowable Truck Trips (cy/year) [d]	28,302,928	N/A	913,898	2,745,656,114	223,495,681	342,280,033	N/A
Haul Year 2017							
Constant and Road Repair Emissions (tons/year) [a]	0	0	0	0	0	0	0
Annual VMT Allowable (miles/year) [b]	60,501,736	N/A	2,108,581	5,502,675,083	476,878,189	750,867,135	N/A
Annual Truck Trips Allowed (trucks/year) [c]	1,592,151	N/A	55,489	144,807,239	12,549,426	19,759,661	N/A
Annual Material Hauled in Allowable Truck Trips (cy/year) [d]	30,250,868	N/A	1,054,291	2,751,337,542	238,439,095	375,433,567	N/A
Summary							
Total Material Hauled in Allowable Truck Trips (cy/project)	58,553,796	N/A	1,968,189	5,496,993,656	461,934,775	717,713,601	N/A
Soil Volume to be Removed from SSFL (cy/project)	502,381						
Is the 2017 Deadline Met (Yes/No)?	Yes						

Notes:

[a] There are no constant, non-hauling emissions expected to occur in Kings County. Additionally, road repair activities will not occur in Kings County.

[b] Conversion factor: 1 short ton: 907,185 grams

[c] Distance Traveled per Roundtrip: 38 VMT/trip

[d] Truck Capacity: 19 cy/truck

Vehicle Emission Factors

Vehicle Type	Emission Factors (g/mile) [a]						
	VOC	CO	NOx	SOx	PM_{10} [b]	$PM_{2.5}$ [b]	Pb [c]
2016 Offsite Emission Factors (55 mph)							
Heavy-Heavy Duty Trucks [d]	0.160	1.071	4.963	0.017	0.203	0.133	0.001
2017 Offsite Emission Factors (55 mph)							
Heavy-Heavy Duty Trucks [d]	0.150	1.021	4.302	0.016	0.190	0.121	0.001

Notes:

[a] Unless otherwise noted, emission factors are from EMFAC2011-PL.

[b] PM_{10} and $PM_{2.5}$ emission factors account for particulate emissions from running exhaust, tire wear, and break wear.

[c] A lead emission factor for stationary and portable internal combustion engines was assumed representative of on-road vehicles. This factor was obtained from Table B-2 of the *Supplemental Instructions: Reporting Procedures for AB2588 Facilities for Reporting their Quadrennial Air Toxics Emissions Inventory* (SCAQMD, 2010). Due to limited available data, this emission factor was assumed equal for all vehicle speeds and all construction years: 0.0083 lbs/1,000 gallons

[d] As calculated using the EMFAC2011 Web Based Emissions Database for California, the heavy-heavy duty truck (diesel) fuel economy is: 5.569 miles per gallon

ATTACHMENT 1-11

Truck Trip Analysis for the Maximum Distance Traveled in Clark County (Nevada)

NASA SSFL EIS - Air Quality General Conformity Analysis

Introduction:

This tab identifies whether the 2017 deadline can be met based on the county's General Conformity *de minimis* threshold values, the project emissions occurring regardless of hauling activities, and the maximum possible mileage traveled within the county.

Truck Trip Analysis

Pollutant	VOC	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	Pb
General Conformity *De Minimis* Threshold (tons/year)	100	100	100	N/A	70	N/A	N/A
Haul Year 2016							
Constant and Road Repair Emissions (tons/year) [a]	0	0	0	0	0	0	0
Annual VMT Allowable (miles/year) [b]	523,925,172	78,194,102	14,808,331	N/A	312,893,953	N/A	N/A
Annual Truck Trips Allowed (trucks/year) [c]	2,943,400	439,293	83,193	N/A	1,757,831	N/A	N/A
Annual Material Hauled in Allowable Truck Trips (cy/year) [d]	55,924,597	8,346,561	1,580,665	N/A	33,398,793	N/A	N/A
Haul Year 2017							
Constant and Road Repair Emissions (tons/year) [a]	0	0	0	0	0	0	0
Annual VMT Allowable (miles/year) [b]	537,519,536	79,181,740	16,738,781	N/A	333,225,711	N/A	N/A
Annual Truck Trips Allowed (trucks/year) [c]	3,019,773	444,841	94,038	N/A	1,872,055	N/A	N/A
Annual Material Hauled in Allowable Truck Trips (cy/year) [d]	57,375,681	8,451,983	1,786,724	N/A	35,569,037	N/A	N/A
Summary							
Total Material Hauled in Allowable Truck Trips (cy/project)	113,300,278	16,798,545	3,367,388	N/A	68,967,829	N/A	N/A
Soil Volume to be Removed from SSFL (cy/project)	502,381						
Is the 2017 Deadline Met (Yes/No)?	Yes						

Notes:

[a] There are no constant, non-hauling emissions expected to occur in Clark County. Additionally, road repair activities will not occur in Clark County.

[b] Conversion factor: 1 short ton: 907,185 grams

[c] Distance Traveled per Roundtrip: 178 VMT/trip

[d] Truck Capacity: 19 cy/truck

Vehicle Emission Factors

Vehicle Type	Emission Factors (g/mile) [a]						
	VOC	CO	NOx	SOx	PM_{10} [b]	$PM_{2.5}$ [b]	Pb [c]
2016 Offsite Emission Factors (55 mph)							
Heavy-Heavy Duty Trucks [d]	0.173	1.160	6.126	0.017	0.203	0.133	0.001
2017 Offsite Emission Factors (55 mph)							
Heavy-Heavy Duty Trucks [d]	0.169	1.146	5.420	0.016	0.191	0.122	0.001

Notes:

[a] As a conservative estimate, the maximum California emission factors were assumed representative of Clark County.

[b] PM_{10} and $PM_{2.5}$ emission factors account for particulate emissions from running exhaust, tire wear, and break wear.

[c] A lead emission factor for stationary and portable internal combustion engines was assumed representative of on-road vehicles. This factor was obtained from Table B-2 of the *Supplemental Instructions: Reporting Procedures for AB2588 Facilities for Reporting their Quadrennial Air Toxics Emissions Inventory* (SCAQMD, 2010). Due to limited available data, this emission factor was assumed equal for all vehicle speeds and all construction years: 0.0083 lbs/1,000 gallons

[d] As calculated using the EMFAC2011 Web Based Emissions Database for California, the heavy-heavy duty truck (diesel) fuel economy is: 5.569 miles per gallon

ATTACHMENT 1-12

Truck Trip Analysis for the Maximum Distance Traveled in White Pine County (Nevada)

NASA SSFL EIS - Air Quality General Conformity Analysis

Introduction:

This tab identifies whether the 2017 deadline can be met based on the county's General Conformity *de minimis* threshold values, the project emissions occurring regardless of hauling activities, and the maximum possible mileage traveled within the county.

Truck Trip Analysis

Pollutant	VOC	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	Pb
General Conformity *De Minimis* Threshold (tons/year)	N/A	N/A	N/A	100	N/A	N/A	N/A
Haul Year 2016							
Constant and Road Repair Emissions (tons/year) [a]	0	0	0	0	0	0	0
Annual VMT Allowable (miles/year) [b]	N/A	N/A	N/A	5,491,312,228	N/A	N/A	N/A
Annual Truck Trips Allowed (trucks/year) [c]	N/A	N/A	N/A	24,297,842	N/A	N/A	N/A
Annual Material Hauled in Allowable Truck Trips (cy/year) [d]	N/A	N/A	N/A	461,658,993	N/A	N/A	N/A
Haul Year 2017							
Constant and Road Repair Emissions (tons/year) [a]	0	0	0	0	0	0	0
Annual VMT Allowable (miles/year) [b]	N/A	N/A	N/A	5,502,675,083	N/A	N/A	N/A
Annual Truck Trips Allowed (trucks/year) [c]	N/A	N/A	N/A	24,348,120	N/A	N/A	N/A
Annual Material Hauled in Allowable Truck Trips (cy/year) [d]	N/A	N/A	N/A	462,614,277	N/A	N/A	N/A
Summary							
Total Material Hauled in Allowable Truck Trips (cy/project)	N/A	N/A	N/A	924,273,270	N/A	N/A	N/A
Soil Volume to be Removed from SSFL (cy/project)	502,381						
Is the 2017 Deadline Met (Yes/No)?	Yes						

Notes:

[a] There are no constant, non-hauling emissions expected to occur in White Pine County. Additionally, road repair activities will not occur in White Pine County.

[b] Conversion factor: 1 short ton: 907,185 grams

[c] Distance Traveled per Roundtrip: 226 VMT/trip

[d] Truck Capacity: 19 cy/truck

Vehicle Emission Factors

Vehicle Type	Emission Factors (g/mile) [a]						
	VOC	CO	NOx	SOx	PM_{10} [b]	$PM_{2.5}$ [b]	Pb [c]
2016 Offsite Emission Factors (55 mph)							
Heavy-Heavy Duty Trucks [d]	0.173	1.160	6.126	0.017	0.203	0.133	0.001
2017 Offsite Emission Factors (55 mph)							
Heavy-Heavy Duty Trucks [d]	0.169	1.146	5.420	0.016	0.191	0.122	0.001

Notes:

[a] As a conservative estimate, the maximum California emission factors were assumed representative of White Pine County.

[b] PM_{10} and $PM_{2.5}$ emission factors account for particulate emissions from running exhaust, tire wear, and break wear.

[c] A lead emission factor for stationary and portable internal combustion engines was assumed representative of on-road vehicles. This factor was obtained from Table B-2 of the *Supplemental Instructions: Reporting Procedures for AB2588 Facilities for Reporting their Quadrennial Air Toxics Emissions Inventory* (SCAQMD, 2010). Due to limited available data, this emission factor was assumed equal for all vehicle speeds and all construction years: 0.0083 lbs/1,000 gallons

[d] As calculated using the EMFAC2011 Web Based Emissions Database for California, the heavy-heavy duty truck (diesel) fuel economy is: 5.569 miles per gallon

ATTACHMENT 1-13

Truck Trip Analysis for the Maximum Distance Traveled in Tooele County (Utah)

NASA SSFL EIS - Air Quality General Conformity Analysis

Introduction:

This tab identifies whether the 2017 deadline can be met based on the county's General Conformity *de minimis* threshold values, the project emissions occurring regardless of hauling activities, and the maximum possible mileage traveled within the county.

Truck Trip Analysis

Pollutant	VOC	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	Pb
General Conformity *De Minimis* Threshold (tons/year)	N/A	N/A	N/A	100	N/A	N/A	N/A
Haul Year 2016							
Constant and Road Repair Emissions (tons/year) [a]	0	0	0	0	0	0	0
Annual VMT Allowable (miles/year) [b]	N/A	N/A	N/A	5,491,312,228	N/A	N/A	N/A
Annual Truck Trips Allowed (trucks/year) [c]	N/A	N/A	N/A	50,845,484	N/A	N/A	N/A
Annual Material Hauled in Allowable Truck Trips (cy/year) [d]	N/A	N/A	N/A	966,064,188	N/A	N/A	N/A
Haul Year 2017							
Constant and Road Repair Emissions (tons/year) [a]	0	0	0	0	0	0	0
Annual VMT Allowable (miles/year) [b]	N/A	N/A	N/A	5,502,675,083	N/A	N/A	N/A
Annual Truck Trips Allowed (trucks/year) [c]	N/A	N/A	N/A	50,950,695	N/A	N/A	N/A
Annual Material Hauled in Allowable Truck Trips (cy/year) [d]	N/A	N/A	N/A	968,063,209	N/A	N/A	N/A
Summary							
Total Material Hauled in Allowable Truck Trips (cy/project)	N/A	N/A	N/A	1,934,127,397	N/A	N/A	N/A
Soil Volume to be Removed from SSFL (cy/project)	502,381						
Is the 2017 Deadline Met (Yes/No)?	Yes						

Notes:

[a] There are no constant, non-hauling emissions expected to occur in Tooele County. Additionally, road repair activities will not occur in Tooele County.

[b] Conversion factor: 1 short ton: 907,185 grams

[c] Distance Traveled per Roundtrip: 108 VMT/trip

[d] Truck Capacity: 19 cy/truck

Vehicle Emission Factors

Vehicle Type	Emission Factors (g/mile) [a]						
	VOC	CO	NOx	SOx	PM_{10} [b]	$PM_{2.5}$ [b]	Pb [c]
2016 Offsite Emission Factors (55 mph)							
Heavy-Heavy Duty Trucks [d]	0.173	1.160	6.126	0.017	0.203	0.133	0.001
2017 Offsite Emission Factors (55 mph)							
Heavy-Heavy Duty Trucks [d]	0.169	1.146	5.420	0.016	0.191	0.122	0.001

Notes:

[a] As a conservative estimate, the maximum California emission factors were assumed representative of Tooele County.

[b] PM_{10} and $PM_{2.5}$ emission factors account for particulate emissions from running exhaust, tire wear, and break wear.

[c] A lead emission factor for stationary and portable internal combustion engines was assumed representative of on-road vehicles. This factor was obtained from Table B-2 of the *Supplemental Instructions: Reporting Procedures for AB2588 Facilities for Reporting their Quadrennial Air Toxics Emissions Inventory* (SCAQMD, 2010). Due to limited available data, this emission factor was assumed equal for all vehicle speeds and all construction years: 0.0083 lbs/1,000 gallons

[d] As calculated using the EMFAC2011 Web Based Emissions Database for California, the heavy-heavy duty truck (diesel) fuel economy is: 5.569 miles per gallon

End of Appendix I

This page is intentionally left blank.