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*product noise R&D • sound quality • noise and vibration control • test facility design • seminars*

**Report No. R1432-01: Acoustical analysis of ISP CISF**
**NRC Requests for Additional Information**
**RAI-01: Background noise assessment**
**RAI-02: Noise levels at receptors during construction and operation**
**RAI-03: Personnel noise exposure during construction and operation**

2019 August 22

Jeff Glaser, PE
Cook-Joyce Inc.
812 W. 11th Street
Austin TX 78701

Dear Jeff,

## REPORT SUMMARY

The following report conveys the results of acoustical analyses related to construction and operation of Interim Storage Partners' Consolidated Interim Storage Facility as requested by NRC. The intent of the analyses is to project the sound levels associated with each phase of activity at nearby receptors and for onsite personnel, to compare them with objective criteria (e.g., HUD, EPA, OSHA), and to recommend noise control measures as necessary.

Tables 1 – 3 summarize the ambient sound level at nine nearby receptors ("Noise Sensitive Areas"), along with CISF contributions during initial construction, operation, and later phases of construction.

**Table 1: Estimated noise impact at NSA's during Phase 1 Construction**

| NSA | Type | Approx. Distance and Direction relative to ISP CISF | Estimated Ambient Ldn | Est'd ISP CISF Ph. 1 Construction Ldn | Est'd Total Ldn during Construction | EPA Recommended Ldn |
|---|---|---|---|---|---|---|
| 1 | Boundary | 6100 ft. SW | 47.9 | 43.2 | 49.1 | 70 |
| 2 | Boundary | 3900 ft. W | 42.6 | 48.4 | 49.4 | 70 |
| 3 | Boundary | 4000 ft. WNW | 41.6 | 48.6 | 49.4 | 70 |
| 4 | ISP CISF | SW Corner Protected Area | 39.1 | 69.9 | 69.9 | (Onsite) |
| 5 | LSA Pad | NE Corner | 39.8 | 60.0 | 60.1 | (Onsite) |
| 6 | Residential | 3.9 mi. WSW | 64.5 | 30.2 | 64.5 | 55 |
| 7 | Residential | 4.1 mi. WSW | 58.9 | 29.6 | 58.9 | 55 |
| 8 | Residential | 5.3 mi. WSW | 47.0 | 27.1 | 47.0 | 55 |
| 9 | Residential | 4.9 mi. WSW | 55.5 | 27.9 | 55.5 | 55 |

**Table 2: Estimated noise impact at NSA's during Operation**

| NSA | Type | Approx. Distance and Direction relative to ISP CISF | Ambient Ldn (via Meas'd Ld & Est'd Ln) | Est'd Sound Level (Ldn) of ISP CISF during Operation | Est'd "Total" Ldn (ISP CISF + Ambient noise) | EPA Recommended Ldn |
|---|---|---|---|---|---|---|
| 1 | Boundary | 6100 ft. SW | 47.9 | 41.4 | 48.7 | 70 |
| 2 | Boundary | 3900 ft. W | 42.6 | 39.9 | 44.5 | 70 |
| 3 | Boundary | 4000 ft. WNW | 41.6 | 39.1 | 43.5 | 70 |
| 4 | ISP CISF | SW Corner Protected Area | 39.1 | 58.4 | 58.5 | (Onsite) |
| 5 | LSA Pad | NE Corner | 39.8 | 55.1 | 55.3 | (Onsite) |
| 6 | Residential | 3.9 mi. WSW | 64.5 | 33.3 | 64.5 | 55 |
| 7 | Residential | 4.1 mi. WSW | 58.9 | 28.8 | 58.9 | 55 |
| 8 | Residential | 5.3 mi. WSW | 47.0 | 34.5 | 47.2 | 55 |
| 9 | Residential | 4.9 mi. WSW | 55.5 | 33.2 | 55.5 | 55 |

**Table 3: Estimated noise impact at NSA's during Phase 2-8 Construction**

| NSA | Type | Approx. Distance and Direction relative to ISP CISF | Estimated Ambient Ldn | Est'd ISP CISF Ph. 2-8 Construction Ldn | Est'd Sound Level (Ldn) of ISP CISF during Operation | Est'd Total Ldn during Construction | EPA Recm'd Ldn |
|---|---|---|---|---|---|---|---|
| 1 | Boundary | 6100 ft. SW | 47.9 | 37.7 | 41.4 | 49.1 | 70 |
| 2 | Boundary | 3900 ft. W | 42.6 | 43.0 | 39.9 | 46.8 | 70 |
| 3 | Boundary | 4000 ft. WNW | 41.6 | 43.7 | 39.1 | 46.6 | 70 |
| 4 | ISP CISF | SW Corner Protected Area | 39.1 | 57.8 | 58.4 | 61.2 | (Onsite) |
| 5 | LSA Pad | NE Corner | 39.8 | 52.2 | 55.1 | 57.0 | (Onsite) |
| 6 | Residential | 3.9 mi. WSW | 64.5 | 25.0 | 33.3 | 64.5 | 55 |
| 7 | Residential | 4.1 mi. WSW | 58.9 | 24.3 | 28.8 | 58.9 | 55 |
| 8 | Residential | 5.3 mi. WSW | 47.0 | 21.8 | 34.5 | 47.2 | 55 |
| 9 | Residential | 4.9 mi. WSW | 55.5 | 22.6 | 33.2 | 55.5 | 55 |

Table 4 summarizes the expected personnel noise exposure during various phases of CISF activity, expressed in terms of A-weighted Time Weighted Average (TWA).

**Table 4: Estimated personnel noise exposure (TWA)**

| | Construction, Phase 1 | Operations | Construction, Phases 2 - 8 |
|---|---|---|---|
| General Earthwork | 83 | --- | --- |
| Cask Building | 92 | --- | --- |
| Security/Admin Building | 94 | --- | --- |
| SNF Pad 1 | 88 | --- | 87 |
| Protected Area | 83 | --- | 78 |
| Storage Module Construction | --- | 92 | --- |
| Storage Module Transport | --- | 89 | --- |

Acoustical analysis indicates that construction and operation of the CISF are expected to be well below EPA and HUD guidelines (55 $L_{DN}$ residential, 70 $L_{DN}$ industrial/rural) at offsite locations without noise mitigation efforts.

Personnel noise exposure is expected to be above the OSHA action level TWA of 85 in many cases, but well within ranges normally associated with construction activity and industrial operations. As is common in industry, personnel noise exposure can be mitigated through

the use of hearing protective devices (e.g., ear plugs or ear muffs), but can be further aided by reduction of back-up alarm output levels and selection of for quiet tools and equipment.

## INTRODUCTION

In this report, Nelson Acoustics presents the results of acoustical analyses for the proposed Interim Storage Partners' (ISP) Consolidated Interim Storage Facility (CISF). Information is included that responds to NRC's information requests:

RAI-01: a pre-construction ambient survey along Waste Control Specialists' (WCS) western property line and for residential locations in Eunice NM,

RAI-02: an analysis of environmental sound (average and maximum) arriving at nearby receptors during construction and operation, and

RAI-03: an analysis of worker exposure to sound (average and maximum) from construction and operational activities.

The CISF is located to the north of WCS' current operations in a remote portion of Andrews County, Texas. WCS has three adjacent industrial neighbors immediately to the west:

- Urenco, which enriches uranium in a completely enclosed facility.
- Sundance Services, which operates a landfill for oilfield waste disposal, and
- Permian Basin Materials, which quarries aggregate materials.

Nine receptor points ("Noise Sensitive Areas" or NSA's) have been selected for study.

- One is onsite at the southwest corner of the CISF,
- One is at the northeast corner of WCS' adjacent LSA Pad,
- Three NSA's have been selected along the western boundary of WCS,
- Four NSA's have been selected to represent residential locations in and near the town of Eunice NM

An overview of the study area, along with locations of NSA's and background measurements are shown in Figures 1 – 3 in the attached Appendix, pages 19 - 20.

## SOUND CRITERIA

The US Environmental Protection Agency promulgated guidelines[1] for environmental sound levels "requisite to protect the publich health and welfare *with an adequate margin of safety*". Values relevant to the present study for compatible land use are:

- 55 $L_{dn}$ at residential properties, and
- 70 $L_{dn}$ at industrial properties and general unpopulated land.

EPA's recommended approach is based on the Day-Night Sound Level $L_{dn}$, a weighted daily

[1] Information on levels of environmental noise requisite to protect public health and welfare with an adequate

energy average A-weighted sound level. The nighttime average sound level ($L_n$) is adjusted upwards by 10 dB to compensate for additional nighttime sensitivity between the hours of 22:00 and 07:00 local. The daytime sound level ($L_d$) is not adjusted.

$$L_{dn} = 10\log_{10}\left(\frac{15}{24}10^{0.1L_d} + \frac{9}{24}10^{0.1(L_n+10)}\right)$$

The effect of the nighttime adjustment is such that, for sounds that are continuous, $L_{dn}$ is approximately 6.4 dB above the measured 24-hour $L_{A,eq}$.

The US Department of Housing and Urban Development subsequently issued guidelines for environmental sound levels[2] pursuant to it's mission to "provide decent housing and a suitable living environment for all Americans":

- Acceptable: $L_{dn} \leq 65$
- Normally Unacceptable: $65 < L_{dn} \leq 75$
- Unacceptable: $L_{dn} > 75$

Nelson Acoustics is not aware of any state, county, or local noise regulations affecting this project.

Workplace noise exposure is administered by the Occupational Safety and Health Administration (OSHA) of the US Department of Labor[3]. Maximum Permissible Noise Exposure is defined as the equivalent Time-Weighted Average (TWA) of 90 dBA for 8-hour duration. Above the Action Level of 85 dBA, employers must implement a hearing conservation program including hearing protectors, noise dosimetry, training, audiometric testing, and recordkeeping. An additional requirement prohibits unprotected transient events in excess of 140 dB(C). However, it should be noted that OSHA does not specify a maximum permissible A-weighted sound level.

Hearing protectors must be sufficient to attenuate employee exposure to an 8-hour TWA of 90 dBA or below. For employees that have already experienced a standard threshold shift, hearing protectors must attenuate to 85 dBA or below. Hearing protectors are rated in terms of "Noise Reduction Rating", but the nature of the laboratory rating and studies of actual benefit in the workplace suggest that actual dBA reduction can be notably less than the NRR rating implies.

[2] "The Noise Guidebook", US Department of Housing and Urban Development, Office of Community Planning and Development, publishing date listed as 2009 online, document certain predates this.
[3] 29 CFR 1910.95 "Occupational Noise Exposure"

## SITE/FACILITY DESCRIPTION

An area layout around the CISF is provided by Figure 2 (Appendix, p. 19). The CISF will consist of eight concrete storage pads constructed in succession, a railroad spur to deliver casks, a Cask Handling building, and a Security/Administration building (see Figure 4, p. 20). Area landforms are generally flat with the exception earthworks such as storage pits, quarries, and large material storage piles.

During construction, the majority of noise will be generated by

- specific earthmoving and concrete work equipment, along with
- generic support equipment (air compressors and portable generators) and
- individual building construction activities (such as grinding, welding).

During operation, the primary noise sources include

- outdoor concrete delivery and pouring for Storage Module Construction,
- a slow-moving Storage Module Transport which must be closely accompanied in order to monitor radiation levels, and
- building mechanical equipment such as ventilation fans and roof-top A/C units.
- Rail activity associated with CISF operation is estimated on the basis of one additional train per day carrying five casks to be stored.

Away from the CISF, primary noise sources are roadway traffic on TX/NM 176 and NM 18 which carry a significant fraction of heavy trucks associated with oil and gas activity. Additional significant noise sources in and around Eunice include two gas plants with flares, and the Texas-New Mexico Railway along with the associated WCS siding.

## AMBIENT SOUND STUDY (in response to RAI-01)

Current ambient sound levels were measured at locations between the proposed CISF and nearest industrial and residential properties during a site visit by David Nelson of Nelson Acoustics spanning 25 – 26 July, 2019. The general noise environment observed at each measurement location is described in Table 5. Measurement locations and their associated NSA's are depicted in Figures 1 – 3 (pp. 19-20). Measured A-weighted sound levels are summarized in Table 6 (dashes indicate that measurements were not made during that time period). Sunny, warm weather conditions prevailed during the measurements (Appendix, Table A-1, p. 21).

Experience and judgment has been exercised in order to decide which sounds constitute the "background". In general, sounds that are infrequent or whose schedule is difficult to discern (e.g., flaring at Eunice's North Gas Plant, rail operations) or seasonal (e.g., insects) are excluded in order to establish a baseline that is likely to be applicable all year (Table 7).

**Table 5: Sources of ambient sound**

| Location | Description | Dominant Sources | Secondary Sources | Infrequent or Intermittent Sources (excluded) |
|---|---|---|---|---|
| M01 | Near South Gas Plant | Gas Plant Operation | | |
| M03 | Near North Gas Plant, Flaring | Flare | | |
| | Near North Gas Plant, Not Flaring | Urban Traffic | Nearby Pumpjack | |
| M04 | Brunson Cemetery | Highway Traffic | | Nearby Industrial Activity |
| M06 | East End of Ave. S | Urban and Highway Traffic | Municipal Pool Equipment, Animals | |
| M07 | Drinkard Ln near NM 18 | Highway Traffic | | Insects |
| M08 | Picnic Area North of Love's Travel Center | Highway Traffic | | |
| M14 | West Boundary at Urenco | Highway Traffic | Wind in Vegetation | WCS Train, Insects |
| M15 | Near West Boundary at Sundance | Highway Traffic | Sundance Operations, Wind in Vegetation | WCS Train, Insects |
| M16 | Near ISP CISF SW Corner | Highway Traffic, Wind in Vegetation | WCS Operations | WCS Train, Insects |
| M17 | N Side of Retention Pond | Highway Traffic | Wind in Vegegation, WCS Operations | WCS Train, Insects |

**Table 6: Measured Ambient Sound Levels**

| Location | Description | Details | Affects Estimates at NSA's | Morning [dBA] | Midday [dBA] | Afternoon/ Evening [dBA] |
|---|---|---|---|---|---|---|
| M01 | Near South Gas Plant | 1425 ft. N of Plant Center | 7, 9 | --- | --- | 57.3 |
| M03 | Near North Gas Plant, Flaring | 1300 ft. S of Flare | 8, 9 | --- | --- | 75.9 |
| | Near North Gas Plant, Not Flaring | | | --- | --- | 42.1 |
| M04 | Brunson Cemetery | 825 ft. W of NM 207 | 9 | --- | --- | 46.6 |
| M06 | End of Ave. S | East end of Materials Yard | 8 | 46.3 | 37.3 | 42.1 |
| M07 | Drinkard Ln near NM 18 | 775 ft. SE of intersection | 7 | 50.3 | 40.4 | 37.5 |
| M08 | NMDOT Picnic Area opposite Love's Travel Center | 300 ft. N of roadway | 6 | 57.2 | 58.0 | 57.6 |
| M14 | West Boundary at Urenco | 4250 ft. N of NM 176 | 1 | 43.8 | --- | --- |
| M15 | Near West Boundary at Sundance | 7725 ft. N of NM 176 | 2, 3 | 39.9 | --- | --- |
| M16 | Near ISP CISF SW Corner | 300 ft. E of SW Corner | 4, 5 | 36.3 | --- | --- |
| M17 | N Side of Retention Pond | 1700 ft. N of TX 176 | --- | --- | 40.7 | --- |

**Table 7: Disposition of contributions to Ambient $L_{dn}$**

| Description | Schedule | Variability | Included in Ldn? |
|---|---|---|---|
| Roadway Traffic | Constant | Slowly varying | Yes |
| WCS Train | Irregular | Brief | No |
| Texas and New Mexico Railway | Irregular | Brief | No |
| Wind in Vegetation | Common | Fluctuating | Yes |
| South Gas Plant | Constant | Continuous | Yes |
| North Gas Plant Flare | Irregular | Continuous | No |
| Insects | Seasonal | Continuous | No |
| Vehicle Activities WCS | Daily | Continuous | Yes |
| Vehicle Activities Sundance Services | Daily | Continuous | Yes |
| Vehicle Activities Permiam Materials | Daily | Continuous | Yes |

Measurements were made near the selected NSA's in accessible locations that respect residents' privacy. Daytime NSA values are derived from measured values adjusted for relative source-receptor distance. Nighttime NSA values were not measured but, because roadway traffic is the primary ambient noise contributor at all locations, are estimated as 4.8 dBA less than daytime values based on hourly traffic volumes provided by TxDOT. The overall ambient $L_{dn}$ is estimated from $L_d$ and $L_n$ inputs given in Table 8.

**Table 8: Derivation of Ambient $L_{dn}$**

| NSA | Related Measurement Positions | Description | Est'd Ambient Ld [dBA] | Est'd Ambient Ln [dBA] | Resulting Ambient Ldn [dBA] |
|---|---|---|---|---|---|
| 1 | M14 | West Property Boundary near Urenco | 45.1 | 40.3 | 47.9 |
| 2 | M15 | West Property Boundary near Sundance | 39.9 | 35.1 | 42.6 |
| 3 | M15 | West Property Boundary near Permian | 38.9 | 34.1 | 41.6 |
| 4 | M16 | Center of Phase 1 Pad | 36.1 | 31.3 | 38.9 |
| 5 | M16 | NE Corner of LSA Pad | 37.1 | 32.3 | 39.8 |
| 6 | M08 | Residences near intersection of NM 176 and NM 18 | 61.8 | 57.0 | 64.5 |
| 7 | M07 | Residence on NM 18 S of NM 176 | 56.2 | 51.4 | 58.9 |
| 8 | M06 | Residences at E edge of Eunice NM | 44.2 | 39.4 | 47.0 |
| 9 | M01, M04, M08 | Residences along NM 176 near RR Crossing | 52.8 | 48.0 | 55.5 |

The ambient sound levels described above compare favorably to results from a HUD Traffic Noise analysis based on traffic volume data obtained from TXDOT and NMDOT, as well as with a venerable estimating method based on population density (which predicts $L_{DN}$ 51.4 for Eunice's 877.5 persons/square mile).

Industrial activity within WCS and nearby at Urenco, Sundance, and Permian Materials, exerted a minimal impact on the observed $L_{dn}$ in comparison with highway traffic.

## CONSTRUCTION AND OPERATIONAL SOUND AT RECEPTORS (in response to RAI-02)

Equipment types and counts for Construction and Operational Phases have been tabulated by Joe Pere of CJI and were used as the basis for this analysis (see Appendix, Table A-2, p. 21). Additional noise sources likely to exist on site have been added, including backup alarms, building mechanical equipment, construction support equipment, and some larger handtools.

Noise sources as classified, along with their presumed operational extent and acoustic centers, are tabulated in Appendix Tables A-3 through A-5 (pp. 21-22).

A-weighted Sound Power Level and temporal Usage Factors (UF) for construction vehicles were obtained from the FHWA's Road Construction Noise Model. Typical construction octave band spectral shapes and Sound Power Levels for other equipment were derived from ESEERCO (Empire State Electric Energy Research Corporation), the New York Dept. of Environmental Protection, and NIOSH Power Tool databases as well as Nelson Acoustics' project files. Noise emission levels from the WCS Train were extracted from direct measurements performed during the site visit.

Shift-average sound power levels (Appendix Table A-6, p. 22) combine operational sound power levels with the assumed percentage operational time. Maximum A-weighted sound power levels (Appendix Table A-7, p. 22) are presumed to occur in the rare event that all

equipment is operating simultaneously. The number of backup alarms involved in a maximum event is based on the largest number likely to sound simultaneously at least 1 second per shift. During operational phases, the maximum sound level occurs at some locations when the Train sounds its horn exactly at its nearest approach to the observation point. In the case of NSA #4, the distance is only 100 feet; maximum levels are elevated accordingly.

The modeled shift-average sound pressure level (for the $i$-th equipment type in the $j$-th octave band) is based on the operating sound power level ($L_w$), the number of units operating ($N$), and the usage factor ($UF$). Factors for geometric divergence due to distance ($A_{div}$) and excess attenuation due to air ($A_{air}$) and ground absorption ($A_{gr}$) were computed in accordance with ISO 9613-2 (1996). No "credit" is taken for attenuation from intervening terrain, buildings, or materials piles that could further reduce offsite levels (these barriers could be bypassed under certain weather conditions and are therefore considered unreliable in this application).

$$L_{p,eq,i,j} = L_{w,i,j} + 10\log_{10} N_i + 10\log_{10} UF_i - A_{div,i} - A_{air,i,j} - A_{gr,i,j}$$

The total $j$-th octave band sound pressure level from all equipment at a receptor point are aggregated as

$$L_{p,eq,j} = 10\log_{10} \sum_i 10^{0.1 L_{p,eq,i,j}}$$

The A-weighted overall sound pressure levels is then computed from the octave band sound pressure levels and the A-weighting octave band corrections as

$$L_{pA,eq} = 10\log_{10} \sum_j 10^{0.1(L_{p,eq,j}+A_j)}$$

Computed $L_{DN}$'s take into account the summertime work schedule (beginning 06:00 CDT), the shift lengths (10 hrs for construction, 8 hrs for operation), and time offset between MDT and CDT applying to NSA's 1 – 3 and 6 – 9.

Detailed computations of shift-average and maximum A-weighted sound pressure level at each NSA are tabulated in Appendix Tables A-8 through A-16 (pp. 23-27) for Construction phases, and A-17 through A-25 (pp. 27-30) for Operations.

Time-average noise impact at receptors is tabulated in Table 9 – 11 in terms of $L_{dn}$. Comparison is made to EPA guidelines for industrial and residential properties. No guideline value is tabulated for the NSA #4 or NSA #5 because WCS, whose adjacent land encloses the CISF, presumably considers itself closely allied with its operation. However, the $L_{dn}$ 70 guideline would apply if NRC wishes to consider them as neighboring properties.

The $L_{DN}$'s contributed by the proposed CISF are expected to be well below EPA guidelines at the offsite locations. It should be noted that some of the residential locations already exceed EPA guidelines due to high levels of nearby roadway traffic, although they still fall within HUD's acceptability guideline.

**Table 9: Estimated Noise Impact at NSA's during Phase 1 Construction**

| NSA | Type | Approx. Distance and Direction relative to ISP CISF | Estimated Ambient Ldn | Est'd ISP CISF Ph. 1 Construction Ldn | Est'd Total Ldn during Construction | EPA Recommended Ldn | Potential Noise Increase |
|---|---|---|---|---|---|---|---|
| 1 | Boundary | 6100 ft. SW | 47.9 | 43.2 | 49.1 | 70 | 1.3 |
| 2 | Boundary | 3900 ft. W | 42.6 | 48.4 | 49.4 | 70 | 6.8 |
| 3 | Boundary | 4000 ft. WNW | 41.6 | 48.6 | 49.4 | 70 | 7.8 |
| 4 | ISP CISF | SW Corner Protected Area | 39.1 | 69.9 | 69.9 | (Onsite) | 30.8 |
| 5 | LSA Pad | NE Corner | 39.8 | 60.0 | 60.1 | (Onsite) | 20.3 |
| 6 | Residential | 3.9 mi. WSW | 64.5 | 30.2 | 64.5 | 55 | 0.0 |
| 7 | Residential | 4.1 mi. WSW | 58.9 | 29.6 | 58.9 | 55 | 0.0 |
| 8 | Residential | 5.3 mi. WSW | 47.0 | 27.1 | 47.0 | 55 | 0.0 |
| 9 | Residential | 4.9 mi. WSW | 55.5 | 27.9 | 55.5 | 55 | 0.0 |

**Table 10: Estimated Noise Impact at NSA's during Operation**

| NSA | Type | Approx. Distance and Direction relative to ISP CISF | Ambient Ldn (via Meas'd Ld & Est'd Ln) | Est'd Sound Level (Ldn) of ISP CISF during Operation | Est'd "Total" Ldn (ISP CISF + Ambient noise) | EPA Recommended Ldn | Potential Noise Increase |
|---|---|---|---|---|---|---|---|
| 1 | Boundary | 6100 ft. SW | 47.9 | 41.4 | 48.7 | 70 | 0.9 |
| 2 | Boundary | 3900 ft. W | 42.6 | 39.9 | 44.5 | 70 | 1.9 |
| 3 | Boundary | 4000 ft. WNW | 41.6 | 39.1 | 43.5 | 70 | 1.9 |
| 4 | ISP CISF | SW Corner Protected Area | 39.1 | 58.4 | 58.5 | (Onsite) | 19.4 |
| 5 | LSA Pad | NE Corner | 39.8 | 55.1 | 55.3 | (Onsite) | 15.5 |
| 6 | Residential | 3.9 mi. WSW | 64.5 | 33.3 | 64.5 | 55 | 0.0 |
| 7 | Residential | 4.1 mi. WSW | 58.9 | 28.8 | 58.9 | 55 | 0.0 |
| 8 | Residential | 5.3 mi. WSW | 47.0 | 34.5 | 47.2 | 55 | 0.2 |
| 9 | Residential | 4.9 mi. WSW | 55.5 | 33.2 | 55.5 | 55 | 0.0 |

**Table 11: Est'd Noise Impact at NSA's during Ph. 2-8 Construction w/ Operation**

| NSA | Type | Approx. Distance and Direction relative to ISP CISF | Estimated Ambient Ldn | Est'd ISP CISF Ph. 2-8 Construction Ldn | Est'd Sound Level (Ldn) of ISP CISF during Operation | Est'd Total Ldn during Construction | EPA Recm'd Ldn | Potential Noise Increase |
|---|---|---|---|---|---|---|---|---|
| 1 | Boundary | 6100 ft. SW | 47.9 | 37.7 | 41.4 | 49.1 | 70 | 1.2 |
| 2 | Boundary | 3900 ft. W | 42.6 | 43.0 | 39.9 | 46.8 | 70 | 4.2 |
| 3 | Boundary | 4000 ft. WNW | 41.6 | 43.7 | 39.1 | 46.6 | 70 | 5.0 |
| 4 | ISP CISF | SW Corner Protected Area | 39.1 | 57.8 | 58.4 | 61.2 | (Onsite) | 22.1 |
| 5 | LSA Pad | NE Corner | 39.8 | 52.2 | 55.1 | 57.0 | (Onsite) | 17.2 |
| 6 | Residential | 3.9 mi. WSW | 64.5 | 25.0 | 33.3 | 64.5 | 55 | 0.0 |
| 7 | Residential | 4.1 mi. WSW | 58.9 | 24.3 | 28.8 | 58.9 | 55 | 0.0 |
| 8 | Residential | 5.3 mi. WSW | 47.0 | 21.8 | 34.5 | 47.2 | 55 | 0.3 |
| 9 | Residential | 4.9 mi. WSW | 55.5 | 22.6 | 33.2 | 55.5 | 55 | 0.0 |

Maximum sound levels are tabulated in comparison to the daytime average sound levels due to both the ambient and the denoted activities in Tables 12 – 14. The maxima tabulated in Table 14 for Phases 2 – 8 are from the construction activities only. Maxima due to Operation (in particular due to the Train) would also apply during the period but are tabulated separately in Table 13.

**Table 12: Estimated Maximum Noise Levels at NSA's during Phase 1 Construction**

| NSA | Type | Approx. Distance and Direction relative to ISP CISF | Estimated Ambient Ld | Estimated Ph.1 Construction Ld | Total Ph. 1 Construction Ld | Estimated Max Lp during Ph. 1 Construction |
|---|---|---|---|---|---|---|
| 1 | Boundary | 6100 ft. SW | 45.1 | 40.7 | 46.5 | 48.0 |
| 2 | Boundary | 3900 ft. W | 39.9 | 45.9 | 46.9 | 53.9 |
| 3 | Boundary | 4000 ft. WNW | 38.9 | 46.2 | 46.9 | 54.2 |
| 4 | ISP CISF | SW Corner Protected Area | 36.4 | 69.1 | 69.1 | 75.9 |
| 5 | LSA Pad | NE Corner | 37.1 | 59.3 | 59.3 | 68.0 |
| 6 | Residential | 3.9 mi. WSW | 61.8 | 27.8 | 61.8 | 33.5 |
| 7 | Residential | 4.1 mi. WSW | 56.2 | 27.1 | 56.2 | 32.8 |
| 8 | Residential | 5.3 mi. WSW | 44.2 | 24.6 | 44.3 | 30.3 |
| 9 | Residential | 4.9 mi. WSW | 52.8 | 25.4 | 52.8 | 31.1 |

**Table 13: Estimated Maximum Noise Levels at NSA's during Operation**

| NSA | Type | Approx. Distance and Direction relative to ISP CISF | Estimated Ambient Ld | Estimated Operational Ld | Total Operational Ld | Estimated Max Lp during Operation |
|---|---|---|---|---|---|---|
| 1 | Boundary | 6100 ft. SW | 45.1 | 38.4 | 46.0 | 75.3 |
| 2 | Boundary | 3900 ft. W | 39.9 | 36.9 | 41.6 | 68.6 |
| 3 | Boundary | 4000 ft. WNW | 38.9 | 36.1 | 40.7 | 63.1 |
| 4 | ISP CISF | SW Corner Protected Area | 36.4 | 55.4 | 55.5 | 96.3 |
| 5 | LSA Pad | NE Corner | 37.1 | 52.1 | 52.2 | 73.4 |
| 6 | Residential | 3.9 mi. WSW | 61.8 | 30.3 | 61.8 | 62.9 |
| 7 | Residential | 4.1 mi. WSW | 56.2 | 25.8 | 56.2 | 52.8 |
| 8 | Residential | 5.3 mi. WSW | 44.2 | 31.5 | 44.5 | 65.3 |
| 9 | Residential | 4.9 mi. WSW | 52.8 | 30.2 | 52.8 | 62.9 |

**Table 14: Est'd Maximum Noise Levels at NSA's during Phase 2-8 Construction**

| NSA | Type | Approx. Distance and Direction relative to ISP CISF | Estimated Ambient Ld | Estimated Ph. 2-8 Construction Ld | Total Ph. 2-8 Construction Ld | Estimated Max Lp during Ph. 2-8 Construction |
|---|---|---|---|---|---|---|
| 1 | Boundary | 6100 ft. SW | 45.1 | 35.2 | 45.6 | 44.1 |
| 2 | Boundary | 3900 ft. W | 39.9 | 40.6 | 43.3 | 50.9 |
| 3 | Boundary | 4000 ft. WNW | 38.9 | 41.2 | 43.2 | 51.7 |
| 4 | ISP CISF | SW Corner Protected Area | 36.4 | 57.1 | 57.1 | 67.5 |
| 5 | LSA Pad | NE Corner | 37.1 | 51.5 | 51.6 | 62.8 |
| 6 | Residential | 3.9 mi. WSW | 61.8 | 22.5 | 61.8 | 28.6 |
| 7 | Residential | 4.1 mi. WSW | 56.2 | 21.9 | 56.2 | 27.9 |
| 8 | Residential | 5.3 mi. WSW | 44.2 | 19.3 | 44.3 | 25.4 |
| 9 | Residential | 4.9 mi. WSW | 52.8 | 20.1 | 52.8 | 26.2 |

Elevated sound levels may be noticeable from the property boundaries with Urenco, Sundance Services, and Permian Materials (NSA's #1 – 3) during construction. During Operation however the average sound levels increase less than 2 dBA; the additional activity is likely to go unnoticed. In any event, $L_{DN}$'s are well below the EPA guideline for industrial land use.

Residents of Eunice (NSA's #6 – 9) are expected to be unable to hear Construction activities during any Phase because of the relatively high level of traffic noise already present in the area. During Operation the only potentially audible impact from CISF is due to the passage of one additional Train per day. This is also likely to go unnoticed to the extent that it is infrequent and already familiar, and remains within current timeframes.

In any event, CISF contribution to $L_{DN}$'s are well below both the EPA guideline for residential properties and prevailing background levels.

NSA's on site are more strongly affected because of proximity. $L_{dn}$'s on adjacent WCS property only approach the EPA Guideline for Industrial land use during initial construction, otherwise they are well below. However it is clear that ISP CISF construction and operational phases cause negligible hearing conservation risk to WCS personnel at the nearby LSA Pad: the highest predicted shift average sound level is 60.6 dBA, well below the OSHA-mandated action level of 85.0 dBA. The sounding of the train horn at crossings can lead to brief moderately high sound levels, but these are familiar and are already factored into the reported averages.

**PERSONNEL EXPOSURE TO CONSTRUCTION AND OPERATIONAL SOUND (in response to RAI-03)**

Personnel noise exposure is a function of the time-average sound pressure level received during a shift. The source sound power levels, their percentage "on time" duration, and the "time and motion" aspect of location and orientation relative to individuals, all play a role in determining noise exposure. The distance and orientation may be relatively predictable during operations, but much less so during construction when vehicles and personnel are continuously changing.

Model inputs are based on the source strengths and assumptions given in Tables A-2 through A-7 (pp. 20-21), identical with the foregoing section (RAI-02).

The modeled shift-average A-weighted sound pressure level is based on the operating A-weighted sound power level for the $i$-th equipment type ($L_{wA}$), the number of units operating ($N$), and the usage factor ($UF$). Because of the relatively short distance involved, excess attenuation due to air and ground absorption are omitted. Because the remaining terms are independent of frequency, the sound pressure level can be estimated directly in A-weighted terms as:

$$L_{pA,eq,i} = L_{wA,i} + 10\log_{10} N_i + 10\log_{10} UF_i - D$$

The overall A-weighted sound pressure level from each equipment type ($i$) at a receptor point are aggregated as:

$$L_{pA,eq} = 10\log_{10} \sum_i 10^{0.1 L_{pA,eq,i}}$$

The divergence factor $D$ is simply $20 \log (r/3.28) - 8$, where $r$ is in feet, for well-defined source-receptor distances. In particular, relatively close standoffs of 20 ft. and 10 ft. are assumed for workers attending the ready-mix truck during Storage Module Construction and checking radiation levels while accompanying the Cask Transport vehicle during Storage Module Transport.

A different approach is required for construction activities that are distributed across a large area. Each of the designated construction subprojects is assumed to take place within a work area that extends 50 feet beyond the building or area footprint on all sides. One quadrant of the rectangular area is then divided into a 10x10 array of rectangles to simulate a "maximum scenario" in which the observer is located in the center of the work area with equipment all around. The divergence of sound power for a given array element is:

$$D_{m,n} = -20\log_{10}\frac{r_{m,n}}{3.28} - 8$$

The value at $D_{0,0}$ (for which $r = 0$) is set to -10 dB. The average geometric divergence for equipment evenly distributed across the site to a central observer is:

$$D_{central} = \frac{1}{100}\sum_{m}\sum_{n} 10^{0.1D_{m,n}}$$

The "minimum scenario" by contrast would occur when the observer is located at an outside corner of the overall work area. Because the distances are all double relative to the "maximum case", the minimum-case result would be $D_{central} - 6$ dB. An intermediate value is used in this analysis:

$$D = D_{central} - 3$$

This analysis addresses baseline noise levels in each work area. Individual noise exposure may be increased and highly sensitive to details of particular work practices, including events like sound radiating from extended workpieces or unexpectedly close long-term positioning relative to a piece of heavy equipment.

RAI-03 makes reference to "peak" noise levels. The technical definition of "peak" is the instantaneous maximum pressure, which is not perceptible by humans nor is it hazardous unless the levels exceed 140 dB(C). That latter occur primarily in the context of explosions, firearms, and artillery, which are not expected for this project. They could occur during accidental impacts such as dropping a tool or wooden pallet nearby. By their nature such accidental events are impossible to predict or estimate. They are rare on a typical job site and are usually easily avoided. The concept of "peak" has therefore been interpreted to mean "maximum" on a human timescale.

Personnel noise exposure is a function of the Time-Weighted Average (TWA). When evaluated according to the OSHA paradigm ("5-dBA exchange rate"), TWA is identical to shift-average $L_{A,eq}$ for continuous noise source but less for fluctuating, intermittent, and transient sources. It includes the $L_{pA,max}$ events tabulated below. The TWA's reported here are simply the modeled shift-average $L_{A,eq}$'s. The small difference (~ 1 – 2 dBA) anticipated for the construction and activities contemplated in this report has been retained as a safety factor.

OSHA's most basic requirement is that workers not receive an unprotected noise dose in excess of 100% in any given shift. This corresponds to 90.0 dBA TWA for an 8-hr shift and 88.4 dBA for a 10-hour shift. OSHA does not specify a maximum permissible A-weighted sound pressure level.

Less obvious perhaps is fact that multiple requirements (periodic dosimetry and audiometric testing, providing hearing protective devices, training and recordkeeping) become active when the TWA reaches 85.0 dBA for 8 hrs or 83.4 dBA for a 10-hr shift. For this reason, 85.0 TWA is the recommended target value.

As will be seen, some of the estimated TWA's exceed 90 dBA in large part because of backup alarms. Generic backup alarms are typically adjusted to maximum power output, roughly 115 dBA at 4 ft. However this is usually considerably more than necessary to assure awareness of moving vehicles. It is recommended that these alarm levels be reduced in order to limit unnecessary personnel noise exposure. It turns out that OSHA regulations permit backup alarm levels to be reduced as long as they are readily audible, or to use a dedicated observer behind each vehicle and eliminate the alarms altogether.

Because of their significant impact, a parallel analysis has been performed on the assumption that they can be reduced 10 dBA, which sounds approximately ½ as loud (on some jobsites it has been possible to reduce them by as much as 20 dBA). The reduced level would correspond to 97 dBA at 10 ft., which is still likely to be sufficient for workplace safety, especially if *all* backup alarms on the site are similarly adjusted.

Results for Estimated Personnel TWAs are given below in Tables 15 – 17, including a parallel set of values associated with backup alarm noise reduction ("NC B/U Alarms"). Estimated shift-average construction levels are notably elevated in the work areas for the Cask and Security/Admin Buildings because of the large amount of equipment assumed to be active in a relatively small area. Construction levels are lower in other, more extended work areas.

Maximum sound levels occur under the rare circumstance that all equipment and several backup alarms are operating simultaneously and, for locations near the railroad tracks, that the Train also sounds its horn simultaneously. These values are expected to be conservative in the sense that they are unlikely to be exceeded. It bears repeating that OSHA does not mandate a maximum permissible A-weighted sound level.

Detailed computations of shift-average sound pressure level at each NSA are tabulated in Appendix Tables A-26 through A-34 (pp. 30-32), and for maximum A-weighted sound pressure level, Appendix Tables A-35 through A-43 (pp. 32-34).

**Table 15: Estimated Baseline Personnel Noise Exposure during Ph. 1 Construction**

| Activity | TWA | TWA w/ NC B/U Alarms | Benefit | Max LpA | Max LpA + NC B/U Alarms | Benefit |
|---|---|---|---|---|---|---|
| General Earthwork | 83 | 78 | 4 | 89 | 83 | 6 |
| Cask Building | 92 | 89 | 3 | 99 | 93 | 5 |
| Security/Admin Building | 94 | 91 | 3 | 100 | 95 | 5 |
| SNF Pad 1 | 88 | 83 | 5 | 96 | 89 | 7 |
| Protected Area | 83 | 78 | 4 | 89 | 83 | 6 |

**Table 16: Estimated Baseline Personnel Noise Exposure during Operation**

| Activity | TWA | TWA w/ NC B/U Alarms | Benefit | Max LpA | Max LpA + NC B/U Alarms | Benefit |
|---|---|---|---|---|---|---|
| Storage Module Construction | 92 | 89 | 3 | 103 | 95 | 8 |
| Storage Module Transport | 89 | 89 | 0 | 97 | 96 | 1 |

**Table 17: Estimated Baseline Personnel Noise Exposure during Phase 2-8 Construction including Operation**

| Activity | TWA | TWA w/ NC B/U Alarms | Benefit | Max LpA | Max LpA + NC B/U Alarms | Benefit |
|---|---|---|---|---|---|---|
| SNF Pad 1 | 87 | 81 | 6 | 97 | 88 | 9 |
| Protected Area | 78 | 73 | 5 | 89 | 79 | 10 |

## RECOMMENDATIONS

### 1. Dosimetry

Onsite sound levels are expected to be highest during construction. If contractors are used for this purpose, they should already have their own hearing conservation program in place.

CISF operational noise exposures can be estimated in advance by finding or making dosimetry readings on similar activities at WCS. Given that the current "pessimistic" estimates documented in this report suggest TWAs of 89, actual TWAs may be close enough to 85 that administrative or engineering controls can yield further reductions. If the TWAs are below 85, the OSHA mandate for a hearing conservation program falls away. Even without it however, periodic dosimetry is recommended in order to identify, assess and mitigate any changes in work practices that could elevate TWAs.

### 2. Hearing Protectors

Hearing protection is recommended for all the onsite activities contemplated in this report. Noise Reduction Ratings (NRR's) of hearing protectors capable of reducing at-the-ear exposure to 85.0 dBA (8-hour, Operation) and 83.4 dBA (10-hour, Construction) are determined following a method recommended by the National Institute of Occupational Safety and Health:

$$NRR = \frac{(TWA - L + 7)}{C}$$

where $L$ is the target level, and $C$ takes the values 0.75 for earmuffs and 0.5 for expanding foam earplugs (due to imperfect fit in actual practice). Recommended NRRs are provided in Tables 18 – 20.

Note that these recommendations incorporate the "best practice" of targeting 85 dBA rather than 90 dBA. This reduces the risk of noise-induced hearing loss, and obviates the need to track which personnel have a pre-existing STS when distributing hearing protectors.

**Table 18: Recommended HPD NRRs for Phase 1 Construction**

| Activity | TWA | NRR Muffs | NRR Foam | TWA + NC B/U Alarms | NRR Muffs | NRR Foam |
|---|---|---|---|---|---|---|
| General Earthwork | 83 | 9 | 13 | 78 | | |
| Cask Building | 92 | 22 | 32 | 89 | 17 | 25 |
| Security/Admin Building | 94 | 24 | 36 | 91 | 19 | 29 |
| SNF Pad 1 | 88 | 16 | 23 | 83 | 9 | 14 |
| Protected Area | 83 | 9 | 13 | 78 | | |

**Table 19: Recommended HPD NRRs for Operation**

| Activity | TWA | NRR Muffs | NRR Foam | TWA + NC B/U Alarms | NRR Muffs | NRR Foam |
|---|---|---|---|---|---|---|
| Storage Module Construction | 92 | 19 | 28 | 89 | 15 | 23 |
| Storage Module Transport | 89 | 16 | 23 | 89 | 16 | 23 |

**Table 20: Recommended HPD NRRs for Phase 2-8 Construction**

| Activity | TWA | NRR Muffs | NRR Foam | TWA + NC B/U Alarms | NRR Muffs | NRR Foam |
|---|---|---|---|---|---|---|
| SNF Pad 1 | 87 | 15 | 22 | 81 | 7 | 10 |
| Protected Area | 78 | | | 73 | | |

### 3. Backup Alarms

Reduction of backup alarm sound levels has a significant effect on personnel noise exposure and should be seriously considered. Besides the reduced risk of hearing loss, lower sound levels permit lesser-performing HPDs to be worn. This allows approaching vehicles, verbal instructions, and other communications to be more readily heard. It also reduces the sense of isolation some workers report which, ironically, may lead them to partially or completely remove their earplugs. This is especially true of workers who already have hearing loss.

Backup alarm noise control is expected to reduce TWAs by 3 to 6 dBA and maxima by 5 to 10 dBA during construction.

"Smart" backup alarms have been developed over the years that adjust to the prevailing background or have a different noise spectrum. See the OSHA regulation that allows this for specifics: 29 CFR Part 1926, Subpart "O", 1926.601.b.4 and 1926.602.a.9. The following devices are approved by the NYC Department of Environmental Protection:

| **BACKUP ALARMS** | | |
|---|---|---|
| • Preco Electronics | 45, 200 and 6000 Series | www.precosafety.com |
| • Ecco Group | Smart Alarms, 500 and 700 Series | www.eccolink.com |
| • Grote Industries | Model 73040 | www.grote.com |
| • Brigade Electronics | BBS-TEK Series | www.bbs-tek.com |

**4. Vehicles**

Vehicles should be turned off when not in use. However if they must be left running, they should preferably be parked at least 25 feet away from workers.

Vehicles should be selected from among those with lower tabulated sound power levels and interior operator sound pressure levels ("Buy Quiet"). This information ust be requested by model from manufacturers.

Most vehicles have Operator sound pressure levels of 80 dBA or below. However Operators' actual exposure can vary widely due to one or more factors:

- Operating closed-cab trucks with windows open, which elevates the sound level to roughly that of the surrounding work area,
- Playing music or other entertainment, in order to be audible, must be at least 5 dBA above the vehicle's interior noise, and
- Use of communications radios which, in order to be intelligible, must in turn be set at least 5 dBA above the vehicle's interior noise including the entertainment.

Thus the best results are obtained when operators are required to keep windows closed (which of course requires an air conditioned cab) and communicate by radio. No entertainment music players or headsets should be allowed. Experience has shown that vehicle operator exposure can be highly individualized. For this reason vehicle operator noise exposure should be evaluated for each individual operator of a closed-cab vehicle.

Diligent vehicle maintenance is strongly recommended. Factors such as damaged exhaust systems, failing fan belt clutches or idler bearings, elevated engine idle speeds, and rattling covers or guards, can all unnecessarily elevate a vehicle's exterior noise emission. Within the operator cab, sound-absorbing ceiling linings and sound-isolating floor mats typically suffer significant wear and tear on a normal jobsite. These should be replaced periodically to reduce the unnecessary buildup of interior vehicle sound.

The impact of additional noise exposure due to exceptional work practices or circumstances is tabulated below in absolute (Table 21) and relative (Table 22) terms. For example, adding 85 dBA TWA music to an 80 dBA closed-cab vehicle has the potential to cause a TWA of 86

(Table 21), an effective exposure increase of 6 dBA (Table 22).

**Table 21: New TWA due to adding a new TWA contribution to an existing TWA**

| TWA | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Add 80 | 83 | 84 | 84 | 85 | 85 | 86 | 87 | 88 | 89 | 90 | 90 | 91 | 92 | 93 | 94 | 95 |
| Add 85 | 86 | 86 | 87 | 87 | 88 | 88 | 89 | 89 | 90 | 90 | 91 | 92 | 93 | 94 | 95 | 95 |
| Add 90 | 90 | 91 | 91 | 91 | 91 | 91 | 91 | 92 | 92 | 93 | 93 | 94 | 94 | 95 | 95 | 96 |
| Add 95 | 95 | 95 | 95 | 95 | 95 | 95 | 96 | 96 | 96 | 96 | 96 | 96 | 97 | 97 | 98 | 98 |

**Table 22: Increase in TWA due to adding a new TWA contribution**

| TWA | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Add 80 | 3 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Add 85 | 6 | 5 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| Add 90 | 10 | 10 | 9 | 8 | 7 | 6 | 5 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 |
| Add 95 | 15 | 14 | 13 | 12 | 11 | 10 | 10 | 9 | 8 | 7 | 6 | 5 | 5 | 4 | 4 | 3 |

### 5. Individual construction activities

Power tools should be selected from among those with lower tabulated sound power levels ("Buy Quiet"). Listings can be found at:

- https://www1.nyc.gov/assets/dep/downloads/pdf/air/noise/noise-vendor-guidance-small-construction-jobs.pdf, and
- https://www.cdc.gov/niosh/topics/noise/noise_levels.html.

Position relative to vehicles during concrete pouring and steel erection can have a significant effect. These distances should be maximized when possible through activity planning within the work area.

Individual activities such as welding, installing sheet metal roof and wall panels, and particularly grinding can cause unpredictable and very high individual noise exposure. If necessary these activities should be dispersed physically to minimize the number of affected individuals, and rotated among workers in order to avoid a few individuals being overexposed. Special care should be taken to avoid grinding on or hammering extended resonant objects like sheet metal panels without applying local mechanical damping (e.g., small bags of shot or sand roughly 6" diameter by 1" thick).

For example, adding 90 dBA TWA due to grinding a large resonant workpiece in an otherwise 88 dBA environment has the potential to cause a TWA of 92 (Table 21), an effective exposure increase of 4 (Table 22).

## SUMMARY AND FINAL COMMENT

The ambient environment throughout the survey area is dominated by significant roadway traffic noise, more than might be expected for the remoteness of the Site and the population of nearby Eunice NM. This appears to be due in large part to trucking activity related to oil- and gas exploration and production.

Construction and operational CISF sound levels at offsite receptors are expected to be well below EPA and HUD recommendations, aided significantly by the relatively large distances involved.

Worker noise exposures during construction are expected to be above OSHA's action level of 85 dBA TWA in many cases, but well within the expected range for such activities. Practical noise control recommendations are provided to reduce noise exposures along with appropriate levels of hearing protection. Attention to backup alarm levels alone can reduce TWAs 3 to 6 dBA.

Worker noise exposures during operations, including Storage Module Construction and Storage Module Transport, are also above 85 dBA. An initial dosimetry study is recommended to assess actual exposures in advance of CISF operations. Practical noise control recommendations are provided to reduce noise exposures and for appropriate levels of hearing protection.

Sincerely,

NELSON ACOUSTICS (Member NCAC, TX F-3001)
www.nelsonacoustical.com


David A. Nelson, INCE Bd. Cert., P.E. (OR 17635, TX 81329)
Principal Consultant


**Figure 1: Overview of Study Area, North Up (approximately 8 miles by 3 miles)**

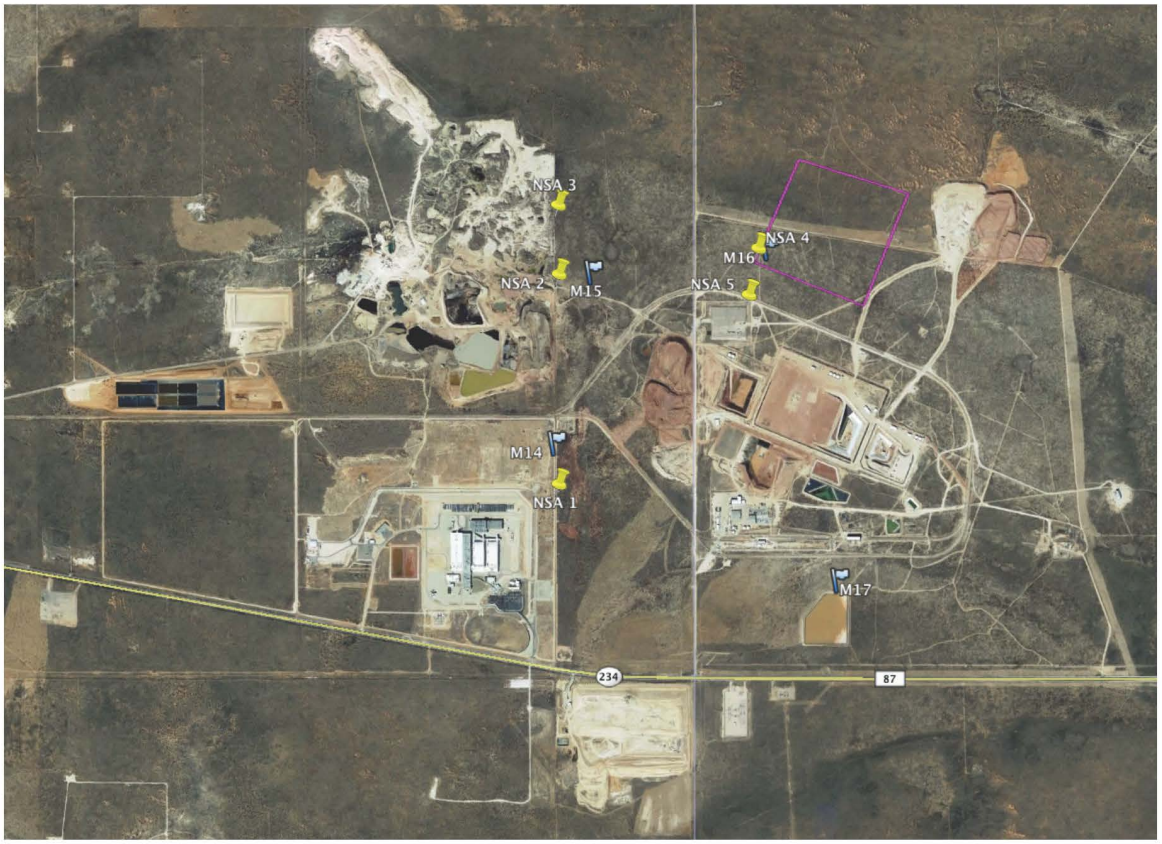


**Figure 2: Overview of Study Area, North Up, around WCS**

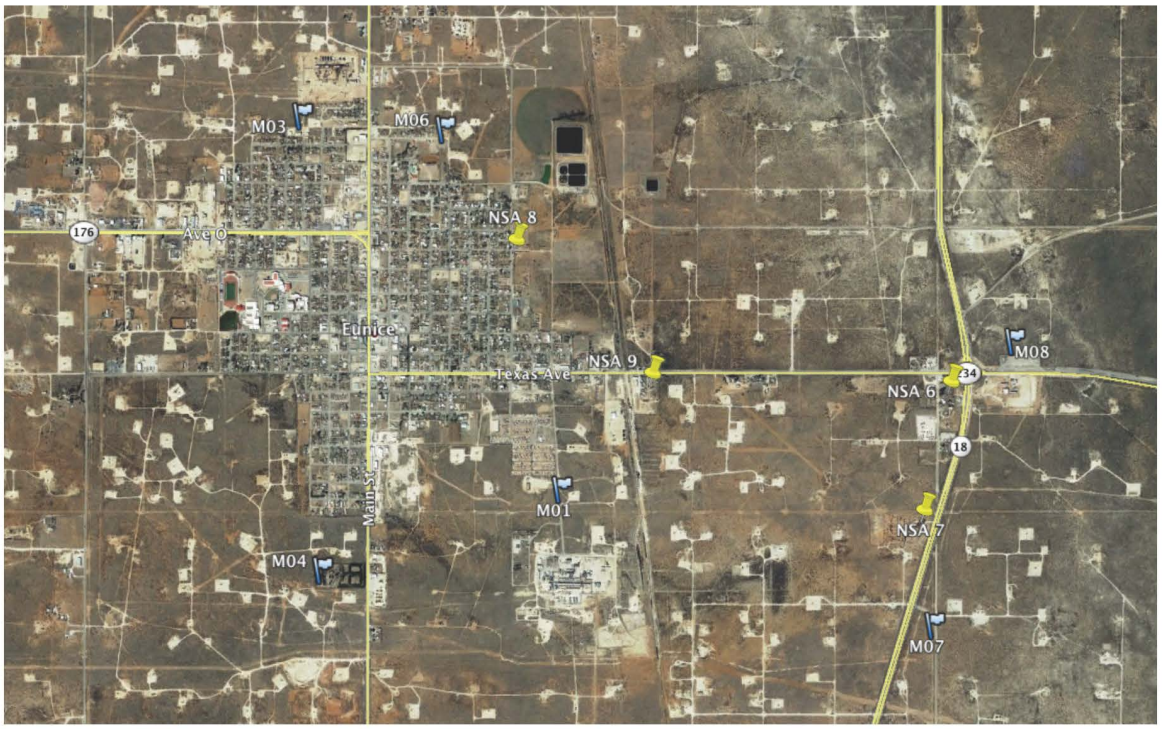


**Figure 3: Overview of Study Area, North Up, around Eunice**

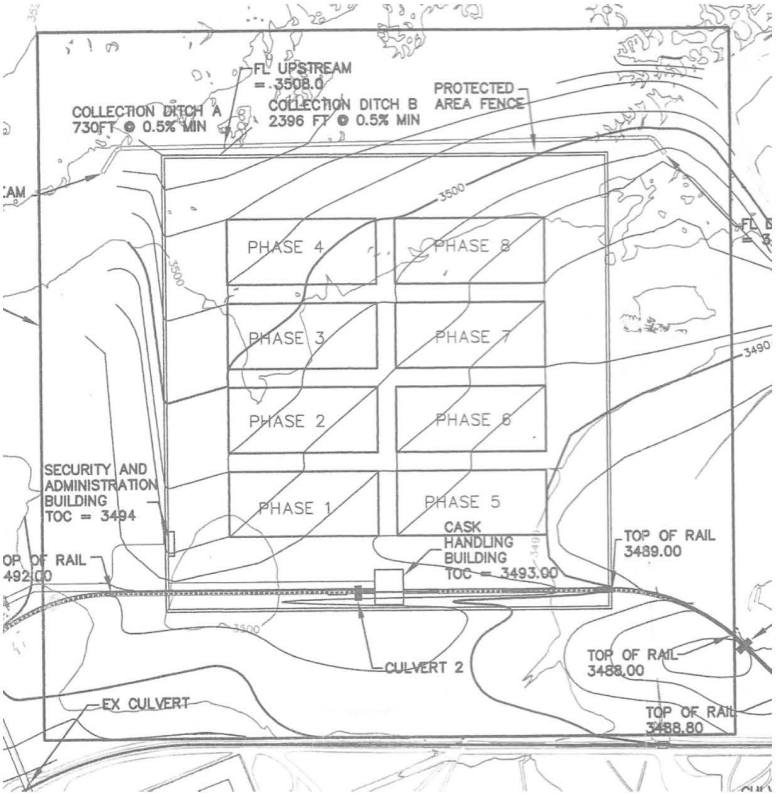


**Figure 4: Site Layout, North approx. 30° counterclockwise from top of diagram**

**Table A-1: Prevailing Weather Conditions during Measurements (WCS)**

| Date | Range | Time [CDT] | Windspeed [kts] | Wind Direction | Temperature [ºF] | Rel. Humidity [%] | Barometric Pressure [in. Hg] |
|---|---|---|---|---|---|---|---|
| July 25 2019 | Min Hourly | 13:00 | 6.1 | 135 | 86.3 | 19.2 | 26.47 |
| | Median Hourly | | 7.0 | 146 | 91.6 | 21.1 | 26.50 |
| | Max Hourly | 17:30 | 8.4 | 182 | 92.3 | 29.7 | 26.52 |
| July 26 2019 | Min Hourly | 06:00 | 1.9 | 008 | 63.2 | 25.3 | 26.40 |
| | Median Hourly | | 6.9 | 174 | 74.8 | 42.5 | 26.49 |
| | Max Hourly | 13:30 | 9.9 | 205 | 90.0 | 62.1 | 26.54 |

**Table A-2: CJI Construction Equipment Count List**

| Phase | Action | Equipment | HP | Quantity per Hour |
|---|---|---|---|---|
| 1 | General Earthwork | Heavy Haul Truck | 350 | 4 |
| 1 | General Earthwork | Earthmover | 500 | 2 |
| 1 | Cask Building | Pump Truck | 400 | 1 |
| 1 | Cask Building | Ready-Mix Truck | 400 | 1 |
| 1 | Cask Building | Construction Eq | 400 | 2 |
| 1 | Cask Building | Earthmover | 500 | 1 |
| 1 | Security/Admin Bldg | Pump Truck | 400 | 1 |
| 1 | Security/Admin Bldg | Ready-Mix Truck | 400 | 1 |
| 1 | Security/Admin Bldg | Construction Eq | 400 | 2 |
| 1 | Security/Admin Bldg | Earthmover | 500 | 1 |
| 1 | SNF Pad | Pump Truck | 400 | 1 |
| 1 | SNF Pad | Ready-Mix Truck | 400 | 1 |
| 1 | SNF Pad | Earthmover | 500 | 2 |
| 1 | Protected Area | Heavy Haul Truck | 350 | 1 |
| 1 | Protected Area | Earthmover | 500 | 2 |
| 2-8 | SNF Pad | Pump Truck | 400 | 1 |
| 2-8 | SNF Pad | Ready-Mix Truck | 400 | 1 |
| 2-8 | SNF Pad | Earthmover | 500 | 2 |
| 2-8 | Protected Area | Heavy Haul Truck | 350 | 1 |
| 2-8 | Protected Area | Earthmover | 500 | 2 |
| Operations | Storage Module Construction | Ready-Mix Truck | 400 | 1 |
| Operations | Storage Module Transport | Transporter | 350 | 1 |

**Table A-3: Noise Source Classifications, Construction Phase 1**

| Classification | Extent | Presumed Acoustic Center | Equipment from CJI List | Additions |
|---|---|---|---|---|
| General Earthwork | Owner-Controlled and Protected Areas | Center of Protected Area | (4) Heavy Haul Trucks, (2) Earthmovers | (6) Back-up Alarms |
| Cask Building | Around the Building Site | Center of Cask Building | Concrete Pumper, Ready-Mix Truck, (2) Const. Equipment, Earthmover | (5) Back-up Alarms, (4) Welding, (4) Grinding, Air Compressor, Diesel Generator |
| Security/Admin Building | Around the Building Site | Center of Security/Admin Building | Concrete Pumper, Ready-Mix Truck, (2) Const. Equipment, Earthmover | (5) Back-up Alarms, (4) Welding, (4) Grinding, Air Compressor, Diesel Generator |
| SNF Pad | (1) Pad ea. of (8) Phases | Center of Phase 1 Pad | Concrete Pumper, Ready-Mix Truck, Earthmover | (4) Back-up Alarms |
| Protected Area | Protected Area | Center of Protected Area | Heavy Haul Truck, (2) Earthmovers | (3) Back-up Alarms |

## Table A-4: Noise Source Classifications, Operations

| Classification | Extent | Presumed Acoustic Center | Equipment from CJI List | Additions |
|---|---|---|---|---|
| Storage Module Construction | Near Cask Handling Building | Center of Cask Handling Building | Ready-Mix Truck | (1) Back-up Alarms |
| Storage Module Transport | Between Cask Handling Building and SNF Pad | Between Cask Building and Phase 1 Pad | Transport | (1) Back-up Alarms |
| Cask Building Mechanical Equipment | Around Cask Building | Center of Cask Building | --- | (8) unshrouded Ventilation Fans each long building side |
| Security/Admin Building Mechanical Equipment | Around Security/Admin Building | Center of Security/Admin Building | --- | (3) 12T RTUs |
| Train | Siding Loop passing through CISF | Nearest point on North and South sides of Siding Loop | --- | (1) Train per Day |

## Table A-5: Noise Source Classifications, Construction Phases 2 – 8

| Classification | Extent | Presumed Acoustic Center | Equipment from CJI List | Additions |
|---|---|---|---|---|
| SNF Pad | (1) Pad ea. of (8) Phases | Center of Phase 2 Pad | Concrete Pumper, Ready-Mix Truck, Earthmover | (4) Back-up Alarms |
| Protected Area | Protected Area | Center of Protected Area | Heavy Haul Truck, (2) Earthmovers | (3) Back-up Alarms |

## Table A-6: Est'd Shift-Average Noise Levels during Construction and Operation

| | | | | | | Octave Band LwA,eq | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Equip. Type | Data Source | HP | LpA,max @ 50 ft | % Utilization | LwA,eq | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| Earthmover | RCNM | 500 | 82 | 40 | 110 | 94 | 85 | 76 | 68 | 63 | 55 | 45 |
| Heavy Haul Truck | RCNM | 350 | 84 | 40 | 112 | 96 | 87 | 78 | 70 | 65 | 57 | 47 |
| Pump Truck | RCNM | 400 | 82 | 20 | 107 | 91 | 82 | 73 | 65 | 60 | 52 | 42 |
| Ready-Mix Truck | RCNM | 400 | 85 | 40 | 113 | 97 | 88 | 79 | 71 | 66 | 58 | 48 |
| Transporter | RCNM | 350 | 85 | 31 | 109 | 93 | 85 | 75 | 67 | 62 | 54 | 44 |
| Backup Alarm | Project Files | | 93 | 20 | 115 | | | | | 115 | | |
| Air Compressors | RCNM | | 80 | 40 | 108 | 92 | 83 | 74 | 66 | 61 | 53 | 43 |
| Diesel Generator | RCNM | | 82 | 50 | 111 | 95 | 86 | 77 | 69 | 64 | 56 | 46 |
| Welding | Database | | | 40 | 105 | 85 | 92 | 91 | 93 | 96 | 93 | 91 |
| Grinding | Database | | | 20 | 105 | 82 | 89 | 88 | 90 | 93 | 90 | 88 |
| Bldg. Vent Fans | Project Files | | 75 | 100 | 107 | 100 | 103 | 104 | 102 | 102 | 103 | 100 |
| Rooftop A/C Units | Project Files | | --- | 100 | 92 | 86 | 86 | 83 | 86 | 81 | 74 | 72 |
| | | | | | SEL (A) | Octave Band SEL (A) | | | | | | |
| Train | Measurement, at 825 ft. | | | 1/shift | 82 | 70 | 70 | 64 | 77 | 79 | 64 | 49 |

## Table A-7: Est'd Shift-Average Noise Levels during Construction and Operation

| | | | | | | Octave Band LwA,max | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Equip. Type | Data Source | HP | LpA,max @ 50 ft | % Utilization | LwA,max | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| Earthmover | RCNM | 500 | 82 | 100 | 114 | 98 | 105 | 104 | 106 | 108 | 106 | 104 |
| Heavy Haul Truck | RCNM | 350 | 84 | 100 | 116 | 100 | 107 | 106 | 108 | 110 | 108 | 106 |
| Pump Truck | RCNM | 400 | 82 | 100 | 114 | 98 | 105 | 104 | 106 | 108 | 106 | 104 |
| Ready-Mix Truck | RCNM | 400 | 85 | 100 | 117 | 101 | 108 | 107 | 109 | 111 | 109 | 107 |
| Transporter | RCNM | 350 | 85 | 100 | 117 | 101 | 108 | 107 | 109 | 111 | 109 | 107 |
| Backup Alarm | Project Files | | 93 | 100 | 125 | 109 | 116 | 115 | 117 | 120 | 117 | 115 |
| Air Compressors | RCNM | | 80 | 100 | 112 | 96 | 103 | 102 | 104 | 106 | 104 | 102 |
| Diesel Generator | RCNM | | 82 | 100 | 114 | 98 | 105 | 104 | 106 | 108 | 106 | 104 |
| Welding | Database | | | 100 | 105 | 89 | 96 | 95 | 97 | 100 | 97 | 95 |
| Grinding | Database | | | 100 | 105 | 89 | 96 | 95 | 97 | 100 | 97 | 95 |
| Bldg. Vent Fans | Project Files | | 75 | 100 | 107 | 100 | 103 | 104 | 102 | 102 | 103 | 100 |
| Rooftop A/C Units | Project Files | | --- | 100 | 92 | 86 | 86 | 83 | 86 | 81 | 74 | 72 |
| Train | Measurement | | | 1/shift | 131 | 108 | 112 | 119 | 132 | 133 | 115 | 101 |

## Table A-8: Construction Sound Levels, NSA #1 (Urenco)

| Receptor | N | E |
|---|---|---|
| NSA 1 | -4725 | -4050 |

| PHASE 1 | | | Continuous Sound Power Level | | | | | | | Max Sound Power Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LWA | N | E | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| General Earthwork | 1175 | 1175 | 103 | 110 | 109 | 111 | 121 | 111 | 109 | 107 | 114 | 113 | 115 | 118 | 115 | 113 |
| Cask Building | 100 | 1150 | 105 | 112 | 110 | 112 | 120 | 112 | 110 | 108 | 115 | 114 | 116 | 119 | 116 | 114 |
| Security/Admin Bldg | 375 | 0 | 105 | 112 | 110 | 112 | 120 | 112 | 110 | 108 | 115 | 114 | 116 | 119 | 116 | 114 |
| SNF Pad | 525 | 725 | 101 | 108 | 106 | 108 | 119 | 108 | 106 | 105 | 112 | 111 | 113 | 115 | 113 | 111 |
| Protected Area | 1175 | 1175 | 100 | 107 | 105 | 107 | 117 | 107 | 105 | 104 | 111 | 109 | 111 | 114 | 111 | 109 |
| B/U Alarms Max | 525 | 725 | | | | | | | | | | | | 134 | | |

| Divergence | Distance | | | | | | |
|---|---|---|---|---|---|---|---|
| General Earthwork | 7881 | -75 | -81 | -83 | -87 | -92 | -103 | -132 |
| Cask Building | 7094 | -74 | -80 | -82 | -85 | -90 | -100 | -126 |
| Security/Admin Bldg | 6512 | -73 | -79 | -81 | -84 | -88 | -97 | -121 |
| SNF Pad | 7097 | -74 | -80 | -82 | -85 | -90 | -100 | -126 |
| Protected Area | 7881 | -75 | -81 | -83 | -87 | -92 | -103 | -132 |
| B/U Alarms Max | 7097 | -74 | -80 | -82 | -85 | -90 | -100 | -126 |

| LPA | | Continuous Sound Pressure Level | | | | | | | Max Sound Pressure Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Earthwork | | 28 | 29 | 26 | 25 | 28 | 8 | -24 | 32 | 33 | 30 | 29 | 25 | 12 | -20 |
| Cask Building | | 30 | 32 | 28 | 27 | 30 | 13 | -16 | 34 | 35 | 32 | 31 | 29 | 17 | -12 |
| Security/Admin Bldg | | 31 | 32 | 29 | 29 | 32 | 15 | -11 | 35 | 36 | 33 | 32 | 31 | 19 | -7 |
| SNF Pad | | 27 | 28 | 24 | 23 | 29 | 9 | -20 | 31 | 32 | 29 | 28 | 26 | 13 | -15 |
| Protected Area | | 25 | 26 | 22 | 21 | 25 | 4 | -27 | 29 | 30 | 26 | 25 | 22 | 8 | -23 |
| B/U Alarms Max | | | | | | | | | | | | | 44 | | |
| LPA EQ | 42.5 | 36 | 37 | 33 | 33 | 37 | 18 | -9 | 40 | 41 | 37 | 37 | 45 | 22 | -5 |
| LDN (NM. Summer) | 43.2 | | | | | | | | | | | | | | |
| LPA MAX | 48.0 | | | | | | | | | | | | | | |

| PHASES 2-8 | | | Continuous Sound Power Level | | | | | | | Max Sound Power Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LWA | N | E | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| SNF Pad (use #2) | 975 | 725 | 101 | 108 | 106 | 108 | 119 | 108 | 106 | 105 | 112 | 111 | 113 | 115 | 113 | 111 |
| Protected Area | 1175 | 1175 | 100 | 107 | 105 | 107 | 117 | 107 | 105 | 104 | 111 | 109 | 111 | 114 | 111 | 109 |
| B/U Alarms Max | 975 | 725 | | | | | | | | | | | | 131 | | |

| Divergence | Distance | | | | | | |
|---|---|---|---|---|---|---|---|
| SNF Pad (use #2) | 7436 | -74 | -76 | -78 | -82 | -89 | -99 | -127 |
| Protected Area | 7881 | -75 | -81 | -83 | -87 | -92 | -103 | -132 |
| B/U Alarms Max | 7436 | -74 | -76 | -78 | -82 | -89 | -99 | -127 |

| LPA | | Continuous Sound Pressure Level | | | | | | | Max Sound Pressure Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SNF Pad (use #2) | | 26 | 31 | 28 | 26 | 30 | 9 | -21 | 31 | 36 | 33 | 31 | 26 | 13 | -16 |
| Protected Area | | 25 | 26 | 22 | 21 | 25 | 4 | -27 | 29 | 30 | 26 | 25 | 22 | 8 | -23 |
| B/U Alarms Max | | | | | | | | | | | | | 42 | | |
| LPA EQ | 37.0 | 28 | 32 | 29 | 27 | 31 | 10 | -20 | 33 | 37 | 33 | 32 | 42 | 15 | -16 |
| LDN (NM. Summer) | 37.7 | | | | | | | | | | | | | | |
| LPA MAX | 44.1 | | | | | | | | | | | | | | |

## Table A-9: Construction Sound Levels, NSA #2 (Sundance)

| Receptor | N | E |
|---|---|---|
| NSA 2 | -500 | -4050 |

| PHASE 1 | | | Continuous Sound Power Level | | | | | | | Max Sound Power Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LWA | N | E | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| General Earthwork | 1175 | 1175 | 103 | 110 | 109 | 111 | 121 | 111 | 109 | 107 | 114 | 113 | 115 | 118 | 115 | 113 |
| Cask Building | 100 | 1150 | 105 | 112 | 110 | 112 | 120 | 112 | 110 | 108 | 115 | 114 | 116 | 119 | 116 | 114 |
| Security/Admin Bldg | 375 | 0 | 105 | 112 | 110 | 112 | 120 | 112 | 110 | 108 | 115 | 114 | 116 | 119 | 116 | 114 |
| SNF Pad | 525 | 725 | 101 | 108 | 106 | 108 | 119 | 108 | 106 | 105 | 112 | 111 | 113 | 115 | 113 | 111 |
| Protected Area | 1175 | 1175 | 100 | 107 | 105 | 107 | 117 | 107 | 105 | 104 | 111 | 109 | 111 | 114 | 111 | 109 |
| B/U Alarms Max | 525 | 725 | | | | | | | | | | | | 134 | | |

| Divergence | Distance | | | | | | |
|---|---|---|---|---|---|---|---|
| General Earthwork | 5487 | -72 | -78 | -79 | -81 | -85 | -92 | -112 |
| Cask Building | 5235 | -71 | -77 | -79 | -81 | -84 | -91 | -110 |
| Security/Admin Bldg | 4143 | -69 | -75 | -77 | -78 | -80 | -85 | -101 |
| SNF Pad | 4884 | -71 | -76 | -78 | -80 | -82 | -89 | -107 |
| Protected Area | 5487 | -72 | -78 | -79 | -81 | -85 | -92 | -112 |
| B/U Alarms Max | 4884 | -71 | -76 | -78 | -80 | -82 | -89 | -107 |

| LPA | | Continuous Sound Pressure Level | | | | | | | Max Sound Pressure Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Earthwork | | 31 | 33 | 30 | 30 | 36 | 19 | -4 | 35 | 37 | 34 | 34 | 33 | 23 | 0 |
| Cask Building | | 33 | 34 | 31 | 32 | 36 | 22 | 0 | 37 | 38 | 35 | 36 | 35 | 25 | 4 |
| Security/Admin Bldg | | 35 | 37 | 34 | 35 | 41 | 27 | 9 | 39 | 40 | 37 | 38 | 39 | 31 | 13 |
| SNF Pad | | 30 | 31 | 28 | 29 | 36 | 19 | -1 | 34 | 36 | 32 | 33 | 33 | 24 | 3 |
| Protected Area | | 28 | 29 | 26 | 26 | 33 | 15 | -7 | 32 | 33 | 30 | 30 | 29 | 19 | -3 |
| B/U Alarms Max | | | | | | | | | | | | | 52 | | |
| LPA EQ | 47.7 | 39 | 41 | 37 | 38 | 44 | 29 | 11 | 43 | 44 | 41 | 42 | 52 | 33 | 14 |
| LDN (NM. Summer) | 48.4 | | | | | | | | | | | | | | |
| LPA MAX | 53.9 | | | | | | | | | | | | | | |

| PHASES 2-8 | | | Continuous Sound Power Level | | | | | | | Max Sound Power Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LWA | N | E | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| SNF Pad (use #2) | 975 | 725 | 101 | 108 | 106 | 108 | 119 | 108 | 106 | 105 | 112 | 111 | 113 | 115 | 113 | 111 |
| Protected Area | 1175 | 1175 | 100 | 107 | 105 | 107 | 117 | 107 | 105 | 104 | 111 | 109 | 111 | 114 | 111 | 109 |
| B/U Alarms Max | 975 | 725 | | | | | | | | | | | | 131 | | |

| Divergence | Distance | | | | | | |
|---|---|---|---|---|---|---|---|
| SNF Pad (use #2) | 4998 | -71 | -73 | -74 | -76 | -81 | -88 | -107 |
| Protected Area | 5487 | -72 | -78 | -79 | -81 | -85 | -92 | -112 |
| B/U Alarms Max | 4998 | -71 | -73 | -74 | -76 | -81 | -88 | -107 |

| LPA | | Continuous Sound Pressure Level | | | | | | | Max Sound Pressure Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SNF Pad (use #2) | | 30 | 35 | 32 | 32 | 38 | 20 | 0 | 34 | 39 | 37 | 36 | 34 | 25 | 4 |
| Protected Area | | 28 | 29 | 26 | 26 | 33 | 15 | -7 | 32 | 33 | 30 | 30 | 29 | 19 | -3 |
| B/U Alarms Max | | | | | | | | | | | | | 50 | | |
| LPA EQ | 42.3 | 32 | 36 | 33 | 33 | 39 | 22 | 0 | 36 | 40 | 38 | 37 | 50 | 26 | 5 |
| LDN (NM. Summer) | 43.0 | | | | | | | | | | | | | | |
| LPA MAX | 50.9 | | | | | | | | | | | | | | |

## Table A-10: Construction Sound Levels, NSA #3 (Permian)

| Receptor | N | E |
|---|---|---|
| NSA 3 | 925 | -4050 |

| PHASE 1 | | | Continuous Sound Power Level | | | | | | | Max Sound Power Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LWA | N | E | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| General Earthwork | 1175 | 1175 | 103 | 110 | 109 | 111 | 121 | 111 | 109 | 107 | 114 | 113 | 115 | 118 | 115 | 113 |
| Cask Building | 100 | 1150 | 105 | 112 | 110 | 112 | 120 | 112 | 110 | 108 | 115 | 114 | 116 | 119 | 116 | 114 |
| Security/Admin Bldg | 375 | 0 | 105 | 112 | 110 | 112 | 120 | 112 | 110 | 108 | 115 | 114 | 116 | 119 | 116 | 114 |
| SNF Pad | 525 | 725 | 101 | 108 | 106 | 108 | 119 | 108 | 106 | 105 | 112 | 111 | 113 | 115 | 113 | 111 |
| Protected Area | 1175 | 1175 | 100 | 107 | 105 | 107 | 117 | 107 | 105 | 104 | 111 | 109 | 111 | 114 | 111 | 109 |
| B/U Alarms Max | 525 | 725 | | | | | | | | | | | | 134 | | |

| Divergence | Distance | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| General Earthwork | 5231 | -71 | -77 | -79 | -81 | -84 | -91 | -110 |
| Cask Building | 5265 | -71 | -77 | -79 | -81 | -84 | -91 | -111 |
| Security/Admin Bldg | 4087 | -69 | -75 | -76 | -77 | -79 | -85 | -100 |
| SNF Pad | 4792 | -71 | -76 | -78 | -79 | -82 | -89 | -106 |
| Protected Area | 5231 | -71 | -77 | -79 | -81 | -84 | -91 | -110 |
| B/U Alarms Max | 4792 | -71 | -76 | -78 | -79 | -82 | -89 | -106 |

| LPA | | Continuous Sound Pressure Level | | | | | | | Max Sound Pressure Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| General Earthwork | | 32 | 33 | 30 | 30 | 37 | 20 | -1 | 36 | 37 | 34 | 34 | 34 | 24 | 3 |
| Cask Building | | 33 | 34 | 31 | 32 | 36 | 21 | 0 | 37 | 38 | 35 | 35 | 35 | 25 | 3 |
| Security/Admin Bldg | | 35 | 37 | 34 | 35 | 41 | 27 | 10 | 39 | 41 | 38 | 39 | 39 | 31 | 14 |
| SNF Pad | | 30 | 31 | 28 | 29 | 36 | 20 | 0 | 34 | 36 | 33 | 33 | 33 | 24 | 4 |
| Protected Area | | 28 | 30 | 26 | 27 | 34 | 17 | -5 | 32 | 34 | 30 | 31 | 30 | 21 | -1 |
| B/U Alarms Max | | | | | | | | | | | | | 52 | | |
| LPA EQ | 47.9 | 39 | 41 | 38 | 38 | 44 | 30 | 11 | 43 | 45 | 42 | 42 | 53 | 34 | 15 |
| LDN (NM. Summer) | 48.6 | | | | | | | | | | | | | | |
| LPA MAX | 54.2 | | | | | | | | | | | | | | |

| PHASES 2-8 | | | Continuous Sound Power Level | | | | | | | Max Sound Power Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LWA | N | E | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| SNF Pad (use #2) | 975 | 725 | 101 | 108 | 106 | 108 | 119 | 108 | 106 | 105 | 112 | 111 | 113 | 115 | 113 | 111 |
| Protected Area | 1175 | 1175 | 100 | 107 | 105 | 107 | 117 | 107 | 105 | 104 | 111 | 109 | 111 | 114 | 111 | 109 |
| B/U Alarms Max | 975 | 725 | | | | | | | | | | | | 131 | | |

| Divergence | Distance | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| SNF Pad (use #2) | 4775 | -71 | -72 | -74 | -76 | -80 | -87 | -105 |
| Protected Area | 5231 | -71 | -77 | -79 | -81 | -84 | -91 | -110 |
| B/U Alarms Max | 4775 | -71 | -72 | -74 | -76 | -80 | -87 | -105 |

| LPA | | Continuous Sound Pressure Level | | | | | | | Max Sound Pressure Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| SNF Pad (use #2) | | 30 | 35 | 33 | 33 | 38 | 22 | 2 | 34 | 40 | 37 | 37 | 35 | 26 | 6 |
| Protected Area | | 28 | 30 | 26 | 27 | 34 | 17 | -5 | 32 | 34 | 30 | 31 | 30 | 21 | -1 |
| B/U Alarms Max | | | | | | | | | | | | | 51 | | |
| LPA EQ | 43.0 | 32 | 36 | 34 | 34 | 40 | 23 | 2 | 36 | 41 | 38 | 38 | 51 | 27 | 7 |
| LDN (NM. Summer) | 43.7 | | | | | | | | | | | | | | |
| LPA MAX | 51.7 | | | | | | | | | | | | | | |

## Table A-11: Construction Sound Levels, NSA #4 (CISF SW Corner)

| Receptor | N | E |
|---|---|---|
| NSA 4 | 0 | 0 |

| PHASE 1 | | | Continuous Sound Power Level | | | | | | | Max Sound Power Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LWA | N | E | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| General Earthwork | 1175 | 1175 | 103 | 110 | 109 | 111 | 121 | 111 | 109 | 107 | 114 | 113 | 115 | 118 | 115 | 113 |
| Cask Building | 100 | 1150 | 105 | 112 | 110 | 112 | 120 | 112 | 110 | 108 | 115 | 114 | 116 | 119 | 116 | 114 |
| Security/Admin Bldg | 375 | 0 | 105 | 112 | 110 | 112 | 120 | 112 | 110 | 108 | 115 | 114 | 116 | 119 | 116 | 114 |
| SNF Pad | 525 | 725 | 101 | 108 | 106 | 108 | 119 | 108 | 106 | 105 | 112 | 111 | 113 | 115 | 113 | 111 |
| Protected Area | 1175 | 1175 | 100 | 107 | 105 | 107 | 117 | 107 | 105 | 104 | 111 | 109 | 111 | 114 | 111 | 109 |
| B/U Alarms Max | 525 | 725 | | | | | | | | | | | | 134 | | |

| Divergence | Distance | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| General Earthwork | 1662 | -62 | -66 | -68 | -68 | -67 | -69 | -75 |
| Cask Building | 1154 | -59 | -62 | -65 | -64 | -63 | -65 | -69 |
| Security/Admin Bldg | 375 | -50 | -52 | -55 | -54 | -52 | -52 | -54 |
| SNF Pad | 895 | -57 | -60 | -63 | -62 | -61 | -62 | -65 |
| Protected Area | 1662 | -62 | -66 | -68 | -68 | -67 | -69 | -75 |
| B/U Alarms Max | 895 | -57 | -60 | -63 | -62 | -61 | -62 | -65 |

| LPA | | Continuous Sound Pressure Level | | | | | | | Max Sound Pressure Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| General Earthwork | | 41 | 45 | 41 | 43 | 53 | 42 | 33 | 45 | 49 | 45 | 47 | 50 | 46 | 37 |
| Cask Building | | 46 | 49 | 45 | 48 | 57 | 48 | 41 | 49 | 53 | 49 | 52 | 56 | 52 | 45 |
| Security/Admin Bldg | | 54 | 60 | 56 | 59 | 68 | 60 | 56 | 58 | 64 | 59 | 63 | 67 | 64 | 60 |
| SNF Pad | | 44 | 48 | 44 | 47 | 58 | 47 | 41 | 48 | 52 | 48 | 51 | 55 | 51 | 46 |
| Protected Area | | 38 | 41 | 37 | 40 | 50 | 38 | 30 | 42 | 45 | 41 | 44 | 47 | 42 | 34 |
| B/U Alarms Max | | | | | | | | | | | | | 74 | | |
| LPA EQ | 70.9 | 55 | 61 | 56 | 59 | 69 | 61 | 57 | 59 | 64 | 60 | 63 | 75 | 64 | 60 |
| LDN (TX, Summer) | 69.9 | | | | | | | | | | | | | | |
| LPA MAX | 75.9 | | | | | | | | | | | | | | |

| PHASES 2-8 | | | Continuous Sound Power Level | | | | | | | Max Sound Power Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LWA | N | E | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| SNF Pad (use #2) | 975 | 725 | 101 | 108 | 106 | 108 | 119 | 108 | 106 | 105 | 112 | 111 | 113 | 115 | 113 | 111 |
| Protected Area | 1175 | 1175 | 100 | 107 | 105 | 107 | 117 | 107 | 105 | 104 | 111 | 109 | 111 | 114 | 111 | 109 |
| B/U Alarms Max | 975 | 725 | | | | | | | | | | | | 131 | | |

| Divergence | Distance | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| SNF Pad (use #2) | 1215 | -59 | -60 | -61 | -61 | -62 | -64 | -68 |
| Protected Area | 1662 | -62 | -66 | -68 | -68 | -67 | -69 | -75 |
| B/U Alarms Max | 1215 | -59 | -60 | -61 | -61 | -62 | -64 | -68 |

| LPA | | Continuous Sound Pressure Level | | | | | | | Max Sound Pressure Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| SNF Pad (use #2) | | 41 | 47 | 45 | 47 | 56 | 45 | 38 | 46 | 52 | 50 | 51 | 53 | 49 | 42 |
| Protected Area | | 38 | 41 | 37 | 40 | 50 | 38 | 30 | 42 | 45 | 41 | 44 | 47 | 42 | 34 |
| B/U Alarms Max | | | | | | | | | | | | | 67 | | |
| LPA EQ | 58.8 | 43 | 48 | 46 | 48 | 57 | 45 | 38 | 47 | 52 | 50 | 52 | 67 | 50 | 43 |
| LDN (TX, Summer) | 57.8 | | | | | | | | | | | | | | |
| LPA MAX | 67.5 | | | | | | | | | | | | | | |

## Table A-12: Construction Sound Levels, NSA #5 (LSA Pad NE Corner)

| Receptor | N | E |
|---|---|---|
| NSA 5 | -1150 | 1075 |

| PHASE 1 | | | Continuous Sound Power Level | | | | | | | Max Sound Power Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LWA | N | E | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| General Earthwork | 1175 | 1175 | 103 | 110 | 109 | 111 | 121 | 111 | 109 | 107 | 114 | 113 | 115 | 118 | 115 | 113 |
| Cask Building | 100 | 1150 | 105 | 112 | 110 | 112 | 120 | 112 | 110 | 108 | 115 | 114 | 116 | 119 | 116 | 114 |
| Security/Admin Bldg | 375 | 0 | 105 | 112 | 110 | 112 | 120 | 112 | 110 | 108 | 115 | 114 | 116 | 119 | 116 | 114 |
| SNF Pad | 525 | 725 | 101 | 108 | 106 | 108 | 119 | 108 | 106 | 105 | 112 | 111 | 113 | 115 | 113 | 111 |
| Protected Area | 1175 | 1175 | 100 | 107 | 105 | 107 | 117 | 107 | 105 | 104 | 111 | 109 | 111 | 114 | 111 | 109 |
| B/U Alarms Max | 525 | 725 | | | | | | | | | | | | 134 | | |

| Divergence | Distance | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| General Earthwork | 2327 | -65 | -69 | -71 | -71 | -71 | -74 | -83 |
| Cask Building | 1252 | -60 | -63 | -66 | -65 | -64 | -66 | -70 |
| Security/Admin Bldg | 1866 | -63 | -67 | -69 | -69 | -69 | -71 | -78 |
| SNF Pad | 1711 | -62 | -66 | -68 | -68 | -68 | -70 | -76 |
| Protected Area | 2327 | -65 | -69 | -71 | -71 | -71 | -74 | -83 |
| B/U Alarms Max | 1711 | -62 | -66 | -68 | -68 | -68 | -70 | -76 |

| LPA | | Continuous Sound Pressure Level | | | | | | | Max Sound Pressure Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Earthwork | | 39 | 41 | 38 | 40 | 49 | 37 | 26 | 43 | 45 | 42 | 44 | 46 | 41 | 30 |
| Cask Building | | 45 | 49 | 45 | 47 | 56 | 47 | 40 | 49 | 52 | 49 | 51 | 55 | 51 | 44 |
| Security/Admin Bldg | | 42 | 45 | 41 | 44 | 52 | 41 | 32 | 46 | 48 | 45 | 47 | 50 | 45 | 36 |
| SNF Pad | | 39 | 42 | 38 | 40 | 51 | 39 | 30 | 43 | 46 | 42 | 45 | 48 | 43 | 35 |
| Protected Area | | 35 | 37 | 34 | 36 | 46 | 33 | 22 | 39 | 41 | 38 | 40 | 43 | 37 | 26 |
| B/U Alarms Max | | | | | | | | | | | | | 67 | | |
| LPA EQ | 61.0 | 48 | 51 | 48 | 50 | 59 | 49 | 41 | 52 | 55 | 52 | 54 | 67 | 53 | 45 |
| LDN (TX, Summer) | 60.0 | | | | | | | | | | | | | | |
| LPA MAX | 68.0 | | | | | | | | | | | | | | |

| PHASES 2-8 | | | Continuous Sound Power Level | | | | | | | Max Sound Power Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LWA | N | E | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| SNF Pad (use #2) | 975 | 725 | 101 | 108 | 106 | 108 | 119 | 108 | 106 | 105 | 112 | 111 | 113 | 115 | 113 | 111 |
| Protected Area | 1175 | 1175 | 100 | 107 | 105 | 107 | 117 | 107 | 105 | 104 | 111 | 109 | 111 | 114 | 111 | 109 |
| B/U Alarms Max | 975 | 725 | | | | | | | | | | | | 131 | | |

| Divergence | Distance | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| SNF Pad (use #2) | 2154 | -64 | -65 | -66 | -67 | -69 | -72 | -80 |
| Protected Area | 2327 | -65 | -69 | -71 | -71 | -71 | -74 | -83 |
| B/U Alarms Max | 2154 | -64 | -65 | -66 | -67 | -69 | -72 | -80 |

| LPA | | Continuous Sound Pressure Level | | | | | | | Max Sound Pressure Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SNF Pad (use #2) | | 37 | 42 | 40 | 42 | 50 | 37 | 27 | 41 | 47 | 45 | 46 | 47 | 41 | 31 |
| Protected Area | | 35 | 37 | 34 | 36 | 46 | 33 | 22 | 39 | 41 | 38 | 40 | 43 | 37 | 26 |
| B/U Alarms Max | | | | | | | | | | | | | 62 | | |
| LPA EQ | 53.2 | 39 | 43 | 41 | 43 | 51 | 38 | 28 | 43 | 48 | 46 | 47 | 62 | 43 | 32 |
| LDN (TX, Summer) | 52.2 | | | | | | | | | | | | | | |
| LPA MAX | 62.8 | | | | | | | | | | | | | | |

## Table A-13: Construction Sound Levels, NSA #6 (Residential, near 176 & 18)

| Receptor | N | E |
|---|---|---|
| NSA 6 | -6225 | -19675 |

| PHASE 1 | | | Continuous Sound Power Level | | | | | | | Max Sound Power Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LWA | N | E | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| General Earthwork | 1175 | 1175 | 103 | 110 | 109 | 111 | 121 | 111 | 109 | 107 | 114 | 113 | 115 | 118 | 115 | 113 |
| Cask Building | 100 | 1150 | 105 | 112 | 110 | 112 | 120 | 112 | 110 | 108 | 115 | 114 | 116 | 119 | 116 | 114 |
| Security/Admin Bldg | 375 | 0 | 105 | 112 | 110 | 112 | 120 | 112 | 110 | 108 | 115 | 114 | 116 | 119 | 116 | 114 |
| SNF Pad | 525 | 725 | 101 | 108 | 106 | 108 | 119 | 108 | 106 | 105 | 112 | 111 | 113 | 115 | 113 | 111 |
| Protected Area | 1175 | 1175 | 100 | 107 | 105 | 107 | 117 | 107 | 105 | 104 | 111 | 109 | 111 | 114 | 111 | 109 |
| B/U Alarms Max | 525 | 725 | | | | | | | | | | | | 134 | | |

| Divergence | Distance | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| General Earthwork | 22124 | -84 | -91 | -97 | -108 | -128 | -159 | -241 |
| Cask Building | 21764 | -84 | -91 | -97 | -108 | -127 | -158 | -238 |
| Security/Admin Bldg | 20752 | -84 | -90 | -96 | -107 | -125 | -154 | -231 |
| SNF Pad | 21488 | -84 | -91 | -96 | -107 | -127 | -157 | -236 |
| Protected Area | 22124 | -84 | -91 | -97 | -108 | -128 | -159 | -241 |
| B/U Alarms Max | 21488 | -84 | -91 | -96 | -107 | -127 | -157 | -236 |

| LPA | | Continuous Sound Pressure Level | | | | | | | Max Sound Pressure Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Earthwork | | 19 | 19 | 12 | 3 | -8 | -48 | -132 | 23 | 23 | 16 | 7 | -10 | -44 | -128 |
| Cask Building | | 20 | 21 | 14 | 5 | -7 | -45 | -128 | 24 | 24 | 17 | 8 | -9 | -42 | -125 |
| Security/Admin Bldg | | 21 | 21 | 14 | 6 | -5 | -42 | -121 | 25 | 25 | 18 | 10 | -6 | -38 | -117 |
| SNF Pad | | 17 | 17 | 10 | 1 | -8 | -48 | -130 | 21 | 21 | 14 | 5 | -11 | -44 | -126 |
| Protected Area | | 15 | 16 | 8 | -1 | -11 | -52 | -136 | 19 | 20 | 12 | 3 | -14 | -48 | -132 |
| B/U Alarms Max | | | | | | | | | | | | | 8 | | |
| LPA EQ | 29.5 | 26 | 26 | 19 | 10 | 0 | -39 | -119 | 30 | 30 | 23 | 14 | 8 | -35 | -116 |
| LDN (NM. Summer) | 30.2 | | | | | | | | | | | | | | |
| LPA MAX | 33.5 | | | | | | | | | | | | | | |

| PHASES 2-8 | | | Continuous Sound Power Level | | | | | | | Max Sound Power Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LWA | N | E | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| SNF Pad (use #2) | 975 | 725 | 101 | 108 | 106 | 108 | 119 | 108 | 106 | 105 | 112 | 111 | 113 | 115 | 113 | 111 |
| Protected Area | 1175 | 1175 | 100 | 107 | 105 | 107 | 117 | 107 | 105 | 104 | 111 | 109 | 111 | 114 | 111 | 109 |
| B/U Alarms Max | 975 | 725 | | | | | | | | | | | | 131 | | |

| Divergence | Distance | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| SNF Pad (use #2) | 21633 | -84 | -87 | -92 | -104 | -125 | -156 | -236 |
| Protected Area | 22124 | -84 | -91 | -97 | -108 | -128 | -159 | -241 |
| B/U Alarms Max | 21633 | -84 | -87 | -92 | -104 | -125 | -156 | -236 |

| LPA | | Continuous Sound Pressure Level | | | | | | | Max Sound Pressure Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SNF Pad (use #2) | | 17 | 21 | 14 | 4 | -6 | -47 | -130 | 21 | 25 | 19 | 9 | -10 | -43 | -125 |
| Protected Area | | 15 | 16 | 8 | -1 | -11 | -52 | -136 | 19 | 20 | 12 | 3 | -14 | -48 | -132 |
| B/U Alarms Max | | | | | | | | | | | | | 6 | | |
| LPA EQ | 24.3 | 19 | 22 | 15 | 6 | -5 | -46 | -129 | 23 | 26 | 20 | 10 | 6 | -42 | -124 |
| LDN (NM. Summer) | 25.0 | | | | | | | | | | | | | | |
| LPA MAX | 28.6 | | | | | | | | | | | | | | |

## Table A-14: Construction Sound Levels, NSA #7 (Residential, south of 176 & 18)

| Receptor | N | E |
|---|---|---|
| NSA 7 | -8625 | -20175 |

| PHASE 1 | | | Continuous Sound Power Level | | | | | | | Max Sound Power Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LWA | N | E | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| General Earthwork | 1175 | 1175 | 103 | 110 | 109 | 111 | 121 | 111 | 109 | 107 | 114 | 113 | 115 | 118 | 115 | 113 |
| Cask Building | 100 | 1150 | 105 | 112 | 110 | 112 | 120 | 112 | 110 | 108 | 115 | 114 | 116 | 119 | 116 | 114 |
| Security/Admin Bldg | 375 | 0 | 105 | 112 | 110 | 112 | 120 | 112 | 110 | 108 | 115 | 114 | 116 | 119 | 116 | 114 |
| SNF Pad | 525 | 725 | 101 | 108 | 106 | 108 | 119 | 108 | 106 | 105 | 112 | 111 | 113 | 115 | 113 | 111 |
| Protected Area | 1175 | 1175 | 100 | 107 | 105 | 107 | 117 | 107 | 105 | 104 | 111 | 109 | 111 | 114 | 111 | 109 |
| B/U Alarms Max | 525 | 725 | | | | | | | | | | | | 134 | | |

| Divergence | Distance | | | | | | |
|---|---|---|---|---|---|---|---|
| General Earthwork | 23492 | -85 | -92 | -98 | -110 | -131 | -164 | -251 |
| Cask Building | 23041 | -85 | -92 | -97 | -109 | -130 | -163 | -248 |
| Security/Admin Bldg | 22091 | -84 | -91 | -97 | -108 | -128 | -159 | -241 |
| SNF Pad | 22815 | -85 | -91 | -97 | -109 | -130 | -162 | -246 |
| Protected Area | 23492 | -85 | -92 | -98 | -110 | -131 | -164 | -251 |
| B/U Alarms Max | 22815 | -85 | -91 | -97 | -109 | -130 | -162 | -246 |

| LPA | | Continuous Sound Pressure Level | | | | | | | Max Sound Pressure Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| General Earthwork | | 18 | 19 | 11 | 1 | -11 | -53 | -142 | 22 | 23 | 15 | 5 | -14 | -49 | -138 |
| Cask Building | | 20 | 20 | 13 | 3 | -10 | -50 | -138 | 24 | 24 | 17 | 7 | -11 | -46 | -134 |
| Security/Admin Bldg | | 20 | 20 | 13 | 4 | -8 | -47 | -131 | 24 | 24 | 17 | 8 | -9 | -43 | -127 |
| SNF Pad | | 16 | 16 | 9 | -1 | -11 | -53 | -140 | 20 | 21 | 13 | 4 | -14 | -49 | -136 |
| Protected Area | | 15 | 15 | 8 | -3 | -14 | -57 | -146 | 19 | 19 | 12 | 1 | -17 | -53 | -142 |
| B/U Alarms Max | | | | | | | | | | | | | 5 | | |
| LPA EQ | **28.9** | **25** | **26** | **18** | **9** | **-3** | **-44** | **-129** | **29** | **29** | **22** | **12** | **5** | **-40** | **-125** |
| LDN (NM. Summer) | **29.6** | | | | | | | | | | | | | | |
| LPA MAX | **32.8** | | | | | | | | | | | | | | |

| PHASES 2-8 | | | Continuous Sound Power Level | | | | | | | Max Sound Power Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LWA | N | E | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| SNF Pad (use #2) | 975 | 725 | 101 | 108 | 106 | 108 | 119 | 108 | 106 | 105 | 112 | 111 | 113 | 115 | 113 | 111 |
| Protected Area | 1175 | 1175 | 100 | 107 | 105 | 107 | 117 | 107 | 105 | 104 | 111 | 109 | 111 | 114 | 111 | 109 |
| B/U Alarms Max | 975 | 725 | | | | | | | | | | | | 131 | | |

| Divergence | Distance | | | | | | |
|---|---|---|---|---|---|---|---|
| SNF Pad (use #2) | 22999 | -85 | -88 | -93 | -106 | -128 | -161 | -246 |
| Protected Area | 23492 | -85 | -92 | -98 | -110 | -131 | -164 | -251 |
| B/U Alarms Max | 22999 | -85 | -88 | -93 | -106 | -128 | -161 | -246 |

| LPA | | Continuous Sound Pressure Level | | | | | | | Max Sound Pressure Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| SNF Pad (use #2) | | 16 | 20 | 13 | 3 | -10 | -52 | -140 | 20 | 24 | 18 | 7 | -13 | -48 | -135 |
| Protected Area | | 15 | 15 | 8 | -3 | -14 | -57 | -146 | 19 | 19 | 12 | 1 | -17 | -53 | -142 |
| B/U Alarms Max | | | | | | | | | | | | | 3 | | |
| LPA EQ | **23.6** | **18** | **21** | **14** | **4** | **-8** | **-51** | **-139** | **23** | **25** | **19** | **8** | **3** | **-47** | **-134** |
| LDN (NM. Summer) | **24.3** | | | | | | | | | | | | | | |
| LPA MAX | **27.9** | | | | | | | | | | | | | | |

## Table A-15: Construction Sound Levels, NSA #8 (Residential, NE corner of Eunice)

| Receptor | N | E |
|---|---|---|
| NSA 8 | -3525 | -27700 |

| PHASE 1 | | | Continuous Sound Power Level | | | | | | | Max Sound Power Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LWA | N | E | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| General Earthwork | 1175 | 1175 | 103 | 110 | 109 | 111 | 121 | 111 | 109 | 107 | 114 | 113 | 115 | 118 | 115 | 113 |
| Cask Building | 100 | 1150 | 105 | 112 | 110 | 112 | 120 | 112 | 110 | 108 | 115 | 114 | 116 | 119 | 116 | 114 |
| Security/Admin Bldg | 375 | 0 | 105 | 112 | 110 | 112 | 120 | 112 | 110 | 108 | 115 | 114 | 116 | 119 | 116 | 114 |
| SNF Pad | 525 | 725 | 101 | 108 | 106 | 108 | 119 | 108 | 106 | 105 | 112 | 111 | 113 | 115 | 113 | 111 |
| Protected Area | 1175 | 1175 | 100 | 107 | 105 | 107 | 117 | 107 | 105 | 104 | 111 | 109 | 111 | 114 | 111 | 109 |
| B/U Alarms Max | 525 | 725 | | | | | | | | | | | | 134 | | |

| Divergence | Distance | | | | | | |
|---|---|---|---|---|---|---|---|
| General Earthwork | 29255 | -87 | -94 | -102 | -117 | -144 | -185 | -294 |
| Cask Building | 29077 | -87 | -94 | -101 | -117 | -144 | -185 | -292 |
| Security/Admin Bldg | 27973 | -87 | -94 | -101 | -116 | -141 | -181 | -284 |
| SNF Pad | 28712 | -87 | -94 | -101 | -116 | -143 | -183 | -290 |
| Protected Area | 29255 | -87 | -94 | -102 | -117 | -144 | -185 | -294 |
| B/U Alarms Max | 28712 | -87 | -94 | -101 | -116 | -143 | -183 | -290 |

| LPA | | Continuous Sound Pressure Level | | | | | | | Max Sound Pressure Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| General Earthwork | | 16 | 16 | 7 | -6 | -24 | -74 | -185 | 20 | 20 | 11 | -2 | -26 | -70 | -181 |
| Cask Building | | 18 | 17 | 9 | -5 | -23 | -72 | -182 | 21 | 21 | 13 | -1 | -25 | -68 | -178 |
| Security/Admin Bldg | | 18 | 18 | 10 | -3 | -21 | -68 | -174 | 22 | 22 | 13 | 1 | -22 | -64 | -170 |
| SNF Pad | | 14 | 14 | 5 | -8 | -24 | -75 | -183 | 18 | 18 | 10 | -4 | -27 | -70 | -179 |
| Protected Area | | 13 | 12 | 4 | -10 | -27 | -78 | -188 | 17 | 16 | 8 | -6 | -30 | -74 | -184 |
| B/U Alarms Max | | | | | | | | | | | | | -9 | | |
| LPA EQ | **26.4** | **23** | **23** | **14** | **1** | **-16** | **-65** | **-173** | **27** | **27** | **18** | **5** | **-8** | **-61** | **-169** |
| LDN (NM. Summer) | **27.1** | | | | | | | | | | | | | | |
| LPA MAX | **30.3** | | | | | | | | | | | | | | |

| PHASES 2-8 | | | Continuous Sound Power Level | | | | | | | Max Sound Power Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LWA | N | E | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| SNF Pad (use #2) | 975 | 725 | 101 | 108 | 106 | 108 | 119 | 108 | 106 | 105 | 112 | 111 | 113 | 115 | 113 | 111 |
| Protected Area | 1175 | 1175 | 100 | 107 | 105 | 107 | 117 | 107 | 105 | 104 | 111 | 109 | 111 | 114 | 111 | 109 |
| B/U Alarms Max | 975 | 725 | | | | | | | | | | | | 131 | | |

| Divergence | Distance | | | | | | |
|---|---|---|---|---|---|---|---|
| SNF Pad (use #2) | 28779 | -87 | -90 | -97 | -113 | -141 | -182 | -288 |
| Protected Area | 29255 | -87 | -94 | -102 | -117 | -144 | -185 | -294 |
| B/U Alarms Max | 28779 | -87 | -90 | -97 | -113 | -141 | -182 | -288 |

| LPA | | Continuous Sound Pressure Level | | | | | | | Max Sound Pressure Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| SNF Pad (use #2) | | 14 | 18 | 10 | -4 | -22 | -73 | -182 | 18 | 22 | 14 | 0 | -26 | -69 | -178 |
| Protected Area | | 13 | 12 | 4 | -10 | -27 | -78 | -188 | 17 | 16 | 8 | -6 | -30 | -74 | -184 |
| B/U Alarms Max | | | | | | | | | | | | | -10 | | |
| LPA EQ | **21.1** | **16** | **19** | **11** | **-3** | **-21** | **-72** | **-181** | **21** | **23** | **15** | **1** | **-10** | **-68** | **-177** |
| LDN (NM. Summer) | **21.8** | | | | | | | | | | | | | | |
| LPA MAX | **25.4** | | | | | | | | | | | | | | |

## Table A-16: Construction Sound Levels, NSA #9 (Residential, 176 @ TXNM RR)

| Receptor | N | E |
|---|---|---|
| NSA 9 | -6075 | -25160 |

| PHASE 1 | | | Continuous Sound Power Level | | | | | | | Max Sound Power Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LWA | N | E | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| General Earthwork | 1175 | 1175 | 103 | 110 | 109 | 111 | 121 | 111 | 109 | 107 | 114 | 113 | 115 | 118 | 115 | 113 |
| Cask Building | 100 | 1150 | 105 | 112 | 110 | 112 | 120 | 112 | 110 | 108 | 115 | 114 | 116 | 119 | 116 | 114 |
| Security/Admin Bldg | 375 | 0 | 105 | 112 | 110 | 112 | 120 | 112 | 110 | 108 | 115 | 114 | 116 | 119 | 116 | 114 |
| SNF Pad | 525 | 725 | 101 | 108 | 106 | 108 | 119 | 108 | 106 | 105 | 112 | 111 | 113 | 115 | 113 | 111 |
| Protected Area | 1175 | 1175 | 100 | 107 | 105 | 107 | 117 | 107 | 105 | 104 | 111 | 109 | 111 | 114 | 111 | 109 |
| B/U Alarms Max | 525 | 725 | | | | | | | | | | | | 134 | | |

| Divergence | Distance | | | | | | |
|---|---|---|---|---|---|---|---|
| General Earthwork | 27315 | -86 | -93 | -100 | -115 | -140 | -178 | -279 |
| Cask Building | 27025 | -86 | -93 | -100 | -114 | -139 | -177 | -277 |
| Security/Admin Bldg | 25974 | -86 | -93 | -99 | -113 | -137 | -173 | -270 |
| SNF Pad | 26713 | -86 | -93 | -100 | -114 | -138 | -176 | -275 |
| Protected Area | 27315 | -86 | -93 | -100 | -115 | -140 | -178 | -279 |
| B/U Alarms Max | 26713 | -86 | -93 | -100 | -114 | -138 | -176 | -275 |

| LPA | | Continuous Sound Pressure Level | | | | | | | Max Sound Pressure Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General Earthwork | | 17 | 17 | 9 | -4 | -19 | -67 | -171 | 21 | 21 | 13 | 0 | -22 | -63 | -167 |
| Cask Building | | 18 | 18 | 10 | -2 | -19 | -65 | -167 | 22 | 22 | 14 | 2 | -20 | -61 | -163 |
| Security/Admin Bldg | | 19 | 19 | 11 | -1 | -17 | -61 | -159 | 23 | 23 | 15 | 3 | -18 | -57 | -156 |
| SNF Pad | | 15 | 14 | 6 | -6 | -20 | -68 | -169 | 19 | 19 | 11 | -1 | -23 | -63 | -164 |
| Protected Area | | 13 | 13 | 5 | -7 | -22 | -71 | -174 | 17 | 17 | 9 | -3 | -26 | -67 | -170 |
| B/U Alarms Max | | | | | | | | | | | | | -4 | | |
| LPA EQ | 27.2 | 24 | 24 | 16 | 4 | -12 | -58 | -158 | 28 | 28 | 20 | 8 | -4 | -54 | -154 |
| LDN (NM. Summer) | 27.9 | | | | | | | | | | | | | | |
| LPA MAX | 31.1 | | | | | | | | | | | | | | |

| PHASES 2-8 | | | Continuous Sound Power Level | | | | | | | Max Sound Power Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LWA | N | E | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| SNF Pad (use #2) | 975 | 725 | 101 | 108 | 106 | 108 | 119 | 108 | 106 | 105 | 112 | 111 | 113 | 115 | 113 | 111 |
| Protected Area | 1175 | 1175 | 100 | 107 | 105 | 107 | 117 | 107 | 105 | 104 | 111 | 109 | 111 | 114 | 111 | 109 |
| B/U Alarms Max | 975 | 725 | | | | | | | | | | | | 131 | | |

| Divergence | Distance | | | | | | |
|---|---|---|---|---|---|---|---|
| SNF Pad (use #2) | 26828 | -86 | -89 | -95 | -111 | -137 | -175 | -274 |
| Protected Area | 27315 | -86 | -93 | -100 | -115 | -140 | -178 | -279 |
| B/U Alarms Max | 26828 | -86 | -89 | -95 | -111 | -137 | -175 | -274 |

| LPA | | Continuous Sound Pressure Level | | | | | | | Max Sound Pressure Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SNF Pad (use #2) | | 14 | 18 | 11 | -2 | -18 | -66 | -168 | 19 | 23 | 15 | 2 | -21 | -62 | -163 |
| Protected Area | | 13 | 13 | 5 | -7 | -22 | -71 | -174 | 17 | 17 | 9 | -3 | -26 | -67 | -170 |
| B/U Alarms Max | | | | | | | | | | | | | -6 | | |
| LPA EQ | 21.9 | 17 | 19 | 12 | -1 | -17 | -65 | -167 | 21 | 24 | 16 | 3 | -6 | -61 | -163 |
| LDN (NM. Summer) | 22.6 | | | | | | | | | | | | | | |
| LPA MAX | 26.2 | | | | | | | | | | | | | | |

## Table A-17: Operational Sound Levels, NSA #1 (Urenco)

| Receptor | N | E | ft |
|---|---|---|---|
| NSA 1 | -4725 | -4050 | |

| PHASE 1 | | | Continuous Sound Power Level | | | | | | | Max Sound Power Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LWA | N | E | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| Storage Model Const | 100 | 1150 | 97 | 104 | 103 | 105 | 107 | 105 | 103 | 101 | 108 | 107 | 109 | 111 | 109 | 107 |
| Storage Model Transp | 310 | 935 | 96 | 103 | 102 | 104 | 106 | 104 | 102 | 101 | 108 | 107 | 109 | 111 | 109 | 107 |
| B/U Alarms Max | 310 | 935 | | | | | 115 | | | | | | | 128 | | |
| Cask Building | 100 | 1150 | 86 | 94 | 102 | 108 | 112 | 110 | 102 | 86 | 94 | 102 | 108 | 112 | 110 | 102 |
| Security Bldg | 375 | 0 | 64 | 69 | 82 | 83 | 79 | 78 | 75 | 64 | 69 | 82 | 83 | 79 | 78 | 75 |
| Train Out at 825 ft, 8 hr avg | | | 25 | 25 | 19 | 32 | 34 | 19 | 4 | 108 | 112 | 119 | 132 | 133 | 115 | 101 |
| Train In at 825 ft, 8 hr avg | | | 25 | 25 | 19 | 32 | 34 | 19 | 4 | 108 | 112 | 119 | 132 | 133 | 115 | 101 |

| Divergence | Distance | | | | | | |
|---|---|---|---|---|---|---|---|
| Storage Model Const | 7094 | -74 | -80 | -82 | -85 | -90 | -100 | -126 |
| Storage Model Transp | 7085 | -74 | -80 | -82 | -85 | -90 | -100 | -126 |
| B/U Alarms Max | 7085 | -74 | -80 | -82 | -85 | -90 | -100 | -126 |
| Cask Building | 7094 | -74 | -80 | -82 | -85 | -90 | -100 | -126 |
| Security Bldg | 6512 | -73 | -79 | -81 | -84 | -88 | -97 | -121 |
| Train Out, 8 hr avg | 825 | -56 | -59 | -62 | -61 | -60 | -61 | -64 |
| Train In, 8 hr avg | 825 | -56 | -59 | -62 | -61 | -60 | -61 | -64 |

| LPA | | Continuous Sound Pressure Level | | | | | | | Max Sound Pressure Level | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Storage Model Const | | 23 | 24 | 21 | 20 | 18 | 5 | -23 | 27 | 28 | 25 | 24 | 22 | 9 | -19 |
| Storage Model Transport | | 22 | 23 | 20 | 19 | 17 | 4 | -24 | 27 | 28 | 25 | 24 | 22 | 9 | -19 |
| B/U Alarms Max | | | | | | 25 | | | | | | | 38 | | |
| Cask Building | | 12 | 14 | 20 | 23 | 22 | 10 | -24 | 12 | 14 | 20 | 23 | 22 | 10 | -24 |
| Security Bldg | | -9 | -10 | 1 | -1 | -9 | -19 | -46 | -9 | -10 | 1 | -1 | -9 | -19 | -46 |
| Train Out, 8 hr avg | | 25 | 25 | 19 | 32 | 34 | 19 | 4 | 52 | 53 | 57 | 71 | 73 | 54 | 37 |
| Train In, 8 hr avg | | 25 | 25 | 19 | 32 | 34 | 19 | 4 | 52 | 53 | 57 | 71 | 73 | 54 | 37 |
| LPA EQ | 41.1 | 30 | 31 | 27 | 36 | 38 | 23 | 8 | 52 | 53 | 57 | 71 | 73 | 54 | 37 |
| LDN (NM. Summer) | 41.4 | | | | | | | | | | | | | | |
| LPA MAX | 75.3 | | | | | | | | | | | | | | |

## Table A-18: Operational Sound Levels, NSA #2 (Sundance)

| Receptor | N | E | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NSA 2 | -500 | -4050 | ft | | | | | | | | | | | | | |
| **PHASE 1** | | | **Continuous Sound Power Level** | | | | | | | **Max Sound Power Level** | | | | | | |
| **LWA** | **N** | **E** | **63** | **125** | **250** | **500** | **1000** | **2000** | **4000** | **63** | **125** | **250** | **500** | **1000** | **2000** | **4000** |
| Storage Model Const | 100 | 1150 | 97 | 104 | 103 | 105 | 107 | 105 | 103 | 101 | 108 | 107 | 109 | 111 | 109 | 107 |
| Storage Model Transp | 310 | 935 | 96 | 103 | 102 | 104 | 106 | 104 | 102 | 101 | 108 | 107 | 109 | 111 | 109 | 107 |
| B/U Alarms Max | 310 | 935 | | | | | 115 | | | | | | | 128 | | |
| Cask Building | 100 | 1150 | 86 | 94 | 102 | 108 | 112 | 110 | 102 | 86 | 94 | 102 | 108 | 112 | 110 | 102 |
| Security Bldg | 375 | 0 | 64 | 69 | 82 | 83 | 79 | 78 | 75 | 64 | 69 | 82 | 83 | 79 | 78 | 75 |
| Train Out at 825 ft, 8 hr avg | | | 25 | 25 | 19 | 32 | 34 | 19 | 4 | 108 | 112 | 119 | 132 | 133 | 115 | 101 |
| Train In at 825 ft, 8 hr avg | | | 25 | 25 | 19 | 32 | 34 | 19 | 4 | 108 | 112 | 119 | 132 | 133 | 115 | 101 |
| **Divergence** | **Distance** | | | | | | | | | | | | | | | |
| Storage Model Const | 5235 | | -71 | -77 | -79 | -81 | -84 | -91 | -110 | | | | | | | |
| Storage Model Transp | 5050 | | -71 | -77 | -79 | -80 | -83 | -90 | -109 | | | | | | | |
| B/U Alarms Max | 5050 | | -71 | -77 | -79 | -80 | -83 | -90 | -109 | | | | | | | |
| Cask Building | 5235 | | -71 | -77 | -79 | -81 | -84 | -91 | -110 | | | | | | | |
| Security Bldg | 4143 | | -69 | -75 | -77 | -78 | -80 | -85 | -101 | | | | | | | |
| Train Out, 8 hr avg | 1600 | | -62 | -65 | -68 | -67 | -67 | -69 | -75 | | | | | | | |
| Train In, 8 hr avg | 2600 | | -66 | -70 | -72 | -72 | -73 | -76 | -86 | | | | | | | |
| **LPA** | | | **Continuous Sound Pressure Level** | | | | | | | **Max Sound Pressure Level** | | | | | | |
| Storage Model Const | | | 26 | 27 | 24 | 24 | 24 | 14 | -8 | 30 | 31 | 28 | 28 | 28 | 18 | -4 |
| Storage Model Transport | | | 25 | 26 | 23 | 24 | 23 | 14 | -7 | 30 | 31 | 28 | 29 | 28 | 19 | -2 |
| B/U Alarms Max | | | | | | | 32 | | | | | | | 45 | | |
| Cask Building | | | 15 | 17 | 23 | 27 | 28 | 19 | -8 | 15 | 17 | 23 | 27 | 28 | 19 | -8 |
| Security Bldg | | | -5 | -6 | 5 | 5 | -1 | -7 | -26 | -5 | -6 | 5 | 5 | -1 | -7 | -26 |
| Train Out, 8 hr avg | | | 21 | 21 | 15 | 28 | 30 | 15 | 0 | 47 | 47 | 51 | 65 | 66 | 46 | 26 |
| Train In, 8 hr avg | | | 18 | 18 | 12 | 25 | 27 | 12 | -3 | 43 | 42 | 47 | 60 | 60 | 39 | 15 |
| LPA EQ | 39.6 | | **30** | **31** | **28** | **33** | **36** | **23** | **5** | **47** | **47** | **51** | **65** | **66** | **46** | **26** |
| LDN (NM. Summer) | 39.9 | | | | | | | | | | | | | | | |
| LPA MAX | 68.6 | | | | | | | | | | | | | | | |

## Table A-19: Operational Sound Levels, NSA #3 (Permian)

| Receptor | N | E | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NSA 3 | 925 | -4050 | ft | | | | | | | | | | | | | |
| **PHASE 1** | | | **Continuous Sound Power Level** | | | | | | | **Max Sound Power Level** | | | | | | |
| **LWA** | **N** | **E** | **63** | **125** | **250** | **500** | **1000** | **2000** | **4000** | **63** | **125** | **250** | **500** | **1000** | **2000** | **4000** |
| Storage Model Const | 100 | 1150 | 97 | 104 | 103 | 105 | 107 | 105 | 103 | 101 | 108 | 107 | 109 | 111 | 109 | 107 |
| Storage Model Transp | 310 | 935 | 96 | 103 | 102 | 104 | 106 | 104 | 102 | 101 | 108 | 107 | 109 | 111 | 109 | 107 |
| B/U Alarms Max | 310 | 935 | | | | | 115 | | | | | | | 128 | | |
| Cask Building | 100 | 1150 | 86 | 94 | 102 | 108 | 112 | 110 | 102 | 86 | 94 | 102 | 108 | 112 | 110 | 102 |
| Security Bldg | 375 | 0 | 64 | 69 | 82 | 83 | 79 | 78 | 75 | 64 | 69 | 82 | 83 | 79 | 78 | 75 |
| Train Out at 825 ft, 8 hr avg | | | 25 | 25 | 19 | 32 | 34 | 19 | 4 | 108 | 112 | 119 | 132 | 133 | 115 | 101 |
| Train In at 825 ft, 8 hr avg | | | 25 | 25 | 19 | 32 | 34 | 19 | 4 | 108 | 112 | 119 | 132 | 133 | 115 | 101 |
| **Divergence** | **Distance** | | | | | | | | | | | | | | | |
| Storage Model Const | 5265 | | -71 | -77 | -79 | -81 | -84 | -91 | -111 | | | | | | | |
| Storage Model Transp | 5023 | | -71 | -77 | -79 | -80 | -83 | -90 | -108 | | | | | | | |
| B/U Alarms Max | 5023 | | -71 | -77 | -79 | -80 | -83 | -90 | -108 | | | | | | | |
| Cask Building | 5265 | | -71 | -77 | -79 | -81 | -84 | -91 | -111 | | | | | | | |
| Security Bldg | 4087 | | -69 | -75 | -76 | -77 | -79 | -85 | -100 | | | | | | | |
| Train Out, 8 hr avg | 2600 | | -66 | -70 | -72 | -72 | -73 | -76 | -86 | | | | | | | |
| Train In, 8 hr avg | 4050 | | -69 | -75 | -76 | -77 | -79 | -85 | -100 | | | | | | | |
| **LPA** | | | **Continuous Sound Pressure Level** | | | | | | | **Max Sound Pressure Level** | | | | | | |
| Storage Model Const | | | 26 | 27 | 24 | 24 | 24 | 14 | -8 | 30 | 31 | 28 | 28 | 28 | 18 | -4 |
| Storage Model Transport | | | 25 | 26 | 23 | 24 | 23 | 14 | -7 | 30 | 31 | 28 | 29 | 28 | 19 | -2 |
| B/U Alarms Max | | | | | | | 32 | | | | | | | 45 | | |
| Cask Building | | | 15 | 17 | 23 | 27 | 28 | 19 | -8 | 15 | 17 | 23 | 27 | 28 | 19 | -8 |
| Security Bldg | | | -5 | -6 | 6 | 5 | 0 | -7 | -25 | -5 | -6 | 6 | 5 | 0 | -7 | -25 |
| Train Out, 8 hr avg | | | 18 | 18 | 12 | 25 | 27 | 12 | -3 | 43 | 42 | 47 | 60 | 60 | 39 | 15 |
| Train In, 8 hr avg | | | 15 | 15 | 9 | 22 | 24 | 9 | -6 | 39 | 37 | 43 | 55 | 53 | 30 | 1 |
| LPA EQ | 38.8 | | **29** | **30** | **28** | **32** | **35** | **22** | **4** | **43** | **42** | **47** | **60** | **60** | **39** | **15** |
| LDN (NM. Summer) | 39.1 | | | | | | | | | | | | | | | |
| LPA MAX | 63.1 | | | | | | | | | | | | | | | |

## Table A-20: Operational Sound Levels, NSA #4 (CISF SW Corner)

| Receptor | N | E | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NSA 4 | 0 | 0 | ft | | | | | | | | | | | | | |
| **PHASE 1** | | | **Continuous Sound Power Level** | | | | | | | **Max Sound Power Level** | | | | | | |
| **LWA** | **N** | **E** | **63** | **125** | **250** | **500** | **1000** | **2000** | **4000** | **63** | **125** | **250** | **500** | **1000** | **2000** | **4000** |
| Storage Model Const | 100 | 1150 | 97 | 104 | 103 | 105 | 107 | 105 | 103 | 101 | 108 | 107 | 109 | 111 | 109 | 107 |
| Storage Model Transp | 310 | 935 | 96 | 103 | 102 | 104 | 106 | 104 | 102 | 101 | 108 | 107 | 109 | 111 | 109 | 107 |
| B/U Alarms Max | 310 | 935 | | | | | 115 | | | | | | | 128 | | |
| Cask Building | 100 | 1150 | 86 | 94 | 102 | 108 | 112 | 110 | 102 | 86 | 94 | 102 | 108 | 112 | 110 | 102 |
| Security Bldg | 375 | 0 | 64 | 69 | 82 | 83 | 79 | 78 | 75 | 64 | 69 | 82 | 83 | 79 | 78 | 75 |
| Train Out at 825 ft, 8 hr avg | | | 25 | 25 | 19 | 32 | 34 | 19 | 4 | 108 | 112 | 119 | 132 | 133 | 115 | 101 |
| Train In at 825 ft, 8 hr avg | | | 25 | 25 | 19 | 32 | 34 | 19 | 4 | 108 | 112 | 119 | 132 | 133 | 115 | 101 |
| **Divergence** | **Distance** | | | | | | | | | | | | | | | |
| Storage Model Const | 1154 | | -59 | -62 | -65 | -64 | -63 | -65 | -69 | | | | | | | |
| Storage Model Transp | 985 | | -58 | -61 | -63 | -63 | -62 | -63 | -66 | | | | | | | |
| B/U Alarms Max | 985 | | -58 | -61 | -63 | -63 | -62 | -63 | -66 | | | | | | | |
| Cask Building | 1154 | | -59 | -62 | -65 | -64 | -63 | -65 | -69 | | | | | | | |
| Security Bldg | 375 | | -50 | -52 | -55 | -54 | -52 | -52 | -54 | | | | | | | |
| Train Out, 8 hr avg | 100 | | -38 | -39 | -40 | -40 | -39 | -39 | -39 | | | | | | | |
| Train In, 8 hr avg | 5700 | | -72 | -78 | -80 | -82 | -85 | -93 | -114 | | | | | | | |
| **LPA** | | | **Continuous Sound Pressure Level** | | | | | | | **Max Sound Pressure Level** | | | | | | |
| Storage Model Const | | | 38 | 42 | 38 | 41 | 44 | 40 | 34 | 42 | 46 | 42 | 45 | 48 | 44 | 38 |
| Storage Model Transport | | | 38 | 42 | 38 | 41 | 45 | 41 | 35 | 43 | 47 | 43 | 46 | 50 | 46 | 40 |
| B/U Alarms Max | | | | | | | 53 | | | | | | | 66 | | |
| Cask Building | | | 27 | 32 | 37 | 44 | 49 | 46 | 33 | 27 | 32 | 37 | 44 | 49 | 46 | 33 |
| Security Bldg | | | 14 | 17 | 27 | 29 | 27 | 26 | 21 | 14 | 17 | 27 | 29 | 27 | 26 | 21 |
| Train Out, 8 hr avg | | | 39 | 39 | 33 | 46 | 48 | 33 | 18 | 71 | 73 | 79 | 92 | 94 | 76 | 61 |
| Train In, 8 hr avg | | | 13 | 13 | 7 | 20 | 22 | 7 | -8 | 36 | 34 | 39 | 50 | 47 | 22 | -14 |
| LPA EQ | 58.1 | | **43** | **46** | **43** | **50** | **56** | **48** | **39** | **71** | **73** | **79** | **92** | **94** | **76** | **61** |
| LDN (NM. Summer) | 58.4 | | | | | | | | | | | | | | | |
| LPA MAX | 96.3 | | | | | | | | | | | | | | | |

## Table A-21: Operational Sound Levels, NSA #5 (LSA Pad NE Corner)

| Receptor | N | E | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NSA 5 | -1150 | 1075 | ft | | | | | | | | | | | | | |
| **PHASE 1** | | | **Continuous Sound Power Level** | | | | | | | **Max Sound Power Level** | | | | | | |
| **LWA** | **N** | **E** | **63** | **125** | **250** | **500** | **1000** | **2000** | **4000** | **63** | **125** | **250** | **500** | **1000** | **2000** | **4000** |
| Storage Model Const | 100 | 1150 | 97 | 104 | 103 | 105 | 107 | 105 | 103 | 101 | 108 | 107 | 109 | 111 | 109 | 107 |
| Storage Model Transp | 310 | 935 | 96 | 103 | 102 | 104 | 106 | 104 | 102 | 101 | 108 | 107 | 109 | 111 | 109 | 107 |
| B/U Alarms Max | 310 | 935 | | | | | 115 | | | | | | | 128 | | |
| Cask Building | 100 | 1150 | 86 | 94 | 102 | 108 | 112 | 110 | 102 | 86 | 94 | 102 | 108 | 112 | 110 | 102 |
| Security Bldg | 375 | 0 | 64 | 69 | 82 | 83 | 79 | 78 | 75 | 64 | 69 | 82 | 83 | 79 | 78 | 75 |
| Train Out at 825 ft, 8 hr avg | | | 25 | 25 | 19 | 32 | 34 | 19 | 4 | 108 | 112 | 119 | 132 | 133 | 115 | 101 |
| Train In at 825 ft, 8 hr avg | | | 25 | 25 | 19 | 32 | 34 | 19 | 4 | 108 | 112 | 119 | 132 | 133 | 115 | 101 |
| **Divergence** | **Distance** | | | | | | | | | | | | | | | |
| Storage Model Const | 1252 | | -60 | -63 | -66 | -65 | -64 | -66 | -70 | | | | | | | |
| Storage Model Transp | 1467 | | -61 | -64 | -67 | -66 | -66 | -68 | -73 | | | | | | | |
| B/U Alarms Max | 1467 | | -61 | -64 | -67 | -66 | -66 | -68 | -73 | | | | | | | |
| Cask Building | 1252 | | -60 | -63 | -66 | -65 | -64 | -66 | -70 | | | | | | | |
| Security Bldg | 1866 | | -63 | -67 | -69 | -69 | -69 | -71 | -78 | | | | | | | |
| Train Out, 8 hr avg | 1000 | | -58 | -61 | -64 | -63 | -62 | -63 | -67 | | | | | | | |
| Train In, 8 hr avg | 4650 | | -70 | -76 | -78 | -79 | -82 | -88 | -105 | | | | | | | |
| **LPA** | | | **Continuous Sound Pressure Level** | | | | | | | **Max Sound Pressure Level** | | | | | | |
| Storage Model Const | | | 37 | 41 | 37 | 40 | 43 | 39 | 32 | 41 | 45 | 41 | 44 | 47 | 43 | 36 |
| Storage Model Transport | | | 35 | 39 | 35 | 37 | 41 | 36 | 29 | 40 | 44 | 40 | 42 | 46 | 41 | 34 |
| B/U Alarms Max | | | | | | | 49 | | | | | | | 62 | | |
| Cask Building | | | 26 | 31 | 37 | 43 | 48 | 45 | 32 | 26 | 31 | 37 | 43 | 48 | 45 | 32 |
| Security Bldg | | | 1 | 2 | 13 | 14 | 10 | 7 | -3 | 1 | 2 | 13 | 14 | 10 | 7 | -3 |
| Train Out, 8 hr avg | | | 24 | 24 | 18 | 31 | 33 | 18 | 3 | 51 | 51 | 55 | 69 | 71 | 52 | 34 |
| Train In, 8 hr avg | | | 14 | 14 | 8 | 21 | 23 | 8 | -7 | 38 | 36 | 41 | 53 | 51 | 27 | -4 |
| LPA EQ | **54.8** | | **40** | **43** | **41** | **46** | **52** | **46** | **36** | **51** | **51** | **55** | **69** | **71** | **52** | **39** |
| LDN (NM. Summer) | **55.1** | | | | | | | | | | | | | | | |
| LPA MAX | **73.4** | | | | | | | | | | | | | | | |

## Table A-22: Operational Sound Levels, NSA #6 (Residential, near 176 & 18)

| Receptor | N | E | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NSA 6 | -6225 | -19675 | ft | | | | | | | | | | | | | |
| **PHASE 1** | | | **Continuous Sound Power Level** | | | | | | | **Max Sound Power Level** | | | | | | |
| **LWA** | **N** | **E** | **63** | **125** | **250** | **500** | **1000** | **2000** | **4000** | **63** | **125** | **250** | **500** | **1000** | **2000** | **4000** |
| Storage Model Const | 100 | 1150 | 97 | 104 | 103 | 105 | 107 | 105 | 103 | 101 | 108 | 107 | 109 | 111 | 109 | 107 |
| Storage Model Transp | 310 | 935 | 96 | 103 | 102 | 104 | 106 | 104 | 102 | 101 | 108 | 107 | 109 | 111 | 109 | 107 |
| B/U Alarms Max | 310 | 935 | | | | | 115 | | | | | | | 128 | | |
| Cask Building | 100 | 1150 | 86 | 94 | 102 | 108 | 112 | 110 | 102 | 86 | 94 | 102 | 108 | 112 | 110 | 102 |
| Security Bldg | 375 | 0 | 64 | 69 | 82 | 83 | 79 | 78 | 75 | 64 | 69 | 82 | 83 | 79 | 78 | 75 |
| Train Out at 825 ft, 8 hr avg | | | 25 | 25 | 19 | 32 | 34 | 19 | 4 | 108 | 112 | 119 | 132 | 133 | 115 | 101 |
| Train In at 825 ft, 8 hr avg | | | 25 | 25 | 19 | 32 | 34 | 19 | 4 | 108 | 112 | 119 | 132 | 133 | 115 | 101 |
| **Divergence** | **Distance** | | | | | | | | | | | | | | | |
| Storage Model Const | 21764 | | -84 | -91 | -97 | -108 | -127 | -158 | -238 | | | | | | | |
| Storage Model Transp | 21621 | | -84 | -91 | -96 | -108 | -127 | -157 | -237 | | | | | | | |
| B/U Alarms Max | 21621 | | -84 | -91 | -96 | -108 | -127 | -157 | -237 | | | | | | | |
| Cask Building | 21764 | | -84 | -91 | -97 | -108 | -127 | -158 | -238 | | | | | | | |
| Security Bldg | 20752 | | -84 | -90 | -96 | -107 | -125 | -154 | -231 | | | | | | | |
| Train Out, 8 hr avg | 2640 | | -66 | -71 | -72 | -72 | -73 | -76 | -86 | | | | | | | |
| Train In, 8 hr avg | 2640 | | -66 | -71 | -72 | -72 | -73 | -76 | -86 | | | | | | | |
| **LPA** | | | **Continuous Sound Pressure Level** | | | | | | | **Max Sound Pressure Level** | | | | | | |
| Storage Model Const | | | 13 | 13 | 6 | -3 | -20 | -53 | -136 | 17 | 17 | 10 | 1 | -16 | -49 | -132 |
| Storage Model Transport | | | 12 | 12 | 5 | -4 | -21 | -54 | -136 | 17 | 17 | 10 | 1 | -16 | -48 | -131 |
| B/U Alarms Max | | | | | | | -12 | | | | | | | 1 | | |
| Cask Building | | | 2 | 3 | 5 | 0 | -15 | -48 | -136 | 2 | 3 | 5 | 0 | -15 | -48 | -136 |
| Security Bldg | | | -19 | -21 | -14 | -24 | -46 | -76 | -156 | -19 | -21 | -14 | -24 | -46 | -76 | -156 |
| Train Out, 8 hr avg | | | 18 | 18 | 12 | 25 | 27 | 12 | -3 | 43 | 41 | 47 | 60 | 60 | 38 | 15 |
| Train In, 8 hr avg | | | 18 | 18 | 12 | 25 | 27 | 12 | -3 | 43 | 41 | 47 | 60 | 60 | 38 | 15 |
| LPA EQ | **33.0** | | **22** | **22** | **16** | **28** | **30** | **15** | **3** | **43** | **41** | **47** | **60** | **60** | **38** | **15** |
| LDN (NM. Summer) | **33.3** | | | | | | | | | | | | | | | |
| LPA MAX | **62.9** | | | | | | | | | | | | | | | |

## Table A-23: Operational Sound Levels, NSA #7 (Residential, south of 176 & 18)

| Receptor | N | E | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NSA 7 | -8625 | -20175 | ft | | | | | | | | | | | | | |
| **PHASE 1** | | | **Continuous Sound Power Level** | | | | | | | **Max Sound Power Level** | | | | | | |
| **LWA** | **N** | **E** | **63** | **125** | **250** | **500** | **1000** | **2000** | **4000** | **63** | **125** | **250** | **500** | **1000** | **2000** | **4000** |
| Storage Model Const | 100 | 1150 | 97 | 104 | 103 | 105 | 107 | 105 | 103 | 101 | 108 | 107 | 109 | 111 | 109 | 107 |
| Storage Model Transp | 310 | 935 | 96 | 103 | 102 | 104 | 106 | 104 | 102 | 101 | 108 | 107 | 109 | 111 | 109 | 107 |
| B/U Alarms Max | 310 | 935 | | | | | 115 | | | | | | | 128 | | |
| Cask Building | 100 | 1150 | 86 | 94 | 102 | 108 | 112 | 110 | 102 | 86 | 94 | 102 | 108 | 112 | 110 | 102 |
| Security Bldg | 375 | 0 | 64 | 69 | 82 | 83 | 79 | 78 | 75 | 64 | 69 | 82 | 83 | 79 | 78 | 75 |
| Train Out at 825 ft, 8 hr avg | | | 25 | 25 | 19 | 32 | 34 | 19 | 4 | 108 | 112 | 119 | 132 | 133 | 115 | 101 |
| Train In at 825 ft, 8 hr avg | | | 25 | 25 | 19 | 32 | 34 | 19 | 4 | 108 | 112 | 119 | 132 | 133 | 115 | 101 |
| **Divergence** | **Distance** | | | | | | | | | | | | | | | |
| Storage Model Const | 23041 | | -85 | -92 | -97 | -109 | -130 | -163 | -248 | | | | | | | |
| Storage Model Transp | 22923 | | -85 | -91 | -97 | -109 | -130 | -162 | -247 | | | | | | | |
| B/U Alarms Max | 22923 | | -85 | -91 | -97 | -109 | -130 | -162 | -247 | | | | | | | |
| Cask Building | 23041 | | -85 | -92 | -97 | -109 | -130 | -163 | -248 | | | | | | | |
| Security Bldg | 22091 | | -84 | -91 | -97 | -108 | -128 | -159 | -241 | | | | | | | |
| Train Out, 8 hr avg | 5575 | | -72 | -78 | -80 | -82 | -85 | -93 | -113 | | | | | | | |
| Train In, 8 hr avg | 5575 | | -72 | -78 | -80 | -82 | -85 | -93 | -113 | | | | | | | |
| **LPA** | | | **Continuous Sound Pressure Level** | | | | | | | **Max Sound Pressure Level** | | | | | | |
| Storage Model Const | | | 12 | 13 | 5 | -5 | -23 | -58 | -145 | 16 | 17 | 9 | -1 | -19 | -54 | -141 |
| Storage Model Transport | | | 11 | 12 | 4 | -6 | -24 | -58 | -146 | 16 | 17 | 9 | 0 | -18 | -53 | -140 |
| B/U Alarms Max | | | | | | | -15 | | | | | | | -2 | | |
| Cask Building | | | 1 | 2 | 5 | -1 | -18 | -53 | -146 | 1 | 2 | 5 | -1 | -18 | -53 | -146 |
| Security Bldg | | | -20 | -22 | -15 | -25 | -49 | -81 | -166 | -20 | -22 | -15 | -25 | -49 | -81 | -166 |
| Train Out, 8 hr avg | | | 13 | 13 | 7 | 20 | 22 | 7 | -8 | 36 | 34 | 39 | 51 | 48 | 22 | -12 |
| Train In, 8 hr avg | | | 13 | 13 | 7 | 20 | 22 | 7 | -8 | 36 | 34 | 39 | 51 | 48 | 22 | -12 |
| LPA EQ | **28.5** | | **19** | **19** | **13** | **23** | **25** | **10** | **1** | **36** | **34** | **39** | **51** | **48** | **22** | **0** |
| LDN (NM. Summer) | **28.8** | | | | | | | | | | | | | | | |
| LPA MAX | **52.8** | | | | | | | | | | | | | | | |

## Table A-24: Operational Sound Levels, NSA #8 (Residential, NE corner of Eunice)

| Receptor | N | E | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NSA 8 | -3525 | -27700 | ft | | | | | | | | | | | | |
| **PHASE 1** | | | **Continuous Sound Power Level** | | | | | | | **Max Sound Power Level** | | | | | |
| **LWA** | **N** | **E** | **63** | **125** | **250** | **500** | **1000** | **2000** | **4000** | **63** | **125** | **250** | **500** | **1000** | **2000** | **4000** |
| Storage Model Const | 100 | 1150 | 97 | 104 | 103 | 105 | 107 | 105 | 103 | 101 | 108 | 107 | 109 | 111 | 109 | 107 |
| Storage Model Transp | 310 | 935 | 96 | 103 | 102 | 104 | 106 | 104 | 102 | 101 | 108 | 107 | 109 | 111 | 109 | 107 |
| B/U Alarms Max | 310 | 935 | | | | | 115 | | | | | | | 128 | | |
| Cask Building | 100 | 1150 | 86 | 94 | 102 | 108 | 112 | 110 | 102 | 86 | 94 | 102 | 108 | 112 | 110 | 102 |
| Security Bldg | 375 | 0 | 64 | 69 | 82 | 83 | 79 | 78 | 75 | 64 | 69 | 82 | 83 | 79 | 78 | 75 |
| Train Out at 825 ft, 8 hr avg | | | 25 | 25 | 19 | 32 | 34 | 19 | 4 | 108 | 112 | 119 | 132 | 133 | 115 | 101 |
| Train In at 825 ft, 8 hr avg | | | 25 | 25 | 19 | 32 | 34 | 19 | 4 | 108 | 112 | 119 | 132 | 133 | 115 | 101 |
| **Divergence** | **Distance** | | | | | | | | | | | | | | |
| Storage Model Const | 29077 | | -87 | -94 | -101 | -117 | -144 | -185 | -292 | | | | | | | |
| Storage Model Transp | 28891 | | -87 | -94 | -101 | -117 | -143 | -184 | -291 | | | | | | | |
| B/U Alarms Max | 28891 | | -87 | -94 | -101 | -117 | -143 | -184 | -291 | | | | | | | |
| Cask Building | 29077 | | -87 | -94 | -101 | -117 | -144 | -185 | -292 | | | | | | | |
| Security Bldg | 27973 | | -87 | -94 | -101 | -116 | -141 | -181 | -284 | | | | | | | |
| Train Out, 8 hr avg | 2150 | | -64 | -68 | -70 | -70 | -70 | -73 | -81 | | | | | | | |
| Train In, 8 hr avg | 2150 | | -64 | -68 | -70 | -70 | -70 | -73 | -81 | | | | | | | |
| **LPA** | | | **Continuous Sound Pressure Level** | | | | | | | **Max Sound Pressure Level** | | | | | |
| Storage Model Const | | | 10 | 10 | 1 | -12 | -36 | -80 | -190 | 14 | 14 | 5 | -8 | -32 | -76 | -186 |
| Storage Model Transport | | | 9 | 9 | 0 | -13 | -37 | -80 | -189 | 14 | 14 | 5 | -8 | -32 | -75 | -184 |
| B/U Alarms Max | | | | | | | -28 | | | | | | | -15 | | |
| Cask Building | | | -1 | 0 | 1 | -9 | -32 | -75 | -190 | -1 | 0 | 1 | -9 | -32 | -75 | -190 |
| Security Bldg | | | -22 | -25 | -19 | -33 | -62 | -103 | -209 | -22 | -25 | -19 | -33 | -62 | -103 | -209 |
| Train Out, 8 hr avg | | | 19 | 19 | 13 | 26 | 28 | 13 | -2 | 45 | 44 | 49 | 62 | 62 | 42 | 20 |
| Train In, 8 hr avg | | | 19 | 19 | 13 | 26 | 28 | 13 | -2 | 45 | 44 | 49 | 62 | 62 | 42 | 20 |
| LPA EQ | **34.2** | | **23** | **23** | **17** | **29** | **31** | **16** | **4** | **45** | **44** | **49** | **62** | **62** | **42** | **20** |
| LDN (NM. Summer) | **34.5** | | | | | | | | | | | | | | | |
| LPA MAX | **65.3** | | | | | | | | | | | | | | | |

## Table A-25: Operational Sound Levels, NSA #9 (Residential, 176 @ TXNM RR)

| Receptor | N | E | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NSA 9 | -6075 | -25160 | ft | | | | | | | | | | | | |
| **PHASE 1** | | | **Continuous Sound Power Level** | | | | | | | **Max Sound Power Level** | | | | | |
| **LWA** | **N** | **E** | **63** | **125** | **250** | **500** | **1000** | **2000** | **4000** | **63** | **125** | **250** | **500** | **1000** | **2000** | **4000** |
| Storage Model Const | 100 | 1150 | 97 | 104 | 103 | 105 | 107 | 105 | 103 | 101 | 108 | 107 | 109 | 111 | 109 | 107 |
| Storage Model Transp | 310 | 935 | 96 | 103 | 102 | 104 | 106 | 104 | 102 | 101 | 108 | 107 | 109 | 111 | 109 | 107 |
| B/U Alarms Max | 310 | 935 | | | | | 115 | | | | | | | 128 | | |
| Cask Building | 100 | 1150 | 86 | 94 | 102 | 108 | 112 | 110 | 102 | 86 | 94 | 102 | 108 | 112 | 110 | 102 |
| Security Bldg | 375 | 0 | 64 | 69 | 82 | 83 | 79 | 78 | 75 | 64 | 69 | 82 | 83 | 79 | 78 | 75 |
| Train Out at 825 ft, 8 hr avg | | | 25 | 25 | 19 | 32 | 34 | 19 | 4 | 108 | 112 | 119 | 132 | 133 | 115 | 101 |
| Train In at 825 ft, 8 hr avg | | | 25 | 25 | 19 | 32 | 34 | 19 | 4 | 108 | 112 | 119 | 132 | 133 | 115 | 101 |
| **Divergence** | **Distance** | | | | | | | | | | | | | | |
| Storage Model Const | 27025 | | -86 | -93 | -100 | -114 | -139 | -177 | -277 | | | | | | | |
| Storage Model Transp | 26865 | | -86 | -93 | -100 | -114 | -139 | -177 | -276 | | | | | | | |
| B/U Alarms Max | 26865 | | -86 | -93 | -100 | -114 | -139 | -177 | -276 | | | | | | | |
| Cask Building | 27025 | | -86 | -93 | -100 | -114 | -139 | -177 | -277 | | | | | | | |
| Security Bldg | 25974 | | -86 | -93 | -99 | -113 | -137 | -173 | -270 | | | | | | | |
| Train Out, 8 hr avg | 2640 | | -66 | -71 | -72 | -72 | -73 | -76 | -86 | | | | | | | |
| Train In, 8 hr avg | 2640 | | -66 | -71 | -72 | -72 | -73 | -76 | -86 | | | | | | | |
| **LPA** | | | **Continuous Sound Pressure Level** | | | | | | | **Max Sound Pressure Level** | | | | | |
| Storage Model Const | | | 11 | 11 | 3 | -10 | -32 | -72 | -175 | 15 | 15 | 7 | -6 | -28 | -68 | -171 |
| Storage Model Transport | | | 10 | 10 | 2 | -10 | -32 | -73 | -175 | 15 | 15 | 7 | -5 | -27 | -68 | -170 |
| B/U Alarms Max | | | | | | | -24 | | | | | | | -11 | | |
| Cask Building | | | 0 | 1 | 2 | -6 | -27 | -67 | -175 | 0 | 1 | 2 | -6 | -27 | -67 | -175 |
| Security Bldg | | | -22 | -24 | -17 | -30 | -58 | -95 | -195 | -22 | -24 | -17 | -30 | -58 | -95 | -195 |
| Train Out, 8 hr avg | | | 18 | 18 | 12 | 25 | 27 | 12 | -3 | 43 | 41 | 47 | 60 | 60 | 38 | 15 |
| Train In, 8 hr avg | | | 18 | 18 | 12 | 25 | 27 | 12 | -3 | 43 | 41 | 47 | 60 | 60 | 38 | 15 |
| LPA EQ | **32.9** | | **22** | **22** | **16** | **28** | **30** | **15** | **3** | **43** | **41** | **47** | **60** | **60** | **38** | **15** |
| LDN (NM. Summer) | **33.2** | | | | | | | | | | | | | | | |
| LPA MAX | **62.9** | | | | | | | | | | | | | | | |

## Table A-26: Personnel TWA, General Earthwork, Phase 1 Construction

| Task | Description | HP | Quantity per Hour | Item LwA,eq | Subtotal LwA,eq | Divergence | LpA,eq | LpA,eq w/ NC B/U Alarms |
|---|---|---|---|---|---|---|---|---|
| Earthwork | Heavy Haul Truck | 350 | 4 | 118 | | | | |
| | Earthmover | 500 | 2 | 113 | | | | |
| | Backup Alarms | | 6 | 123 | | | | |
| | **General Earthwork Subtotal** | | | | **124** | **-43** | **81** | **76** |
| Adjacent Const. | Cask Building | | | | 124 | -61 | 63 | 60 |
| | Security/Admin Bldg | | | | 124 | -56 | 68 | 65 |
| | SNF Pad 1 | | | | 122 | -56 | 66 | 61 |
| | Protected Area | | | | 121 | -43 | 78 | 73 |
| | **General Earthwork Total** | | | | | | **83** | **78** |

## Table A-27: Personnel TWA, Cask Building, Phase 1 Construction

| Task | Description | HP | Quantity per Hour | Item LwA,eq | Subtotal LwA,eq | Divergence | LpA,eq | LpA,eq w/ NC B/U Alarms |
|---|---|---|---|---|---|---|---|---|
| Earthwork | Earthmover | 500 | 1 | 110 | | | | |
| | Backup Alarms | | 1 | 115 | | | | |
| Support | Air Compressor | | 1 | 108 | | | | |
| | Diesel Generator | | 1 | 111 | | | | |
| Concrete | Pump Truck | 400 | 1 | 107 | | | | |
| | Ready-Mix Truck | 400 | 1 | 113 | | | | |
| | Backup Alarms | | 2 | 118 | | | | |
| Construction | Construction Eq | 400 | 2 | 117 | | | | |
| | Welding | | 4 | 107 | | | | |
| | Grinding | | 4 | 104 | | | | |
| | Backup Alarms | | 2 | 118 | | | | |
| | **Cask Building Subtotal** | | | | **124** | **-32** | **92** | **89** |
| Adjacent Const. | Gen'l Earthwork | | | | 124 | -61 | 63 | 59 |
| | Security/Admin Bldg | | | | 124 | -59 | 68 | 65 |
| | SNF Pad 1 | | | | 122 | -53 | 66 | 61 |
| | Protected Area | | | | 121 | -61 | 78 | 73 |
| | **Cask Building Total** | | | | | | **92** | **89** |

## Table A-28: Personnel TWA, Security/Admin Building, Phase 1 Construction

| Task | Description | HP | Quantity per Hour | Item LwA,eq | Subtotal LwA,eq | Divergence | LpA,eq | LpA,eq w/ NC B/U Alarms |
|---|---|---|---|---|---|---|---|---|
| Earthwork | Earthmover | 500 | 1 | 110 | | | | |
| | Backup Alarms | | 1 | 115 | | | | |
| Support | Air Compressor | | 1 | 108 | | | | |
| | Diesel Generator | | 1 | 111 | | | | |
| Concrete | Pump Truck | 400 | 1 | 107 | | | | |
| | Ready-Mix Truck | 400 | 1 | 113 | | | | |
| | Backup Alarms | | 2 | 118 | | | | |
| Construction | Construction Eq | 400 | 2 | 117 | | | | |
| | Welding | | 4 | 107 | | | | |
| | Grinding | | 4 | 104 | | | | |
| | Backup Alarms | | 2 | 118 | | | | |
| | **Security/Admin Subtotal** | | | | **124** | **-30** | **94** | **91** |
| Adjacent Const. | Gen'l Earthwork | | | | 124 | -56 | 63 | 59 |
| | Cask Building | | | | 124 | -59 | 68 | 65 |
| | SNF Pad 1 | | | | 122 | -55 | 66 | 61 |
| | Protected Area | | | | 121 | -56 | 78 | 73 |
| | **Security/Admin Building Total** | | | | | | **94** | **91** |

## Table A-29: Personnel TWA, SNF Pad 1, Phase 1 Construction

| Task | Description | HP | Quantity per Hour | Item LwA,eq | Subtotal LwA,eq | Divergence | LpA,eq | LpA,eq w/ NC B/U Alarms |
|---|---|---|---|---|---|---|---|---|
| Earthwork | Earthmover | 500 | 2 | 113 | | | | |
| | Backup Alarms | | 2 | 118 | | | | |
| Concrete | Pump Truck | 400 | 1 | 107 | | | | |
| | Ready-Mix Truck | 400 | 1 | 113 | | | | |
| | Backup Alarms | | 2 | 118 | | | | |
| | **SNF Pad 1 Subtotal** | | | | **122** | **-35** | **87** | **83** |
| Adjacent Const. | Gen'l Earthwork | | | | 124 | -56 | 68 | 64 |
| | Cask Building | | | | 124 | -53 | 71 | 67 |
| | Security/Admin Building | | | | 124 | -55 | 69 | 66 |
| | Protected Area | | | | 121 | -56 | 65 | 60 |
| | **SNF Pad 1 Total** | | | | | | **88** | **83** |

## Table A-30: Personnel TWA, Protected Area, Phase 1 Construction

| Task | Description | HP | Quantity per Hour | Item LwA,eq | Subtotal LwA,eq | Divergence | LpA,eq | LpA,eq w/ NC B/U Alarms |
|---|---|---|---|---|---|---|---|---|
| Earthwork | Heavy Haul Truck | 350 | 1 | 112 | | | | |
| | Earthmover | 500 | 2 | 113 | | | | |
| | Backup Alarms | | 3 | 120 | | | | |
| | **Protected Area Subtotal** | | | | **121** | **-43** | **78** | **73** |
| Adjacent Const. | Gen'l Earthwork | | | | 124 | -43 | 81 | 76 |
| | Cask Building | | | | 124 | -61 | 63 | 60 |
| | Security/Admin Building | | | | 124 | -56 | 68 | 65 |
| | SNF Pad 1 | | | | 122 | -56 | 66 | 61 |
| | **Protected Area Total** | | | | | | **83** | **78** |

## Table A-31: Personnel TWA, Storage Module Construction

| Task | Description | Location | Quantity per Hour | Item LwA,eq | Eff. Dist. [ft] | Divergence | LpA,eq | LpA,eq w/ NC B/U Alarms |
|---|---|---|---|---|---|---|---|---|
| Operations | Storage Module Construction | Working | 1 | 113 | 25 | -26 | 87 | 87 |
| | Backup Alarm | Working | 1 | 115 | 25 | -26 | 89 | 79 |
| | Storage Module Transport | Pad 1 | 1 | 112 | | -53 | 58 | 58 |
| | Backup Alarm | Pad 1 | 1 | 115 | | -53 | 61 | 51 |
| | Cask Building Vent Fans | Cask Bldg | 8 | 116 | 50 | -32 | 84 | 84 |
| | Security Bldg RTUs | Sec/Admin | 3 | 97 | | -59 | 37 | 37 |
| | Train Inbound | | | 82 | 200 | -35 | 47 | 47 |
| | Train Outbound | | | 82 | 5250 | -56 | 26 | 26 |
| | **Storage Module Construction Crew Total** | | | | | | **92** | **89** |

## Table A-32: Personnel TWA, Storage Module Transport

| Task | Description | Location | Quantity per Hour | Item LwA,eq | Eff. Dist. [ft] | Divergence | LpA,eq | LpA,eq w/ NC B/U Alarms |
|---|---|---|---|---|---|---|---|---|
| Operations | Storage Module Construction | Cask Bldg | 1 | 113 | | -53 | 59 | 59 |
| | Backup Alarm | Cask Bldg | 1 | 115 | | -53 | 61 | 51 |
| | Storage Module Transport | Working | 1 | 112 | 12 | -22 | 89 | 89 |
| | Backup Alarm | Working | 0 | 0 | | | 0 | 0 |
| | Cask Building Vent Fans | Cask Bldg | 8 | 116 | | -53 | 62 | 62 |
| | Security Bldg RTUs | Sec/Admin | 3 | 97 | | -55 | 42 | 42 |
| | Train Inbound | | | 82 | 425 | -39 | 43 | 43 |
| | Train Outbound | | | 82 | 5000 | -55 | 27 | 27 |
| | **Storage Module Transport Operations** | | | | | | **89** | **89** |

## Table A-33: Personnel TWA, SNF Pads, Phase 2-8 Construction

| Task | Description | HP | Quantity per Hour | Item LwA,eq | Subtotal LwA,eq | Divergence | LpA,eq | LpA,eq w/ NC B/U Alarms |
|---|---|---|---|---|---|---|---|---|
| Earthwork | Earthmover | 500 | 2 | 113 | | | | |
| Concrete | Pump Truck | 400 | 1 | 107 | | | | |
| | Ready-Mix Truck | 400 | 1 | 113 | | | | |
| All | Backup Alarms | | 4 | 121 | | | | |
| | **SNF Pad 2-8 Subtotal** | | | | **122** | **-35** | **87** | **81** |
| Adjacent Const. | Protected Area | | | | 121 | -53 | 68 | 63 |
| Operations | Storage Model Construction | 400 | 1 | | 113 | -57 | 55 | 55 |
| | Backup Alarm | | 1 | | 115 | -57 | 57 | 47 |
| | Storage Module Transport | 350 | 1 | | 112 | -53 | 59 | 59 |
| | Backup Alarm | | 1 | | 115 | -53 | 61 | 51 |
| | Cask Building Vent Fans | | 8 | | 116 | -57 | 58 | 58 |
| | Security Bldg RTUs | | 3 | | 97 | -57 | 39 | 39 |
| | Train Inbound, Pad 5 | | | | 82 | -39 | 43 | 43 |
| | Train Outboud, Pad 5 | | | | 82 | -55 | 27 | 27 |
| | **SNF Pad 2-8 Total** | | | | | | **87** | **81** |

## Table A-34: Personnel TWA, Protected Area, Phase 2-8 Construction

| Task | Description | HP | Quantity per Hour | Item LwA,eq | Subtotal LwA,eq | Divergence | LpA,eq | LpA,eq w/ NC B/U Alarms |
|---|---|---|---|---|---|---|---|---|
| Earthwork | Heavy Haul Truck | 350 | 1 | 112 | | | | |
| | Earthmover | 500 | 2 | 113 | | | | |
| | Backup Alarms | | 3 | 120 | | | | |
| | **Protected Area Subtotal** | | | | **121** | **-43** | **78** | **73** |
| Adjacent Const. | SNF Pad 2 | | | | 122 | -53 | 68 | 62 |
| Operations | Storage Module Construction | 400 | 1 | | 113 | -61 | 52 | 52 |
| | Backup Alarm | | 1 | | 115 | -61 | 54 | 44 |
| | Storage Module Transport | 350 | 1 | | 112 | -56 | 55 | 55 |
| | Backup Alarm | | 1 | | 115 | -56 | 58 | 48 |
| | Cask Building Vent Fans | | 8 | | 116 | -61 | 55 | 55 |
| | Security Bldg RTUs | | 3 | | 97 | -56 | 41 | 41 |
| | Train Inbound, PA Center | | | | 82 | -45 | 37 | 37 |
| | Train Outbound, PA Center | | | | 82 | -57 | 25 | 25 |
| | **Protected Area Total** | | | | | | **78** | **73** |

## Table A-35: Personnel $L_{pA,max}$, General Earthwork, Phase 2-8 Construction

| Task | Description | HP | Quantity per Hour | Item LwA,max | Subtotal LwA,max | Divergence | LpA,max | LpA,max w/ NC B/U Alarms |
|---|---|---|---|---|---|---|---|---|
| Earthwork | Heavy Haul Truck | 350 | 4 | 122 | | | | |
| | Earthmover | 500 | 2 | 117 | | | | |
| | Backup Alarms | | 3 | 129 | | | | |
| | **General Earthwork Subtotal** | | | | **130** | **-43** | **87** | **81** |
| Adjacent Const. | Cask Building | | | | 131 | -61 | 70 | 64 |
| | Security/Admin Bldg | | | | 131 | -56 | 75 | 69 |
| | SNF Pad 1 | | | | 130 | -56 | 74 | 67 |
| | Protected Area | | | | 128 | -43 | 85 | 78 |
| | **General Earthwork Total** | | | | | | **89** | **83** |

## Table A-36: Personnel $L_{pA,max}$, Cask Building, Phase 1 Construction

| Task | Description | HP | Quantity per Hour | Item LwA,max | Subtotal LwA,max | Divergence | LpA,max | LpA,max w/ NC B/U Alarms |
|---|---|---|---|---|---|---|---|---|
| Earthwork | Earthmover | 500 | 1 | 114 | | | | |
| Support | Air Compressor | | 1 | 112 | | | | |
| | Diesel Generator | | 1 | 114 | | | | |
| Concrete | Pump Truck | 400 | 1 | 114 | | | | |
| | Ready-Mix Truck | 400 | 1 | 117 | | | | |
| Construction | Construction Eq | 400 | 2 | 120 | | | | |
| | Welding | | 4 | 111 | | | | |
| | Grinding | | 4 | 111 | | | | |
| All | Backup Alarms | | 3 | 129 | | | | |
| | **Cask Building Subtotal** | | | | **131** | **-32** | **99** | **93** |
| Adjacent Const. | Gen'l Earthwork | | | | 130 | -61 | 69 | 64 |
| | Security/Admin Bldg | | | | 131 | -59 | 75 | 69 |
| | SNF Pad 1 | | | | 130 | -53 | 74 | 67 |
| | Protected Area | | | | 128 | -61 | 85 | 78 |
| | **Cask Building Total** | | | | | | **99** | **93** |

## Table A-37: Personnel $L_{pA,max}$, Security/Admin Building, Phase 1 Construction

| Task | Description | HP | Quantity per Hour | Item LwA,max | Subtotal LwA,max | Divergence | LpA,max | LpA,max w/ NC B/U Alarms |
|---|---|---|---|---|---|---|---|---|
| Earthwork | Earthmover | 500 | 1 | 114 | | | | |
| Support | Air Compressor | | 1 | 112 | | | | |
| | Diesel Generator | | 1 | 114 | | | | |
| Concrete | Pump Truck | 400 | 1 | 114 | | | | |
| | Ready-Mix Truck | 400 | 1 | 117 | | | | |
| Construction | Construction Eq | 400 | 2 | 120 | | | | |
| | Welding | | 4 | 111 | | | | |
| | Grinding | | 4 | 111 | | | | |
| All | Backup Alarms | | 3 | 129 | | | | |
| | **Security/Admin Subtotal** | | | | **131** | **-30** | **100** | **95** |
| Adjacent Const. | Gen'l Earthwork | | | | 130 | -56 | 69 | 64 |
| | Cask Building | | | | 131 | -59 | 75 | 69 |
| | SNF Pad 1 | | | | 130 | -55 | 74 | 67 |
| | Protected Area | | | | 128 | -56 | 85 | 78 |
| | **Security/Admin Building Total** | | | | | | **100** | **95** |

## Table A-38: Personnel $L_{pA,max}$, SNF Pad 1, Phase 1 Construction

| Task | Description | HP | Quantity per Hour | Item LwA,max | Subtotal LwA,max | Divergence | LpA,max | LpA,max w/ NC B/U Alarms |
|---|---|---|---|---|---|---|---|---|
| Earthwork | Earthmover | 500 | 2 | 117 | | | | |
| Concrete | Pump Truck | 400 | 1 | 114 | | | | |
| | Ready-Mix Truck | 400 | 1 | 117 | | | | |
| All | Backup Alarms | | 3 | 129 | | | | |
| | **SNF Pad 1 Subtotal** | | | | **130** | **-35** | **95** | **89** |
| Adjacent Const. | Gen'l Earthwork | | | | 131 | -56 | 74 | 69 |
| | Cask Building | | | | 131 | -53 | 77 | 72 |
| | Security/Admin Building | | | | 131 | -55 | 75 | 70 |
| | Protected Area | | | | 128 | -56 | 72 | 65 |
| | **SNF Pad 1 Total** | | | | | | **96** | **89** |

## Table A-39: Personnel $L_{pA,max}$, Protected Area, Phase 1 Construction

| Task | Description | HP | Quantity per Hour | Item LwA,max | Subtotal LwA,max | Divergence | LpA,max | LpA,max w/ NC B/U Alarms |
|---|---|---|---|---|---|---|---|---|
| Earthwork | Heavy Haul Truck | 350 | 1 | 116 | | | | |
| | Earthmover | 500 | 2 | 117 | | | | |
| | Backup Alarms | | 2 | 128 | | | | |
| | **Protected Area Subtotal** | | | | **128** | **-43** | **85** | **78** |
| Adjacent Const. | Gen'l Earthwork | | | | 130 | -43 | 87 | 81 |
| | Cask Building | | | | 131 | -61 | 70 | 64 |
| | Security/Admin Building | | | | 131 | -56 | 75 | 69 |
| | SNF Pad 1 | | | | 130 | -56 | 74 | 67 |
| | **Protected Area Total** | | | | | | **89** | **83** |

## Table A-40: Personnel $L_{pA,max}$, Storage Module Construction

| Task | Description | Location | Quantity per Hour | Item LwA,max | Eff. Dist. [ft] | Divergence | LpA,max | LpA,max w/ NC B/U Alarms |
|---|---|---|---|---|---|---|---|---|
| Operations | Storage Module Construction | Working | 1 | 117 | 20 | -24 | 93 | 93 |
| | Backup Alarm | Working | 1 | 125 | 20 | -24 | 101 | 91 |
| | Storage Module Transport | Pad 1 | 1 | 117 | | -53 | 63 | 63 |
| | Backup Alarm | Pad 1 | 1 | 125 | | -53 | 71 | 61 |
| | Cask Building Vent Fans | Cask Bldg | 8 | 116 | 50 | -32 | 84 | 84 |
| | Security Bldg RTUs | Sec/Admin | 3 | 97 | | -59 | 37 | 37 |
| | Train Inbound | | | 131 | 200 | -35 | 97 | 47 |
| | Train Outbound | | | 131 | 5250 | -56 | 76 | 26 |
| | **Storage Module Construction Crew Total** | | | | | | **103** | **95** |

## Table A-41: Personnel $L_{pA,max}$, Storage Module Transport

| Task | Description | Location | Quantity per Hour | Item LwA,max | Eff. Dist. [ft] | Divergence | LpA,max | LpA,max w/ NC B/U Alarms |
|---|---|---|---|---|---|---|---|---|
| Operations | Storage Module Construction | Cask Bldg | 1 | 117 | | -53 | 63 | 63 |
| | Backup Alarm | Cask Bldg | 1 | 125 | | -53 | 71 | 61 |
| | Storage Module Transport | Working | 1 | 117 | 10 | -21 | 96 | 96 |
| | Backup Alarm | Working | 0 | 0 | | | 0 | 0 |
| | Cask Building Vent Fans | Cask Bldg | 8 | 116 | | -53 | 62 | 62 |
| | Security Bldg RTUs | Sec/Admin | 3 | 97 | | -55 | 42 | 42 |
| | Train Inbound | | | 131 | 425 | -39 | 92 | 43 |
| | Train Outbound | | | 131 | 5000 | -55 | 76 | 27 |
| | **Storage Module Transport Operations** | | | | | | **97** | **96** |

## Table A-42: Personnel $L_{pA,max}$, SNF Pads, Phase 2-8 Construction

| Task | Description | HP | Quantity per Hour | Item LwA,max | Subtotal LwA,max | Divergence | LpA,max | LpA,max w/ NC B/U Alarms |
|---|---|---|---|---|---|---|---|---|
| Earthwork | Earthmover | 500 | 2 | 117 | | | | |
| Concrete | Pump Truck | 400 | 1 | 114 | | | | |
| | Ready-Mix Truck | 400 | 1 | 117 | | | | |
| All | Backup Alarms | | 3 | 129 | | | | |
| | **SNF Pad 2-8 Subtotal** | | | | **130** | **-35** | **95** | **87** |
| Adjacent Const. | Protected Area | | | | 128 | -53 | 75 | 69 |
| Operations | Storage Model Construction | 400 | 1 | | 117 | -57 | 59 | 59 |
| | Backup Alarm | | 1 | | 125 | -57 | 67 | 57 |
| | Storage Module Transport | 350 | 1 | | 117 | -53 | 63 | 63 |
| | Backup Alarm | | 1 | | 125 | -53 | 71 | 61 |
| | Cask Building Vent Fans | | 8 | | 116 | -57 | 58 | 58 |
| | Security Bldg RTUs | | 3 | | 97 | -57 | 39 | 39 |
| | Train Inbound, Pad 5 | | | | 131 | -39 | 92 | 43 |
| | Train Outboud, Pad 5 | | | | 131 | -55 | 76 | 27 |
| | **SNF Pad 2-8 Total** | | | | | | **97** | **88** |

## Table A-43: Personnel $L_{pA,max}$, Protected Area, Phase 2-8 Construction

| Task | Description | HP | Quantity per Hour | Item LwA,max | Subtotal LwA,max | Divergence | LpA,max | LpA,max w/ NC B/U Alarms |
|---|---|---|---|---|---|---|---|---|
| Earthwork | Heavy Haul Truck | 350 | 1 | 116 | | | | |
| | Earthmover | 500 | 2 | 117 | | | | |
| | Backup Alarms | | 2 | 128 | | | | |
| | **Protected Area Subtotal** | | | | **128** | **-43** | **85** | **78** |
| Adjacent Const. | SNF Pad 2 | | | | 130 | -53 | 77 | 69 |
| Operations | Storage Module Construction | 400 | 1 | | 117 | -61 | 56 | 56 |
| | Backup Alarm | | 1 | | 125 | -61 | 64 | 54 |
| | Storage Module Transport | 350 | 1 | | 117 | -56 | 60 | 60 |
| | Backup Alarm | | 1 | | 125 | -56 | 68 | 58 |
| | Cask Building Vent Fans | | 8 | | 116 | -61 | 55 | 55 |
| | Security Bldg RTUs | | 3 | | 97 | -56 | 41 | 41 |
| | Train Inbound, PA Center | | | | 131 | -45 | 86 | 37 |
| | Train Outbound, PA Center | | | | 131 | -57 | 75 | 25 |
| | **Protected Area Total** | | | | | | **89** | **79** |