## 3.12 AIR QUALITY AND NOISE

### 3.12.1 Air Quality

The proposed Project would include installation of pipeline and construction of pump stations and associated facilities such as the proposed Cushing tank farm and two surge relief tanks at the end of the Gulf Coast Segment. The proposed pump stations would be electrically driven, with electricity to be provided from existing local electric utilities. Back-up power at each pump station would be provided by an uninterruptible power supply (UPS). No back-up generators at pump stations are planned and, therefore, no fuel storage tanks would be located at pump stations. However, back-up generators and associated fuel tanks would be located at MLV stations.

#### 3.12.1.1 Environmental Setting

#### Regional Climate

The proposed Project would be constructed in portions of Montana, South Dakota, Nebraska, Kansas, Oklahoma, and Texas. The proposed Project in Montana, South Dakota, Nebraska, and Kansas is located within a zone characterized by a humid continental climate that occurs where polar and tropical air masses collide. The humid continental climate zone is noted for its variable weather patterns and large temperature ranges, with summer high temperatures averaging over 89 ˚F, and winter low temperatures averaging between 12 to 20 ˚F. The proposed Project in Texas and Oklahoma is located within a zone characterized by a humid subtropical climate, noted for its warm summer months and relatively mild winters. The daily temperature range within this climate zone tends to be very small, and tropical air masses and warm ocean currents create air mass instability that produces moderate amounts of precipitation during most of the year. Representative climate data for Circle, Montana; Midland, South Dakota; Lincoln, Nebraska; Marion Lake, Kansas; Cushing, Oklahoma; and Beaumont and Houston, Texas are presented in Table 3.12.1-1.

**TABLE 3.12.1-1**
**Representative Climate Data in the Vicinity of the Proposed Pipeline**

| Location/ Measurement (Average) | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Circle, Montana** | | | | | | | | | | | | | |
| Maximum temperature (ºF) | 26.0 | 33.1 | 43.2 | 57.7 | 68.8 | 78.2 | 86.9 | 85.8 | 73.4 | 59.7 | 42.0 | 30.2 | 57.1 |
| Minimum temperature (ºF) | 3.8 | 10.6 | 19.4 | 31.1 | 41.5 | 50.3 | 55.8 | 53.9 | 42.8 | 31.9 | 19.0 | 8.2 | 30.7 |
| Total precipitation (inches) | 0.4 | 0.3 | 0.6 | 1.3 | 2.0 | 2.6 | 1.9 | 1.3 | 1.3 | 0.8 | 0.4 | 0.4 | 13.3 |
| Total snowfall (inches) | 5.6 | 3.4 | 3.6 | 2.2 | 0.4 | 0.0 | 0.0 | 0.0 | 0.1 | 0.9 | 2.6 | 5.1 | 23.9 |
| Snow depth (inches) | 4 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 |
| **Midland, South Dakota** | | | | | | | | | | | | | |
| Maximum temperature (ºF) | 32.8 | 38.3 | 47.2 | 62.4 | 73.2 | 82.5 | 90.8 | 89.9 | 79.2 | 65.7 | 48.1 | 36.6 | 62.2 |
| Minimum temperature (ºF) | 6.0 | 11.1 | 20.2 | 32.6 | 44.1 | 54.0 | 59.6 | 57.4 | 45.9 | 33.5 | 20.1 | 10.2 | 32.9 |
| Total precipitation (inches) | 0.3 | 0.4 | 1.1 | 1.6 | 2.8 | 3.1 | 2.2 | 1.7 | 1.4 | 1.1 | 0.5 | 0.3 | 16.4 |
| Total snowfall (inches) | 3.9 | 5.8 | 6.4 | 1.8 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.6 | 3.1 | 4.4 | 26.2 |
| Snow depth (inches) | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| **Lincoln, Nebraska** | | | | | | | | | | | | | |
| Maximum temperature (ºF) | 33.8 | 39.9 | 50.7 | 63.8 | 73.9 | 84.6 | 89.3 | 86.6 | 78.6 | 66.3 | 49.7 | 37.5 | 62.9 |
| Minimum temperature (ºF) | 12.2 | 17.8 | 27.5 | 38.9 | 50.2 | 60.7 | 66.0 | 63.6 | 53.1 | 40.3 | 27.4 | 16.5 | 39.5 |
| Total precipitation (inches) | 0.7 | 0.9 | 2.1 | 2.9 | 4.3 | 3.6 | 3.4 | 3.4 | 3.0 | 1.9 | 1.5 | 0.8 | 28.4 |
| Total snowfall (inches) | 6.4 | 5.3 | 5.1 | 1.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.6 | 2.6 | 5.4 | 26.7 |
| Snow depth (inches) | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| **Marion Lake, Kansas** | | | | | | | | | | | | | |
| Maximum temperature (ºF) | 37.9 | 43.9 | 55.1 | 66.1 | 75.1 | 84.8 | 91.4 | 89.9 | 81.0 | 69.1 | 53.7 | 41.8 | 65.8 |
| Minimum temperature (ºF) | 17.1 | 21.3 | 31.6 | 42.6 | 52.8 | 62.5 | 67.7 | 65.4 | 55.8 | 43.7 | 31.8 | 21.7 | 42.8 |
| Total precipitation (inches) | 0.7 | 0.9 | 2.4 | 3.0 | 4.6 | 4.9 | 3.8 | 3.8 | 3.2 | 2.8 | 1.7 | 1.0 | 33.0 |
| Total snowfall (inches) | 1.1 | 1.1 | 0.3 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 1.0 | 4.0 |
| Snow depth (inches) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Cushing, Oklahoma** | | | | | | | | | | | | | |
| Maximum temperature (ºF) | 45.8 | 52.2 | 61.2 | 71.0 | 78.4 | 86.5 | 92.7 | 92.4 | 83.6 | 73.4 | 59.4 | 49.0 | 70.5 |

**TABLE 3.12.1-1**
**Representative Climate Data in the Vicinity of the Proposed Pipeline**

| Location/ Measurement (Average) | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Minimum temperature (ºF) | 24.6 | 29.8 | 38.6 | 48.1 | 58.2 | 66.7 | 71.3 | 69.9 | 61.5 | 49.7 | 38.1 | 28.3 | 48.7 |
| Total precipitation (inches) | 1.2 | 1.9 | 3.2 | 3.7 | 5.8 | 4.4 | 2.9 | 2.7 | 4.1 | 3.4 | 2.9 | 1.9 | 38.2 |
| Total snowfall (inches) | 3.0 | 1.7 | 0.9 | T | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 1.2 | 7.1 |
| Snow depth (inches) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Beaumont, Texas** | | | | | | | | | | | | | |
| Maximum temperature (ºF) | 61.5 | 65.3 | 72.0 | 77.8 | 84.3 | 89.4 | 91.6 | 91.7 | 88.0 | 80.5 | 70.9 | 63.9 | 78.1 |
| Minimum temperature (ºF) | 42.9 | 45.9 | 52.4 | 58.6 | 66.4 | 72.3 | 73.8 | 73.2 | 69.4 | 59.6 | 50.8 | 44.5 | 59.2 |
| Total precipitation (inches) | 5.7 | 3.4 | 3.8 | 3.8 | 5.8 | 6.6 | 5.2 | 4.8 | 6.1 | 4.7 | 4.7 | 5.2 | 59.8 |
| **Houston, Texas** | | | | | | | | | | | | | |
| Maximum temperature (ºF) | 59.1 | 65.9 | 75.4 | 76.4 | 84.7 | 89.7 | 88.7 | 93.4 | 90.1 | 84.3 | 74.2 | 70.8 | 79.4 |
| Minimum temperature (ºF) | 45.1 | 46.7 | 58.3 | 59.0 | 69.1 | 75.1 | 75.5 | 78.0 | 74.5 | 64.1 | 55.6 | 49.6 | 62.6 |
| Total precipitation (inches) | 6.7 | 1.4 | 8.8 | 4.8 | 9.6 | 5.6 | 10.0 | 7.2 | 6.3 | 1.8 | 4.4 | 1.6 | 68.2 |

Notes:
ºF = Degrees Fahrenheit
T = Trace amounts
Source: Keystone 2009c.

## Ambient Air Quality

Ambient air quality standards are regulated by federal, state, and local agencies. EPA has established national ambient air quality standards (NAAQS) for six criteria pollutants: sulfur dioxide ($SO_2$), nitrogen dioxide ($NO_2$), particulate matter ($PM_{10}$ particulates and $PM_{2.5}$ particulates), carbon monoxide (CO), ozone ($O_3$), and lead (Pb). The NAAQS were developed to protect human health (primary standards) and human welfare (secondary standards). State air quality standards cannot be less stringent than the NAAQS. South Dakota, Nebraska, Kansas, Oklahoma, and Texas have adopted ambient air quality standards equivalent to the NAAQS for all six criteria pollutants, whereas Montana has more stringent standards as discussed in detail in Appendix I. Table 3.12.1-2 lists the NAAQS for the six criteria pollutants.

**TABLE 3.12.1-2**
**National Ambient Air Quality Standards**

| Pollutant | Time Frame | Primary | Secondary |
|---|---|---|---|
| Particulate matter less than 10 microns in diameter | Annual[a] | Revoked | Revoked |
| | 24-hour[b] | 150 µg/m$^3$ | 150 µg/m$^3$ |
| Particulate matter less than 2.5 microns in diameter | Annual[c] | 15 µg/m$^3$ | 15 µg/m$^3$ |
| | 24-hour[d] | 35 µg/m$^3$ | NA |
| Sulfur dioxide | Annual | 0.030 ppm (80 µg/m$^3$) | NA |
| | 24-hour[b] | 0.14 ppm (365 µg/m$^3$) | NA |
| | 3-hour[b] | NA | 0.5 ppm (1,300 µg/m$^3$) |
| Carbon monoxide | 8-hour[b] | 9 ppm (10,000 µg/m$^3$) | NA |
| | 1-hour[b] | 35 ppm (40,000 µg/m$^3$) | NA |
| Nitrogen dioxide | Annual | 0.053 ppm (100 µg/m$^3$) | 0.053 ppm (100 µg/m$^3$) |
| | 1-hour[e] | 0.100 ppm | NA |
| Ozone | 8-hour[f] | 0.075 ppm (147 µg/m$^3$) | 0.075 ppm (147 µg/m$^3$) |
| | 1-hour[g] | 0.12 ppm (235 µg/m$^3$) | 0.12 ppm (235 µg/m$^3$) |
| Lead | 3-month rolling[h] | 0.15 µg/m$^3$ | 0.15 µg/m$^3$ |
| | Quarterly | 1.5 µg/m$^3$ | 1.5 µg/m$^3$ |

[a] Due to a lack of evidence linking health problems to long-term exposure to coarse particle pollution, the United States Environmental Protection Agency revoked the annual $PM_{10}$ standard of 50 µg/m$^3$ in 2006 (effective December 17, 2006).

[b] Not to be exceeded more than once per year.

[c] To attain this standard, the 3-year average of the weighted annual mean particulate matter less than 2.5 microns in diameter concentrations from single- or multiple community-oriented monitors must not exceed 15.0 µg/m$^3$.

[d] To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m$^3$ (effective December 17, 2006).

[e] To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm (effective January 22, 2010).

[f] To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations, measured at each monitor within an area over each year, must not exceed 0.075 ppm (effective May 27, 2008).

[g] The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is < 1. As of June 15, 2005, EPA revoked the 1-hour ozone standard in all areas, except the fourteen 8-hour ozone nonattainment Early Action Compact Areas.

[h] Final rule signed October 15, 2008.

Notes:

µg = Microgram(s)
m$^3$ = Cubic meter(s)
NA = Not applicable
ppm = Part(s) per million

Source: EPA 2009a.

EPA uses four classifications to define relative air quality within specified zones in the United States. These four classifications are:

- Attainment – areas where the ambient air concentration of a pollutant is less than the NAAQS;
- Nonattainment – areas where the ambient air concentration of a pollutant is greater than the NAAQS;
- Maintenance – areas previously designated as nonattainment areas that have more recently demonstrated compliance with the NAAQS and are treated as attainment areas for the purposes of permitting stationary sources (individual states may have specific provisions to ensure that the area would continue to comply with the NAAQS); and
- Unclassifiable – areas where no ambient air quality data are available. Unclassifiable areas are treated as attainment areas for the purposes of permitting stationary sources.

A network of ambient air quality monitoring stations has been established by EPA and state and local agencies to measure and track the background concentrations of criteria pollutants across the United States, and to assist in designation of nonattainment areas. To characterize the background air quality in the regions surrounding the proposed Project area, data from air quality monitoring stations were obtained. A summary of the available regional background air quality concentrations for 2008 is presented in Table 3.12.1-3.

The proposed Project would pass through areas in Texas that are classified as nonattainment areas for the 8-hour ozone federal standard. These areas include Liberty, Hardin, Jefferson, Harris, and Chambers counties. While ozone is not emitted directly into the air, it typically develops within inversion-layers in the presence of sunlight (ultraviolet light) through photochemical reactions between atmospheric oxygen, oxides of nitrogen (NOx), and volatile organic compounds (VOCs). The major sources of NOx and VOC precursor emissions include motor vehicles, industrial facilities, electric utilities, gasoline storage facilities, chemical solvents, and biogenic sources. During the construction and operation phases of the proposed Project, some NOx and VOC precursor emissions could occur within designated nonattainment areas (e.g. through the use of motor vehicles and temporary fuel storage facilities) and therefore a General Conformity Determination is required (see Sections 3.12.1.2 and 3.12.1.3).

**TABLE 3.12.1-3**
**2008 Regional Background Air Quality Concentrations for the Project [a]**

| Location | $PM_{10}$ ($\mu g/m^3$) 24-Hr[b] | $PM_{2.5}$ ($\mu g/m^3$) Annual | $PM_{2.5}$ ($\mu g/m^3$) 24-Hr[c] | $SO_2$ (ppm) Annual | $SO_2$ (ppm) 24-Hr[b] | $SO_2$ (ppm) 3-Hr[b] | CO (ppm) 8-Hr[b] | CO (ppm) 1-Hr[b] | $NO_2$ (ppm) Annual | $O_3$ (ppm) 8-Hr[d] | $O_3$ (ppm) 1-Hr[b] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Montana** | | | | | | | | | | | |
| Flathead County | -- | -- | -- | -- | -- | -- | 1.9 | 3.4 | -- | 0.057 | 0.061 |
| Rosebud County | 45 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Yellowstone County | -- | 6.66 | 15.7 | 0.004 | 0.021 | 0.043 | -- | -- | -- | -- | -- |
| **South Dakota** | | | | | | | | | | | |
| Jackson County | 56 | 5.80 | 12.8 | 0.002 | 0.005 | 0.006 | -- | -- | 0.001 | 0.052 | 0.058 |
| Meade County | 32 | -- | -- | -- | -- | -- | -- | -- | -- | 0.060 | 0.068 |
| Pennington County | 110 | 8.16 | 21.6 | -- | -- | -- | -- | -- | -- | -- | -- |
| **Nebraska** | | | | | | | | | | | |
| Douglas County | 124 | 9.81 | 22.0 | 0.002 | 0.017 | 0.050 | 2.0 | 2.9 | -- | 0.058 | 0.068 |
| Hall County | -- | 8.21 | 18.6 | -- | -- | -- | -- | -- | -- | -- | -- |
| Lancaster County | -- | 8.30 | 23.4 | -- | -- | -- | 1.8 | 4.5 | -- | 0.051 | 0.059 |
| **Kansas** | | | | | | | | | | | |
| Sedgwick County | 62 | 10.15 | 22.9 | -- | -- | -- | 1.5 | 2.7 | 0.009 | 0.067 | 0.077 |
| Shawnee County | 49 | 10.47 | 19.5 | -- | -- | -- | -- | -- | -- | 0.065 | 0.072 |
| Sumner County | -- | 9.48 | 22.3 | 0.002 | 0.003 | 0.004 | -- | -- | 0.004 | 0.068 | 0.080 |
| **Oklahoma** | | | | | | | | | | | |
| Creek County | -- | -- | -- | -- | -- | | -- | -- | -- | 0.069 | 0.085 |
| Kay County | 84 | -- | -- | 0.003 | 0.018 | 0.037 | 0.3 | 0.3 | -- | 0.069 | 0.090 |
| Lincoln County | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.061 | 0.073 |
| Tulsa County | 77 | 12.10 | 24.7 | 0.007 | 0.036 | 0.067 | 1.3 | 1.9 | 0.011 | **0.079** | 0.099 |
| **Texas** | | | | | | | | | | | |
| Gregg County | -- | -- | -- | 0.002 | 0.013 | 0.055 | -- | -- | 0.007 | 0.071 | 0.101 |
| Harris County | 127 | 14.26 | 32.4 | 0.002 | 0.015 | 0.046 | 5.2 | 8.1 | 0.015 | **0.083** | 0.122 |
| Jefferson County | -- | 10.41 | 32.6 | 0.003 | 0.018 | 0.064 | 0.7 | 1.7 | 0.008 | **0.078** | 0.099 |

[a] The values shown are the highest reported during the year by all monitoring sites in a county.
[b] Data represents the second-highest daily maximum concentrations.
[c] Data represents the 98th percentile of 24-hour average $PM_{2.5}$ concentrations.
[d] Data represents the fourth-highest daily maximum 8-hour average ozone concentrations.

Notes:
µg = Microgram(s)
CO = Carbon monoxide
$m^3$ = Cubic meter(s)
$NO_2$ = Nitrogen dioxide
$O_3$ = Ozone
ppm = Part(s) per million
$PM_{10}$ = Particulate matter less than 10 microns in diameter
$PM_{2.5}$ = Particulate matter less than 2.5 microns in diameter
$SO_2$ = Sulfur dioxide

Source: EPA 2009b.

### 3.12.1.2 Regulatory Requirements

The Clean Air Act (CAA) and its implementing regulations (42 USC 7401 et seq., as amended in 1977 and 1990) are the basic federal statutes and regulations governing air pollution in the United States. The following requirements have been reviewed for applicability to the proposed Project:

- New Source Review (NSR)/Prevention of Significant Deterioration (PSD);
- Air Quality Control Regions (AQCRs);
- New Source Performance Standards (NSPS);
- National Emission Standards for Hazardous Air Pollutants (NESHAPs)/Maximum Achievable Control Technology (MACT);
- Chemical Accident Prevention Provisions;
- Title V Operating Permits/State Operating Permits;
- Other Applicable State Permits;
- General Conformity Rule; and
- Greenhouse Gases (GHG).

#### New Source Review/Prevention of Significant Deterioration

The NSR permitting program was established as part of the 1977 Clean Air Act Amendments (CAAA). NSR is a preconstruction permitting program that is designed to ensure that air quality is not significantly degraded from the addition of new or modified major emissions sources.[1] In poor air quality areas, NSR requires that new emissions do not inhibit progress toward cleaner air. In addition, the NSR program requires that any large new or modified industrial source would be as clean as possible, and that the best available pollution control is utilized. The NSR permit establishes allowable construction procedures, emission source operations, and applicable emission limits relevant to the permitted action.

If construction or modification of a major stationary source would result in emissions greater than the established significance threshold for a pollutant within an attainment area, the project must be reviewed in accordance with PSD regulations. Construction or modification of a major or, in some jurisdictions, non-major stationary source in a designated nonattainment or designated maintenance area (Section 175A) requires that the project be reviewed in accordance with nonattainment NSR regulations.

The proposed Project includes the construction of a tank farm within a designated attainment area in Cushing, Oklahoma. The proposed tank farm includes three crude oil storage tanks, each with a capacity of 350,000 barrels (14,700,000 gallons). Estimated emissions are less than the 100-ton-per year (tpy) significance threshold level for a petroleum storage and transfer unit with a total storage capacity exceeding 300,000 barrels (i.e., one of the 28 named source types subject to the 100 tpy significance threshold for PSD permitting; see Table 3.12.1-4). In addition, mobile source emissions and fugitive emissions during the construction phase would be excluded from the determination of "potential to emit"

[1] A major stationary pollutant source in a nonattainment area has the potential to emit more than 100 tpy of any criteria pollutant. In PSD areas, the threshold level may be either 100 or 250 tpy, depending on whether the source is classified as one of the 28 named source categories listed in Section 168 of the CAA.

for applicability purposes in accordance with the CAA. Therefore, the proposed tank farm would not trigger PSD review.

**TABLE 3.12.1-4**
**Estimated Emissions from the Cushing Tank Farm in Oklahoma**

| Emission Unit | VOC (tpy) | Total HAPs (tpy) | Maximum Individual HAP (tpy) |
|---|---|---|---|
| Crude Oil Tank #1 | 12.71 | 0.37 | 0.34 (hexane) |
| Crude Oil Tank #2 | 12.71 | 0.37 | 0.34 (hexane) |
| Crude Oil Tank #3 | 12.71 | 0.37 | 0.34 (hexane) |
| Fugitive Emissions | 5.10 | 0.46 | 0.36 (hexane) |
| Total | 43.23 | 1.57 | 1.38 (hexane) |

Notes:
tpy = Tons per year
HAP = Hazardous air pollutant
Source: Keystone 2010a.

The proposed Project also includes construction and operation of two (primary and back-up) surge relief tanks within a designated nonattainment area in Jefferson County, Texas at the end of the Gulf Coast Segment. Each tank would have a capacity of approximately 10,417 barrels (435,514 gallons) with two carbon adsorption beds each, in series, for an approximate 90 percent removal of VOC emissions. Although the actual number of surge relief events that could occur during proposed Project operations is not known, the emissions estimates were based on Keystone estimate that there would be an average of one surge relief event per month for a total of 12 surge relief events per year. In that scenario, estimated emissions would be less than the 100-ton-per year (tpy) significance threshold level for a new source subject to nonattainment area pre-construction review requirements in a moderate ozone nonattainment area (see Table 3.12.1-5). Mobile source emissions and fugitive emissions during the construction phase would be excluded from the determination of "potential to emit" for applicability purposes in accordance with the CAA. Based on those assumptions, the proposed surge relief tanks would not trigger NSR review.

**TABLE 3.12.1-5**
**Estimated Emissions from the Surge Relief Tanks in Texas**

| Emission Unit | VOC (tpy) | Total HAPs (tpy) | Maximum Individual HAP (tpy) |
|---|---|---|---|
| Surge Relief Tanks (12 events per year) | 1.33 | 0.039 | 0.0113 (cyclohexane) |
| Fugitive Emissions | 14.69 | 0.740 | 0.206 (xylene) |
| Total | 16.02 | 0.779 | 0.208 (xylene) |

Notes:
tpy = Tons per year
HAP = Hazardous air pollutant
Source: Keystone 2010a.

During construction, temporary diesel-fired generator engines could be used at temporary construction camps if commercial electrical power is unavailable. These camps would be located within designated attainment areas near Nashua and Baker, Montana, and Union Center and Winner, South Dakota. If

commercial electrical power is acquired from local utilities, emergency back-up temporary diesel-fired generator engines could still be used at these locations. The temporary diesel-fired generator engines would be considered nonroad engines under 40 CFR 89.2 if they meet the definitions of portable or transportable, and are on location for less than 12 consecutive months. Nonroad engine emissions would be excluded from the determination of "potential to emit" for applicability purposes in accordance with the CAA. Consequently, emissions would be less than the 250 tpy significance threshold level, and PSD review would not be triggered. However, if the temporary diesel-fired generator engines are considered stationary rather than nonroad, estimated emissions would still be less than the 250 tpy significance threshold level (see Tables 3.12.1-6 and 3.12.1-7 and PSD review would not be triggered.

**TABLE 3.12.1-6**
**Estimated Emissions Per Construction Camp [a, b]**

| Pollutant | Annual Emissions (tpy) |
|---|---|
| Nitrogen Oxides + Nonmethane Hydrocarbon | 61.80 |
| Carbon Monoxide | 54.07 |
| Particulate Matter | 3.09 |
| Sulfur Oxides | 4.31 |
| Lead | 7.2e-04 |

Notes:
tpy = Tons per year
[a] Emission estimates include four, 400-kW generator engines per camp.
[b] Engines would be "Tier 3" certified and assumed to operate 8,760 hours per year for worst-case emissions.
Source: Keystone 2009c.

**TABLE 3.12.1-7**
**Estimated Emissions Per Emergency Generator [a, b]**

| Pollutant | Annual Emissions (tpy) |
|---|---|
| Nitrogen Oxides + Nonmethane Hydrocarbon | 15.45 |
| Carbon Monoxide | 13.52 |
| Particulate Matter | 0.77 |
| Sulfur Oxides | 1.08 |
| Lead | 1.8e-04 |

Notes:
tpy = Tons per year
[a] Emission estimates include one, 400-kW generator engine.
[b] Engine would be "Tier 3" certified and assumed to operate 8,760 hours per year for worst-case emissions.
Source: Keystone 2009c.

The proposed Project also includes construction and operation of back-up generators and associated fuel tanks located at MLV stations. Emissions would be negligible since the units would only operate in upset conditions. Consequently, emissions would be less than the 250 tpy significance threshold level, and PSD review would not be triggered.

## Air Quality Control Region

Air Quality Control Regions (AQCRs) are categorized as Class I, Class II, or Class III. Class I areas (commonly called "pristine areas") include:

- International parks;
- National wilderness areas that exceed 5,000 acres in size;
- National memorial parks that exceed 5,000 acres in size; and
- National parks that exceed 6,000 acres and were in existence on August 7, 1977 (the effective date of the 1977 Amendments).

In addition, Indian tribes that have received "Treatment in the Same Manner as a State" (TAS) designations can redesignate Class II tribal lands to Class I. Class II areas include all attainment and not classifiable areas not designated as Class I areas (unless subsequently redesignated). Class III areas are not defined in the statute and refer to areas wherein a state decides not to afford the protections associated with either the pristine or Class II areas. Class III designations are intended for heavily industrialized zones, must meet all requirements outlined in 40 CFR Part 51.166 and can be made only on request.

If a new source (or a major modification to an existing source) is subject to the PSD program requirements and is within 62 miles (100 kilometers) of a Class I area, the proposed facility is required to notify the appropriate federal officials and to assess the impacts of the proposed project on the Class I area. The following Class I areas are within 62 miles (100 kilometers) of the Project ROW: Badlands/Sage Creek Wilderness and Badlands National Park in South Dakota; Theodore Roosevelt National Park in North Dakota; and Fort Peck Indian Reservation in Montana. However, the proposed Project does not include construction or operation of significant stationary sources of air pollutants subject to the PSD program requirements. Therefore, the proposed Project does not trigger a federal Class I area impact assessment.

## New Source Performance Standards

The New Source Performance Standards (NSPS), codified at 40 CFR Part 60, establish requirements for new, modified, or reconstructed units in specific source categories. NSPS requirements include emission limits, monitoring, reporting, and record keeping.

As described previously, the proposed Project includes construction of a tank farm in Cushing, Oklahoma and a surge relief tank in Jefferson County, Texas. The regulation at 40 CFR 60 Subpart Kb applies to storage vessels containing volatile organic liquids (VOLs) with a capacity greater than 75 $m^3$ (approximately 19,800 gallons). As stated in 40 CFR 60.112b(a), the owner or operator of a storage vessel with a design capacity greater than or equal to 151 $m^3$ (approximately 39,900 gallons) containing a VOL that has a maximum true vapor pressure greater than or equal to 5.2 kPa (approximately 0.7 psia) shall equip each storage vessel with one of several control options:

- A fixed roof in combination with an internal floating roof;
- An external floating roof;
- A closed vent system and control device; or
- A system equivalent to those described above.

The crude oil tanks to be located at the Cushing, Oklahoma tank farm and the surge relief tanks to be located at Nederland, Texas, would be installed with a fixed roof in combination with an internal floating roof, or an external floating roof. If internal floating roofs are the selected technology, as required by 40 CFR 60.112b(a)(1)(ii), each internal floating roof would be equipped with a mechanical shoe seal (a metal sheet connected by braces to the floating roof and held against the wall of the storage vessel by springs or weighted levers). A flexible coated fabric envelope would span the "annular space" between the metal sheet and the floating roof. If external roofs are the selected technology, as required by 40 CFR 112b(a)(2)(i), each external floating roof would be equipped with a closure device between the wall of the storage vessel and the roof edge. The closure device would consist of a lower primary seal, and an upper secondary seal. The proposed Project would be required to comply with all applicable provisions of Subpart Kb, and the General Provisions in 40 CFR 60 Subpart A.

During construction, temporary fuel storage systems would be located at contractor yards and pipe yards. Each system would consist of temporary aboveground 10,000- to 20,000-gallon onroad and off-road diesel skid mounted tanks and/or 9,500-gallon gasoline fuel trailers. Normally, a two to three day supply of fuel would be maintained in storage, resulting in approximately 30,000 gallons in storage volume at each fuel storage location. The regulatory applicability of 40 CFR 60 Subpart XX depends on the gasoline throughput of transfer facilities. As long as the throughput of proposed Project transfer facilities are less than 75,700 liters per day (i.e., 19,998 gallons per day), they would be exempt from Subpart XX. In addition, fuel tanks smaller than 75 $m^3$ (19,800 gallons) constructed after July 23, 1984 would be exempt from the requirements of 40 CFR 60 Subpart Kb.

Construction camp generator engines in Montana and South Dakota that are on site less than 12 months and that qualify as nonroad engines per 40 CFR 89.2 would not be considered stationary units and would not be subject to 40 CFR 60 Subpart IIII. However, back-up generators at MLV stations would be stationary units subject to 40 CFR 60 Subpart IIII. The regulations at 40 CFR 60 Subpart IIII apply to stationary compression ignition internal combustion engines manufactured after April 1, 2006 or modified or reconstructed after July 11, 2005. Subpart IIII requires that these engines be certified to meet the emission standards in 40 CFR 60.4201 for nitrogen oxides (NOx), particulate matter (PM), carbon monoxide (CO), and non-methane hydrocarbons (NMHC). In addition, owners and operators of the engines must use low sulfur fuel, and beginning October 1, 2010, ultra low sulfur fuel. The regulation has specific provisions for emergency engines starting in 40 CFR 60.4202.

No other subparts would apply because the proposed Project does not include construction or operation of any other specific source category of air pollutants.

### National Emission Standards for Hazardous Air Pollutants/Maximum Achievable Control Technology

National Emission Standards for Hazardous Air Pollutants/Maximum Achievable Control Technology (NESHAPs), codified in 40 CFR Parts 61 and 63, regulate hazardous air pollutant (HAP) emissions. Part 61 was promulgated prior to the 1990 CAAA and regulates only eight types of hazardous substances (asbestos, benzene, beryllium, coke oven emissions, inorganic arsenic, mercury, radionuclides, and vinyl chloride). The proposed Project would not include facilities that fall under one of the source categories regulated by Part 61; therefore, the requirements of Part 61 are not applicable.

The 1990 CAAA established a list of 189 additional HAPs, resulting in the promulgation of Part 63. Also known as the Maximum Achievable Control Technology (MACT) standards, Part 63 regulates HAP emissions from major sources, area sources, and specific source categories. Part 63 considers any source with the potential to emit 10 tpy of any single HAP or 25 tpy of HAPs in aggregate as a major source of HAPs. Area sources consist of smaller-size facilities that release lesser quantities of HAPs that are of concern when large numbers of sources are located in heavily populated areas. As currently projected,

neither the Cushing tank farm nor any other proposed Project facilities would have the potential to emit HAP emissions greater than 10 tpy for a single HAP, nor would they have the potential to emit multiple HAPs at a quantity equal to or greater than 25 tpy. The proposed Project facilities therefore would not be considered a major source of HAP emissions. However, the proposed Project would require the use of stationary engines at the MLV stations and may require the use of stationary engines at construction work camps if local electrical power is not available. Those engines would be subject to area source provisions in 40 CFR 63 Subpart ZZZZ for stationary reciprocating internal combustion engines (RICE). If the generator engines are located at construction camps for less than 12 months and considered nonroad engines per 40 CFR 89.2, the engines would not be considered stationary units nor would they be subject to this subpart.

### Chemical Accident Prevention Provisions

The chemical accident prevention provisions, codified in 40 CFR Part 68, are federal regulations designed to prevent the release of hazardous materials in the event of an accident and to minimize potential impacts if a release did occur. The regulations contain a list of substances and threshold quantities for determining applicability to stationary sources. If a stationary source stores, handles, or processes one or more substances on this list in a quantity equal to or greater than specified in the regulation, the facility must prepare and submit a Risk Management Plan. If a facility does not have a listed substance onsite, or if the quantity of a listed substance is below the applicability threshold, the facility does not need to prepare a Risk Management Plan. No hazardous materials subject to the Chemical Accident Prevention Provision/Risk Management Plan (40 CFR Part 68) would be stored at any of the proposed Project aboveground facilities.

### Title V Operating Permits/State Operating Permits

Title V of the federal CAA requires individual states to establish an air operating permit program. The requirements of Title V are outlined in 40 CFR Parts 70 and 71, and the permits required by these regulations are often referred to as Part 70 or 71 permits. The permit includes air pollution requirements that apply to an emissions source, including emissions limits and monitoring, record keeping, and reporting requirements. It also requires that the emissions source report its compliance status with respect to permit conditions to the permitting authority. Operating permits (also known as Title V permits) are required for all major stationary sources. What constitutes a major source varies according to what pollutant(s) are being emitted and the attainment designation of the area where the source is located. In general, a source is considered to be a major source under Title V if it emits or has the potential to emit:

- 100 tpy or more of any criteria air pollutant in an attainment area[2];
- 10 tpy or more of a single HAP; or
- 25 tpy of cumulative HAPs.

During construction, temporary diesel-fired generator engines could be used at temporary construction camps if commercial electrical power is unavailable. These camps would be located within designated attainment areas near Nashua and Baker, Montana, and Union Center and Winner, South Dakota. If commercial electrical power is acquired from local utilities, emergency back-up temporary diesel-fired

[2] Lower thresholds apply in nonattainment areas (but only for the pollutant that are in nonattainment). For the Beaumont-Port Arthur 8-hour ozone nonattainment area, the region is currently classified as moderate nonattainment. For moderate ozone nonattainment, the thresholds are 100 tpy or more of VOCs or NOx.

generator engines could still be used at these locations. In Montana, the State of Montana Department of Environmental Quality (MDEQ) has authority to implement the Title V program. Regulations are contained in the Administrative Rules of Montana, Title 17, Chapter 8, Subchapter 12. The diesel-fired generator engines and emergency back-up generators at each camp in Montana would not have potential emissions that exceed the Title V threshold of 100 tpy (see Tables 3.12.1-6 and 3.12.1-7). Consequently, proposed temporary construction camps in Montana would not trigger Title V permitting.

In South Dakota, the State of South Dakota Department of Environment and Natural Resources (SD DENR) has authority to implement the Title V program, and operating permit program for minor sources not subject to Title V. Regulations are contained in the Administrative Rules of South Dakota, Chapters 74:36:04-05. SD DENR exempts sources from the requirements for a minor operating permit as described in Chapter 74:36:04:03, including facilities that have the potential to emit 25 tons or less per year of any criteria pollutant. The diesel-fired generator engines and emergency back-up generators at each camp in South Dakota would not have potential emissions that exceed the Title V threshold of 100 tpy (see Tables 3.12.1-6 and 3.12.1-7). However, the generator engines would have potential emissions greater than the minor operating permit threshold. Consequently, Project camps in South Dakota would not trigger Title V permitting, but appear to trigger the need for a minor operating permit unless exemptions exist and are met for temporary nonroad engines.

As described previously, the proposed Project includes construction of a tank farm in Cushing, Oklahoma. In Oklahoma, the State of Oklahoma Department of Environmental Quality (ODEQ) has authority to implement the Title V Operating Permits Program. Air pollution control regulations are contained in Oklahoma Administrative Code, Title 252, Chapter 100. The Cushing tank farm has emissions below the Title V permit thresholds (see Table 3.12-4). In addition, tanks subject to 40 CFR 60 Subpart Kb are not required to obtain a Title V permit if emissions are below Title V major thresholds. Consequently, the tank farm would not trigger Title V permitting.

The proposed Project would also include construction and operation of two surge relief tanks in Jefferson County, Texas at the end of the Gulf Coast Segment. In Texas, the State of Texas Commission of Environmental Quality (TCEQ) has authority to implement the Title V Operating Permits Program. Air pollution control regulations are contained in Texas Administrative Code, Title 30, Chapter 122. The TCEQ requires a Title V operating permit for all sources that have potential emissions of 100 tpy or more of any criteria air pollutant, 10 tpy or more of a single HAP, or 25 tpy of cumulative HAPs (see footnote 2). The surge relief tanks would have emissions below the Title V permit thresholds (see Table 3.12-5). In addition, tanks subject to 40 CFR 60 Subpart Kb are not required to obtain a Title V permit if emissions are below Title V major thresholds. Consequently, the relief tanks would not trigger Title V permitting.

The proposed Project also includes construction and operation of back-up generators and associated fuel tanks located at MLV stations. Emissions would be negligible since the units would only operate in upset conditions. However, the engines would be subject to 40 CFR 60 Subpart IIII and 40 CFR 63 Subpart ZZZZ. Consequently, Title V permitting may be required at locations where state agencies require a permit based on federal regulation applicability.

### State Preconstruction Permits

In Montana, MDEQ requires preconstruction air quality permits under the Administrative Rules of Montana (ARM), Title 17, Chapter 8, Subchapter 7. Permitting is required for sources that have potential emissions that exceed 25 tpy and are not excluded under ARM 17.8.744 (i.e., emergency back-up generators). The temporary diesel-fired generator engines at each camp in Montana would have potential emissions that exceed the preconstruction permit threshold of 25 tpy (see Tables 3.12.1-6 and 3.12.1-7).

Consequently, Project camps in Montana would appear to trigger requirements for preconstruction permitting unless exemptions exist and are met for temporary nonroad engines.

In Oklahoma, ODEQ requires preconstruction air quality permits (major and minor) under Oklahoma Administrative Code, Title 252, Chapter 100. Permitting is required for all sources with actual emissions greater than 5 tpy. The Cushing tank farm would have emissions above the minor permit thresholds (see Table 3.12-4). Consequently, the tank farm would trigger preconstruction permitting.

In Texas, TCEQ requires preconstruction air quality permits under Texas Administrative Code, Title 30, Chapter 116. Permitting is required for all sources except those considered de minimis for air emissions. State air authorizations for activities that produce more than a de minimis level of emissions but less than other NSR permitting options (i.e., less than 25 tpy of $SO_2$, $PM_{10}$, and VOC; less than 250 tpy CO; and less than 100 tpy NOx) qualify for a permit by rule. The surge relief tanks are not a listed de minimis source, and have emissions less than NSR permitting thresholds (see Table 3.12-5). Consequently, the relief tanks would trigger the requirements for a permit by rule.

For emergency generators at MLV stations, preconstruction permitting may be required by state agencies that require a permit based on federal regulation applicability. Emissions would be negligible since the units would only operate in upset conditions. However, the engines would be subject to 40 CFR 60 Subpart IIII and 40 CFR 63 Subpart ZZZZ.

### General Conformity Rule

The General Conformity Rule was designed to compel federal agencies to require that proposed projects conform to the applicable State Implementation Plan (SIP). General Conformity regulations apply for pollutant emissions within project areas designated as nonattainment for these pollutant emissions (or, for ozone, its precursors NOx and VOC) that are not subject to NSR and where pollutant emissions are greater than the significance thresholds established in the General Conformity regulations or exceed 10 percent of the total emissions budget for the entire nonattainment area. Federal agencies are able to make a positive conformity determination when:

- Emissions from the project are specifically identified and accounted for in the SIP attainment or maintenance demonstration; or
- Emissions from the action are fully offset within the same area through a revision to the SIP, or a similarly enforceable measure that creates emissions reductions so that there is no net increase in emissions of that pollutant.

For the proposed Project, Liberty, Hardin, Jefferson, Harris, and Chambers counties in Texas are designated as nonattainment areas for the 8-hour federal ozone standard (precursors are $NO_X$ and VOC). Therefore, emissions of NOx and VOCs from sources related to the proposed Project would be considered under the General Conformity Rule, including a comparison of potential emissions to applicability threshold levels and a conformity determination if the emissions are greater than applicability threshold levels. For more details on Keystone's General Conformity analysis, see Section 3.12.1.3 and Appendix Q.

### Greenhouse Gases

On October 30, 2009, the EPA promulgated the first comprehensive national system for reporting emissions of carbon dioxide ($CO_2$) and other GHG produced by major sources in the United States. Through this new reporting, EPA will have comprehensive and accurate data about the production of GHG in order to confront climate change. Approximately 13,000 facilities, accounting for about 85 to 90

percent of industrial GHG emitted in the United States are covered under the rule. The new reporting requirements apply to suppliers of fossil fuel and industrial chemicals, manufacturers of certain motor vehicles and engines (not including light and medium duty on-road vehicles), as well as large direct emitters of GHG with emissions equal to or greater than a threshold of 25,000 metric tpy. This threshold is equivalent to the annual GHG emissions from just over 4,500 passenger vehicles. The direct emission sources covered under the reporting requirement include energy intensive sectors such as cement production, iron and steel production, electricity generation, and oil refineries, among others. The gases covered by the rule are $CO_2$, methane ($CH_4$), nitrous oxide ($N_2O$), hydrofluorocarbons (HFC), perfluorocarbons (PFC), sulfur hexafluoride ($SF_6$), and other fluorinated gases, including nitrogen trifluoride ($NF_3$) and hydrofluorinated ethers (HFE). Because $CO_2$ is the reference gas for climate change, measures of non-$CO_2$ GHG are converted into $CO_2$-equivalent values ($CO_2$-e) based on their potential to absorb heat in the atmosphere. The first annual report would be submitted to EPA in 2011 for the calendar year 2010, except for vehicle and engine manufacturers, which would begin reporting for model year 2011.

According to the preamble of the rule, the U.S. petroleum and natural gas industry encompasses hundreds of thousands of wells, hundreds of processing facilities, and over a million miles of transmission and distribution pipelines. Crude oil is commonly transported by barge, tanker, rail, truck, and pipeline from production operations and import terminals to petroleum refineries or export terminals. Typical equipment associated with these operations includes storage tanks and pumping stations. The major sources of $CH_4$ and $CO_2$ fugitive emissions include releases from tanks and marine vessel loading operations. EPA did not propose to include the crude oil transportation segment of the petroleum and natural gas industry in this rulemaking due to its small contribution to total petroleum and natural gas fugitive emissions (accounting for much less than 1 percent) and the difficulty in defining a facility. The responsibility for reporting would instead be placed on the processing plants and refineries. Consequently, the proposed pipeline Project would not trigger GHG reporting requirements.

On June 2, 2010, the EPA issued a final rule that establishes an approach to addressing GHG emissions from stationary sources under the CAA permitting programs. These stationary sources would be required to obtain permits that would demonstrate they are using the best practices and technologies to minimize GHG emissions. The rule sets thresholds for GHG emissions that define when the CAA permits under the NSR/PSD and the Title V Operating Permits programs are required for new or existing industrial facilities. The rule "tailors" the requirements to limit which facilities will be required to obtain NSR/PSD and Title V permits and cover nearly 70 percent of the national GHG emissions that come from stationary sources, including those from the nation's largest emitters (e.g., power plants, refineries, and cement production facilities).

For sources permitted between January 2, 2011 and June 30, 2011, the rule requires GHG permitting for only sources currently subject to the PSD permitting program (i.e., those that are newly-constructed or modified in a way that significantly increases emissions of a pollutant other than GHG) and that emit GHG emissions of at least 75,000 tpy. In addition, only sources required to have Title V permits for non-GHG pollutants will be required to address GHG as part of their Title V permitting (note: the 75,000 tpy $CO_2$-e limit does not apply to Title V). For sources constructed from July 1, 2011 to June 30, 2013, the rule requires PSD permitting for first-time new construction projects that emit GHG emissions of at least 100,000 tpy even if they do not exceed the permitting thresholds for any other pollutant. In addition, sources that emit or have the potential to emit at least 100,000 tpy $CO_2$-e and that undertake a modification that increases net emissions of GHG by at least 75,000 tpy $CO_2$-e will also be subject to PSD requirements. Under this scenario, operating permit requirements will for the first time apply to sources based on their GHG emissions, even if they would not apply based on emissions of any other pollutant. Facilities that emit at least 100,000 tpy $CO_2$-e will be subject to Title V permitting requirements. The proposed Project is not subject to PSD and would have emissions of $CO_2$-e less than

the applicable thresholds for any of the stationary sources (i.e., construction camp, tank farm, and surge relief tanks). Note that emissions from fugitive dust and mobile sources (on-road and non-road) are not included in the emission estimates for permit applicability of a stationary source. Consequently, the proposed Project would not be subject to the federal GHG permitting rule. EPA plans further rulemaking that would possibly reduce the permitting thresholds for new and modified sources making changes after June 30, 2013.

For further information on the cumulative impacts of GHG and climate change, refer to Section 3.14.

#### 3.12.1.3 Potential Impacts and Mitigation

### Construction Impacts

Air quality impacts associated with construction of the proposed Project would include emissions from fugitive dust, fossil-fuel fired construction equipment, open burning, and temporary fuel transfer systems and associated storage tanks.

#### *Fugitive Dust*

Fugitive dust is a source of respirable airborne particulate matter, including $PM_{10}$ and $PM_{2.5}$. Fugitive dust results from land clearing, grading, excavation, concrete work, blasting and dynamiting, and vehicle traffic (including construction camp traffic) on paved and unpaved roads. The amount of dust generated is related to the type and duration of construction activities, silt and moisture content of the soil, wind speed, frequency of precipitation, vehicle traffic, vehicle types, and roadway characteristics. Fugitive dust generation would be greater in fine-textured soils during drier summer and autumn months.

Emissions of particulate matter arising from fugitive dust are regulated by state and local agencies. Typically, the regulations require measures to prevent particulates from becoming airborne, such as application of dust suppressants. Specific requirements can also include development and approval of a fugitive dust control plan. The Project would affect approximately 23,768 acres of land in six states during the construction phase. The majority of potential fugitive dust generation in a given location would occur within a 30-day construction period prior to final grading, seeding, and mulching of the ROW. Fugitive dust impacts during construction would therefore be temporary and localized.

Fugitive dust during construction would be controlled using BMPs such as applying water sprays and surfactant chemicals and quickly stabilizing disturbed areas (see CMR Plan, Appendix B). Additional dust control measures may be required by state or local ordinances.

#### *Fossil-Fueled Construction Equipment*

Construction camp generators, large earth-moving equipment, skip loaders, trucks, nonroad engines, and other mobile sources may be fueled by diesel or gasoline and are sources of combustion emissions, including NOx, CO, VOCs, $SO_2$, $PM_{10}$, $PM_{2.5}$, and small amounts of HAPs. Gasoline and diesel engines must comply with the EPA mobile source regulations in 40 CFR Part 86 for onroad engines and 40 CFR Part 89 and 90 for nonroad engines. EPA has established rules in 40 CFR 80 that require significant reductions in the sulfur content of diesel fuel used in onroad and off-road engines. As of June 1, 2006, 80 percent of diesel fuel for onroad use was required to have a sulfur content no greater than 15 ppm. As of June 1, 2007, diesel fuel for nonroad engines was required to have a sulfur content no greater than 500 ppm. As of December 1, 2010, EPA required that all on and off-road (nonroad) diesel fuel would not exceed 15 ppm sulfur (i.e., ultra low sulfur fuel).

The construction equipment listed in Table 3.12.1-8 would be used in a typical construction spread. The pipeline would be constructed in 17 construction spreads (Section 2.2.5). Each spread would require approximately 6 to 8 months to complete.

**TABLE 3.12.1-8**
**Construction Equipment per Spread for the Project [a, b]**

| Equipment Description | Units per Spread | Equipment Rating (hp) | Hours of Operation (hours/day) | Fuel Type |
|---|---|---|---|---|
| Automobile | 50 | 500 | 2 | Gasoline/ Diesel |
| Bus | 7 | 190 | 3 | Diesel |
| Pickup 4x4 | 100 | 500 | 5 | Gasoline/Diesel |
| Welding Rig | 30 | 400 | 10 | Gasoline/Diesel |
| Winch Truck | 3 | 650 | 8 | Diesel |
| Dump Truck | 1 | 650 | 8 | Diesel |
| Flatbed Truck | 8 | 650 | 9 | Diesel |
| Fuel Truck | 2 | 650 | 9 | Diesel |
| Grease Truck | 1 | 1 | 9 | Diesel |
| Mechanic Rig | 1 | 500 | 10 | Diesel |
| Skid Truck | 1 | 650 | 10 | Diesel |
| Stringing Tr. and Tr. | 15 | 650 | 10 | Diesel |
| Truck and Float | 9 | 650 | 10 | Diesel |
| Truck and Lowboy | 5 | 650 | 10 | Diesel |
| D-7 Dozer | 12 | 240 | 8 | Diesel |
| D-8 Dozer | 22 | 310 | 8 | Diesel |
| D-8 Ripper | 0 | 310 | 0 | Diesel |
| D-5 Tow | 2 | 90/120 | 8 | Diesel |
| D-7 Tow | 1 | 200/240 | 8 | Diesel |
| D-6 Tack | 3 | 200 | 8 | Diesel |
| CAT 225 | 7 | 150 | 8 | Diesel |
| CAT 235 | 26 | 250 | 8 | Diesel |
| CAT 235 w/Hammer | 0-1 | 260 | 8 | Diesel |
| Bending Machine 22-36 | 1 | 159 | 8 | Diesel |
| Crane LS-98A (35 ton) | 0-2 | 230 | 8 | Diesel |
| Farm Tractor | 2 | 60 | 8 | Diesel |
| Frontend Loader 977 | 2 | 190 | 8 | Diesel |
| Motor Grader 14G | 2 | 200 | 8 | Diesel |
| Sideboom 571 | 1 | 200 | 8 | Diesel |
| Sideboom 572 | 1 | 200/230 | 8 | Diesel |
| Sideboom 583 | 22 | 300/310 | 8 | Diesel |
| Sideboom 594 | 4 | 410 | 8 | Diesel |
| Air Compressor 1750 cfm | 3-9 | 50 | 8 | Gasoline |

| TABLE 3.12.1-8<br>Construction Equipment per Spread for the Project [a, b] | | | | |
|---|---|---|---|---|
| **Equipment Description** | **Units per Spread** | **Equipment Rating (hp)** | **Hours of Operation (hours/day)** | **Fuel Type** |
| Generators | 9 | 10 | 8 | Gasoline |
| Pump – 3" | 1 | 20 | 8 | Gasoline |
| Pump - 6" | 9 | 40 | 8 | Gasoline |

[a] In addition to the equipment listed above, ten 10-hp diesel or gasoline generators could be used per spread.

[b] Construction equipment listed in this table does not directly correlate to equipment listed in Table 2.4.2-1; however, total horsepower is similar for the purposes of the air emissions analysis. In addition, the list does not include generators proposed for construction camps (emissions from generators at construction camps are included in Table 3.12.1-9).

Source: Keystone 2009c; Keystone 2010a.

Four 400-kW generator engines would be installed at construction camps near Nashua and Baker, Montana, and Union Center and Winner, South Dakota if commercial electrical power is unavailable. If commercial electrical power is acquired, one 400-kW emergency back-up generator would still be installed at these locations. All fossil-fueled construction equipment would be maintained in accordance with manufacturer's recommendations to minimize construction-related emissions.

### *Open Burning*

The burning of slash materials could be required along the route, although the quantities and locations cannot be determined prior to construction since actual slash materials may be burned, chipped, or hauled for disposal in a suitable landfill depending on construction conditions and landowner requirements.

Necessary permits for slash burning would be acquired prior to construction. Open burning regulations, including restrictions on burn location, material, and time, as well as consideration of local air quality, would be followed. Required burning would be done within the ROW in small piles to avoid damage to trees or other structures.

### *Temporary Fuel Transfer Systems and Associated Storage Tanks*

Temporary fuel storage systems would be located at contractor yards and pipe yards. Although temporary fuel transfer systems and tanks have the potential to release VOC emissions, VOC releases would be minimal since low vapor pressure diesel fuels would be the primary fuel stored.

### *Summary*

Estimates of construction emissions from the proposed Project are provided in Table 3.12.1-9. Construction air emissions typically would be localized, intermittent, and temporary since pipeline construction would move through an area relatively quickly. In addition, the total emissions listed in Table 3.12.1-9 would be the total from all of the 17 construction spreads along the proposed route. The localized emissions at each spread would be much less, likely no more than about 6 percent (1/17 of the values listed in Table 3.13.1-9). The temporary construction camps in Montana would likely trigger requirements for preconstruction permits and in South Dakota would likely trigger requirements for a minor operating permit unless exemptions apply for temporary nonroad engines. The construction-related emissions associated with the proposed Project would be temporary and localized and would not produce major long-term effects on local or regional air quality.

**TABLE 3.12.1-9**
**Estimated Direct Construction Emissions for the Proposed Project**

| Emission Source | NOx (tons) | CO (tons) | VOC (tons) | $SO_2$ (tons) | PM (tons) | $PM_{10}$ (tons) | $PM_{2.5}$ (tons) | $CO_2$-e[a] (tons) |
|---|---|---|---|---|---|---|---|---|
| Construction emissions | | | | | | | | |
| Construction camps[b] | 494.4 | 432.6 | 46.4 | 33.0 | 24.7 | 24.7 | 24.7 | 108288.0 |
| On-road vehicles | 37.5 | 232.6 | 12.9 | 0.2 | 1.4 | 1.4 | 1.4 | 16094.3 |
| Non-road equipment | 596.4 | 697.4 | 51.0 | 25.2 | 25.0 | 25.0 | 25.0 | 85162.4 |
| Open burning | 19.8 | 1159.8 | 85.2 | -- | 185.9 | 132.6 | 112.7 | 27433.0 |
| Fugitive dust | -- | -- | -- | -- | 1480.9 | 740.5 | 111.1 | -- |
| Paved road dust | -- | -- | -- | -- | 117.8 | 18.5 | 1.9 | -- |
| **Total construction emissions (3-yr combined)** | **1148.1** | **2522.4** | **195.5** | **58.4** | **1835.7** | **942.7** | **276.8** | **236977.7** |

[a] $CO_2$ equivalent is conservatively estimated by assuming all total organic compounds are methane and multiplying by 21 for the global warming potential (GWP) for methane.
[b] Construction camp emission estimates include four construction camps with four, 400-kW generator engines per camp operating for 2 years.

Notes:

NOx = Oxides of nitrogen.
CO = Carbon monoxide.
VOC = Volatile organic compounds.
$SO_2$ = Sulfur dioxide.
PM = Particulate matter.
$PM_{10}$ = Particulate matter less than 10 microns in diameter.
$PM_{2.5}$ = Particulate matter less than 2.5 microns in diameter.
$CO_2$-e = Carbon dioxide equivalents.

Source: Keystone 2009c; Keystone 2010a.

## Operations Impacts

Estimated air emissions associated with the operation of the proposed Project are provided in Table 3.12.1-10. Operational impacts would include minimal fugitive emissions from crude oil pipeline connections and pumping equipment at the pump stations, minimal emissions from mobile sources, and VOC and HAP emissions from the crude oil storage tanks at the Cushing tank farm and the surge relief tanks in Jefferson County, Texas. Pipeline pumps would be electrically powered. MLVs would have back-up generators for emergencies and upsets; therefore, emissions would be negligible.

Operational emissions for the Cushing tank farm were estimated assuming that each tank would have an internal self-supporting roof, that each tank would undergo 32 product turnovers annually and that each tank would have a mechanical shoe seal (primary) with no secondary seal. These estimated operational emissions suggest that the proposed Project would not cause or contribute to a violation of any federal, state, or local air quality standards, and also suggest that the proposed Project operations would not trigger the requirement for a Title V operating permit, although they would likely trigger the requirement for a preconstruction permit.

The proposed Project also includes operation of two surge relief tanks in Jefferson County, Texas. The tanks would have a capacity of 10,417 barrels each (435,514 gallons). The surge relief tanks would not trigger the requirement for a Title V operating permit, but would trigger the requirement for a preconstruction permit. Although located in a nonattainment area, the tanks would not trigger NSR review.

**TABLE 3.12.1-10**
**Estimated Direct Operations Emissions for the Proposed Project**

| Emission Source | NOx (tpy) | CO (tpy) | VOC (tpy) | $SO_2$ (tpy) | PM (tpy) | $PM_{10}$ (tpy) | $PM_{2.5}$ (tpy) | $CO_2$-e[a] (tpy) |
|---|---|---|---|---|---|---|---|---|
| Operating emissions | | | | | | | | |
| Tank farm | -- | -- | 43.23 | -- | -- | -- | -- | -- |
| Surge relief tanks[b] | -- | -- | 16.02 | -- | -- | -- | -- | -- |
| Pump station fugitives[c] | -- | -- | 6.82 | -- | -- | -- | -- | 84.63 |
| On-road vehicles[d] | 6.7E-05 | 1.5E-03 | 7.2E-05 | 8.0E-07 | 3.7E-02 | 5.8E-03 | 5.7E-04 | 4.3E-02 |
| **Total operating emissions** | **6.7E-05** | **1.5E-03** | **66.07** | **8.0E-07** | **3.7E-02** | **5.8E-03** | **5.7E-04** | **84.63** |

[a] $CO_2$ equivalent emission is conservatively estimated by assuming all total organic compounds are methane and multiplying by 21 for the global warming potential (GWP) for methane.

[b] Emissions are for 12 surge relief events per year.

[c] Pump station emissions include combined emissions from 30 pumping stations along the Steele City and Gulf Coast Segments. The $CO_2$ equivalent emissions listed for pump stations is for emissions from maintenance vehicles traveling to and from the pump stations. There are no $CO_2$ equivalent emissions from pump stations.

[d] The operational emissions noted from onroad vehicles include mobile emissions from the Cushing tank farm only.

Notes:

NOx = Oxides of nitrogen
CO = Carbon monoxide
VOC = Volatile organic compounds
$SO_2$ = Sulfur dioxide
PM = Particulate matter
$PM_{10}$ = Particulate matter less than 10 microns in diameter
$PM_{2.5}$ = Particulate matter less than 2.5 microns in diameter
$CO_2$-e = Carbon dioxide equivalents

Source: Keystone 2009c; Keystone 2010a.

## General Conformity

Section 176(c) of the CAA prohibits federal actions in nonattainment or PSD maintenance areas that do not conform to the relevant SIP for the attainment and maintenance of NAAQS. Therefore, the purpose of the General Conformity Determination is to provide that: (1) federal activities do not interfere with the emission budgets in the SIPs; (2) federal actions do not cause or contribute to new violations; and (3) the NAAQS are attained and maintained. Conformity can be demonstrated by showing: (1) that emission increases are allowed in the SIP; (2) that the state agrees to include emission increases in the SIP; (3) that no new violations of NAAQS, or that no increase in the frequency or severity of violations would occur; (4) that appropriate offsets exist; and (5) that mitigation is possible. Actions that are excluded from the General Conformity Determination include those already subject to NSR and those covered by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or other environmental laws.

The proposed Project would cross five counties that are designated as nonattainment for the federal ozone standard. Liberty, Chambers, and Harris counties are counties located in the Houston-Galveston-Brazoria 8-hour ozone nonattainment area. This area is currently classified as severe nonattainment for the 1997 8-hour ozone standard and has a maximum target date to achieve attainment for this standard of June 15, 2019. Hardin and Jefferson counties are located in the Beaumont-Port Arthur 8-hour ozone nonattainment area. This area is currently classified as moderate nonattainment for the 1997 8-hour ozone standard and has a maximum target date to achieve attainment for this standard of June 15, 2010. EPA is making a final determination that the Beaumont-Port Arthur nonattainment area has attained the 1997 8-hour ozone NAAQS, based on complete, quality-assured, and certified ambient air quality

monitoring data for 2006–2008. Preliminary data available for 2009 and 2010, show that the area continues to attain the 1997 8-hour ozone NAAQS.

Emissions of ozone precursor compounds (NOx and VOCs) would be evaluated against the General Conformity applicability threshold levels and nonattainment area emissions budgets. Written approval of conformance with the SIP would be necessary for the proposed Project if estimated emissions are above the General Conformity applicability threshold levels (see Table 3.12.1-11 for estimated emissions).

**TABLE 3.12.1-11**
**Estimated Emissions from Activities in Nonattainment Areas for the Proposed Project**

| Emission Source | NOx (tpy) | VOC (tpy) |
|---|---|---|
| **Beaumont-Port Arthur 8-hour Moderate Ozone Nonattainment Area (Hardin and Jefferson Counties, Texas)** | | |
| **Annual general conformity applicability threshold levels** | **100** | **100** |
| Construction emissions - 2011 | | |
| Onroad equipment | 3.94 | 1.45 |
| Nonroad equipment | 66.08 | 12.15 |
| Open burning | 4.75 | 22.29 |
| Total construction emissions | 74.78 | 35.89 |
| Below thresholds? | Yes | Yes |
| Operating emissions - 2012 | | |
| Surge Relief Tanks[a] | -- | 16.02 |
| Below thresholds? | Yes | Yes[a] |
| **Houston-Galveston-Brazoria 8-hour Severe Ozone Nonattainment Area (Liberty, Harris, and Chambers Counties, Texas)** | | |
| **Annual general conformity applicability threshold levels** | **25** | **25** |
| Construction emissions - 2011 | | |
| Onroad equipment | 2.51 | 0.94 |
| Nonroad equipment | 35.95 | 2.84 |
| Open burning | 1.50 | 7.01 |
| Total construction emissions | 39.96 | 10.79 |
| Below thresholds? | **No** | Yes |
| Construction emissions - 2012 | | |
| Onroad equipment | 3.87 | 1.33 |
| Nonroad equipment | 56.29 | 4.15 |
| Open burning | 5.25 | 24.64 |
| Total construction emissions | 65.41 | 30.12 |
| Below thresholds? | **No** | **No** |
| Operating emissions - 2012 | | |
| (Pump station No. 41) | -- | 0.01 |
| Below thresholds? | Yes | Yes |

[a] Emissions of VOC are for 12 surge relief events per year.

Notes:
NOx = Oxides of nitrogen
VOC = Volatile organic compounds
tpy = Tons per year

Source: Keystone 2010a; Keystone 2010b.

As shown in Table 3.12.1-11, NOx emissions for both 2011 and 2012 construction and VOC emissions for 2012 construction in the Houston-Galveston-Brazoria 8-hour ozone nonattainment area would exceed the General Conformity threshold of 25 tons per year. The emissions calculations completed for the General Conformity Determination (Keystone 2010b) for nonroad mobile sources are conservative and based on EPA's Tier 2 engine standards. Various actions as part of the Texas SIP could be used to mitigate emissions during construction activity, including:

- Utilize construction contractors that participate in the Texas Emission Reduction Plan (TERP) grant program or require contractors to apply for TERP grant funds,
- Give preference through the bidding process to "Green/Clean" Contractors,
- Require construction contracts to use diesel fuels that meet the Texas Low Emission Diesel (TxLED) standards, and
- Require construction contractors to use Best Management Practices (BMP) in relation to air quality.

When determining if a project conforms to the relevant SIP, the emissions from the project are compared to the allowable emissions inventory to determine if the expected emissions increase can be accommodated in the SIP emissions budget. As discussed in the General Conformity Determination (Keystone 2010b), TCEQ staff reviewed the May 23, 2007 revision of the Houston/Galveston Area SIP for 8-Hour Ozone and determined the 2011 and 2012 compliance year emission inventories for the construction emissions category. TCEQ staff compared the estimated proposed Project construction emissions for both NOx and VOC to the SIP emissions budget for 2011 and 2012 and determined the emissions to be below the emissions budgets allocated to the construction emissions category. Therefore, construction emissions for the proposed Project should be accounted for in the SIP emissions budget and the proposed activities would not cause new violations of the standards and/or cause an increase in the frequency or severity of previous violations.

All other emissions for construction and operations in the Beaumont-Port Arthur and Houston-Galveston-Brazoria 8-hour ozone nonattainment areas would be below the General Conformity significance thresholds (Table 3.12.1-11). Therefore, construction and operation of the proposed Project in these areas are presumed to conform to the SIP.

### 3.12.1.4 Connected Actions

#### Power Distribution Lines and Substations

The following measures, and other BMPs, would be implemented by servicing electric cooperatives or their contractors in the modification or construction of electric distribution lines and substations:

- Servicing electric cooperatives or their contractors would utilize such practicable methods and devices as are reasonably available to control, prevent, and otherwise minimize atmospheric emissions or discharges of air contaminants. Dust control watering of access roads and work areas would occur during the project when air quality is compromised by construction activities. Disturbed areas would be scarified to facilitate natural revegetation, provide for proper drainage, and prevent erosion.
- Equipment and vehicles that show excessive emissions of exhaust gases due to poor engine adjustments, or other inefficient operating conditions, would not be operated until repairs or adjustments are made.

### Big Bend to Witten 230-kV Transmission Line

The following measures, and other BMPs, would be implemented by servicing electric cooperatives or their contractors in the construction of Big Bend to Witten 230-kV transmission line:

- Servicing electric cooperatives or their contractors would utilize such practicable methods and devices as are reasonably available to control, prevent, and otherwise minimize atmospheric emissions or discharges of air contaminants. Dust control watering of access roads and work areas would occur during the project when air quality is compromised by construction activities. Disturbed areas would be scarified to facilitate natural revegetation, provide for proper drainage, and prevent erosion.
- Equipment and vehicles that show excessive emissions of exhaust gases due to poor engine adjustments, or other inefficient operating conditions, would not be operated until repairs or adjustments are made.

### Bakken Marketlink Project

The Bakken Marketlink Project would include the construction of facilities to provide crude oil transportation service from near Baker, Montana to Cushing, Oklahoma via the proposed Project and from Cushing to delivery points at Nederland and Moore Junction, Texas via the proposed Project. The Bakken Marketlink Project would consist of piping, booster pumps, meter manifolds, and two tank terminals; one terminal would be at or near Baker, Montana, and the second would be at the proposed Cushing tank farm. The tank farm near Baker would consist of two, 250,000-barrel tanks that would be used to accumulate crude from connecting third-party pipelines and terminals and a 100,000-barrel tank that would be used for operational purposes. The Bakken Marketlink facilities at the Cushing tank farm would consist of two 250,000-barrel tanks that would be used for batch accumulation from the Baker facilities. The project would result in air emissions from construction and operation, but the extent of air emissions is unknown at this time. Consequently, air quality permitting and compliance efforts will be handled separately by appropriate regulatory agencies. The applicable federal, state, and local regulations would be followed to achieve compliance with air quality requirements.

### Cushing Marketlink Project

The Cushing Marketlink Project would include construction and operation of facilities that would provide crude oil transportation service from Cushing, Oklahoma via the proposed Project to delivery points at Nederland and Moore Junction, Texas. The project would include construction and operation of metering systems and batch accumulation tankage consisting of two 350,000 barrel tanks, with one tank dedicated for light sweet crude. The tanks would be located within the proposed Project's Cushing tank farm property, which also would house Pump Station 32. The Cushing Marketlink Project would result in air emissions from construction and operation, but the extent of air emissions is unknown at this time. Consequently, air quality permitting and compliance efforts will be handled separately by appropriate regulatory agencies. The applicable federal, state, and local regulations would be followed to achieve compliance with air quality requirements.

## 3.12.2 Noise

### 3.12.2.1 Environmental Setting

The ambient sound level of a region is defined by the total noise generated within the specific environment and is usually comprised of sound emanating from natural and artificial sources. At any location, both the magnitude and frequency of environmental noise may vary considerably over the course of the day and throughout the week. This variation is caused in part by changing weather conditions and the effects of seasonal vegetative cover.

The proposed Project would be constructed in primarily rural agricultural areas of Montana, South Dakota, Nebraska, Kansas, Oklahoma, and Texas. It is estimated that the existing ambient noise level in the proposed Project area is in the range of 40 dBA (rural residential) to 45 dBA (agricultural cropland). Ambient (background) noise levels occur from roadway traffic, farm machinery on a seasonal basis, pets, and various other household noises. Areas of the proposed Project along major highways and interstates may experience higher ambient noise levels of approximately 68 dBA to 80 dBA (EPA 1978). These are assumed noise levels.

#### Noise Receptors near the Pipeline ROW

Aerial photography and field survey data were used to identify areas containing structures within 25 feet and 500 feet of the proposed pipeline centerline (Table 3.12.2-1). There are approximately 170 structures within 25 feet and 2,325 structures within 25 feet to 500 feet of the proposed ROW. Of those totals, there are approximately 29 residences (i.e., homes, mobile homes, cabins) within 25 feet and 788 residences within 25 feet to 500 feet of the proposed ROW. For additional discussion of structures close to the ROW, see Section 3.9.1.2.

**TABLE 3.12.2-1**
**Structures near the Proposed Project Construction ROW**

| State | County | Number of Structures within 25 feet of the Construction ROW | | Number of Structures ≤ 500 feet and > 25 feet from the Construction ROW | |
|---|---|---|---|---|---|
| | | Structures [a] | Residences [b] | Structures [a] | Residences [b] |
| **Steele City Segment** | | | | | |
| **Montana** | Phillips | 0 | 0 | 9 | 2 |
| | Valley | 2 | 0 | 38 | 3 |
| | McCone | 2 | 0 | 21 | 0 |
| | Dawson | 3 | 0 | 21 | 0 |
| | Prairie | 0 | 0 | 3 | 0 |
| | Fallon | 2 | 0 | 25 | 2 |
| **South Dakota** | Harding | 3 | 0 | 19 | 0 |
| | Butte | 0 | 0 | 0 | 0 |
| | Perkins | 1 | 0 | 3 | 0 |
| | Meade | 2 | 0 | 22 | 0 |
| | Pennington | 0 | 0 | 0 | 0 |
| | Haakon | 4 | 0 | 26 | 0 |

**TABLE 3.12.2-1**
**Structures near the Proposed Project Construction ROW**

| State | County | Number of Structures within 25 feet of the Construction ROW | | Number of Structures ≤ 500 feet and > 25 feet from the Construction ROW | |
|---|---|---|---|---|---|
| | | Structures [a] | Residences [b] | Structures [a] | Residences [b] |
| | Jones | 0 | 0 | 3 | 0 |
| | Lyman | 1 | 0 | 9 | 0 |
| | Tripp | 4 | 0 | 14 | 0 |
| **Nebraska** | Keya Paha | 2 | 0 | 3 | 0 |
| | Rock | 0 | 0 | 2 | 0 |
| | Holt | 3 | 0 | 11 | 0 |
| | Garfield | 0 | 0 | 0 | 0 |
| | Wheeler | 1 | 0 | 4 | 0 |
| | Greeley | 0 | 0 | 8 | 1 |
| | Boone | 0 | 0 | 0 | 0 |
| | Nance | 0 | 0 | 11 | 0 |
| | Merrick | 7 | 0 | 25 | 1 |
| | Hamilton | 1 | 0 | 5 | 0 |
| | York | 1 | 0 | 28 | 1 |
| | Fillmore | 1 | 0 | 22 | 0 |
| | Saline | 1 | 0 | 13 | 0 |
| | Jefferson | 0 | 0 | 18 | 2 |
| **Kansas** | NA | 0 | 0 | 0 | 0 |
| **Gulf Coast Segment** | | | | | |
| **Oklahoma** | Lincoln | 4 | 0 | 91 | 26 |
| | Creek | 0 | 0 | 0 | 0 |
| | Okfuskee | 7 | 0 | 61 | 20 |
| | Seminole | 6 | 1 | 51 | 13 |
| | Hughes | 7 | 2 | 88 | 26 |
| | Coal | 1 | 0 | 56 | 17 |
| | Atoka | 1 | 0 | 50 | 18 |
| | Bryan | 2 | 1 | 51 | 13 |
| **Texas** | Fannin | 0 | 0 | 1 | 1 |
| | Lamar | 7 | 1 | 89 | 24 |
| | Delta | 6 | 2 | 41 | 13 |
| | Hopkins | 7 | 0 | 78 | 29 |
| | Franklin | 4 | 2 | 68 | 32 |
| | Wood | 2 | 1 | 140 | 65 |
| | Upshur | 7 | 1 | 31 | 10 |
| | Smith | 16 | 9 | 258 | 142 |

| TABLE 3.12.2-1<br>Structures near the Proposed Project Construction ROW | | | | | |
|---|---|---|---|---|---|
| | | Number of Structures within 25 feet of the Construction ROW | | Number of Structures ≤ 500 feet and > 25 feet from the Construction ROW | |
| State | County | Structures [a] | Residences [b] | Structures [a] | Residences [b] |
| | Cherokee | 1 | 0 | 33 | 9 |
| | Rusk | 10 | 2 | 44 | 17 |
| | Nacogdoches | 5 | 1 | 123 | 45 |
| | Angelina | 2 | 1 | 80 | 34 |
| | Polk | 9 | 4 | 112 | 43 |
| | Liberty | 4 | 0 | 76 | 28 |
| | Hardin | 5 | 0 | 15 | 5 |
| | Jefferson | 6 | 1 | 221 | 78 |
| **Houston Lateral** | | | | | |
| **Texas** | Liberty | 6 | 0 | 66 | 37 |
| | Chambers | 0 | 0 | 2 | 1 |
| | Harris | 4 | 0 | 41 | 30 |

[a] Structure totals include residences, homes, cabins, mobile homes, power poles, pools, wells, damns, bridges, barns, garages, churches, etc.

[b] Residence totals include residences, home, cabins, and mobile homes.

Source: Keystone 2009d.

## Noise Receptors near Pump Stations

There are approximately 197 structures within 0.5 mile of proposed Project pump stations (Table 3.12.2-2). Prior to construction, the presence of structures in proximity to the proposed Project pump stations would be verified and residential occupancy would be determined.

| TABLE 3.12.2-2<br>Structures within 0.5 and 1 Mile of Proposed Project Pump Stations | | | |
|---|---|---|---|
| Pump Station No. | Milepost (0 at US border) | Number of Structures within One-half Mile[a] | Number of Structures within One Mile[a] |
| **Steele City Segment** | | | |
| **Montana** | | | |
| PS-09 | 1.3 | 5 | 15 |
| PS-10 | 49.5 | 0 | 4 |
| PS-11 | 98.4 | 6 | 11 |
| PS-12 | 149.1 | 0 | 13 |
| PS-13 | 199.6 | 0 | 10 |
| PS-14 | 237.1 | 0 | 9 |

**TABLE 3.12.2-2**
**Structures within 0.5 and 1 Mile of Proposed Project Pump Stations**

| Pump Station No. | Milepost (0 at US border) | Number of Structures within One-half Mile[a] | Number of Structures within One Mile[a] |
|---|---|---|---|
| **South Dakota** | | | |
| PS-15 | 285.6 | 0 | 0 |
| PS-16 | 333.6 | 0 | 1 |
| PS-17 | 387.3 | 0 | 7 |
| PS-18 | 440.1 | 1 | 5 |
| PS-19 | 496.0 | 4 | 15 |
| PS-20 | 546.7 | 14 | 26 |
| PS-21 | 591.9 | 5 | 23 |
| **Nebraska** | | | |
| PS-22 | 642.4 | 3 | 19 |
| PS-23 | 694.9 | 15 | 24 |
| PS-24 | 752.1 | 16 | 32 |
| PS-25 | 800.8 | 4 | 9 |
| PS-26 | 851.6 | 5 | 47 |
| **Keystone Cushing Extension** | | | |
| **Kansas** | | | |
| PS-27 | 49.7 | 15 | 32 |
| PS-29 | 144.6 | 0 | 14 |
| **Gulf Coast Segment** | | | |
| **Oklahoma** | | | |
| PS-32 | 0.0 | 13 | 41 |
| PS-33 | 49.0 | 7 | 43 |
| PS-34 | 95.4 | 0 | 26 |
| PS-35 | 147.4 | 19 | 49 |
| **Texas** | | | |
| PS-36 | 194.5 | 0 | 41 |
| PS-37 | 238.6 | 25 | 92 |
| PS-38 | 284.0 | 19 | 89 |
| PS-39 | 338.1 | 4 | 4 |
| PS-40 | 380.5 | 0 | 106 |
| PS-41 | 435.1 | 17 | 88 |

[a] Structure totals include residences, homes, cabins, mobile homes, power poles, pools, wells, damns, bridges, barns, garages, churches, etc.

Source: Keystone 2009c.

### 3.12.2.2 Regulatory Requirements

Two measurements used by federal agencies to relate the time-varying quality of environmental noise to its known effect on people are the 24-hour equivalent sound level (Leq(24)) and the day-night sound level (Ldn). The Leq(24) is the level of steady sound with the same total (equivalent) energy as the time-varying sound of interest, averaged over a 24-hour period. The Ldn is the Leq(24) with 10 decibels on

the A-weighted decibel scale (dBA) added to nighttime sound levels between the hours of 10 p.m. and 7 a.m. to account for people's greater sensitivity to sound during nighttime hours.

In 1974, EPA published "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety." This document provides information for state and local agencies to use in developing their ambient noise standards. EPA identified outdoor and indoor noise levels to protect public health and welfare. An Leq(24) of 70 dB was identified as the level of environmental noise that would prevent any measurable hearing loss over a lifetime. An Ldn of 55 dBA outdoors and an Ldn of 45 dBA indoors were identified as noise thresholds that would prevent activity interference or annoyance. These levels are not "peak" levels but are 24-hour averages over several years. Occasional high levels of noise may occur. An Ldn of 55 dBA is equivalent to a continuous noise level of 48.6 dBA. Typical noise levels are as follows:

- Quiet room: 28–33 dBA
- Computer: 37–45 dBA
- Refrigerator: 40–43 dBA
- Forced hot air heating system: 42–52 dBA
- Microwave: 55–59 dBA
- Clothes dryer: 56–58 dBA

With regard to increases in decibels measured on the A-weighted noise level scale, the following relationships occur:

- A change of 1 dBA cannot be perceived by humans, except in carefully controlled laboratory environments;
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference by humans;
- A change in level of at least 5 dBA is required before any noticeable change in human response would be expected; and
- A 10-dBA change is subjectively heard as approximately a doubling in loudness and can cause an adverse response.

None of the states that would be traversed by the proposed Project have a different regulatory noise limit, although many have local ordinances governing noise from construction or industrial activities.

#### 3.12.2.3 Potential Impacts and Mitigation

### Construction Impacts

Construction of the proposed Project would be similar to other pipeline projects in terms of schedule, equipment used, and types of activities. Construction would increase noise levels in the vicinity of project activities, and the noise levels would vary during the construction period, depending on the construction phase. Construction noise levels are rarely steady in nature, but instead fluctuate depending on the number and type of equipment in use at any given time. There would be times when no large equipment is operating and noise would be at or near ambient levels. In addition, construction-related sound levels experienced by a noise sensitive receptor in the vicinity of construction activity would be a function of distance.

Pipeline construction generally proceeds at a rate of approximately 20 completed miles per calendar month per spread. However, due to the assembly-line method of construction, pipeline construction activities in any one area could last from 7 weeks to 30 days. Construction of all pump stations would take approximately 18 to 24 months complete, and construction of the Cushing tank farm would take approximately 15 to 18 months. Construction related noise impacts typically would be localized, intermittent, and short term since construction spreads move relatively quickly (several hundred feet to 1.5 miles or more per day).

Residential, agricultural, and commercial areas within 500 feet of the ROW would experience temporary inconvenience from the construction equipment noise (Table 3.12.2-3).

**TABLE 3.12.2-3**
**Typical Noise Levels for Construction Equipment**

| Equipment | Typical Noise Levels (dBA, at 50 feet) |
|---|---|
| Front loaders | 85 |
| Backhoes, excavators | 80 |
| Tractors, dozers | 85 |
| Graders, scrapers | 85–89 |
| Trucks | 88 |
| Concrete pumps, mixers | 82–85 |
| Cranes (movable) | 83 |
| Cranes (derrick) | 88 |
| Pumps | 76 |
| Generators | 81 |
| Compressors | 81 |
| Pneumatic tools | 85 |
| Jack hammers, rock drills | 88–98 |
| Pavers | 89 |
| Compactors | 82 |

Source: Adapted from DOT 2006.

There are approximately 29 residences within 25 feet of the proposed ROW, and 788 residences within 25 to 500 feet of the proposed ROW (Table 3.12-2.1). Depending on actual distances between construction activity and receptors, construction noise levels could reach over 100 dBA. However, the exact value would depend on the number of sources operating at this close distance. These noise levels could be perceived as moderately loud with a significant to serious effect over existing levels, however, any peak noise levels would be temporary and intermittent, generally limited to daylight hours, and would be attenuated with distance.

Although individuals and livestock in the immediate vicinity of the construction activities may be temporarily disturbed, the impact on the noise environment at any specific location along the proposed pipeline route would be short term. Similarly, noise associated with construction of the proposed aboveground facilities would be intermittent during the construction period, but the overall impact would be temporary and is not expected to be significant. Further, nighttime noise levels would normally be unaffected because most construction activities would be limited to daylight hours. Potential exceptions

include completion of critical tie-ins on the ROW; HDD operations if determined by the contractor to be necessary; and other work if determined necessary based on weather conditions, safety, or other project requirements. HDD activities would be conducted consistent with any applicable local noise ordinances.

Noise impacts from construction would be mitigated in accordance with the proposed Project CMR Plan (Appendix B) to minimize effects on individuals, sensitive areas, and livestock. If local noise regulations exist, site-specific noise mitigation plans would be developed to comply with any specific regulations and any applicable authorizations or variances would be obtained. Noise mitigation plans would be provided to the construction contractors for implementation and would be enforced by construction inspectors using portable sound meters.

To ensure that residential and commercial areas within 500 feet of construction activities are not affected by noise levels, advanced notice would be provided to landowners prior to construction activities with high-decibel noise levels would be limited to specified hours, and work schedules would be coordinated so that construction proceeds quickly. In the event that the contractor expects noise levels to exceed regulated noise standards—based on the types of construction equipment used or construction procedures, immediate noise attenuation would be implemented. To further reduce noise impacts to residential and commercial areas a toll-free telephone number would be provided for landowners to report any construction noise-related issues.

It is understood that during occasional, short-term intervals, noise levels would exceed 55 dBa. There are no regulations in rural areas along the pipeline route applicable to construction noise, including noise from construction camps. In municipal areas, pipeline construction noise levels would comply with any applicable municipal regulations. In areas near residences and businesses where construction activities or noise levels may be considered disruptive, work schedules would be coordinated to minimize disruption.

### Operations Impacts

Noise impacts from operation of the pipeline would be from the pump stations. Crude oil traveling through the buried pipeline would not emit audible noise above the surface nor would there be perceptible levels of vibration associated with crude oil movement through the pipeline. MLVs would have back-up generators for emergencies and upsets; however, noise impacts would be infrequent and negligible.

Concern was expressed during the comment period on the draft EIS relative to the potential for noise generation by proposed Project pump stations, particularly given the generally rural nature of the area within which the pump stations would be constructed and operated. During operation of the pipeline, the noise associated with the electrically-driven pump stations would be limited to the vicinity of the facilities. A preliminary noise assessment survey for a typical pump station was conducted (Table 3.12.2-4). The assessment assumed wind speeds of 8 miles per hour, a temperature of 75 ˚F, and three pumps operating at 3,000 kW cumulative (proposed installation is 2 to 6 pumps rated at 6,500 hp each per pump station).

| TABLE 3.12.2-4<br>Sound Attenuation from Proposed Project Pump Stations | |
|---|---|
| **Distance (feet)** | **Sound Level (dBA)** |
| Background | 35 |
| 300 | 55 |
| 700 | 49 |
| 1,000 | 46 |
| 1,300 | 43 |
| 1,600 | 42 |
| 2,000 | 41 |
| 2,300 | 40 |
| 2,600 | 39 |
| 3,000 | 38 |
| 3,300 | 38 |
| 3,600 | 38 |
| 3,900 | 37 |
| 4,200 | 37 |
| 4,600 | 37 |
| 5,000 | 37 |

Source: Keystone 2009a.

The study indicated that sound levels would attenuate to nearly ambient noise levels (40 to 45 dBA) within 2,300 feet of the facility (Table 3.12.2-4). There are approximately 197 structures within 0.5 mile (2,640 feet) of proposed Project pump stations (Table 3.12-2.2). Prior to construction, the presence of structures in proximity to the proposed Project pump stations would be verified and residential occupancy would be determined. Although noise impacts from the electrically-powered pump stations are projected to be minor, noise assessment surveys would be performed during operations in locations where nearby residents express concerns about pump station noise. These surveys would indicate operational noise levels and would be used to determine any necessary noise abatement measures to reduce noise to acceptable levels. Mitigation measures could include construction of berms or vegetation screens around specific pump stations that would serve as noise barriers.

### 3.12.2.4 Connected Actions

#### Power Distribution Lines and Substations

The following measures, and other BMPs, would be implemented by servicing electric cooperatives or their contractors in the modification or construction of electric transmission lines:

- Mitigation measures to reduce noise during construction as required by local, state, or federal regulations which may include 1) locating construction equipment as far from sensitive receptors as possible, 2) turning off equipment when not in use and reducing idling time, 3) use of temporary equipment enclosures and noise barriers, 4) limit haul trips and construction to

daylight hours where feasible, and 5) use of best available noise control techniques such as mufflers, intake silencers, ducts, engine closures, and acoustically attenuating shields or shrouds for all construction equipment and trucks.

- Mitigation measures to reduce noise during operation, including but not limited to siting of power lines 500 feet or further from residences and the use of C-filters on communication systems. Additional mitigation, such as the use of lightning arrestors and assuring all hardware has a tight fit, are used to reduce Radio Frequency Interference (RFI), which also contributes to a reduction in corona noise.

### Big Bend to Witten 230-kV Transmission Line

The following measures, and other BMPs, would be implemented by servicing electric cooperatives or their contractors in the construction of Big Bend to Witten 230-kV transmission line:

- Mitigation measures to reduce noise during construction as required by local, state, or federal regulations which may include 1) locating construction equipment as far from sensitive receptors as possible, 2) turning off equipment when not in use and reducing idling time, 3) use of temporary equipment enclosures and noise barriers, 4) limit haul trips and construction to daylight hours where feasible, and 5) use of best available noise control techniques such as mufflers, intake silencers, ducts, engine closures, and acoustically attenuating shields or shrouds for all construction equipment and trucks.
- Mitigation measures to reduce noise during operation, including but not limited to siting of power lines 500 feet or further from residences and the use of C-filters on communication systems. Additional mitigation, such as the use of lightning arrestors and assuring all hardware has a tight fit, are used to reduce Radio Frequency Interference (RFI), which also contributes to a reduction in corona noise.

### Bakken Marketlink Project

Construction and operation of the Bakken Marketlink Project would include metering systems, three new storage tanks near Baker, Montana, and two new storage tanks within the boundaries of the proposed Cushing tank farm. The Bakken Marketlink project would result in noise during operations and construction, but the extent of noise effects is unknown at this time. Consequently, federal, state, and local regulations would be followed to achieve compliance with applicable noise requirements.

### Cushing Marketlink Project

The Cushing Marketlink project would be located within the boundaries of the proposed Cushing tank farm of the Keystone XL Project and would include metering systems and two storage tanks. The Cushing Marketlink project would result in noise during operations and construction, but the extent of noise effects is unknown at this time. However, the increase in sound levels over the sound levels produced by the proposed Cushing tank farm and Pump Station 32 is not expected to be substantial. Federal, state, and local regulations would be followed to achieve compliance with applicable noise requirements.

### 3.12.3 References


DOT. See U.S. Department of Transportation.

EPA. See U.S. Environmental Protection Agency.

FTA. See Federal Transit Administration.

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