3.12 AIR QUALITY AND NOISE

3.12.1 Air Quality

As described in Section 2.0, the Project consists of installation of pipeline and construction of pump stations and associated facilities, including the proposed Steele City tank farm. The proposed pump stations would be electrically driven, with electricity to be provided from existing local electric utilities. Backup 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.

3.12.1.1 Environmental Setting

Regional climate and meteorological conditions can influence the transport and dispersion of air pollutants that affect air quality. The existing climate and ambient air quality in the Project area are described below.

Regional Climate

The proposed Project would be constructed in portions of Montana, South Dakota, Nebraska, Kansas, Oklahoma, and Texas.

The project area in Montana, South Dakota, Nebraska, and Kansas is located within the humid continental climate. This climate is noted for its variable weather patterns and large temperature ranges. Summer high temperatures average over 89 ˚F, while winter low temperatures average 12 to 20 ˚F. The climate lies in the boundary between many different air masses, principally polar and tropical. Polar-type air masses collide with tropical-type air masses, causing uplift of the less dense and moister tropical air resulting in precipitation.

The project area in Texas and Oklahoma is located within the humid subtropical climate. This climate is noted for its warm summer months and relatively mild winters. The daily temperature range tends to be very small as the evening does not cool down much during the summer. The tropical air masses and warm ocean currents enhance the instability of the air. These factors combine to produce 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 Keystone XL 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 Keystone XL 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 is 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 that are the same as 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 has characterized all areas of the United States as attainment, unclassifiable, maintenance, or nonattainment. Areas where the ambient air concentration of a pollutant is less than the NAAQS are designated as attainment; areas where no ambient air quality data are available are designated as unclassifiable. Unclassifiable areas are treated as attainment areas for the purposes of permitting stationary sources. Areas are designated as nonattainment when a pollutant's ambient air concentration is greater than the NAAQS. If an area was designated as nonattainment and has since demonstrated compliance with the NAAQS, it is considered a maintenance area. While maintenance areas are treated as attainment areas for the purposes of permitting stationary sources, states may have specific provisions to ensure that the area would continue to comply with the NAAQS.

The Project would pass through nonattainment areas in Texas. Liberty, Hardin, Jefferson, Harris, and Chambers counties are designated as nonattainment for the 8-hour ozone federal standard. Ozone is not emitted directly into the air but rather develops as inversion-layer ozone formed through photochemical reactions between atmospheric oxygen, oxides of nitrogen (NOx), and volatile organic compounds (VOCs) in the presence of sunlight (ultraviolet light). The major sources of NOx and VOC precursor emissions include motor vehicles, industrial facilities, electric utilities, gasoline storage facilities, chemical solvents, and biogenic sources. Because of this nonattainment designation, the Project would be subject to a General Conformity Determination, as described further in Sections 3.12.1.2 and 3.12.1.3.

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.

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

Location	PM_{10} (µg/m^3)	$PM_{2.5}$ (µg/m^3)		SO_2 (ppm)			CO (ppm)		NO_2 (ppm)	O_3 (ppm)	
	24-Hr[b]	Annual	24-Hr[c]	Annual	24-Hr[b]	3-Hr[b]	8-Hr[b]	1-Hr[b]	Annual	8-Hr[d]	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 (see Section 3.14 Cumulative Effects).

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 ensures that air quality is not significantly degraded from the addition of new or modified major emissions sources.[1] In poor air quality areas, NSR ensures that new emissions do not inhibit progress toward cleaner air. In addition, the NSR program ensures 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 what construction is allowed, how the emission source is operated, and which emission limits must be met.

If construction or modification of a major stationary source located in an attainment area would result in emissions greater than the significance thresholds, 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 nonattainment or PSD maintenance (Section 175A) area requires that the project be reviewed in accordance with nonattainment NSR regulations.

The proposed Project includes construction of a tank farm in Steele City, Nebraska. The 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) 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 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" for applicability purposes in accordance with the CAA. Therefore, the proposed tank farm would not trigger NSR or PSD review.

[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.

TABLE 3.12.1-4 Estimated Emissions from the Steele City Tank Farm in Nebraska			
Emission Unit	**VOC (tpy)**	**Total HAPs (tpy)**	**Maximum Individual HAP (tpy)**
Crude Oil Tank #1	5.31	0.37	0.34 (hexane)
Crude Oil Tank #2	5.31	0.37	0.34 (hexane)
Crude Oil Tank #3	5.31	0.37	0.34 (hexane)
Fugitive Emissions	5.10	0.46	0.36 (hexane)
Total	21.03	1.57	1.38 (hexane)

Notes:
tpy = Tons per year.
HAP = Hazardous air pollutant.
Source: Keystone 2008.

During construction, Keystone may use temporary diesel-fired generator engines at construction camps near Nashua and Baker, Montana, and Union Center and Winner, South Dakota if line power is not acquired. If line power is acquired, emergency back-up generators may still be used at these locations. The generators would be considered nonroad engines under 40 CFR 89.2 if they meet the definitions of portable or transportable, and are at a 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. Subsequently, emissions would be less than the 250 tpy threshold level, and as a result, NSR or PSD review would not be triggered. If the temporary diesel-fired generator engines are considered stationary rather than nonroad, estimated emissions would still be less than the 250 tpy threshold level (see Tables 3.12.1-5 and 3.12.1-6). Therefore, the construction camps would not trigger NSR or PSD review.

TABLE 3.12.1-5 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 3.12.1-6 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.

Air Quality Control Region

AQCRs are categorized as Class I, Class II, or Class III. Class I areas are designated specifically as pristine natural areas or areas of natural significance; these areas receive special protections under the CAA because of their good air quality. If a new source or 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 facility is required to notify the appropriate federal officials and assess the impacts of the proposed project on the Class I area. Class III designations, intended for heavily industrialized zones, can be made only on request and must meet all requirements outlined in 40 CFR Part 51.166. The remainder of the United States is designated as Class II.

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 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. The Steele City tank farm in Nebraska, although not subject to PSD review, is located over 600 kilometers from the nearest Class I area. Therefore, the Project would not trigger a federal Class I area impact assessment.

New Source Performance Standards

The 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.

The proposed Project includes construction of a tank farm in Steele City, Nebraska. The tank farm includes three crude oil storage tanks, each with a capacity of 350,000 barrels (14,700,000 gallons). 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.

Each of the crude oil tanks to be located at the Steele City tank farm would be installed with a fixed roof in combination with an internal floating roof. As set out by 40 CFR 60.112b(a)(1)(ii), each internal floating roof shall be equipped with a mechanical shoe seal, which is a metal sheet held vertically against the wall of the storage vessel by springs or weighted levers and is connected by braces to the floating roof. A flexible coated fabric (envelope) spans the "annular space" between the metal sheet and the floating roof. The 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, Keystone proposes to locate temporary fuel storage systems at contractor yards and pipe yards. Each system would consist of temporary aboveground 10,000 to 20,000-gallon onroad and offroad 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 Keystone's 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, as long as Keystone stores only diesel fuel in tanks larger than 75 cubic meters (19,813 gallons) that are constructed after July 23, 1984, the Keystone temporary fuel tanks would be exempt from 40 CFR 60 Subpart Kb.

During construction, Keystone may use construction camp generator engines in Montana and South Dakota. 40 CFR 60 Subpart IIII applies to stationary compression ignition internal combustion engines manufactured after April 1, 2006 or modified or reconstructed after July 11, 2005 as set out by 40 CFR 60.4200(a). Subpart IIII requires that these engines be certified to meet the emission standards starting 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. 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.

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

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 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 MACT standards, Part 63 regulates HAP emissions from major sources of HAPs and specific source categories that emit HAPs. 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. Neither the Steele City tank farm nor any other of the 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 25 tpy of multiple HAPs (see Table 3.12-1-4). Thus, the proposed Project facilities would not be considered a major source of HAP emissions and would not be subject to NESHAPs.

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 Project aboveground facilities (Keystone 2009c).

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 all air pollution requirements that apply to the source, including emissions limits and monitoring, record keeping, and reporting requirements. It also requires that the 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 Title V major if it emits or has the potential to emit 100 tpy or more of any criteria air pollutant.

The proposed Project includes construction of a tank farm in Steele City, Nebraska. The tank farm includes three crude oil storage tanks, each with a capacity of 350,000 barrels (14,700,000 gallons). In Nebraska, the State of Nebraska Department of Environmental Quality has authority to implement the Title V (Class I) program, and Class II program for minor sources not subject to Title V. Regulations are contained in Nebraska Administrative Code, Title 129, Chapters 7 through 14. The department requires a Title V (Class I) operating permit for all sources that have actual emissions that are equal to or greater than the Title V (Class I) thresholds, and requires a Class II operating permit for all sources that have actual emissions that are equal to or greater than the Class II thresholds (see Table 3.12.1-7). The proposed tank farm would not have potential emissions that exceed the Title V (Class I) or Class II thresholds (see Table 3.12.1-4). In addition, Title 129, Chapter 5 authorizes a Source Category Exemption for sources subject to a standard, limitation, or other requirement under Chapter 18 (NSPS) that are not major or affected sources. Consequently, the Project's tank farm would not trigger Title V (Class I) or Class II permitting.

TABLE 3.12.1-7
Nebraska Department of Environmental Quality Permitting

Pollutant	Class I (Major Source) Thresholds	Class II (Minor Source) Thresholds
Nitrogen Oxides	100 tpy	50 tpy
Carbon Monoxide	100 tpy	50 tpy
Sulfur Oxides	100 tpy	50 tpy
Volatile Organic Compounds	100 tpy	50 tpy
Particulate Matter less than 10 microns in diameter	100 tpy	50 tpy
Hazardous Air Pollutants	10 tpy of any single HAP or 25 tpy of a combination of HAPs	5 tpy of any single HAP or 12.5 tpy of a combination of HAPs
Lead	5 tpy	2.5 tpy

Notes:
tpy = Tons per year.
HAP = Hazardous air pollutant.
Source: Nebraska DEQ 2009. Available online at: <http://www.deq.state.ne.us/AirDivis.nsf/pages/AirOPP>.

During construction, Keystone may use temporary diesel-fired generator engines at construction camps near Nashua and Baker, Montana, and Union Center and Winner, South Dakota if line power is not acquired. If line power is acquired, emergency back-up generators may still be used at these locations. In Montana, the State of Montana Department of Environmental Quality 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 3.12.1-5 and 3.12.1-6). Consequently, Project camps in Montana would not trigger Title V permitting.

In South Dakota, the State of South Dakota Department of Environment and Natural Resources 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. The department exempts sources from the requirements for a minor operating permit as set out in Chapter 74:36:04:03, including if a facility that has 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 3.12.1-5 and 3.12.1-6). 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.

Other Applicable State Permits

The State of Montana Department of Environmental Quality requires preconstruction air quality permits under the Administrative Rules of Montana, 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 Table 3.12.1-5). Consequently, Project camps in Montana appear to trigger requirements for preconstruction permitting unless exemptions exist and are met for temporary nonroad engines.

General Conformity Rule

The General Conformity Rule was designed to require federal agencies to ensure that proposed projects conform to the applicable State Implementation Plan (SIP). General Conformity regulations apply to project-wide emissions of pollutants for which the project areas are designated as nonattainment (or, for ozone, its precursors NOx and VOC) that are not subject to NSR and that are greater than the significance thresholds established in the General Conformity regulations or 10 percent of the total emissions budget for the entire nonattainment area. Federal agencies are able to make a positive conformity determination for a proposed project if any of several criteria in the General Conformity Rule are met. These criteria include:

- 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.

A General Conformity analysis is required for pollutant emissions that would occur in nonattainment areas not subject to NSR. For the Project, Liberty, Hardin, Jefferson, Harris, and Chambers counties in Texas are designated as nonattainment for the 8-hour federal ozone standard (precursors are NOx and VOC). Therefore, emissions of NOx and VOCs from Project-related sources would be considered under the General Conformity Rule. The required evaluation of the proposed Project under General Conformity includes an applicability analysis via a comparison of potential emissions to applicability threshold levels, as well as a conformity determination if the emissions are greater than applicability threshold levels. Each federal agency is required to make a Conformity Determination before the action is taken. For more details on Keystone's General Conformity analysis, see Section 3.12.1.3 and Appendix Q.

3.12.1.3 Potential Impacts and Mitigation

Two types of impacts on air quality were considered for this analysis: temporary impacts resulting from emissions associated with construction activities and long-term or permanent impacts resulting from emissions generated from continued operation of a stationary source.

Construction Impacts

Air quality impacts associated with construction of the proposed Project would include emissions from fugitive dust, fossil-fueled 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 a function of construction activities, silt, moisture content of the soil, wind speed, frequency of precipitation, vehicle traffic, vehicle types, and roadway characteristics. Emissions would be greater during drier summer and autumn months, and in fine-textured soils.

Emissions of particulate matter arising from fugitive dust are regulated by state and local agencies. Typically, the regulations require measures to prevent fugitive dust from becoming airborne and leaving

the property boundary, such as application of dust suppressants. Specific requirements also can 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 pipeline construction activity would generally pass by a specific location within a 30-day period before final grading, seeding, and mulching takes place, thereby resulting in short-term and temporary impacts at any one location during construction.

As described in its CMR Plan (Appendix B), Keystone would implement proven dust-minimization practices to control fugitive dust emissions during construction, such as applying water sprays and surfactant chemicals, and stabilizing disturbed areas. Keystone would also place curtains of suitable material, as necessary, to prevent wind-blown particles from sand blasting operations from reaching any residence or public building. Additional dust control measures may be required by state or local ordinances. Keystone would comply with all applicable state and local regulations with respect to truck transportation and fugitive dust emissions.

Fossil-Fueled Construction Equipment

Construction camp generators, large earth-moving equipment, skip loaders, trucks, nonroad engines, and other mobile sources may be powered 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; these regulations are designed to minimize emissions. Furthermore, to implement the CAA, EPA has established rules in 40 CFR 80 to require that sulfur content in onroad and offroad diesel fuel be significantly reduced. On June 1, 2006, 80 percent of diesel fuel for onroad use produced by U.S. refineries was required to be reduced from 500 to 15 ppm sulfur. Additionally, on June 1, 2007 diesel fuel for nonroad engines must be reduced from 5,000 to 500 ppm sulfur. By December 1, 2010, EPA would require that all on and offroad (nonroad) diesel fuel meets a limit of 15 ppm sulfur (i.e., ultra low sulfur fuel).

Keystone proposes to use the construction equipment listed in Table 3.12.1-8 in a typical construction spread. Keystone would construct the pipeline in 17 construction spreads or completed lengths (Section 2.2.5). Each spread would require 6 to 8 months to complete.

TABLE 3.12.1-8
Construction Equipment per Spread for the Project

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

TABLE 3.12.1-8
Construction Equipment per Spread for the Project

Equipment Description	Units per Spread	Equipment Rating (hp)	Hours of Operation (hours/day)	Fuel Type
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	1	260	8	Diesel
Bending Machine 22-36	1	159	8	Diesel
Crane LS-98A (35 ton)	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	9	50	8	Gasoline
Generators	9	10	8	Gasoline
Pump - 3"	1	20	8	Gasoline
Pump - 6"	9	40	8	Gasoline

Notes:

[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.

Source: Keystone 2009c.

Keystone would also install four, 400-kW generator engines at construction camps near Nashua and Baker, Montana, and Union Center and Winner, South Dakota if line power is not acquired. If line power is acquired, one 400-kW emergency back-up generator may still be used at these locations.

Keystone would maintain all fossil-fueled construction equipment in accordance with manufacturer's recommendations to minimize construction-related emissions.

Open Burning

Burning cleared materials may be required along the route, and is fairly typical during pipeline construction. Open burning of cleared materials from construction activities has the potential to affect air quality. However, prior to construction it is unknown how much open burning would occur and in what quantities and locations, as excess materials may be burned, chipped, or hauled for disposal in a suitable landfill.

The states along the route of the proposed Project regulate open burning through local permitting, approval, and notification processes. Keystone would obtain all necessary open burning permits, approvals, and notifications prior to conducting any open burning of land clearing materials. Keystone would follow all open burning regulations during such activities, including restrictions on burn location, material, and time, as well as consideration of local air quality. In addition, burning would be done within the right-of-way (ROW) in small piles to avoid overheating of or damage to trees or other structures.

Temporary Fuel Transfer Systems and Associated Storage Tanks

Keystone proposes to locate temporary fuel storage systems at contractor yards and pipe yards. Temporary fuel transfer systems and tanks have the potential to release VOC emissions. However, because Keystone would be storing mainly diesel fuel with a low vapor pressure, releases of VOCs would be minimal. Fuel transfer is discussed further in New Source Performance Standards in Section 3.12.1.2.

Conclusion

Emissions for the Project from construction sources are provided in Table 3.12.1-9. Because pipeline construction moves through an area relatively quickly, air emissions typically would be localized, intermittent, and short term. Emissions from fugitive dust, construction equipment combustion, open burning, and temporary fuel transfer systems and associated tanks would be controlled to the extent required by state and local agencies as explained above. The Project may use temporary diesel-fired generator engines at construction camps near Nashua and Baker, Montana, and Union Center and Winner, South Dakota if line power is not acquired. If line power is acquired, emergency back-up generators may still be used at these locations. The camps in Montana appear to trigger requirements for a preconstruction permit and camps in South Dakota appear to trigger requirements for a minor operating permit unless exemptions exist and are met for temporary nonroad engines. If Keystone complies with applicable regulations, the Project emissions from construction-related activities would not significantly affect local or regional air quality.

TABLE 3.12.1-9
Estimated Direct Construction Emissions for the 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]	494.40	432.56	46.39	33.04	24.72	24.72	24.72	108288.00
On-road vehicles	37.40	229.67	12.75	0.17	1.36	1.36	1.36	16008.56
Non-road equipment	590.92	391.34	43.35	24.65	24.65	24.65	24.65	82687.49
Open burning	19.72	1157.87	85.00	--	185.64	132.43	112.54	27393.87
Fugitive dust	--	--	--	--	1474.92	737.46	110.67	--
Paved road dust	--	--	--	--	116.79	18.36	1.87	--
Total construction emissions (3-yr combined)	**1142.44**	**2211.44**	**187.49**	**57.86**	**1828.08**	**938.98**	**275.81**	**234378.02**

[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.

Operations Impacts

Emissions for the Project from operational sources are provided in Table 3.12.1-10. Air quality impacts associated with operation of the proposed Project 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 tank at the Steele City tank farm. Keystone proposes that all pipeline pumps would be electric.

The proposed Project includes construction of a tank farm in Steele City, Nebraska. The tank farm includes three crude oil storage tanks, each with a capacity of 350,000 barrels (14,700,000 gallons). Preliminary estimations assumed that each crude oil tank is 350,000 barrels, each crude oil tank would have an internal self supporting roof. Thirty-two turnovers would occur annually and each crude oil tank would have a mechanical shoe seal (primary) with no secondary seal. As a result, the Project would not cause or contribute to a violation of any federal, state, or local air quality standards. In addition, the proposed Project operations would not trigger the requirement for a Title V operating permit.

TABLE 3.12.1-10
Estimated Direct Emissions for the 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)
Operating emissions								
Tank farm	--	--	21.03	--	--	--	--	N/A
Pump station fugitives[b]	--	--	6.82	--	--	--	--	84.63
On-road vehicles[c]	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**	**27.85**	**8.0E-07**	**3.7E-02**	**5.8E-03**	**5.7E-04**	**84.63**

[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] Pumping station emissions include combined emissions from 30 pumping stations along the Steele City and Gulf Coast Segments.

[c] The operational emissions noted from onroad vehicles include mobile emissions from the Steele City Tank Farm only and do not include the preliminary estimated VOC emissions from the storage tanks.

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.

General Conformity

Section 176(c) of the CAA prohibits federal actions in nonattainment or PSD maintenance areas that do not conform to the SIP for the attainment and maintenance of NAAQS. Therefore, the purpose of the General Conformity Determination is to ensure: (1) that federal activities do not interfere with the budgets in the SIPs; (2) that actions do not cause or contribute to new violations; and (3) attainment and maintenance of the NAAQS. 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) offsets; and (5) mitigation. Some 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 Project would cross five counties that are designated as nonattainment for the federal ozone standard. Liberty, Chambers, and Harris counties are located in the Houston-Galveston-Brazoria 8-hour ozone nonattainment area. The region is currently classified as severe nonattainment of the 1997 8-hour ozone standard with a maximum attainment date of June 15, 2019. Hardin and Jefferson counties are located in the Beaumont-Port Arthur 8-hour ozone nonattainment area. The region is currently classified as moderate nonattainment of the 1997 8-hour ozone standard with a maximum attainment date of June 15, 2010.

Emissions of ozone precursor compounds (NOx and VOCs) would be evaluated against the General Conformity applicability threshold levels and nonattainment area emissions budget. All Project emissions of NOx and VOCs emitted during construction and operation would be evaluated because no emissions would be covered under air permit programs. Written approval of conformance with the SIP would be necessary for the 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 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 [a]	**100**	**100**
Construction emissions - 2011		
Onroad equipment	3.80	1.30
Nonroad equipment	60.57	4.47
Open burning	3.85	16.54
Total construction emissions	68.22	22.31
Below thresholds?	Yes	Yes
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		

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

Emission Source	NOx (tpy)	VOC (tpy)
Onroad equipment	2.51	0.94
Nonroad equipment	35.95	2.84
Open burning	1.22	5.24
Total construction emissions	39.68	9.02
Below thresholds?	**No**	Yes
Construction emissions - 2012		
Onroad equipment	3.87	1.33
Nonroad equipment	56.29	4.15
Open burning	4.28	18.42
Total construction emissions	64.44	23.90
Below thresholds?	**No**	Yes
Operating emissions - 2012		
(Pump station No. 41)	--	0.01
Below thresholds?	Yes	Yes

Notes:
$PM_{2.5}$ = Particulate matter less than 2.5 microns in diameter.
NA = Not available at the time of publication of the draft EIS.
NOx = Oxides of nitrogen.
VOC = Volatile organic compounds.
tpy = Tons per year.
[a] The General Conformity Rule does not apply to operational emissions in the Beaumont-Port Arthur Nonattainment Area, which are limited to fugitive emissions.
Source: Keystone 2009d.

As shown in Table 3.12.1-11, NOx and VOC emissions for 2011 construction in the Beaumont-Port Arthur 8-hour ozone nonattainment area would be below the General Conformity significance thresholds of 100 tons per year. This completes the conformity determination for the portion of the pipeline that would be located in the Beaumont-Port Arthur nonattainment area and the proposed construction activity is presumed to conform to the SIP. As pipeline emissions are limited to fugitive emissions from valves and flanges at pump stations and as there are no crude terminals located along the portion of the project within the Beaumont-Port Arthur nonattainment area, the General Conformity Rule does not apply to these operational activities.

As shown in Table 3.12.1-11, NOx emissions for both 2011 and 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 2009d) for nonroad mobile sources are conservative and based on EPA's Tier 2 engine standards. Additionally, various actions as part of the Texas SIP could be used to mitigate emissions during construction activity. These would include the following:

- 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 with a 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 2009d), 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 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 budget allotted for this category. Therefore, construction emissions for the Project would be accounted for in the SIP emissions budget and the proposed activity within the Houston-Galveston-Brazoria nonattainment area is presumed to conform to the SIP.

Finally, Table 3.12.1-11 shows that NOx and VOC emissions for operation in the Houston-Galveston-Brazoria 8-hour ozone nonattainment area would be below the General Conformity significance thresholds of 25 tons per year. Since the operational emissions of NOx and VOC are well below the 25 tpy threshold, the General Conformity Rule does not apply to these operational activities.

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.

Lower Brule 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 Lower Brule 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.

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 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. Project areas 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

Keystone used aerial photography and field survey data to identify areas containing structures within 25 feet and 500 feet of the proposed pipeline centerline. These areas are summarized in Table 3.12.2-1. There are approximately 147 structures within 25 feet and 1,617 structures within 25 feet to 500 feet of the proposed ROW. Of those totals, there are approximately 41 residences (i.e., homes, mobile homes, cabins) within 25 feet and 747 residences within 25 feet to 500 feet of the proposed ROW. For additional discussion of structures close to the ROW, see Section 3.9.3.9.

TABLE 3.12.2-1
Structures near the 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	1	0	8	2
	Valley	0	0	33	2
	McCone	2	0	19	0
	Dawson	2	0	18	0
	Prairie	2	0	9	0
	Fallon	10	0	31	2
South Dakota	Harding	3	0	17	0
	Perkins	0	0	1	0

TABLE 3.12.2-1
Structures near the 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]
	Meade	5	0	32	1
	Haakon	3	0	30	0
	Jones	0	0	9	0
	Lyman	0	0	10	0
	Tripp	1	0	14	0
Nebraska	Keya Paha	2	0	6	0
	Rock	1	0	1	0
	Holt	0	0	23	0
	Garfield	0	0	5	0
	Wheeler	1	0	6	0
	Greeley	4	0	8	1
	Boone	0	0	2	0
	Nance	0	0	15	0
	Merrick	0	0	22	1
	Hamilton	1	0	6	0
	York	4	0	54	0
	Fillmore	1	0	24	0
	Saline	0	0	14	0
	Jefferson	0	0	16	0
Kansas	NA	0	0	0	0
Gulf Coast Segment					
Oklahoma	Lincoln	3	0	61	20
	Okfuskee	3	0	46	19
	Seminole	1	0	33	10
	Hughes	9	2	54	21
	Coal	2	0	36	11
	Atoka	4	0	32	16
	Bryan	2	0	23	9
Texas	Lamar	1	0	33	16
	Delta	1	0	21	13
	Hopkins	5	1	41	25
	Franklin	5	3	26	21
	Wood	4	2	83	55
	Upshur	1	0	18	11
	Smith	15	10	158	116

TABLE 3.12.2-1
Structures near the 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]
	Cherokee	0	0	15	6
	Rusk	8	3	24	14
	Nacogdoches	8	1	74	35
	Angelina	0	0	41	26
	Polk	7	5	49	42
	Liberty	0	0	45	34
	Hardin	0	0	5	5
	Jefferson	16	12	213	175
Houston Lateral					
Texas	Liberty	5	1	33	23
	Chambers	0	0	2	1
	Harris	4	1	18	14

[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 2009e.

In addition, recreational and special interest areas would be crossed by the proposed route (Keystone 2008). Section 3.9.5 and Table 3.9.5-1 provide information on recreational and special interests lands intersected by the Project. USFWS wetland easements in Montana, South Dakota, Nebraska, and Texas would be crossed by the Project (see Table 3.9.4-5). No National Parks or National Forests are crossed by the ROW.

Noise Receptors near Pump Stations

Table 3.12.2-2 summarizes the number of structures within 0.5 mile and 1 mile of each of the 30 proposed pump stations. There are approximately 101 structures within 0.5 mile of all pump stations for Project. Prior to construction, Keystone would verify the proximity of structures to the pump stations and determine if occupied by residences, or other noise sensitive receptors.

TABLE 3.12.2-2
Structures within 0.5 and 1 Mile of Pump Stations for the Project

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	1.1	5	11
PS-10A-1	49.3	0	4
PS-11	98.0	5	9
PS-12	148.6	0	9
PS-13A-2	199.3	0	2
PS-14A-1	236.8	0	6
South Dakota			
PS-15A-2	285.6	0	0
PS-16	333.3	0	0
PS-17A-2	386.9	0	7
PS-18	440.0	0	2
PS-19A-3	495.8	7	19
PS-20A-2	546.4	13	18
Nebraska			
PS-21A-1	591.7	0	23
PS-22	642.1	1	15
PS-23	694.0	8	24
PS-24A-1	751.1	5	19
PS-25A-1	799.7	1	3
PS-26	850.6	1	24
Keystone Cushing Extension			
Kansas			
PS-27A-1	49.0	6	29
PS-29A-2	144.5	0	11
Gulf Coast Segment			
Oklahoma			
PS-32A-1	0.0	6	7
PS-33A-4	49.2	2	15
PS-34A-1	95.4	1	7
PS-35A-1	147.0	2	11
Texas			
PS-36A-3	194.0	1	19
PS-37A-2	238.0	17	56
PS-38A-3	284.0	10	49
PS-39A-1	333.5	1	6
PS-40A-4	378.1	0	83
PS-41A-1	432.7	9	46

[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

Noise impacts for a pipeline project generally fall into two categories: temporary impacts resulting from operation of construction equipment, and long-term or permanent impacts resulting from operation of the facility.

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 Steele City tank farm would take approximately 15 to 18 months. In general, because construction moves through an area relatively quickly (several hundred feet to 1.5 miles or more per day [Keystone 2009b]), noise impacts typically would be localized, intermittent, and short term.

Residential, agricultural, and commercial areas within 500 feet of the ROW would experience short-term inconvenience from the construction equipment noise. Table 3.12.2-3 lists noise levels produced by typical construction machinery, measured at various distances.

TABLE 3.12.2-3
Typical Noise Levels for Construction Equipment

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

TABLE 3.12.2-3 Typical Noise Levels for Construction Equipment	
Equipment	**Typical Noise Levels (dBA, at 50 feet)**
Compactors	82
Drill rigs	70–85

Source: Adapted from DOT 1995.

According to Table 3.12-2.1, there are approximately 41 residences within 25 feet of the proposed ROW, and 747 residences within 25 to 500 feet of the proposed ROW (Keystone, 2009e). 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. Keystone would conduct HDD activities in compliance with any applicable local noise ordinances.

Noise impacts from construction would be mitigated in accordance with Keystone's CMR Plan (Appendix B) to minimize effects on individuals, sensitive areas, and livestock. During permitting activities for the project, Keystone would determine whether state, county or local noise regulations exist for a given location. If local noise regulations exist, Keystone would develop site-specific noise mitigation plans to comply with any specific regulations and would seek any applicable authorizations or variances. Noise mitigation plans would be provided to the construction contractors for implementation and would be enforced by construction inspectors using portable sound meters. Because preliminary research has not yet identified any applicable state or county noise ordinances along the pipeline route, Keystone is not proposing any construction noise assessments or surveys at this time (Keystone 2009c).

To ensure that residential and commercial areas within 500 feet of construction activities are not affected by noise levels, Keystone would give advanced notice to landowners prior to construction, limit the hours during which construction activities with high-decibel noise levels are conducted, coordinate work schedules, and ensure that construction proceeds quickly through such areas. 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, notice would be given to Keystone so that immediate noise attenuation could be achieved. To further reduce noise impacts to residential and commercial areas Keystone would set up a toll-free telephone line 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, Keystone would coordinate work schedules to minimize disruption.

Operations Impacts

Noise impacts from operation of the pipeline would be from the pump stations. Material traveling through the buried pipeline would not emit audible noise above the surface or a perceptible level of vibration.

Concern has been expressed during scoping relative to the potential for noise generation by proposed 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. Keystone prepared a preliminary noise assessment survey for a typical pump station, as illustrated in 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
Sound Attenuation from Proposed Pump Stations for the Project

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.

Table 3.12.2-4 shows that sound levels would attenuate nearly to existing ambient noise levels (40 to 45 dBA) within 2,300 feet of the facility and would be considered minor. According to Table 3.12-2.2, there are approximately 101 structures within 0.5 mile (2,640 feet) of all pump stations for Project. Prior to construction, Keystone would verify the proximity of structures to the pump stations and determine if

occupied by residences, or other noise sensitive receptors. Although noise impacts from the electrically-powered pump stations are projected to be minor, Keystone would perform a noise assessment survey during operations in locations where nearby residents express concerns about pump station noise. Those surveys would indicate the operational levels at that residence and would be used to determine any necessary noise abatement measures needed to reduce the noise levels at that residence (Keystone 2009a). Mitigation measures can include construction of berms around the facilities or planting vegetation screens. As such, Keystone would minimize noise impacts to ensure that project-related operations would not result in a significant effect on the noise environment.

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.

Lower Brule 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 Lower Brule 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.

3.12.3 References

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