



Trinity Consultants is a leading global environmental consulting firm that brings 50 years of experience providing services and solutions in the EHS Regulatory Compliance, Built Environment, Life Sciences, and Water & Ecology markets. Trinity has the technical expertise, industry depth, and specialized capabilities to help clients achieve their goals across the natural and built environments.

Noise and Vibration Issues

Noise and vibration are inherent to industrial equipment and operational activities. Sources of noise can include: fans and exhausts; vehicle operations; baghouses and control equipment; rotating machinery; material handling; motors; reciprocating engines; turbines; steam and gas venting; pressure drops in piping systems; blasting and many others. Potentially an environmental nuisance, noise and vibration are becoming increasingly regulated by federal, state and local agencies. For example, certain natural gas projects under the jurisdiction of the Federal Energy Regulatory Commission (FERC) are required to conduct detailed ambient sound measurements and noise impact analyses at noise sensitive areas to demonstrate compliance with federal noise standards. Increasingly more municipalities are adopting noise ordinances that set technical noise standards at plant fence lines and residential receptors. Failure to comply with these standards can lead to community relations issues and potentially lawsuits.

Services Provided

Trinity provides a wide range of noise and vibration services:

- Industrial noise impact assessments
- Ambient sound and vibration measurement and characterization
- Federal, state and local noise standard compliance planning and verification
- Background (baseline) noise studies
- Siting studies for new plants and expansions
- NEPA Environmental Assessments (EAs) noise reports
- FERC Resource Report 9 Noise Section preparation
- Noise and vibration impact mitigation assistance

Predicting Noise Impact

Trinity can predict the impact of noise sources at fence lines and noise sensitive areas using both vector modeling software packages (e.g., CadnaA and SoundPLAN) and our workbook-based calculation tools. Vector modeling software enables accounting for complex



scenarios, such as industrial facilities having multiple sources spread over large areas, widely varying topography, structure reflections, ground cover, barriers, atmospheric effects, etc. It also provides a means of determining which noise sources have the largest impact on any given receptor, and allows the effects of proposed noise mitigation measures to be tested. Trinity's workbook-based calculation tools typically offer a more conservative prediction at less expense for uncomplicated scenarios. Trinity maintains a database of acoustical data for many types of noise sources.

Measurement and Characterization

Trinity uses research-grade sound level meters (SLMs) in the field to measure ambient sound levels and characterize sound sources at noise sensitive areas and fence lines. This is a requirement for certain federal rules, and is often necessary and prudent before undertaking construction of new noise sources in municipalities having noise standards and when investigating noise related complaints. Trinity can also measure the magnitude and frequency of ground vibrations as needed to demonstrate compliance with vibration standards.

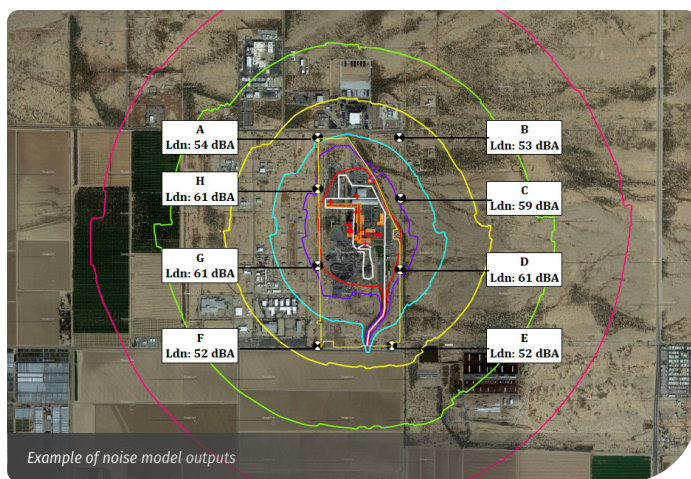
Project Work

Trinity personnel have performed noise and vibration monitoring and impact assessment projects in numerous U.S. states and Canadian provinces. Projects have ranged from the predictive modeling of impacts at Noise Sensitive Areas and assistance with selection of mitigation methods to measurement and characterization of ambient noise and vibration levels and sources, and measurement of acoustic emission data for noise sources. Facilities and emission sources for which we have performed noise and vibration assessments include the following:

- Stationary reciprocating and combustion-turbine powered electrical generating systems
- Many types of manufacturing facilities

- Natural gas compressor stations and storage facilities
- Reciprocating engines, turbines, cooling systems, dehydrators, pressure reduction valves and vents, substations, etc., at natural gas compressor stations
- Active mine sites with extensive blasting
- Construction projects involving heavy equipment
- Horizontal directional drilling and salt cavern development activities

Trinity has prepared and conducted the modeling and monitoring work and prepared the sections of Resource Report 9 necessary to characterize ambient sound quality and predict noise impact for natural gas projects in many states. Our experience includes responding to FERC data requests, and conducting post-operational compliance demonstration monitoring.



Understanding and Selecting Noise Mitigation

Trinity can assist its clients in understanding and selecting noise mitigation measures, including exhaust and vent silencers, acoustic insulation for buildings, ventilation systems and piping, noise berms and barriers, work practices, proper equipment specifications, etc. Trinity has a library of noise mitigation equipment and vendor data that it can draw from.

How Trinity Can Help

Whatever your challenge, Trinity has the experience and insights to provide intelligent noise solutions. Our knowledge and expertise across a wide range of environmental issues make us an excellent partner.

ISO 9001:2015 certified at our corporate office in Dallas, Texas

CONTACT OUR TEAM!

For more information about how we can help your organization, please contact us.

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