Experience Summary

Mr. Fowler is a Senior Acoustic Engineer with over 10 years of varied theoretical and field-practical acoustical consulting experience. He specializes in acoustical studies analyzing both underwater and air-borne noise as well as vibration impacts on the human and biological environments. Mr. Fowler has experience in the deployment of complex long term data acquisition systems for the purpose of measuring and monitoring complex noise and vibration sources. Furthermore, he has experience in data analysis for identifying impacts to humans, sensitive species, marine mammals, and fish species. Mr. Fowler also has extensive experience in the development and deployment of remote long-term monitors located in variety of environments, including arctic conditions.

Mr. Fowler is technically trained and certified as an advance user for the internationally recognized state-of-the-art CadnaA noise modeling software. He has extensive experience in developing large complex three dimensional noise models for evaluating significant sources of noise and their related impacts to the environment. His noise modeling endeavors have included assessments of noise propagation associated with oil & gas operations, mining processes, soil remediation activities, construction equipment, and commercial & industrial facilities. Mr. Fowler is also formally trained as a user of ESI Group's VA One Vibro-Acoustic software for conducting Statistical Energy Analysis (SEA) studies related to a variety of operational mechanical equipment. Furthermore, he is also certified to conduct evaluations for vibration dynamics including modal testing and analysis.

Mr. Fowler has experience conducting noise and vibration analysis studies in compliance with the rigid requirements as set forth by the Federal Transit Authority (FTA) and Federal Highway Administration (FHWA). He has experience conducting air-borne and ground-borne vibration impact assessments for complex railway and roadway corridors, as well as for a wide variety of construction operations.

Mr. Fowler has extensive experience in architectural acoustics evaluating sound transmission within building structures to comply with building codes. His expertise includes conducting forensic acoustical evaluations identifying existing acoustical deficiencies ensuring integration of appropriate design features that control noise transmission from one building space to another. Mr. Fowler also has expertise in the enhancing the overall auditory experience of performance spaces (auditoriums, churches, theaters, concert halls, multipurpose rooms, libraries, museums, hotel lobbies, ballrooms, restaurants, etc.) through the elimination of background noise and the optimization of design and construction for acoustical excellence within the space.

Mr. Fowler's responsibilities include technical expert for acoustics and vibration, field investigation work, management of field teams, deployment of measurement equipment, management of data acquisition systems, data analysis, and conducting a proficient level of computer modeling applications and techniques. Mr. Fowler has assisted clients with satisfying their permitting needs involving NEPA/CEQA requirements, as well as other various governing international, federal, state and local noise and vibration compliance requirements.

Mr. Fowler has presented his work at the Acoustical Society of America (ASA), Institute of Noise Control Engineering (INCE), and the American Wind Energy Association (AWEA) conferences. He has also participated as an expert in beta testing the development of noise prediction software and field noise measurement hardware. He has conducted numerous field tests to evaluate product performance

resulting in standardized industry feedback on hardware development flaws to improve and meet specific manufacturer design specifications.

Education

BA Audio and Acoustics, Columbia College, 2005

Registrations/Certifications

County of San Diego CEQA Approved Noise Consultant

Professional Affiliations

Member, Acoustical Society of America (ASA)
Member, Institute of Noise Control Engineering (INCE)

Training

DataKustik CadnaA Advanced Noise Modeling; 2008
NAVCON Engineering Network, Hands on Modeling Testing and Analysis, 2011
National Transit Institute, Transit Noise and Vibration Impact Assessment, 2011
ESI Group, VA One Vibro-Acoustic software SEA, 2014

Project Experience

Killingly Energy Center – Killingly, Connecticut

The project consisted of constructing a proposed 540 megawatt (MW) combined cycle electric generation facility in a 1x1 configuration, fueled primarily by natural gas with ultra-low-sulfur distillate as backup fuel. Tetra Tech conducted a baseline sound survey and an acoustic modeling analysis of the Project using the Siemens turbine as well as incorporating the associated mechanical equipment. The analysis was conducted in accordance with the Connecticut Department of Energy and Environmental Protection and the Town of Killingly noise requirements.

Ocean State Power Project – Providence County, Rhode Island

The project consisted of constructing a new natural-gas fired simple-cycle peak electric generating facility as part of an existing operational power plant in the village of Harrisville, town of Burrillville, Providence County, Rhode Island. The project elements include a GE 7F.05 combustion turbines and associated mechanical equipment. Tetra Tech conducted an acoustic modeling analysis of the Project in accordance with the Rhode Island Energy Facility Siting Board noise requirements. In addition, near-field sound measurements were collected to aid in more in-depth acoustic analysis of existing equipment and for use in analyzing potential noise mitigation measures, if needed.

Canal Generation Station Expansion Project – Barnstable County, Massachusetts

The project consisted of constructing a new dual-fueled simple cycle electric generating facility to be located in Sandwich, Barnstable County, Massachusetts. The new facility is located within the existing Canal Generating Station property. The project elements include the GE 7HA.02 CTG package. Tetra Tech conducted an acoustic modeling analysis of the Project in accordance with the Massachusetts Department of Environmental Protection regulations and noise policy. Tetra Tech prepared documentation necessary for Energy Facility Siting Board (EFSB) review and responded to subsequent comments made by the EFSB on that application.

Swift Current Energy Project – Swift Current, Saskatchewan

The project consisted of a combined-cycle baseload generating opportunity located in Swift Current Saskatchewan with contract delivery to SaskPower. The generation technology for this project was proposed to be either General Electric (GE) 7HA.01 or 7F.05 Combustion Turbine Generator (CTG)

in combined-cycle configuration. Tetra Tech conducted screening level acoustic modeling analysis to evaluate the noise levels from each CTG configurations.

Environmental Noise Impact Analysis of a Power Plant Facility – Oregon, Ohio

The project consisted of the construction of a natural gas fired power plant locate in Oregon, Ohio. The project will be an 800 megawatt plant on an approximately 30 acre site. The acoustical analysis was conducted to document compliance with local jurisdictions as well as the Ohio Power Sitting Board. The acoustical analysis evaluated noise impacts at all property lines as well as sensitive receptor locations for comparison to specific land use noise compliance standards. Noise monitoring was conducted to evaluate and document existing conditions. A robust noise assessment computer model was created using CadnaA in order to calculate and determine worst-case noise propagation impacts at adjacent residential properties from two separate turbine technologies.

Environmental Noise Monitoring Analysis of a Power Plant Facility – Smithtown, New York

The project consisted of the construction of a power plant locate in Smithtown, New York. The acoustical analysis was conducted to document the existing conditions in compliance with local jurisdictions code ordinances. Two noise monitoring systems were deployed to document the existing community noise sources.

Environmental Noise Analysis of an Energy Facility – San Diego County, California

To perform necessary permitting acoustical services for the Bull Moose Energy – Otay Mesa Facility located within the community of Otay Mesa, County of San Diego, California. The project proposes the construction and operation of a wood and green waste energy plant which requires a CEQA noise analysis for site development and building permit approval within the County of San Diego. A field inspection was conducted of the site to document and photograph surrounding developments and land features, and to identify and measure the current ambient traffic noise level impacting the project site. Four consecutive days of ambient noise monitoring on the project site were conducted during weekday and weekend time periods to accurately document the rise and fall of ambient and traffic noise in the area. An acoustical model was prepared to evaluate worst-case operational mechanical equipment noise levels in order to develop land use compatibility noise emission contours at surrounding and adjacent commercial and industrial communities.

Blewett Falls Hydroelectric Power Plant – Lilesville, North Carolina

The dam contains six, quad-runner, horizontal turbines with the capability of drawing substantial fresh air supply through a series of in-line draft tubes to enhance downstream dissolved oxygen concentration levels. The operational air intake vents under high velocity were determined to be problematic when compared to employee hearing conservation thresholds. A complex set of field noise measurements were conducted in 1/3 octave bands for comparison to OSHA's hearing conservation threshold limits. In order to determine worst-case turbine draft tube noise exceedances, it was necessary to operate the hydroelectric facility at full pumping capacity. Noise measurements were calibrated using the noise model CadnaA and plotted to assess compliance at a variety of distances from the air intake vents. Mitigation measures were designed to reduce noise levels to below the OSHA hearing conservation threshold limits.

Landfill Electrical Generation Environmental and Helicopter Impact Analysis – Los Angeles County, California

Sunshine Gas Producers is proposing to develop and operate a gas turbine electrical generation facility at the existing Sunshine Canyon Landfill in northern Los Angeles County, California. They are proposing to install five gas turbines that would utilize currently flared landfill gases to generate power. Sunshine Gas Producers, under the management of DTE Biomass Energy, are to prepare a noise impact analysis in accordance with CEQA requirements to evaluate the potential environmental impacts associated with the renewable energy project. Field inspections of the site were conducted to document and photograph surrounding developments and land features. Four consecutive days of ambient noise monitoring was conducted on the project site around the perimeter boundary lines at noise sensitive receptor locations. Acoustical modeling of worst-case mechanical equipment operations was constructed in topographic detail of the landfill and the surrounding areas to properly evaluate terrain characteristics and acoustical signal propagation. Land use compatibility operational power plant equipment noise contours were evaluated for determining specific localized worst-case exterior noise levels and mitigation measures necessary to attenuate proposed operational noise levels at neighboring residential areas. A helicopter noise impact evaluation was conducted for the installation of new transmission poles along a utility corridor. The project team modeled flight paths, flight elevations, the type of helicopter, and the number of helicopters to generate noise contours for determining impacts to sensitive receptors. Noise contours included the flight path from the airport to the project area as well as hovering for transmission pole installation.

BP Exploration Central Gas Facility – Prudhoe Bay, Alaska

The BP Exploration oil production operations in Prudhoe Bay, Alaska have been ongoing for more than 30 years. Prudhoe Bay is the largest oil field in North America and is among the 20 largest fields ever discovered. BP controls the Central Gas Facility, which is the largest gas handling facility in the world on the North Slope of Alaska. This facility encompasses a variety of multiple modular buildings that contain large turbines used during the extraction and separation process. These modules generate intense noise levels resulting in high noise exposure levels to the employees working within the modules. To document the existing conditions in each module multiple 1/3 octave band noise measurements were conducted within each module. The measurements were used to develop and calibrate a three dimensional noise model. The noise model was used to develop a sophisticated array of noise contours within the modules to evaluate proposed mitigation designs and determine the noise attenuation results. The mitigation designs include sound barriers, absorption panels and baffles, and pipe wrap barriers.

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Belmont Municipal Light Department – Flanders Road Substation – Massachusetts

The Flanders Road Substation project includes the construction and operation of a new substation. An acoustical analysis was conducted to evaluate the noise impacts at adjacent residential communities from the project proposed construction and operations. The analysis included conducting both long-term and short-term noise measurements to document existing ambient noise environment. A 3D model was developed to evaluate the noise impacts from both the construction and operations of the proposed project.

Consolidated Edison – Sugarloaf Transformer – Orange County, New York

This technical noise study provided an analysis of the potential noise impacts associated with the Sugarloaf Substation improvements is located in the County of Orange, New York. Substation improvements included the incorporation of a new step-down transformer with associated switching equipment and an emergency backup generator. Computer model calculations were compared to field ambient baseline measurements to determine potential noise impacts on an exclusive residential community, where existing noise levels measured at the four sensitive receptor locations were compared with the predicted noise model results in compliance with the NYSDEC noise guidelines. A supplemental noise model evaluation was prepared to incorporate the L_{90} data as provided by the client thus yielding all new noise modeling results in the L_{90} metric. A concluding supplemental noise model study was conducted to evaluate three noise barrier mitigation options for final design approval.

Environmental Noise Impact Analysis for Electric Transmission Line – San Diego County, California

On December 18, 2008, the California Public Utilities Commission gave San Diego Gas & Electric final approval for the Sunrise Powerlink electric transmission line, paving the way toward a greener and more reliable energy future in San Diego. Noise propagation calculations were conducted for worst-case blasting operations to determine the effects to known ambient noise levels in the area of the project and to the existing wildlife. A robust noise model was created to evaluate worst-case noise impacts of blasting operations to noise sensitive areas over a continuous 12-hour time period. The noise calculations were then used to determine compliance with local and federal noise regulations.

Noise Analysis for the Expansion of an Electrical Substation – California

Southern California Edison Company (SCE) proposes to upgrade their existing Downs Substation to meet forecasted electrical demand and maintain safe and reliable service to customers in portions of the City of Ridgecrest and the unincorporated Kern County area. The CEQA acoustical analysis evaluates potential noise impacts associated with the various phases of construction and operation to the various land use areas surrounding the project site. Potential noise impacts from the construction and operation of the proposed Downs Substation expansion include the installation of several new transformer cooling stations, a new 115 kV subtransmission line adjacent to the Downs Substation, the stringing of the fiber optic telecommunications cable and the installation of six replacement subtransmission poles. An upgrade of the existing Down Substation is needed to serve increased electrical demand in the Electrical Needs Area as well as improving system reliability and enhance operational flexibility.