STATE OF NEW MEXICO
ENVIRONMENTAL IMPROVEMENT BOARD

IN THE MATTER OF THE APPEALS
OF THE AIR QUALITY PERMIT
NO. 7482-M1 ISSUED TO 3 BEAR DELAWARE OPERATING – NM, LLC. EIB No. 20-21 (A)

AND

REGISTRATION NOS. 8729, 8730, AND 8733
UNDER GENERAL CONSTRUCTION PERMIT
FOR OIL AND GAS FACILITIES EIB No. 20-33(A)

WildEarth Guardians,
Petitioner.

3 BEAR DELAWARE OPERATING – NM, LLC'S STATEMENT OF INTENT TO PRESENT DIRECT TECHNICAL TESTIMONY

Pursuant to 20.1.2.206 NMAC and the July 20, 2020 Procedural Order, 3 Bear Delaware Operating – NM, LLC (3 Bear) gives notice that it intends to present direct technical testimony in opposition to the appeal of air quality Permit No. 7482-M1. 3 Bear states as follows:

1. Chris Colclasure and Joby Rittenhouse are filing this statement on behalf of 3 Bear.
2. 3 Bear opposes the petition at issue.
3. The names of the witnesses are Jeffry D. Bennet, P.E. and Lori K. Marquez.
4. 3 Bear estimates the witnesses will provide 30 minutes of oral direct testimony.
5. 3 Bear intends to offer the three attachments to this pleading into evidence at the hearing. The attachments include the written testimony of Jeffry Bennet and Lori Marquez and their *curriculum vitae*.
6. The witnesses' written direct technical testimony is attached.

3 Bear reserves the right to introduce written rebuttal testimony and related exhibits at the hearing.

Respectfully submitted this 3rd day of August, 2020.

Joby Rittenhouse (Bar No. 153212)
Chris Colclasure (CO Bar No. 32435, appearing *pro hac vice*)
Beatty & Wozniak, P.C.
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ccolclasure@bwenergylaw.com
Counsel for 3 Bear Delaware Operating – NM, LLC

CERTIFICATE OF SERVICE

This is to certify that I have duly served the above STATEMENT OF INTENT TO PRESENT DIRECT TECHNICAL TESTIMONY upon all parties herein by email this 3rd day of August, 2020, addressed as follows:

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Chris Colclasure
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Ortiz, Melayna, NMENV

From: Chris Colclasure <CColclasure@bwenergylaw.com>
Sent: Monday, August 3, 2020 5:13 PM
To: Public Facilitation, NMENV; Ortiz, Melayna, NMENV
Subject: [EXT] FW: 3 Bear's statement of intent to file direct testimony
Attachments: 3 Bear Statement of Intent to File Direct Testimony.pdf; Direct Testimony of JBennett and LMarquez.PDF; Jeffry Bennett resume Ozone.pdf; Lori Marquez--resume-CV.pdf

Good afternoon,
I am forwarding a copy of 3 Bear's Statement of Intent to File Direct Testimony and supporting exhibits, filed today in EIB 20-21(A) and 20-33(A).

Regards,
Chris

From: Chris Colclasure
Sent: Monday, August 3, 2020 5:04 PM
To: 'ksoloria@nmag.gov' <ksoloria@nmag.gov>; 'lara.katz@state.nm.us' <lara.katz@state.nm.us>; Daniel Timmons <dtimmons@wildearthguardians.org>; sruscavagebarz@wildearthguardians.org; Adam Rankin <AGRankin@hollandhart.com>; 'Jill H. Van Noord' <JHVanNoord@hollandhart.com>; 'lrose@montand.com' <lrose@montand.com>; Kari Olson <kolson@montand.com>; Andrew.j.torrant@exxonmobil.com
Cc: Joby Rittenhouse <JRittenhouse@bwenergylaw.com>
Subject: 3 Bear's statement of intent to file direct testimony

3 Bear respectfully files the attached Statement of Intent to File Direct Testimony and supporting exhibits.

Regards,
Chris

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STATE OF NEW MEXICO
ENVIRONMENTAL IMPROVEMENT BOARD

IN THE MATTER OF THE APPEALS OF THE AIR QUALITY PERMIT NO. 7482-M1 ISSUED TO 3 BEAR DELAWARE OPERATING – NM, LLC.	EIB No. 20-21 (A)
AND	
REGISTRATION NOS. 8720, 8730, AND 8733 UNDER GENERAL CONSTRUCTION PERMIT FOR OIL AND GAS FACILITIES	EIB No. 20-33(A)

WildEarth Guardians,
Petitioner.

TESTIMONY OF JEFFRY D. BENNETT, PE, AND LORI K. MARQUEZ

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1. Background

3 Bear Delaware Operating – NM, LLC, owns and operates the 3 Bear Libby Gas Plant (the Libby plant) that is located about 42 miles east- northeast of Carlsbad, New Mexico and 16 miles southwest of Monument, New Mexico. The Libby plant uses a cryogenic gas separation train to process field gas received from three surrounding compressor stations. The plant extracts natural gas liquids from the field gas, resulting in pipeline quality natural gas that is referred to as residue gas.

The Libby plant is a minor source of air emissions for purposes of the Prevention of Significant Deterioration (PSD) regulations. It is located in Lea County, which is currently designated as an attainment area for purposes of the 2015 ozone National Ambient Air Quality Standard (NAAQS). 40 C.F.R. § 81.332. The plant is a major source for purposes of the Title V operating permit regulations. The Air Quality Bureau issued New Source Review (NSR) Permit No. 7482 for the construction of the Libby Plant on January 8, 2018. On September 11, 2019, 3 Bear submitted an application to amend the permit. A revised application to amend the permit was submitted in December 2019. NSR Permit 7482-M1 (the Libby Permit) was issued on April 8, 2020 and is the subject of the appeal in EIB No. 20-21(A).

Barr Engineering prepared the September 2019 permit application and the December 2019 revised application for 3 Bear. Lori Marquez is a Senior Air Quality Consultant for Barr Engineering. She supervised the preparation of the permit application and was designated on the Bureau's Universal Air Quality Permit Application as 3 Bear's Air Permit Contact. Ms. Marquez has served as 3 Bear's air quality consultant for the Libby plant since its construction and is familiar with its operations. Ms. Marquez will testify regarding the Libby plant's emissions and

compliance with air permitting requirements. Jeffry Bennett is a Professional Engineer and Senior Air Quality Engineer employed by Barr Engineering. He will testify regarding the New Mexico air quality modeling procedures, requirements, and guidelines along with the overall evaluation of ozone impacts.

The Libby plant complies with the conditions of NSR Permit 7482-M1 (Libby Permit), which sets enforceable emissions limits and caps the flowrate of process gas entering the facility at 60 million standard cubic feet per day (MMscfd). Libby Permit condition A108(B). The plant also complies with numerous state and federal emissions regulations including standards for hydrocarbon storage facilities, smoke and visible emissions, emissions inventory reporting, 40 CFR Part 60 Subparts Dc, IIII, JJJJ, and OOOOa, 40 CFR Part 63 Subpart ZZZZ, among others.

The Libby plant is a modern and well-designed natural gas processing plant. It was originally constructed in 2018 and 2019, and uses several technologies to reduce emissions. It uses a thermal oxidizer to control emissions from the amine sweetening unit and uses a flare as back-up. Emissions from storage tanks at the Libby plant are controlled with a tank flare. The plant has an emergency and maintenance flare to limit emissions from compressor blowdowns, plant blowdowns, and emergency upset conditions. The lean burn Caterpillar engines are equipped with oxidation catalysts and air fuel ratio controllers to reduce CO, VOC, and HAP emissions; the lean burn technology of these units inherently reduces NOx emissions. The rich burn Waukesha engine is equipped with non-selective catalytic reduction and air fuel ratio controller to reduce NOx, CO, VOC, and HAP emissions. 3 Bear has implemented a leak detection and repair program in accordance with NSPS 40 CFR 60, Subpart OOOOa. NMED has never initiated an administrative or judicial enforcement action against the Libby plant.

2. Permitted Emissions

NSR Permit No. 7482-M1 was issued on April 8, 2020 and revises the plant's original construction permit. As indicated in the WildEarth Guardians petition for hearing, section D, the appeal relates to the modification to the existing permit. The modified permit authorizes the following:

- The addition of residue compressor options to allow installation of lower emitting Waukesha 7044 rich burn engines as availability permitted, in lieu of the originally authorized Caterpillar 3516 lean burn compressor engines. Emission factors for previously permitted Caterpillar units were increased to NSPS JJJJ emission factors for operational flexibility. Permitted potential emission rate (PER) is based on the higher emitting Caterpillar units.
- Addition of a generator engine.
- Additional blowdown of residue gas to plant flare to provide operational flexibility.
- Redesignation of tank purpose (TK-1 through TK-6) with updated emission estimates to better reflect as-built condition.
- Fugitive emissions updates to reflect as built fugitive counts.
- Revision of compressor blowdowns.
- Other minor and administrative changes.

The amendments to the permit's residue compressor provisions allow 3 Bear to install and operate different engine models but do not increase the total number of permitted engines. NSR Permit 7482 authorized seven Caterpillar model G3516 engines with the option to install one Caterpillar G3508 inlet compressor engine to facilitate startup with limited gas. Prior to the issuance of the permit amendment in April 2020, the Libby plant had two Caterpillar engines installed and operating to compress residue gas. The amended permit allows 3 Bear the option of installing and operating four Waukesha model 7044. In June 2020, a third engine was installed to compress residue gas. The third engine is a Waukesha model 7044. Because the Waukesha engine has lower emission factors than the Caterpillar, the plant's engine emissions are lower than they would have been had 3 Bear installed a third Caterpillar engine as authorized by the original permit.

In accordance with 20.2.72.203.A(3), NMAC, the application for the Libby permit modification provided all information, including all calculations and computations, to describe the specific chemical and physical nature and to estimate the maximum quantities of any regulated air contaminants the source will emit through routine operations after construction, modification or installation is completed, and estimate maximum potential emissions during malfunction, startup, shutdown (SSM) as provided in Section 6 of the permit application.

The authorized facility wide emissions in tons/year (TPY) for the original and modified permits are as follows:

	Facility Potential Emissions Rate (PER)	
Permit No.	NOx	VOC
7482	124	111.3
7482 M1	145.8	182.8
PER Increase	21.8	71.5

3. Statutory and regulatory requirements for issuance of this minor permit in New Mexico

The statutory requirements and regulatory requirements for permit application and issuance are clearly defined in 20.2.72.203 and 20.2.72.207, NMAC, in accordance with the Air Quality Control Act (Chapter 74, Article 2), Section 74-2-7 Permits. The permit was issued based on the application that included all the relevant information necessary including information related to sections 20.2.72.203(A)(3), Emissions Calculations and (A)(4), Compliance Evaluations that "demonstrate that emissions from routine operations will not violate any New Mexico or National Ambient Air Quality Standard."

The New Mexico permitting program does not require an ambient air quality impacts analysis for ozone precursors emitted from minor sources or minor modifications. The New Mexico Air Quality Bureau, Air Dispersion Modeling Guidelines (revised June 6, 2019) specifically address the air quality analysis requirements for ozone precursors for PSD minor sources on page 12: "Ozone and Volatile Organic Compound (VOC) emissions do not currently

require a modeling analysis for a PSD minor source. If NOx or VOCs are subject to PSD review, you should contact NMED and the EPA Regional Office to determine current ozone modeling requirements." This is consistent with 40 CFR Part 51 Appendix W and EPA guidance (EPA Draft Guidance for Ozone and Fine Particulate Matter Permit Modeling, February 10, 2020, page 7), which require an ozone impacts analysis only for projects with VOC and NOx emission increases above the Significant Emission Rates (SER) at PSD major sources.

In addition, Section 2.6.5 Modeling Ozone (O_3) Standards - page 24 of the guideline - provides the following, "In accordance with this guidance, NMED performs ozone modeling on a regional scale as need arises, rather than requiring permit applicants to quantify their contribution to a regional ozone concentration. Comprehensive ozone modeling is too resource intensive to attach this expense to a typical permit application, and screening modeling on an affordable scale currently cannot quantify a source's impacts to ambient ozone concentrations."

The permit application included a regulatory compliance discussion to fulfill the requirements of 20.2.72.203(A)(4), NMAC, which states that:

> All applications shall, as required by the department contain a regulatory compliance discussion demonstrating compliance with each applicable air quality regulation, ambient air quality standard. . . . The discussion must include an analysis, which may require use of US EPA-approved air dispersion model(s), to demonstrate that emissions from routine operations will not violate any New Mexico or National Ambient Air Quality Standard or prevention of significant deterioration increment.

In accordance with this requirement and the Air Dispersion Modeling Guidelines, the application for the Libby permit included dispersion modeling for criteria pollutants including CO, NO_2, $PM_{2.5}$, PM_{10}, and SO_2 but did not include ambient impacts modeling for ozone.

4. New Mexico's permitting requirements are consistent with the permitting requirements of EPA and other states

The relevant provisions of New Mexico's permitting regulation have been approved by the United States EPA and are consistent with the rules followed by other states with respect to source specific ozone analysis for minor stationary sources. Colorado, Oklahoma, and Texas have federally designated nonattainment areas or have areas that are above 95% of the standard and have significant oil and gas presence. These similarities to New Mexico provide perspective for comparison to New Mexico's permitting program.

(a) <u>EPA approved the permitting rules in New Mexico's infrastructure SIP</u>

The "infrastructure" State Implementation Plan pertaining to the implementation, maintenance, and enforcement of the 2015 8-hour ozone NAAQS was approved by USEPA on September 19, 2019. Specifically, EPA approved the permitting program for minor sources and minor modifications (see excerpt from Table 1 of 84 Fed. Reg. 49057, 49060 (Sept. 18, 2019). This approval indicates that New Mexico has a minor source permitting program that provides for protection of the ozone NAAQS. The USEPA SIP approval process requires an evaluation of the

sufficiency of the regulations and supporting statutes along with the efficacy of the procedures used to implement the regulations. *See* 42 U.S.C. § 7410(k). Therefore, since the permit was issued appropriately under this program, the permit and its supporting findings are valid.

Table 1 – Final Action on New Mexico Infrastructure SIP Submittals for the 2015 Ozone NAAQS

Element	2015 Ozone Status
(A): Emission limits and other control measures	Approved
(B): Ambient air quality monitoring and data systems	Approved
(C)(i): Enforcement of SIP measures	Approved
(C)(ii): PSD program for major sources and major modifications	Approved
(C)(iii): Permitting program for minor sources and minor modifications	Approved

(b) Colorado

The statutory requirements and regulatory requirements for permit applications and issuance are defined in 5 CCR 1001-5, AQCC Regulation Number 3 "Stationary Source Permitting and Air Pollutant Emission Notice Requirements." Requirements to permit under Colorado rules are tied to "air pollutants" and "criteria pollutants" emitted. While ozone is a listed air pollutant and criteria pollutant, it is not directly emitted, therefore, only its precursors, NOx and VOC, are addressed in the minor stationary source permitting process. For ozone nonattainment areas, the precursors have lower major source thresholds depending on the severity of the nonattainment status, consistent with the Part 70 thresholds.

The Denver Metro/North Front Range ozone nonattainment area recently changed from Moderate to Serious nonattainment under the 2008 ozone NAAQS. The reclassification requires the state's permitting program to apply a lower threshold for permitting large sources (e.g., Part 70 Major Source threshold for ozone precursors dropped to 50 TPY). In addition, the State is required to revise its SIP in order to attain the ozone standard, and adopt new categories of controls, or reasonably available control technologies, on emissions sources.

Regulation 3, Part B Section III.D.1.d states that "the Division shall grant the permit if it finds that . . . The source or activity will meet any applicable ambient air quality standards and all applicable regulations." This is comparable to 20.2.72.208, NMAC, which makes issuance of a permit contingent on finding that the facility will not cause or contribute to a NAAQS exceedance.

Similar to New Mexico, Colorado does not require single-source ozone impacts analysis before issuing minor source permits. Colorado's draft modeling guidance requires sources in nonattainment areas to analyze and discuss ambient air quality impacts following EPA guidance regarding how to perform an analysis for precursors to ozone. Draft "Colorado Modeling Guideline for Air Quality Permits" at 13 (May 2018). As noted above, EPA regulations and guidance do not require single-source ozone modeling for PSD minor sources. Colorado's draft modeling guidance also states that "In general, accurate and cost effective methods for modeling

ozone impacts from stationary point sources are not available. Therefore, ozone modeling is not routinely requested for construction permits, although it could be in unusual cases such as situations where the Division believes ozone standards could realistically be violated by the proposed source or modification." *Id.* at 54.

(c) Oklahoma

The statutory requirements and regulatory requirements for permit application and issuance are defined in OAC Title 252, Chapter 100. Requirements to permit under Oklahoma rules are tied to regulated air pollutants directly emitted or that have the potential to emit. While ozone is a listed regulated pollutant, it is not directly emitted, therefore, only its precursors, NOx and VOC, are addressed in the minor stationary source permitting process. For ozone nonattainment areas, the precursors have lower major source thresholds depending on the severity of the nonattainment status, consistent with the Part 70 thresholds. However, Oklahoma currently has no ozone nonattainment areas. Oklahoma has multiple monitors in and around Oklahoma City and Tulsa which have exceeded the standard in the last several years. Several are above 95% of the standard but none have violated the standard.

Under Oklahoma's modeling guidance (Air Dispersion Modeling Guidelines for Oklahoma Air Quality Permits, Air Quality Division Oklahoma Department of Environmental Quality, June 2017), air dispersion modeling analyses may be required with an Air Quality permit application under Oklahoma Administrative Code (OAC), Title 252, Chapter 100, Subchapters 8, 31, and 42 (Part 70 sources and major NSR, sulfur compounds, and toxic air contaminants, respectively). Modeling design values are provided for NO_2, $PM_{2.5}$, SO_2, CO, and PM_{10} to compare to the NAAQS (Table 2.2 OK AQ Modeling Guidance, June 2017). The ozone standard is not included in the table. Criteria pollutant modeling to demonstrate compliance with the NAAQS is required of any new Title V major source or modification to an existing major source with a net increase of 100 TPY of a single criteria pollutant. For ozone impacts analysis, the modeling guidance requires the use of US EPA's Modeled Emission Rate for Precursors (MERPs). OK Air Dispersion Modeling Guidance § 2.4.7.4.

(d) Texas

The statutory requirements and regulatory requirements for permit application and issuance are defined in 30 TAC 106 for Permits by Rule (PBR), Subchapter O: Oil and Gas; 30 TAC 116 Subchapter B: New Source Review (NSR), Subchapter F: Standard Permits, and Subchapter G for Flexible Permits.

Requirements to permit under Texas rules are tied to air contaminants emitted or that have the potential to emit. While ozone is a listed regulated pollutant, it is not directly emitted, therefore, only its precursors, NOx and VOC, are addressed in the minor stationary source permitting process. For ozone nonattainment areas, the precursors have lower major source thresholds depending on the severity of the nonattainment status, consistent with the Part 70 thresholds. Texas currently has several ozone nonattainment areas.

Under 30 TAC 116.111, construction permits and amendments for facilities require an air quality impacts analysis. Texas refers to this as a protectiveness or impacts review. Air Quality

Modeling Guidelines, APDG 6232, at 11 (Nov. 2019).

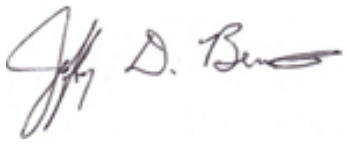
However, Appendix Q of the Texas air modeling guidelines requires an ozone ambient impact analysis only for PSD permit applications. The guidelines thoroughly detail the requirements for analyzing ambient impact analysis for ozone if there is a net emissions increase of 100 TPY or more of VOC or NOx subject to PSD and provides a recommended ozone Significant Impact Level (SIL) of 1 ppb.

To summarize, New Mexico's decision not to require ambient ozone impacts analysis for minor sources is consistent with the regulations and guidance approved by EPA and used in other states. These states consistently do not require ozone ambient air impacts analysis or modeling for facilities classified as minor stationary sources.

5. Conclusion

The application to modify NSR Permit 7482 contained all information required by New Mexico's air quality regulations, including a regulatory compliance discussion demonstrating compliance with each applicable air quality regulation and ambient air quality standard. The Air Quality Bureau reviewed and approved the modeling for criteria pollutants including CO, NO_2, $PM_{2.5}$, PM_{10}, and SO_2. The applicable guidelines do not require modeling of ambient air quality impacts for ozone.

NMED appropriately determined that it is not necessary for minor sources of NOx and VOCs to analyze their potential impacts on ambient ozone concentrations. This decision is consistent with other state permitting programs and EPA regulations and guidance regarding secondary pollutant analysis for single sources.



Jeffry Bennett, PE, Senior Air Quality Engineer, Barr Engineering
MO E-29380

Lori K Marquez, Senior Air Quality Consultant, Barr Engineering

Experience

Lori Marquez is an engineer with more than 30 years of experience in the environmental and design engineering fields. Her work has included regulatory analysis, negotiation, permitting, and auditing in support of Clean Air Act, NEPA and the Atomic Energy Act compliance efforts. Lori brings extensive air quality experience, including permitting, compliance, and emission inventories for minor, Title V, and PSD sources across multiple states and industries. She has assisted clients in numerous complex regulatory and compliance issues at Title V and PSD major sources and has assisted clients in the design phase of natural gas processing plants to assure compliance with air regulations. She is well versed in federal regulations such as, NSPS Kb, Dc, IIII, JJJJ, OOOO, and OOOOa; and NESHAP HH, ZZZZ, DDDDD, and JJJJJJ.

Examples of Lori's experience include:

- Providing ongoing support for clients in preparing and submitting permit applications, including minor source, Title V, and PSD facilities in the oil and gas industry, as well as in other sectors, such as manufacturing, agriculture/fertilizer, asphalt, and the federal government. Responsible for all phases of application development including analysis, regulatory review, modeling protocol, modeling (AERSCREEN, GLYCalc, AmineCalc, AERMOD, TANKS, E&PTANKS, Promax, HYSYS), landowner and public notification, and preparation of state specific application forms. Geographical expertise in multiple states and tribal lands.
- Providing air services to U.S. General Services Administration to prepare permit applications and regulatory compliance support for boilers used for building/hot water heat and emergency generators. Project includes 1) federal (NSPS Dc, IIII, and JJJJ; NESHAP ZZZZ and JJJJJJ; Title V) and state regulatory applicability review and current compliance status; 2) permit application preparation and submittal; and 3) recommendations and set up of on-going compliance demonstration documents. Set up plans and procedures for facility modifications to help ensure that 1) purchased equipment complies with regulatory emission standards, 2) permit applications and initial notifications are submitted in a timely manner, and 3) ongoing compliance demonstrations are implemented.
- Performing air quality analyses to support NEPA requirements at several planned surface and underground coalmine operations in Utah. Responsible for developing an analysis method for coal mines in the conceptual design stage. This included establishing a baseline set of assumptions, preparing and obtaining approval of a work plan and modeling protocol, calculating potential emissions, performing nearfield (AERMOD) and far field (CALPUFF) impact modeling, and preparing a technical report and EIS chapter summaries for each location.
- Performing air toxics inventory reporting for polymer and adhesives facility in Texas and preparing air permit application for facility modification.
- Managing and performing air quality analyses for ski area expansions in Mt. Crested Butte, Aspen, Telluride, Steamboat Springs, and Vail, Colorado, Loon Mountain, New Hampshire, and Mt. Bachelor, Oregon, to support NEPA and General Conformity requirements. Developed comprehensive emissions inventories resulting from stationary, mobile, and area sources including operational phase, and construction phase with controlled burn strategies. Performed air quality modeling for complex terrain using various EPA Appendix

A and B dispersion models for PM10, nitrogen oxides and carbon monoxide. Assessed various control strategies to mitigate air quality impacts resulting from the ski area expansions.

- Preparing and submitting annual emissions inventories for oil and gas facilities. Responsible for all aspects of emission inventory development including formulating analysis methodologies, compiling field data, analysis of data, calculation of actual emissions, and preparation of state specific annual emissions inventory forms.
- Managing and performing an air quality analysis for the Carlsbad, New Mexico, BLM RMP.
- Performing an air analysis for a proposed helicopter skiing operation.
- Performing phase 1 and phase 2 beta testing of the Oklahoma emission inventory electronic filing system. Worked with regulators to address and correct technical issues associated with the new system. Efforts facilitated client's annual emission inventory submittal and established a good working relationship with the regulatory personnel.
- Helping a nuclear power client to address environmental compliance issues associated with thermally cutting a large steel structure with potential radioactive contamination and coated with paint containing PCBs. Efforts included a presentation to the EPA and resulted in a mutually acceptable dismantlement approach. Assisted client in ultimate disposal requirements of the specification cut steel pieces.
- Supporting client with preparation and submittal of semi-annual and annual compliance certifications for facilities holding Title V permits. Responsible for all phases of the certification process including interface with field personnel, analysis of monitoring data, review of permit requirements, and report preparation.
- Preparing air quality modeling protocol and performing modeling for a Nevada coalmine operation.
- Helping a client prepare and submit MACT registrations for oil and gas facilities. Met client's rigorous internal deadline for completion of registrations.
- Managing and performing Colorado Springs regional and sub-regional air quality trend analyses for each criteria pollutant. Also performed AIRS data upload quality assurance check and provided technical information for an air quality trends brochure. Air quality trends brochure became a valuable tool for general, public education.
- Managing the meteorological and radiological ambient air monitoring programs at the Rocky Flats Environmental Technology Site. Responsibilities included development of a task plan for the operation, maintenance, data validation, and calibration of several monitoring sites; implementation of the plan; coordination, scheduling, maintenance support, and oversight of the activities. Efforts resulted in key system improvements.
- Managing the Community Radiation Monitoring Program maintenance contract for the DOE. Responsibilities included developing a task plan for the operation and maintenance of several monitoring sites, implementing the plan, recommending system upgrades, coordination, scheduling, and oversight of the activities. Efforts resulted in improved system operation and acceptance of a system upgrades plan.

- Designing a methodology to assess the vehicular related air quality impact of corridor changes in Denver involving several transportation scenarios. Managed the assessment effort and wrote the final report.
- Managing and performing an air quality analysis of traffic changes resulting from a U.S. Post Office construction project in Telluride, Colorado. Results were used to comply with General Conformity and NEPA requirements as part of the Environmental Assessment process and resulted in successful approval of the Environmental Assessment and ultimate construction of the new post office.
- Performing air quality carrying capacity studies for the town of Telluride, Colorado, to facilitate growth-planning activities. Developed comprehensive emissions inventories resulting from stationary, mobile, and area sources. Performed air quality modeling and hot-spot analyses in complex terrain using various EPA Appendix A and B dispersion models. The data were used by planners to establish a growth scenario that would not degrade air quality.
- Supporting development and implementation of the DOE regulatory compliance program for training and qualification of nuclear facility workers involved in radioactive waste management and Rocky Flats Environmental Technology Site closure operations. Efforts resulted in successful documentation of compliance status.
- Managing technical support services for a DOE domestic wastewater facility. Supported a variety of projects including installation of an ultraviolet disinfection system. Outstanding performance resulted in additional projects with increased complexity.
- Serving as a member of the Transportation Conformity Subcommittee to develop initial Regulation 10 Criteria of Conformity for the State of Colorado. Regulation was adopted by the state.
- Co-chairing, with NREL delegate, the R&D Partnerships roundtable session of the Colorado White House Environmental Technologies Conference. Conference was one of a series of regional conferences requested by Vice President Al Gore to foster the development and deployment of innovative technologies that facilitate environmental improvements while generating jobs, exports, and economic growth. Presentation to a host of distinguished guests showcased a successful partnership between government, industry, and academia.
- Developing and managing a strategy to implement the Alternative Fuel Data Collection program in Colorado for DOE - National Renewable Energy Laboratories (NREL). Created temporary data structures to manage data while network database system was developed. Became the leading contractor in the U.S. for data collection to support this program.
- Developing and installing an ambient air filter pack sampling system for long-term use at the University of Colorado Mountain Research Station. System measured trace quantities of nitrogen species in the nanogram/m3 range in ambient air, including levels of particulate nitrate, ammonium and gaseous nitric acid. Utilized dichotomous sampling system (analysis of fine versus coarse particle fractions) for comparison to the filter pack system. Study supported the formation of wet-dry deposition models for the Niwot Ridge Long Term Ecological Research.

- Performing engineering design, configuration management, and project management activities for eight years in the nuclear energy field. Part of the development team that wrote the "Configuration Management Program Plan" for the Fort St. Vrain Simulation Facility. Addressed design control, software control, operation, and quality control of the facility.
- Serving as a member of a task force to streamline the plant design control process for use at the Fort St. Vrain Nuclear Generating Station. Wrote lesson plans and instructed engineering personnel on an improved design control process.
- Serving as the engineering representative of a team that reviewed and revised plant administrative procedures to comply with regulatory requirements. Served as a primary contact for Nuclear Regulatory Commission auditors. Reviewed detailed nuclear qualification files to ensure compliance with regulatory requirements.

Education

MS, Environmental Sciences, University of Colorado
Thesis: Nitrogen Deposition to the Alpine Tundra at Niwot Ridge, Colorado

BS, Electrical Engineering, Purdue University
Emphasis: Control System Design

Training

Oklahoma Department of Environmental Quality E-Permitting training, 2016

BR&E Promax Training, Bryan Research & Engineering, Inc., 2014

16-Hour NSPS Subpart OOOO industry training, 2012

24-Hour Advanced AERMOD, Oris-Solutions Enviro-Mod University, 2008

16-Hour Introduction to Oil and Gas Technology, Baker Hughes, 2008

16-Hour NSR and Title V Permitting, Trinity Consultants, 2006

24-Hour Modeling for Permits, Bowman Environmental, 2005

Affiliations

Board member, Air & Waste Management Association, Rocky Mountain Section

Publications

Sievering, H., Rusch, D., and Marquez L., "Nitric Acid, Particulate Nitrate and Ammonium under Continental, Clean Air Conditions and Nitrogen Deposition to an Alpine Tundra Ecosystem at Niwot Ridge, Colorado", *Atmospheric Environment*, Vol. 30, No. 14, pp.2527-2537, 1996.

Presentations

"Digital Logic Gets Nuked, An Honest and Somewhat Humorous Presentation of Using Life's Detours and Lessons to Create One's Own Version of Success," presented at electrical engineering senior seminar, Purdue University, West Lafayette, Indiana, April 2017.

Colorado White House Environmental Technologies Conference, R&D Partnerships roundtable, Co-chair with NREL delegate, Golden, Colorado, September 1996.

Marquez, L., and Sievering, H., "Atmospheric Loading of Nitrogen to Alpine Tundra at Niwot Ridge, CO", American Geophysical Union Fall Meeting, San Francisco, California, Ref. #H22A-3, 1993.

Experience

Jeff has 27 years of experience in air quality management, permitting, control, and regulation. He has considerable expertise with ozone, $PM_{2.5}$, and regional haze modeling analyses, much of it gained in regulatory settings. Specifically, he was the principal author of the St. Louis 1-hour and 1997 8-hour ozone and 1997 and 2006 $PM_{2.5}$ attainment demonstrations as part of the State Implementation Plans (SIPs) including development of the technical support documents for the plans. The technical support documents included base-year and future year emission inventories, summaries of the requisite photochemical modeling, and the demonstrations of modeled attainment.

Jeff conducted and supervised all the modeling for these plans in cooperation with the Illinois Environmental Protection Agency. In addition, Jeff was one of the primary authors for the Missouri upwind NOx source regulation for large NOx sources in counties south of the St. Louis area. This regulation was developed in 2005 to address concerns regarding downwind ozone impact from Prevention of Significant Deterioration permits issued in upwind counties. The requirements for the rule were based on photochemical modeling that was conducted and supervised by Jeff. The rule allowed for sources with NOx emissions less than 900 tons per ozone season to obtain permits. The regulation allowed for regional modeling to be completed by the project proposer to demonstrate less than a 1 part per billion increase on critical grid cells.

Jeff also worked with regulated facilties to determine appropriate Reasonably Available Control Technology (RACT) requirements and negotiated controls/emission reductions as part of the approved SIPs.

Currently, he assists Barr's clients with issues involving air quality and environmental compliance, including:

- Complex local and regional air-quality modeling analyses
- Expert testimony
- Regulatory negotiations
- State and federal construction and operating permits
- Technical and economic feasibility studies for pollution control equipment and processes, particularly analyses involving permitting and mandated control requirements for nonattainment areas
- Chemical mass balances
- Evaluation of new air-quality regulations for direct or secondary impacts
- Emission inventories for greenhouse gases, criteria pollutants, and hazardous air pollutants

Since joining Barr in 2011, Jeff has worked on a number of projects for fuels, mining and other manufacturing/industrial clients, including:

- Coordinating and completing air dispersion modeling for multiple clients and other sources in a common airshed to support permit issuance for all sources involved.

- Photochemical modeling and regulatory support for clients contesting proposed federal rule-making requirements that were modified in the clients' interest.
- Modeling criteria pollutants and air toxics at a refinery where development of complex regulatory options for future operation of the modified sources was necessary.
- Successfully negotiating a non-standard modeling solution for a client with unique topographic and meteorological circumstances with EPA.

Before Jeff joined Barr, he served as executive director of Central States Air Resource Agencies, a nonprofit collaborative of nine Midwest air-quality management agencies. In that role, he worked to facilitate air quality planning among state pollution-control agencies, the U.S. Environmental Protection Agency, and Native American tribes.

The majority of Jeff's experience was gained during 17 years with the Missouri Department of Natural Resources' Air Pollution Control Program. He first worked as an environmental engineer, but for most of his tenure served as chief of the Air Quality Modeling Unit, a role in which his responsibilities included:

- Assigning, tracking, and overseeing all regulatory and regional air-quality modeling in the state of Missouri
- Developing conditions for construction and operating permits to ensure compliance with National Ambient Air Quality Standards (NAAQS) and air-quality increment standards
- Conducting public educational meetings throughout Missouri about revised ozone and lead air-quality standards
- Coordinating a multi-program air-toxics monitoring project and numerous criteria-pollutant monitoring programs
- Developing technical and policy positions for ozone and particulate matter
- Performing and reviewing visibility analyses along with determining control requirements under the BART (Best Available Retrofit Technology) component of the U.S. EPA's regional-haze regulations
- Reviewing staff engineers' BACT (Best Available Control Technology) conclusions and permit conditions
- Assisting the permitting section of the MDNR's Water Protection Program by providing procedure and policy recommendations for the implementation of anti-degradation requirements

Jeff has provided numerous presentations at state, regional, and national environmental conferences that are focused on regulatory negotiations, air quality modeling policy/regulation, and air quality permitting.

Education BS, Chemical Engineering, University of Missouri-Columbia

Registration Professional Engineer: Missouri