DUKE ENERGY OHIO EXHIBIT____

BEFORE

THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of Duke Energy Ohio, Inc., for an Adjustment to Rider MGP Rates.	)))	Case No. 19-174-GA-RDR
In the Matter of the Application of Duke Energy Ohio, Inc., for Tariff Approval.	))	Case No. 19-175-GA-ATA

DIRECT TESTIMONY OF

SHAWN S. FIORE

ON BEHALF OF

DUKE ENERGY OHIO, INC.

_____	Management policies, practices, and organization
_____	Operating income
_____	Rate Base
_____	Allocations
_____	Rate of return
_____	Rates and tariffs
X	Other: Manufactured Gas Plant Site Remediation

March 29, 2019

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ATTACHMENTS:

SSF-1: Curriculum Vitae

SSF-2: Confidential Evaluations of Remedial Alternatives

I. INTRODUCTION AND PURPOSE

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND POSITION.

A. My name is Shawn S. Fiore. My business address is 6500 Rockside Road, in Independence, Ohio. My position is Senior Vice President of Haley & Aldrich, Inc.

Q. PLEASE BRIEFLY SUMMARIZE YOUR EDUCATIONAL AND PROFESSIONAL EXPERIENCE.

A. I earned a Bachelor of Science Degree in Geochemistry from Bowling Green State University, in Bowling Green, Ohio; in May 1986. I earned a Master of Science Degree in Geology from Bowling Green State University in August 1993. I am a licensed Professional Geologist in Indiana and Pennsylvania, and a Voluntary Action Program (VAP) Certified Professional (CP), in Ohio. I have been a CP since 1996. I have more than 30 years of experience working in the environmental consulting industry. I began my career as an environmental geologist for Engineering-Science Inc. (later Parsons Corporation), in 1988, in Chicago, Illinois, and continued to work with this company until 2002, when I joined Haley & Aldrich. I have worked predominantly on environmental investigation and remediation projects during my career, focusing on Manufactured Gas Plant (MGP) projects for the past fourteen years. I have completed professional assignments, including investigation and remediation projects, throughout the United States and in Canada, Mexico and other countries. I have presented at several professional conferences, seminars and meetings, including those at the invitation of the Ohio Environmental Protection Agency (Ohio EPA), Fortune 50 Companies and non-profit groups, as listed in my Curriculum Vitae, provided as Attachment SSF-1.

Q. HAVE YOU PREVIOUSLY SUBMITTED TESTIMONY OR TESTIFIED BEFORE THE PUBLIC UTILITIES COMMISSION OF OHIO?

A. Yes, I testified on behalf of Duke Energy Ohio, Inc. (Duke Energy Ohio) in Case No. 12-1685-GA-AIR, *et al.* (Natural Gas Rate Case).

Q. WHAT DOCUMENTS HAVE YOU REVIEWED IN THE PREPARATION OF YOUR TESTIMONY?

A. As the CP for the work at the East End site, I am familiar with the details of the work that has been performed by the Company at the site and have reviewed documents that have been prepared in connection with the investigation and remediation of the East End site. Although I have not been as involved with the investigation and remediation of the West End site, I have reviewed documents prepared for Duke Energy Ohio by other consultants performing work at the West End site.

Q. WHAT IS THE PURPOSE OF YOUR PREFILED TESTIMONY?

A. The purpose of my testimony is to describe Ohio's VAP, Duke Energy Ohio's compliance with VAP requirements and the prudence of the plans developed and actions taken as related to Ohio requirements and practical considerations. My testimony also addresses issues that I understand have been raised by the parties involved in this case regarding Duke Energy Ohio's work that was performed in the Area West of the West Parcel at the East End site and in the Ohio River at both the East End and West End sites.

Q. PLEASE SUMMARIZE YOUR PREFILED TESTIMONY.

A. My testimony focuses on a description of the Ohio VAP and regulation of VAP

CPs, and to provide a discussion of VAP applicable standards associated with the environmental investigation and remediation activities, as relevant to Duke Energy Ohio's East End and West End sites. I previously prepared pre-filed testimony and provided oral testimony in the Natural Gas Rate Case. My previous testimony remains accurate today, and this testimony will be focused on activities that have occurred since my previous testimony was submitted.

II. ENVIRONMENTAL REMEDIATION ACTIVITIES

Q. PLEASE DESCRIBE YOUR EXPERIENCE IN INVESTIGATING AND REMEDIATING CONTAMINATED PROPERTIES.

A. During my approximately 30-year professional career, as discussed previously, I have predominantly focused on investigation and remediation of contaminated sites. I have completed hundreds of professional assignments on contaminated properties in Ohio and beyond, including more than 20 Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and Superfund Sites (which are some of the most contaminated sites in the country) more than 50 former industrial properties or "brownfield sites," more than 200 active industrial facilities, more than 100 commercial facilities, several former wood preserving facilities, more than 20 Department of Defense (DOD) facilities and on MGP sites in Ohio, Pennsylvania, Indiana, and Michigan. Specifically, in Ohio, I have conducted investigations and remediations on multiple contaminated sites regulated by the US EPA, including CERCLA and Superfund sites, Resource Conservation and Recovery Act (RCRA) sites, formerly used DOD sites, hazardous waste landfills, and other sites. I have conducted investigations and remediations

on sites regulated by the Ohio EPA, including Division of Environmental Response and Remediation (DERR) sites, active and inactive industrial facilities, landfills, commercial properties, brownfield sites, residential properties, abandoned / undeveloped properties, and MGP sites. I have completed investigation and remediation projects in all five Ohio EPA districts. I have also conducted investigations and remediations on other contaminated sites in Ohio regulated by the Bureau of Underground Storage Tank Regulations (BUSTR). I have been involved with the East End and West End sites since 2009.

Q. PLEASE DESCRIBE YOUR INVOLVEMENT WITH THE OHIO VOLUNTARY ACTION PROGRAM (VAP).

A. I was certified by the Ohio EPA as a CP in 1996. I have been re-certified, by the Ohio EPA, every year since. I have participated in the VAP in a number of ways including practicing as a VAP CP for more than 23 years on more than 50 properties, obtaining recertification annually through participation in ongoing professional development training as required by the VAP, providing comments and input to Ohio EPA on proposed rule changes regarding the VAP, participating in Ohio EPA=-led training sessions to enhance my knowledge of the VAP rules and requirements, working with the Ohio EPA through Technical Assistance to identify and solve complex project-related issues not directly included in the rules, participating on multi-disciplinary tasks groups (including Total Petroleum Hydrocarbons and Background Metals concentrations), participating in and providing feedback as part of a multidisciplinary stakeholder review process implemented by the Ohio EPA, and presenting at CP training sessions or other Ohio

EPA-led meetings designed to provide additional and ongoing training for VAP CPs. I have also been contacted by other VAP CPs, working on MGP sites in Ohio, to provide information on mitigation of MGP-related wastes under the VAP.

Q. HAVE YOU BEEN INVOLVED IN INVESTIGATING AND REMEDIATING ANY MGP SITES IN OHIO?

A. Yes. I have been involved in investigating and remediating MGP sites in Ohio since 2005. I have investigated more than 22 MGP sites in Ohio and have been involved in the remediation of eight MGP sites, to date, with two more in the planning or design stage, which, I believe makes me the CP with the most experience in investigating and remediating MGPs in Ohio, under the VAP.

Q. HAVE YOU BEEN INVOLVED IN INVESTIGATING AND REMEDIATING ANY MGP SITES IN OHIO UNDER THE VAP?

A. Yes, the sites indicated in my response to the previous question have been or are being investigated or remediated following VAP rules.

III. THE OHIO VOLUNTARY ACTION PROGRAM

Q. THE RECORD IN THE NATURAL GAS RATE CASE DETAILS THE VAP REQUIREMENTS, THE PROCESS OF OBTAINING A NO FURTHER ACTION (NFA) LETTER AND REQUESTING A COVENANT NOT TO SUE (CNS). HAVE THERE BEEN ANY CHANGES TO THE VAP PROGRAM OR PROCESS, OR IS THERE ANYTHING THAT SHOULD BE ADDED TO YOUR PREVIOUS TESTIMONY?

A. No. Information on the VAP's purpose, requirements, process for obtaining a NFA letter and a CNS, as well as how the program applies to the East End and West End

sites is described at length in the Commission's November 13, 2013 Opinion and Order in the Natural Gas Rate Case (Opinion and Order).[1] Likewise, the Commission's Opinion and Order provides descriptions of the impact of Ohio rules and the Ohio EPA cleanup program under the VAP.[2] This information was also the subject of my written direct testimony in the Natural Gas Rate Case and discussed during the prior hearing.

This information remains accurate today and as such, I will focus my testimony on activities occurring during the periods relevant to this proceeding. As described in the Commission's Opinion and Order, because CPs act as agents of the State within the VAP program, the VAP also contains a comprehensive program regulating CPs, which includes verification of educational and work experience, certification criteria, initial and ongoing training requirements (initially and annually), a determination of professional competence, regulation of conduct, and other items.[3]

Q. THE RECORD IN THE NATURAL GAS RATE CASE DETAILS THE REQUIREMENTS TO BECOME A VAP CP AND TO MAINTAIN THE CERTIFICATION, AS WELL AS THE PROFESSIONAL STANDARDS THAT MUST BE MET TO MEET THE STATUTORY OBLIGATIONS OF A VAP CP. HAVE THERE BEEN ANY CHANGES TO THE VAP CP REQUIREMENTS?

A. Generally, no. The VAP rules undergo regular review and amendment by the

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[1] *In the Matter of the Application of Duke Energy Ohio, Inc., for an Increase in its Natural Gas Distribution Rates,* Case No. 12-1685-GA-AIR *et al.*, (Opinion and Order at 23-31) (November 13, 2013).
[2] Id.
[3] Id. *at 30.*

Agency. However, the general criteria to become a VAP CP has not materially changed from the process as described in the Natural Gas Rate Case record. A person must meet several criteria to become a VAP CP, including (1) hold a bachelor's degree from an accredited school in an appropriate engineering or science discipline; (2) have 8 years of professional experience related to cleanup work, including three years as a supervisor or project manager; (3) possess good moral character; (4) possess the professional competence and knowledge to perform the tasks required of a CP; and (5) take the initial training class offered by the Ohio EPA. As noted above, I been a CP since 1996 and have obtained re-certification every year.

Q. THE RECORD IN THE NATURAL GAS RATE CASE DETAILS THE REQUIREMENTS TO DETERMINE WHETHER AN NFA LETTER MAY BE ISSUED FOR A PROPERTY. HAVE THERE BEEN ANY CHANGES TO THESE REQUIREMENTS?

A. As discussed above, Ohio EPA reviews and amends the VAP rules on a regular basis, but there have not been significant changes to the process for determining whether an NFA letter may be issued for a property. In order to determine whether an NFA letter may be issued for property, the CP must follow the VAP rules to confirm that property is eligible for participation in the VAP, ensure that the property is investigated in accordance with the VAP rules, while utilizing analytical data from a VAP-certified laboratory, identify all applicable VAP standards, determine whether all applicable VAP standards have been met, and, if not, ensure that remediation required to meet applicable standards has been completed. All

information obtained under the VAP must be certified to truth, accuracy and completeness by way of an affidavit. Once applicable standards have been met, an NFA letter may be issued for the property by the CP under affidavit. It is also important to note that the NFA letter applies to the work conducted and conditions known to exist at the time it is issued. In the event that, subsequent to the date that a CP issues an NFA letter, the CP learns that relevant facts, data or other information existed at the time the NFA letter was issued which indicates that applicable standards were not met, the CP must: (1) promptly notify the remediating party or the owner or operator of the property, if different, that the applicable standards were not met and of the need to notify the Director of Ohio EPA; and (2) notify the Director of Ohio EPA that applicable standards were not met if the remediating party, or the owner or operator of the property, if different, does not submit written confirmation to the CP within thirty days of learning of the relevant facts, data, or other information, that the Director has been notified.

Q. WHY IS IT DESIRABLE TO FOCUS REMEDIATION EFFORTS ON OBTAINING AN NFA LETTER?

A. As described in the Commission's Opinion and Order, an NFA letter is desirable in that it is written confirmation by the CP that the environmental condition of a site meets all applicable standards under the VAP rules for current and reasonably anticipated future land users.[4] The entire VAP process is focused on meeting applicable standards and the NFA letter serves as documentation that these standards have been achieved. In addition, an NFA letter is required to obtain

[4] Id. at 31.

liability relief, if desired, in the form of a CNS from the State of Ohio. Further, the Ohio EPA offers some enforcement relief for remediating parties working under VAP rules and working toward meeting all applicable standards and ultimately achieving an NFA letter. The Ohio EPA generally will not issue an enforcement order for properties on which work is being undertaken in conformance with the VAP.

Q. ONCE A SITE IS EVALUATED, HOW ARE OPTIONS FOR REMEDIATION SELECTED?

A. As mentioned in the Commission's Opinion and Order, the VAP does not specify or prescribe remedial options.[5] The VAP sets forth applicable standards and specifies that all applicable standards, as related to current and reasonably anticipated land users, must be achieved. Typically, a number of remedial options are evaluated in order to select a remedy. These remedial options are often evaluated with respect to protectiveness of human health and the environment, the long- and short-term effectiveness and permanence, implementability, suitability, compliance (with rules), and costs in meeting these standards. Quite frequently, several remediation techniques are combined to provide a remedial approach that allows a site to achieve all applicable standards.

With respect to the East End and West End sites, Duke Energy Ohio considered several remedial alternatives at each "phase" of the remediation. Both the East End and West End sites were sub-divided into areas or "phases" for purposes of investigation and remediation, which is a common approach utilized in

[5] Id.

contaminated site cleanups and in the VAP. These evaluations have been documented in various reports for work that has been conducted at the sites, which are attached as Confidential Attachment SSF-2. The remedial approach at both the East End and West End sites have followed the same approach that was described by my testimony.

Q. HOW IS COST CONSIDERED IN DETERMINING COMPLIANCE WITH THE VAP?

A. As described in the Commission's Opinion and Order, the VAP establishes applicable standards that must be met to allow for issuance of an NFA letter and a CNS from Ohio EPA.[6] It is up to the remediating party to determine how best to achieve those standards following the VAP regulations. The VAP allows the use of different remedial approaches to address a variety of site conditions and exposure pathways. These different remedial approaches carry with them different costs. In situ stabilization, for example, is generally less costly than excavation, and if used within the appropriate site conditions is as effective in meeting specific applicable standards as excavation, within those conditions. That being said, the objective of remediation conducted on VAP sites is to achieve all applicable VAP standards.

For the East End and West End sites, the remedial work has included the mitigation of significant volumes of free product in order to achieve applicable VAP standards. To meet VAP criteria, including leaching to groundwater, surface water protection and protection of groundwater meeting potable use standards (POGWMPUS), for example, removal or stabilization of the coal tar was necessary.

[6] Id. at 30.

Utilization of other potentially less costly remedial measures, such as environmental covenants or surface capping, would allow the site to meet some applicable standards, but not all applicable standards and, thus, would also not be protective of human health and the environment and not be sufficient to allow for issuance of an NFA letter or a CNS.

Although the VAP does not require consideration of cost, I understand that cost was one of the factors that was considered in assessing remedial alternatives at both sites. Other factors included: protectiveness of human health and the environment, the long-and short-term effectiveness and permanence, implementability, suitability, and compliance with VAP rules. These are appropriate and customary factors to include in evaluating remedial alternatives. Based on the reports I have reviewed, the remedial activities performed at the East End and West End sites were selected based on an evaluation of these factors, with the focus of meeting all applicable VAP standards.

Q. PLEASE IDENTIFY THE STANDARDS THAT MUST BE EVALUATED TO DETERMINE WHETHER A PROPERTY COMPLIES WITH ALL APPLICABLE VAP STANDARDS SUCH THAT AN NFA LETTER MAY BE ISSUED UNDER THE VAP.

A. In order to prepare an NFA letter for a property, CPs are required to identify all applicable standards for that property. Applicable standards must be determined for all chemicals of concern with respect to all current and reasonably anticipated future land use and exposure pathways determined to be complete.

Applicable standards may include, but are not limited to, standards derived

from generic numerical standards (as adjusted for the presence of multiple chemicals), UPUS, non-potable groundwater use standards, vapor intrusion screening levels (VISL) and standards, as well as soil leaching to groundwater, POGWMPUS, and standards related to migration or transport of chemicals to surface water and sediment (both human and ecological), as well as those standards derived through property specific or ecological risk assessment. As indicated previously, once all applicable standards are identified and once it is determined that a property meets all applicable standards, an NFA letter may be issued by the CP under affidavit.

Q. WHAT ARE THE VAP STANDARDS APPLICABLE TO THE EAST END AND WEST END SITES?

A. In general, the standards applicable to these sites are the same standards applicable to most VAP sites. These standards include generic numerical standards (as adjusted for the presence of multiple chemicals), UPUS for groundwater, vapor to indoor air standards, leaching to groundwater standards, POGWMPUS, surface water standards, as well as standards derived from human health and ecological risk assessments, and others.

Q. HAVE THE VAP REQUIREMENTS FOR ADDRESSING MGP RESIDUALS AT A PROPERTY CHANGED SINCE THE NATURAL GAS RATE CASE?

A. No. MGP residuals include, among other contaminants, oil-like material (OLM) and tar-like material (TLM), which contain a number of chemicals, including benzene and polyaromatic hydrocarbons. The OLM and in some TLM present at

the sites are considered "free product" as defined by Ohio EPA: "a separate liquid hydrocarbon phase that has a measurable thickness of greater than one one-hundredth of a foot." In general, the VAP assumes that properties with free product exceed the unrestricted potable use standard (UPUS) for ground water (O.A.C. 3745-300-08(B)(2)(c)). It should be noted that the presence of OLM and TLM may also exceed other applicable standards, such as POGWMPUS, leaching to groundwater, vapor intrusion, direct contact standards, and others.

Q. HAS THE APPROACH FOR REMEDIATING THE EAST END AND WEST END SITES CHANGED SINCE THE NATURAL GAS RATE CASE?

A. No. The approach for remediating the East End and West End sites has followed the same process as was described in the Natural Gas Rate Case. At the East End and West End sites, the MGP residuals must be remediated to meet applicable VAP standards for several reasons. The MGP residuals at the East End and West End sites is, have and will impact groundwater in excess of applicable standards. Moreover, the MGP residuals at the Duke Energy Ohio sites have migrated, which would likely cause failures of other applicable standards including POGWMPUS, leaching to groundwater standards, surface water quality standards, ecological and human health risk-based standards, off-site direct contact standards, and others, thus making issuance of an NFA letter impossible without excavation or treatment of the OLM and TLM. To be clear, receptors that could be impacted by migration of the free product (OLM and TLM) at the East End and West End sites, include the adjacent surface water body (Ohio River). Unless controlled, the MGP residuals could migrate into this surface water body, thus making issuance of an NFA letter

not possible without remediation.

Q. HAS THE WEST END SITE BEEN PROPERLY EVALUATED AND REMEDIATED BASED UPON THE OHIO VAP REGULATIONS?

A. The VAP is an iterative process in which several rounds of investigation are often needed to fully evaluate a property. If applicable standards are not met, remediation activities are then planned such that when these activities are complete, all applicable standards may be achieved.

The iterative investigation and remediation work at the West End site is still ongoing. This work has been conducted in a manner consistent with those previous efforts at the West End site as described in the Commission's Opinion and Order.[7] Although active remediation of the uplands at the West End site is anticipated to be complete this year, investigation of the adjacent river bank and sediment is ongoing. Thus, all applicable standards have not yet been achieved.

The remedial approach that was taken with respect to the Phase 3, Tower Area and the Phase 4 Area is similar to the approach that was taken prior to 2013. Areas that were impacted with MGP residuals, including OLM and TLM, will be addressed with a combination of excavation and in-situ stabilization. Based on the documents that I have reviewed, the investigation and remediation work conducted at the West End site appears to have been prudent and reasonable, and in conformance with VAP regulations.

[7] Id. at 31-36 and 43-46.

Q. HAS THE EAST END SITE BEEN PROPERLY EVALUATED AND REMEDIATED BASED UPON THE OHIO VAP REGULATIONS?

A. As is the case with the West End Site, the work at the East End site is still ongoing and is being conducted in a manner consistent with those previous efforts at this site as described in the Commission's Opinion and Order.[8] Based on the investigations to date, OLM and TLM are present in portions of the Middle Parcel that cannot presently be accessed and remediated due to the sensitive underground infrastructure and facilities present at the site that are necessary and integral to the propane peaking operations.

In developing the remedial approaches for the areas at the East End and West End sites that have been addressed since 2012, Duke Energy Ohio has continued to follow the same process that it had used previously to investigate and remediate MGP impacts. Areas that were impacted with MGP residuals, including OLM and TLM, have and continue to be addressed with a combination of excavation and in situ stabilization. Based on the documents that I have reviewed and my involvement with the East End site, the investigation and remediation work conducted at the East End site appears to have been prudent and reasonable, and in conformance with VAP regulations.

Q. WHY DID DUKE ENERGY OHIO REMEDIATE THE AREA WEST OF THE WEST PARCEL AT THE EAST END SITE?

A. The investigation of the Area West of the West Parcel determined that MGP residuals and impacts were present in that area at concentrations in excess of

[8] Id. at 36-43.

applicable VAP standards, thus requiring remediation. The remedial approach that was used to address the OLM and TLM in the Area West of the West Parcel was consistent with the remedial approach that was utilized in the other areas of the property with similar conditions. As MGP residuals can migrate through the subsurface and are not constrained by parcel boundaries, the VAP requires investigation of the extent of contamination (and remediation as warranted) in order to determine compliance with and to all applicable standards.

Q. WHY DID DUKE ENERGY OHIO ASSESS THE OHIO RIVER BANK AND THE OHIO RIVER SEDIMENTS ALONG THE EAST END AND WEST END SITES?

A. Results of investigation and remediation activities completed in the uplands areas, to date, on both the East End and West End sites have indicated the potential for the Ohio River bank and Ohio River sediments to be impacted by mobile MGP residuals associated with the respective upland former MGP facilities. Under the VAP, the extent of all contaminants of concern present on or emanating from a site must be evaluated to ascertain whether applicable standards, including surface water standards and those standards derived from ecological and human health risk assessment, have been met for all downgradient and off-property receptors. Thus, these investigation activities, which are underway, are being conducted to determine whether applicable standards have been achieved.

Q. WOULD A CP BE ABLE TO ISSUE AN NFA LETTER FOR THE EAST END AND WEST END SITES BASED SOLELY ON IMPLEMENTATION OF ASPHALT OR CONCRETE CAPPING?

A. No, not as the only remedy implemented. This type of remedy would not meet all applicable standards and, in fact, could potentially exacerbate the site risks. Engineering controls, such as asphalt or concrete capping, may enable a property to achieve certain standards, such as meeting direct contact standards for current site workers; however, the VAP requires that all applicable standards be met for a property to be eligible for an NFA letter. Additional standards that would not be achieved through asphalt or concrete capping would include construction worker direct contact standards, surface water standards, POGWMPUS, leaching to groundwater, vapor intrusion to indoor air and other standards. Further, because of the presence of liquid and mobile free product (OLM), near surface, in some portions of both sites, placement of an engineering control, such as pavement or a soil cover, could alter subsurface conditions and further mobilize the OLM and TLM.

Q. WOULD A CP BE ABLE TO ISSUE AN NFA LETTER FOR THE EAST END AND WEST END SITES BASED SOLELY ON LAND USE RESTRICTIONS?

A. No, not as the only remedy implemented. Institutional controls, such as land use restrictions in the form of an environmental covenant, would not achieve all applicable standards. Institutional controls, such as land use restrictions, may enable a site to meet certain direct contact standards for current site workers or

groundwater potable use standards; however, the VAP requires that all applicable standards be achieved prior to issuance of an NFA letter. Land use restrictions would not allow the property to meet construction worker direct contact standards, surface water standards, POGWMPUS, leaching to groundwater, vapor intrusion to indoor air and other standards.

Q. WOULD A CP BE ABLE TO ISSUE AN NFA LETTER FOR THE EAST END AND WEST END SITES IF ONLY THE TOP TWO FEET OF SOIL WERE EXCAVATED AND REMEDIATED?

A. No, not as the only remedy implemented. Excavating and remediating only the top two feet of soil would only allow the sites to meet the direct contact standards for site workers, assuming the removed soils were replaced by two feet of clean soil; however, the VAP requires that all applicable standards be met to be eligible for an NFA letter. Additional standards that would not be achieved would include construction worker direct contact standards, surface water standards, POGWMPUS, leaching to groundwater, vapor intrusion to indoor air and other standards.

Q. WERE THE SECURITY MEASURES, AIR AND VIBRATION MONITORING THAT WERE IMPLEMENTED AND PERFORMED DURING REMEDIATION REASONABLE AND PRUDENT?

A. All of these activities were reasonable, prudent, consistent with previous remedial work conducted at these sites, and standard industry practice for remediation work conducted at similar sites. Air monitoring activities were implemented to ensure that site workers and residents on adjacent properties were not adversely impacted

by the ongoing remediation activities. In addition, the vibration monitoring was completed to ensure that buildings and subsurface structures were not, in real time, adversely impacted by the remediation activities undertaken. Finally, the security measures, which included fences around each site, fencing around areas undergoing remediation, and use of security services, were implemented to prevent access and exposure to MGP contaminants and construction activities to limit access, for safety purposes, to areas undergoing remediation. All of these activities are typical and considered prudent for remediation projects, such as this.

Q. DO YOU BELIEVE THAT THE INVESTIGATION AND REMEDIATION ACTIVITIES THAT DUKE ENERGY OHIO HAS COMPLETED ARE REASONABLE AND PRUDENT IN WORKING TOWARD MEETING APPLICABLE VAP STANDARDS AT THE EAST END AND WEST END SITES?

A. The activities completed by Duke Energy Ohio, to date, have focused on remediation of areas not meeting applicable VAP standards, including those areas containing MGP-related wastes, such as mobile free product (OLM). Mobile free product remains in certain portions of the Middle Parcel at the East End site, which are currently inaccessible due to essential utility services associated with the East End Gas Works operations. These areas will need to be addressed once the sensitive underground infrastructure and propane peaking facilities can be taken out of service and decommissioned. While investigative work and remediation work in the accessible portions of the uplands area will soon be complete, the investigation of the Ohio River has only recently begun.

These activities, which are consistent with activities determined to be reasonable and prudent in the Commission's Opinion and Order[9], were reasonable and prudent to mitigate site risks to address Duke Energy Ohio's liability and to meet all applicable standards under the VAP. These activities are also consistent with approaches taken at other similarly contaminated properties. Not all VAP standards have been achieved yet and additional activities will be needed, including addressing groundwater impacts, defining impacts in river sediment, demonstrating POGWMPUS has been met, and others, before an NFA letter can be issued.

IV. CONCLUSION

Q. WERE THE ATTACHMENTS TO YOUR TESTIMONY PREPARED BY YOU OR UNDER YOUR DIRECTION AND SUPERVISION?

A. SSF-1 is my Curriculum Vitae and I prepared this attachment. Confidential SSF-2 includes the remedial alternative evaluations, some of which were prepared by Haley & Aldrich, but others were prepared by other Duke Energy Ohio consultants.

Q. IS THE INFORMATION CONTAINED IN THESE ATTACHMENTS ACCURATE TO THE BEST OF YOUR KNOWLEDGE AND BELIEF?

A. Yes.

Q. DOES THIS CONCLUDE YOUR FILED TESTIMONY?

A. Yes.

[9] *See* Id. *page 60.*

CURRICULUM VITAE

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Summary of Professional Expertise

Mr. Fiore is a Voluntary Action Program (VAP) Certified Professional (CP) in Ohio, as well as a licensed Professional Geologist (PG), in Indiana and Pennsylvania). He is experienced in the management, investigation and remediation phases of legacy environmental projects, including former manufactured gas plant (MGP) sites. Mr. Fiore has completed hundreds of professional assignments on contaminated properties in Ohio and beyond, including 25 Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and Superfund Sites, more than 50 former industrial properties or "brownfield sites," more than 200 active industrial facilities, more than 20 former Department of Defense (DOD) facilities, more than 100 commercial facilities, and on MGP sites in Ohio, Pennsylvania, Indiana, and Michigan.

Mr. Fiore has conducted investigations and remediations on contaminated sites regulated by the US EPA, including CERCLA and Superfund Sites, Resource Conservation and Recovery Act (RCRA) Sites, formerly used defense sites, hazardous waste landfills, and other sites. He has also conducted investigations and remediations on sites regulated by the Ohio EPA, active and inactive industrial facilities, landfills, commercial properties, brownfield sites, residential properties, abandoned / undeveloped properties, and MGP sites. He has completed investigation and remediation projects in all five Ohio EPA districts. He has also conducted

investigations and remediations on other contaminated sites in Ohio regulated by the Bureau of Underground Storage Tank Regulations (BUSTR).

Mr. Fiore has led and conducted hydrogeological investigations, aquifer and contamination assessments in a variety of technically challenging and complex geological regimes. Mr. Fiore's expertise includes the evaluation of contaminant migration pathways and characteristics, interaction of contaminant plumes and natural systems and assessment and implementation of low-cost remedial actions.

Mr. Fiore's work experience includes:

- Manufactured Gas Plant Investigations / Remediations in Ohio, Indiana, Michigan and Pennsylvania

- Brownfields Redevelopment Experience
  - More than 20 projects in Cleveland's poorest neighborhood (Fairfax)
  - Langston Hughes Center for Senior Outreach, Cleveland Clinic Global Center for Cardiovascular Innovation, Cuyahoga County Juvenile Justice Facility, Quincy Place, Church Square, planned Quincy Industrial Park, others.
- US Experience
  - Completed professional assignments in all 50 states, under numerous regulatory programs.
- International Experience
  - Completed professional International Assignments in countries including Canada, Mexico, Central America, South America, Caribbean, Europe, Middle East, India, East Asia.

Professional Experience Summary

Haley & Aldrich (2002 to Date)

- Senior Vice President, (2016 – To date)
- Vice President and Geologist, (2004 – 2016)
- Great Lakes Unit Leadership Team (2004 – 2006)
- Senior Environmental Geologist (2002- Date)

Parsons Corporation (1988 to 2002)

- Manager, Environmental Studies Department (2000 – 2002)
- Project Manager (1993 – 2002)
- Geologist / Senior Geologist (1988- 1993)

Bowling Green State University, Department of Geology

- Research and Teaching Assistant (1986-1988)

Bowser-Morner, Inc. (1987)

- Geotechnical Engineering Technician

Education Summary

Bowling Green State University, B.S., Geochemistry, 1988

- Outstanding Senior Geology Major
- President, Geology Club
- Founding President AAPG, BGSU

Bowling Green State University, M.S., Geology, 1993

- Thesis: Origin of the Cave Branch Bed of the Slade Formation
- Additional Research – Geobotany of Albion Scippio Field

Professional Registrations

- Professional Geologist: Pennsylvania (License PG-001770-G)
- Professional Geologist (by ASBOG Examination): Indiana (License 2382)
- Certified Professional: Ohio EPA Voluntary Action Program (CP #154)

Special Studies and Courses (abridged)

- Haley & Aldrich, Leadership Development Program
- Project Management Training Program
- Financial Management for Engineers and Scientists
- Probability, Statistics and Geostatistics
- OSHA Supervisor Training
- OSHA 40-Hour HAZWOPER Training
- OSHA HAZWOPER Annual Refresher Training
- Asbestos Awareness Training

- VAP Annual Certified Professional Training
- VAP Initial Certified Professional Training

Publications/Presentations (abridged)

- "Third Time's A Charm," MGP-2017 Conference, New Orleans, Louisiana, 2017
- "Remediation in Harsh Winter Conditions," presented at the MGP-2015 Conference, Providence, Rhode Island, 2015.
- "Natural Gas Before Fracking," presented to the Northern Ohio Geological Society, at the University of Akron, Akron, Ohio 2013.
- "How an Effective Communication Strategy Streamlined an MGP Cleanup," presented at the 2012 Ohio Brownfields Conference, Newark, Ohio 2012.
- "Leveraging Partnerships to Create Adaptive Reuses of Brownfield Properties" presented at the 2011 Ohio Brownfields Conference, Newark, Ohio 2011.
- "Implementation of a Corporate Due Diligence Program," presented at the 2008 Global EH&S Conference, San Minneapolis, Minnesota, 2008.
- "Manufactured Gas Plants," presented at the Annual Voluntary Action Program Certified Professional Training Course, Newark, Ohio, 2007.
- "Case Study: Delaware, Ohio MGP," presented at the Manufactured Gas Plant Training Course, Columbus, Ohio 2007.

- "Emergency and Contingency Planning," presented at the 2006 Global EH&S Conference, San Luis Potosi, Mexico, 2006.

- "Due Diligence in Property Transfers," presented at the 2004 Global EH&S Conference, Columbus, Indiana 2004.

- "Due Diligence and Liability Management," presented at the 25th Annual Inland Spills Conference, Kings Island, Ohio, 2002.

- "Geochemical Evaluation of Groundwater in Support of a Monitored Natural Attenuation Remedy," Colloquium presentation at Bowling Green State University, 2001.

- "Recovery of Highly Viscous NAPL, using Steam Injection and Vacuum Enhanced Vapor Extraction," Proceedings at 2nd Conference on the Remediation of Chlorinated and Recalcitrant Compounds, Monterey, CA, 1998.

Professional and Community Involvement Summary (abridged)

- Cuyahoga National Park Conservancy – Member
- Dean's Science Advocate Advisors, Bowling Green State University
- Parents Resource Team – Denison University
- Northern Ohio Geological Society
- Crowne Point Community Sponsored Agriculture – Member & Shareholder
- Cleveland Industrial Land Bank, Brownfield Criteria Evaluation Committee
- Ohio Environmental Protection Agency Voluntary Action Program
  - Multidisciplinary Task Group - Stakeholder Program Review and Feedback Group

  - Multidisciplinary Task Group - Total Petroleum Hydrocarbons and NAPL Committee
  - Multidisciplinary Task Group - Background Committee
- Development Committee Chair, Census Committee Member, Fundraising Committee Member, St. Thomas More Church
- Cuyahoga Valley Princesses and Guides, Chief Information Officer
- Cleveland Foodbank –Presidents Circle
- Head Coach – Brecksville City Baseball League
  - Girls Softball (2003),
  - Boys Baseball (2004 through 2010)

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Case No(s). 19-0174-GA-RDR

Summary: Testimony Testimony of Shawn S. Fiore electronically filed by Mrs. Debbie L Gates on behalf of Duke Energy Ohio Inc. and D'Ascenzo, Rocco O. Mr. and Watts, Elizabeth H