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. 20-0053-GA-RDR
In the Matter of the Application of Duke Energy Ohio, Inc., for Tariff Approval.	))	Case No. 20-0054-GA-ATA

AMENDED TESTIMONY OF

TODD L. BACHAND

ON BEHALF OF

DUKE ENERGY OHIO, INC.

July 7, 2020

TABLE OF CONTENTS

Attachments:

TLB-1: Summary Timeline of Investigation and Remediation Activities for East End and West End Sites

TLB-2: East End Site Property Map/Phase 2 Area

AMENDED TLB-3: Summary of Costs Apportioned to Area West of the West Parcel and Ohio River

CONFIDENTIAL TLB-4: Haley & Aldrich Invoice IN00037560 for Groundwater Monitoring at the East End Site

CONFIDENTIAL TLB-5: Haley & Aldrich Invoice IN00039231 for Groundwater Monitoring at the East End Site

CONFIDENTIAL TLB-6: EMS Inc./HEPACO Invoice FY19-011531REV (pages 1-2 of 22) for Riverbank Investigation at the East End Site

CONFIDENTIAL TLB-7: Haley & Aldrich Invoice IN00042448 (pages 1-3 of 19) for Remedial Construction and Site Restoration in Phase 1, 4, and 5 at the East End Site

TLB-8: East End Site Plan Map showing Remediation Phases

CONFIDENTIAL TLB-9: Haley & Aldrich Invoice IN00045385-RET for Remedial Construction and Site Restoration in Phase 1, 3, 4, and 5 at the East End Site

CONFIDENTIAL TLB-10: EMS Inc./HEPACO Invoice FY19-007720 (pages 1-2 of 19) for Limited Riverbank Remediation in the Area West of the West Parcel at the East End Site

I. INTRODUCTION AND PURPOSE

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Todd L. Bachand, and my business address is 139 East Fourth Street, Cincinnati, Ohio 45202.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Duke Energy Business Services LLC (DEBS) as a Principal Environmental Specialist for the Remediation Group, which is part of Environmental Services at Duke Energy Corporation (Duke Energy). DEBS provides various administrative and other services to Duke Energy Ohio, Inc., (Duke Energy Ohio or Company) and other affiliated companies of Duke Energy.

Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE.

A. I received my Bachelor of Science degree in Environmental Sciences from Springfield College, located in Springfield, Massachusetts, in 1985. From 1985 to 1992, as an Environmental Scientist with Baystate Environmental Consultants, Inc. (East Longmeadow, MA), I was responsible for conducting site assessments, performing feasibility studies, and managing construction, dredging and remediation projects. From 1992 to 1996, as the manager of Technical Services for Nuclear Energy Services, Inc. (Danbury, CT), I was responsible for overseeing and managing a wide variety of site assessments and remediation projects. I was responsible for managing a team of environmental scientists and geologists primarily working on sites throughout the East Coast focusing on petroleum-impacted properties. From 1996 to 1998, as the Mid-West Operations Manager for Nuclear Energy Services, Inc.,

Integrated Environmental Services Division (Blue Ash, OH), I was responsible for managing a team of environmental scientists, geologists, and engineers. I managed projects that dealt with environmental assessments, real estate due diligence (Phase I Environmental Site Assessments), risk assessments, underground storage tank remedial actions, and remedial actions relating to chlorinated solvents, mercury, and polychlorinated biphenyls (PCBs).

From 1998 to 2009, as the Vice President of NEES, LLC (West Chester, OH), I managed a team of environmental professionals and I was responsible for projects focusing on site assessments, property transactions, remediation projects, U.S. Army Corps of Engineers permitting and compliance, and cultural resources assessments. Projects that I personally managed focused on site assessments (Phase I, Phase II, and Phase III), remediation, risk analysis, environmental permitting, environmental auditing, and environmental compliance.

From 2009 to 2013, as the Director of Environment, FirstGroup America (Cincinnati, OH), I had all environmental responsibility for the company, which included the operating companies of Greyhound Bus, Greyhound Canada, Americanos, First Student, First Canada, First Transit, and First Vehicle Services. The occupational footprint included Mexico, Puerto Rico, the United States and Canada. My responsibilities focused on ensuring compliance with all environmental regulatory programs from city, county, state, and federal agencies in the United States and city, provincial, and the Ministry of Environment in Canada. Compliance included over 3,000 storage tanks and issuance of annual permits for each location (1,500+ locations). Additional responsibilities focused on real estate

holdings throughout North America and the environmental due diligence aspect of acquisitions and dispositions for both leased and owned properties. I was also responsible for managing multiple Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites where the company had liabilities, as well as managing multiple environmental remediation projects, focusing on petroleum, chlorinated solvents and PCB impacts to both soils and groundwater. In addition, I was responsible for ensuring that all operating permits were up-to-date and that all federal, state and local Emergency Planning and Community Right-to-Know Act Tier II reports were filed as required.

From June 2014 to the present, I have been with Duke Energy in the Remediation Group and my title is currently Principal Environmental Specialist. I am responsible for managing remediation projects within the states of Ohio, Kentucky, and Indiana. I have extensive experience in site assessments and remediation that I employ while managing the various projects in these states. Currently, I am managing the site assessment and remediation of contaminants from two former manufactured gas plant (MGP) sites in Cincinnati, Ohio (the East End and West End sites) for Duke Energy Ohio. I also represent Duke Energy on the Indiana Energy Association – MGP Remediation Work Group and I am a member of the MGP Consortium, which is a group comprised of 28 utilities where lessons learned and best practices are shared among utility project managers on the investigation and remediation of former MGP sites.

Q. PLEASE SUMMARIZE YOUR RESPONSIBILITIES AS A PRINCIPAL ENVIRONMENTAL SPECIALIST WITHIN THE REMEDIATION GROUP.

A. As a Principal Environmental Specialist in the Remediation Group, I provide project management and technical oversight for Duke Energy's environmental liabilities at power plants and other properties that any Duke Energy entity or predecessor company either owned, operated and/or sent material to and that is now subject to remediation obligations.

My job responsibilities, which are similar to the responsibilities of other project managers in the Remediation Group, include interaction and coordination with many different groups within and outside of Duke Energy, including: senior leadership; legal; finance; business units such as gas operations and transmission, customer delivery, and generation; ratepayers and community groups; local, state, and federal governmental or regulatory officials; and consultants, contractors, and site/construction workers. We prepare bid documents that detail Duke Energy's requirements and expectations for remedial work and we provide the technical evaluation of the proposals received. During the execution of site work, we actively review, comment on, and approve all plans, scope or design changes, and final documents prepared by environmental consultants. We regularly visit sites during active investigation and remediation activities to oversee work and ensure that Duke Energy's expectations are being met.

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

A. Yes. I submitted written testimony in Case Nos. Case Nos. 15-0452-GA-RDR, *et al.*; Case Nos. 16-0542-GA-RDR, *et al.*; Case Nos. 17-0596-GA-RDR, *et al.*; Case Nos. 18-283-GA-RDR, *et al.*; and Case Nos. 19-174-GA-RDR, *et al.*, which were consolidated (Consolidated Rider MGP Proceedings). I provided oral testimony during the hearing for the Consolidated Rider MGP Proceedings, which took place November 19- 21, 2019.

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY IN THESE PROCEEDINGS?

A. I am the project manager for the MGP investigation and remediation projects at the East End and West End sites in Duke Energy Ohio's service territory. The purpose of my direct testimony is to describe the environmental investigation and remediation activities that occurred at the East End and West End sites in Cincinnati, Ohio, through calendar year 2019. In so doing, my testimony will support the recovery of such expenditures that are included in Duke Energy Ohio's requested update to Rider MGP, as authorized by the Commission.

Q. WHY ARE YOU AMENDING YOUR DIRECT TESTIMONY IN THESE PROCEEDINGS?

A. My direct testimony was initially filed on April 1, 2020. In the course of discovery, it was discovered that the Company had inadvertently omitted certain expenses from the filing due to the timing of the filing relative to the timing of the payment of the relevant invoices. Upon additional review, a small number of minor errors

were identified in the filing and in Attachment TLB-3. The corrections to the Application are detailed in the Amended Testimony of Sarah E. Lawler being filed today. In accordance with these corrections and/or to correct errors that appeared in TLB-3, I am amending my direct testimony, as well as Attachment TLB-3 (now Amended TLB-3). Amended TLB-3 supersedes the previously filed TLB-3 in its entirety. Otherwise, my Amended testimony continues to rely on all of the other attachments filed with my initial testimony on April 1, 2020.

Q. PLEASE DESCRIBE THE CORRECTIONS MADE IN THIS AMENDED TESTIMONY AND IN AMENDED TLB-3.

A. My direct testimony is being revised to correct references to the costs included in the Application, which are detailed in the Amended Testimony of Sarah E. Lawler being filed today. In addition, corrections were made to Amended TLB-3 to fix minor typos and errors, including two TestAmerica invoices that were inadvertently overlooked and one invoice that had been included on the wrong table. Below are the corrections made to the table entitled "2019 Investigation and Remediation Costs Submitted for Recovery-Ohio River at East End Site" as provided in Amended TLB-3:

- Corrected the invoice number, 2050129687, for the invoice dated January 3, 2020 from Pace Analytical Services LLC in the amount of $18.60.
- Added the invoice dated January 3, 2020, invoice number 2050129686, from Pace Analytical Services LLC in the amount of $7.44. This invoice was removed from the table titled "2019 Investigation and Remediation Costs Submitted for Recovery-Ohio River at West End Site."

- Inserted the invoice dated April 15, 2018, invoice number 49279261 from TestAmerica in the amount of $4,200.00.
- Corrected the amount for the invoice dated June 3, 2019, invoice number IN00040435 from Haley & Aldrich Inc. to the amount of $24,220.25.

The table entitled "2019 Investigation and Remediation Costs Submitted for Recovery-Ohio River at West End Site" as provided in Amended TLB-3 includes the following revisions:

- Removed the invoice dated January 3, 2020, invoice number 2050129686, from Pace Analytical Services LLC in the amount of $7.44 as this invoice relates to the East End site. This invoice was added to the table titled "2019 Investigation and Remediation Costs Submitted for Recovery-Ohio River at East End Site" as discussed above.
- Inserted the invoice dated July 11, 2019, invoice number 4900004255A from TestAmerica in the amount of $61,429.26.

II. BACKGROUND AND HISTORY OF MGP SITES

Q. PLEASE SUMMARIZE YOUR EXPERIENCE WITH THE COMPANY'S INVESTIGATION AND REMEDIATION OF ITS TWO CINCINNATI MGP SITES, THE EAST END SITE AND WEST END SITE.

A. Since 2014, I have been the project manager for the investigation and remediation of the East End site and West End site. I have been providing direct testimony in each of the previously filed cases since 2015 and supplemental direct testimony in the Consolidated Rider MGP Proceedings wherein Duke Energy Ohio is seeking

approval for recovery of costs related to investigation and remediation of impacts associated with the former MGP operations at the East End and West End sites. I previously provided oral and written testimony in the Consolidated Rider MGP Proceedings that details my responsibilities and my experience with respect to the investigation and remediation of the East End and West End sites at issue in these proceedings.

Q. PLEASE SUMMARIZE YOUR EXPERIENCE WITH MGP SITES.

A. In addition to acting as project manager for the remediation of the East End and West End sites, I also participate and serve in organizations dedicated to addressing environmental conditions at former MGP sites. In particular, I am currently Vice Chair of the MGP Consortium, and a member of the technical review committee for the GEI Consultants MGP Conferences.

Q. PLEASE EXPLAIN WHAT YOU MEAN BY THE TERM MGP SITES.

A. Duke Energy Ohio owns and utilizes the East End MGP site and West End MGP site for utility operations that previously were used for MGP operations long ago. Both the East End MGP site and West End site have been subdivided over time for purposes of investigation and remediation under the Ohio Environmental Protection Agency's (Ohio EPA) Voluntary Action Program (VAP). These subdivided areas were referred to as "parcels." "Parcels" were not defined based on real property boundaries, but were based on areas requiring investigation and, if necessary, remediation for MGP impacts from the legacy operations. The term "MGP sites" when referring to East End and West End has the meaning typically used in the environmental remediation industry—the area that may be impacted or

contaminated from the former MGP operations and which requires investigation and, in some instances, remediation under state and federal environmental laws and regulations. Duke Energy Ohio's investigations have determined that MGP impacts at the MGP sites must be remediated under applicable environmental laws. As the Company first explained in its 2012 natural gas rate case, Case No. 12-1865-GA-AIR, *et al*., (Natural Gas Rate Case) and in subsequent related cases, MGP impacts have by-products and other waste materials, including tar-like material (TLM) and oil-like material (OLM), with a number of chemicals, including benzene and polyaromatic hydrocarbons. These contaminants are not stable, but rather mobile and can migrate through soils and dissolve into the groundwater at concentrations above applicable standards.[1] Both the East End site and West End site are located on the Ohio River and the mobile free product could migrate into the riverbanks, sediments, and surface water body.[2] Investigation and remediation of MGP contaminants is required to address the Company's liability under state and federal environmental laws and to meet applicable standards under the Ohio EPA's VAP. Therefore, the term "MGP sites" refers to the areas where MGP contaminants are present and must be remediated under CERCLA and in accordance with the Ohio VAP to address Duke Energy Ohio's liability for those conditions.

Q. PLEASE DESCRIBE THE CORPORATE STRUCTURE AND MANAGEMENT OVERSIGHT OF THESE TWO MGP SITES.

A. These two remediation sites are managed by Duke Energy Environmental Services

[1] *In the Matter of the Application of Duke Energy Ohio, Inc., for an Increase in its Natural Gas Distribution Rates*, Case No.12-1865-GA-AIR, *et al*., Opinion and Order pg. 32 (November 13, 2013); *See also,* Direct Testimony of Shawn S. Fiore at 18 (April 22, 2013).
[2] Id.

as part of the Environmental Health and Safety Department in Regulated Utilities. Environmental Services is headed by a Vice President who oversees Directors who are appointed to manage various disciplines/media programs. Within the Remediation Group, I review project scopes and activities with each consultant's individual project manager on a minimum bi-weekly basis, which I then review verbally with my management on a minimum bi-weekly basis. Information on the status and activities on the East End and West End sites is periodically reviewed with higher levels of management and the financial department. Known and anticipated activities, including cost estimates, are reviewed with levels of senior management at least semi-annually and whenever significant decisions are required on strategy or anticipated costs. Each level of management has limited authority to approve activities and authorize the expenditure of funds. For new purchase orders, approval also must be obtained from Duke Energy's sourcing department. Over the course of 2019, I met with several members of Duke Energy management to discuss the status of the projects, seek input on certain decisions, and obtain approval of spending requests, as necessary.

Q. THE COMMISSION'S ORDER IN THE 2012 NATURAL GAS RATE CASE DETAILS THE HISTORY OF MANUFACTURED GAS PLANTS, AS WELL AS THE PROCESS TO INVESTIGATE AND REMEDIATE FORMER MGP SITES. IS THERE ADDITIONAL INFORMATION TO SUPPLEMENT THAT DETAIL?

A. No. Information on the background of manufactured gas and its history in southwest Ohio is described at length in the Commission's Opinion and Order in

the 2012 Natural Gas Rate Case (Commission's Order).[3] Likewise, the Commission's Order provides details of typical investigation and remediation activities and a description of the impact of Ohio laws and regulations and the Ohio EPA clean-up programs on the management of the environmental conditions at Duke Energy Ohio's MGP sites, especially the VAP.

Q. WHAT IS YOUR UNDERSTANDING OF THE SCOPE OF DUKE ENERGY OHIO'S LIABILITY AND OBLIGATION TO INVESTIGATE AND REMEDIATE THE ENVIRONMENTAL IMPACTS ASSOCIATED WITH THE FORMER MGP OPERATIONS AT THE EAST END AND WEST END SITES?

Based on my more than thirty years of experience as an environmental remediation professional, my work with environmental consultants and others in the environmental field, the training I have received, and review of the record in the 2012 Natural Gas Rate Case, it is my understanding that the Company is liable under state and federal environmental laws for the remediation of all impacts associated with the former MGP operations at the East End and West End sites, regardless of the precise location of those impacts.[4] As noted in the Commission's Order, this means that the Company has a legal and societal obligation to remediate areas that have been contaminated by the former MGP operations[5] even when those

[3] *See e.g., In the Matter of the Application of Duke Energy Ohio, Inc., for an Increase in its Natural Gas Distribution Rates*, Case No.12-1865-GA-AIR, *et al*., Supplemental Direct Testimony of Jessica Bednarcik, (February 23, 2013); Id., Direct Testimony of Shawn S. Fiore (April 22, 2013); and Id. Opinion and Order (November 13, 2013).

[4] Id.

[5] *In the Matter of the Application of Duke Energy Ohio, Inc., for an Increase in its Natural Gas Distribution Rates*, Case No.12-1865-GA-AIR, *et al*., Opinion and Order (November 13, 2013) at 58-59.

impacts extend beyond Duke Energy Ohio's current property boundary. This liability is not limited to current or historical property boundaries, as Duke Energy Ohio is responsible for any cleanup required on-site or off-site of the Company's current property boundaries that can be causally linked to the former MGP operations conducted under the ownership of Duke Energy Ohio or its predecessors.[6]

As approved by the Commission, Duke Energy Ohio is addressing its liability under these state and federal environmental laws by investigating and remediating the consequences of MGP operations at the East End and West End sites under the Ohio VAP. Duke Energy Ohio has continued its approach of investigating and remediating MGP impacts from the sites in the same iterative manner that was determined by the Commission to be reasonable and prudent in the Commission's Order.[7] The costs to investigate and remediate contamination from the Company's former MGP operations are costs of doing business as the Company has liability under federal and state environmental laws regardless of whether the contamination occurs inside or outside an arbitrary geographic boundary.[8]

The Company is required to investigate and address all such impacts, including the impacts in the area of the East End site referred to as the "Area West of the West Parcel." In 2014, Duke Energy Ohio completed environmental

[6] 42 U.S.C. 9601(9)(b); *see* 84 Fed. Reg 60339, 60340 (Nov. 8, 2019) (defining a "facility" to "include any area where a hazardous substance has 'come to be located'").
[7] *In the Matter of the Application of Duke Energy Ohio, Inc., for an Increase in Gas Rates,* Case No. 12-1685-GA-AIR, *et al.*, Opinion and Order (Nov. 13, 2013) at 73.
[8] 42 U.S.C. 9601(9)(b); *see* 84 Fed. Reg 60339, 60340 (Nov. 8, 2019) (defining a "facility" to "include any area where a hazardous substance has 'come to be located'").

investigations that determined MGP contamination was present at the East End site and that remediation was necessary in parts of the Area West of the West Parcel (referred to as "Phase 2 Area" for remediation purposes). During remediation, the foundation of a former iron tar tank was discovered in the Area West of the West Parcel, confirming that MGP equipment was also formerly located in that area.

Similarly, the Company must investigate and remediate, if necessary, impacts in the Ohio River sediments as its responsibility does not end at the river bank. Under CERCLA and the VAP, the Company is required to evaluate whether the former MGP operations have impacted the Ohio River and whether there is a risk to human health and the environment associated with any such impacts.[9] If the results of the required investigations demonstrate that remediation is necessary, the Company will need to address these impacts. Duke Energy Ohio's liability is not based on current or historical property boundaries, but is based on where the contamination migrated and whether there is an unacceptable level of risk to human health or the environment associated with that contamination.

The MGP contamination, wherever it exists, was a result of the operation of those MGP facilities that, at one time, served customers. As Duke Energy Ohio witness Fiore describes in his direct testimony, Duke Energy Ohio has performed its investigation and remediation in accordance with the Ohio VAP under the guidance and oversight of VAP Certified Professionals (CPs).

Q. PLEASE BRIEFLY SUMMARIZE THE INVESTIGATION AND REMEDIATION ACTIVITIES THAT DUKE ENERGY OHIO

[9] Ohio Adm.Code 3745-300-08(A)(3).

PERFORMED AT THE EAST END AND WEST END SITES FROM 2013 THROUGH 2018.

A. Investigation and remediation activities at the East End and West End sites were sequenced in phases as is typical for remediation of MGP impacts at similar sites and to facilitate ongoing on-site utility operations. It is very common to address large remediation projects in phases for both efficiency and effectiveness. This is also consistent with the testimony I provided in the Consolidated Rider MGP Proceedings and as noted in the Commission's Order. I have prepared Attachment TLB-1, which includes a summary timeline of the investigation and remediation activities conducted at the East End and West End sites for each year from 2013 through 2018 (and supplemented for activities in 2019, as discussed below).

Q. ARE THE BOUNDARIES OF THE UPLAND PORTIONS OF THE EAST END AND WEST END SITES IDENTICAL TO THOSE THAT EXISTED AT THE TIME THOSE PLANTS WERE OPERATING?

A. No, they are not. In fact, a significant portion of the land that comprised the facilities when the MGPs were operational is now located beneath the waterline of the Ohio River. This is because the water level in the Ohio River today is much higher than it was decades ago. The low-water mark of the Ohio River was historically at the Kentucky and Ohio border, which in some areas is as much as 200 feet south of the current riverbank. The East End site operated as an MGP from 1884 to 1909, and again from 1925 to 1963. The West End site operated as an MGP from 1843 to 1909, and again from 1918 to 1928. The southern boundary of the East End and West End sites changed significantly following the completion of the construction

of the Markland locks in 1959 and the dam in 1964. The construction of the Markland locks and dam significantly raised the Ohio River water level after the MGP operations ceased at East End and West End sites. Attachment TLB-2 shows the historical water edge at the East End site in 1962, which was located approximately 200 feet to the south in what is the current Ohio River.

III. INVESTIGATION AND REMEDIATION AT EAST END AND WEST END SITES

Q. PLEASE DESCRIBE THE COMPANY'S GENERAL USE OF THE EAST END AND WEST END SITES IN 2019.

A. Both the East End and West End facilities continued to be used as plant in service for utility service by Duke Energy Ohio. At the East End site, the facility continues to be used as a synthetic natural gas peaking station with significant above and underground facilities throughout the area, especially in the location referred to as the "Middle Parcel."

At the West End site, Duke Energy's Transmission and Distribution Group continues to operate the electrical substations. The Company continues to own and operate two 12-inch diameter gas transmission pipelines that enter Ohio at the West End site. At the valve pit on the riverbank, the two lines combine into one 20-inch pipeline. There is also a gas measurement station at this location. This building also houses the Remote Terminal Units (RTU) equipment, which is part of the Supervisory Control and Data Acquisition (SCADA) system that monitors and controls the natural gas distribution system. This line supplies approximately 20,000 customers in a peak hour.

Q. DID DUKE ENERGY OHIO CONDUCT INVESTIGATION AND

REMEDIATION ACTIVITIES IN 2019 AT THE EAST END AND WEST END SITES?

A. Yes, the Company conducted investigation and remediation activities in 2019 at the East End and West End sites.

Q. PLEASE GENERALLY DESCRIBE THE INVESTIGATION AND REMEDIATION WORK AT THE EAST END AND WEST END SITES DURING 2019.

As in prior years, the environmental work at the East End and West End sites continued to be performed by environmental consulting firms experienced in MGP site investigation and remediation and under the oversight of Ohio EPA VAP CPs, whose role is to ensure activities are compliant with Ohio EPA's VAP regulations. The Ohio EPA VAP CPs and environmental consultants hired to perform activities at the two sites continue to work with me to ensure that the work complies with the VAP and meets all applicable local, state, and federal standards, as well as to ensure that the environmental conditions at the sites are protective of human health and the environment, both short term and long term.

Q. PLEASE IDENTIFY THE ACTIVITIES CONDUCTED IN 2019 THAT RELATE TO THE INVESTIGATION AND REMEDIATION OF ENVIRONMENTAL CONDITIONS RESULTING FROM THE FORMER EAST END MGP OPERATIONS.

A. Attachment TLB-1 provides a summary of the investigation and remediation activities performed at the East End site from 2007 through 2019. All upland work at the East End site performed in 2019 was conducted under my supervision, along

with the oversight of an Ohio EPA VAP CP employed by the firm of Haley & Aldrich, Inc. (Haley & Aldrich). As noted in testimony in the Consolidated Rider MGP Proceeding, the only area where active remediation activities, (*i.e.,* soil excavation and *in situ* solidification (ISS)), was performed in the "Area West of the West Parcel" at the East End site was in what is referred to as the "Phase 2 Area." As described in the Consolidated Rider MGP Proceedings, all active remediation in the Area West of the West Parcel was completed in 2017.

In 2019, there were no active remediation measures implemented in the Phase 2 Area or elsewhere within the Area West of the West Parcel. Soil excavation and ISS activities were performed in the Phase 4 and Phase 5 Areas, which are located in the Middle Parcel. The only 2019 work in the Area West of the West Parcel involved the limited remediation of the riverbank, which included placing aquagate and an organoclay mat on an area where MGP impacts were observed and work that was performed on a site-wide basis. Work that was performed site-wide, but also included the Area West of the West Parcel, consisted of: site-wide quarterly groundwater monitoring, site restoration work (*i.e.*, seeding, grading, and in some instances, installing gravel base and re-paving access roads that had been removed during remediation) in the Phase 2 Area in the Area West of the West Parcel and in the Phase 1, 3, 4, and 5 Areas of the Middle Parcel, and the investigation along the riverbank, which included the installation of two borings in the Area West of the West Parcel out of ten total borings at the East End site.

During the remedial activities in the Middle Parcel, consistent with previous work, precautions were taken to ensure that the critical infrastructure at the East

End site was not damaged. Duke Energy contracted with Terracon Consultants, Inc. to conduct vibration monitoring of the critical infrastructure during the active remediation work. Ambient air monitoring activities continue to be conducted by AECOM to monitor the perimeter ambient air quality during active remedial activities in the Middle Parcel.

In addition, a Remedial Design Package was prepared for areas in the Middle Parcel that are inaccessible due to sensitive underground infrastructure and propane peaking facilities in operation at the East End site. These areas will be identified as Phase 7 and Phase 8 Areas, which are located in the Middle Parcel.

In 2019, Haley & Aldrich also performed the next phase of Ohio River investigation. Haley & Aldrich's Ohio EPA VAP CP is overseeing the work to ensure that the activities are compliant with Ohio EPA's VAP regulations and is consistent with the work that has been performed in the uplands, the portions of the East End site that is not in the Ohio River. Haley & Aldrich's work involving the Ohio River included the installation of borings and the collection of samples for laboratory analysis within the Ohio River. All work conducted within the Ohio River was completed within the State of Ohio and within the geographical boundaries of the historical MGP facility. As noted earlier, because of the construction of the Markland Dam in the 1960s, the elevation of the Ohio River is much higher today than it was during the operation of the MGP at the East End site decades ago. As such, in some areas, the original riverbank of the East End site is now located more than two hundred feet further south into the current Ohio River due to the higher water levels.

Q. PLEASE IDENTIFY THE ACTIVITIES CONDUCTED IN 2019 THAT RELATE TO THE INVESTIGATION AND REMEDIATION OF ENVIRONMENTAL CONDITIONS RESULTING FROM THE FORMER WEST END MGP SITE.

A. Attachment TLB-1 provides a summary of the investigation and remediation activities performed at the West End site from 2009 through 2019.

In 2019, remedial activities included the excavation of contaminated soils in the Tower Area and excavation of contaminated soils and ISS in the Phase 3 Area. The work was completed by Northstar and Arcadis, and Silar Services provided construction oversight during the project. During the remedial activities, consistent with previous work, precautions were taken to ensure that the critical infrastructure at the site was not damaged. Duke Energy contracted with Terracon Consultants, Inc. to conduct vibration monitoring of the critical infrastructure during the active remediation activities. Ambient air monitoring activities continue to be conducted by AECOM to monitor the perimeter ambient air quality during active remedial activities.

In addition, AECOM conducted quarterly groundwater sampling of all groundwater monitoring wells at the West End site.

Duke Energy Ohio engaged Haley & Aldrich to perform the next phase of Ohio River investigation at the West End site. Haley & Aldrich's Ohio EPA VAP CP is overseeing the work to ensure that the activities are compliant with Ohio EPA's VAP regulations and is consistent with the work that has been performed in the uplands. In 2019, Haley & Aldrich's work included the installation of borings

and the collection of samples for laboratory analysis within the Ohio River. All work conducted within the Ohio River in 2019 was completed within the State of Ohio and within the geographical boundaries of the historical MGP facility. As noted above, because of the construction of the Markland Dam in the 1960s, the elevation of the Ohio River today is much higher today than it was during the operation of the MGP at the West End site decades ago. As such, in some areas, the original riverbank of the West End site is now located more than two hundred feet further into the current Ohio River due to the higher water levels.

Q. PLEASE DETAIL THE 2019 COSTS INCURRED AT BOTH THE EAST END AND WEST END SITES FOR WHICH DUKE ENERGY OHIO IS SEEKING RECOVERY THROUGH RIDER MGP.

A. In 2019, Duke Energy Ohio incurred, in investigation and remediation costs, approximately $13.5 million at the East End site and $25.9 million in investigation and remediation costs at the West End site, which total approximately $39.4 million in total MGP costs at the East End and West End sites. The recovery mechanism for the costs incurred in 2019 is discussed in the Amended Direct Testimony of Duke Energy Ohio witness Sarah E. Lawler. The categories of costs that are described at length in the Commission's Order are applicable to the investigation and remediation activities that occurred in 2019.

External costs included: environmental consultants used for the investigation of the soil, groundwater and sediment impacts; environmental consultants used to perform oversight during remedial actions; environmental contractors and subcontractors used to perform excavation and ISS; waste disposal

costs; restoration work, and analytical laboratories that analyzed soil and groundwater samples.

Internal costs included: expenses for Duke Energy employees working on the projects; oversight by the Duke Energy Analytical Laboratory located in Huntersville, North Carolina that performed audits of the analytical laboratories and performed quality control and review of analytical data; oversight and coordination by Duke Energy Power Delivery and Gas Operations personnel while working in close proximity to sensitive electrical and/or gas utilities; survey support; and project management oversight.

Although Duke Energy Ohio's responsibility is to remediate all impacts associated with the former MGP operations to the extent required under applicable environmental laws, in 2019 all costs incurred for both the East End and the West End sites are associated with activities conducted within the original MGP facility operational boundaries.

As I testified during the Consolidated Rider MGP Proceedings, most of the investigation and remediation activities were not invoiced or scoped based on individual "parcel" as the required approach is to address the entire East End site and the West End site. As such, many scopes of work involved multiple "parcels" at the sites for purposes of effectiveness, efficiency and also reduced some costs.

However, I have reviewed all of the 2019 costs and prepared an allocation calculation based on reasonable assumptions, as summarized below and in more detail in the tables provided in Amended TLB-3 (which has been corrected to incorporate the items discussed earlier).

- Area West of the West Parcel (East End Site)
  - Groundwater Monitoring: $10,000
  - Riverbank Investigation: $77,000
  - Phase 2 Area Restoration: $76,000
  - Limited Riverbank Remediation: $340,000
- East End Site River Investigation: $2.04 million
- West End Site River Investigation: $1.32 million

The remainder of the costs incurred at the East End and West End sites, which are approximately $11 million and $24.57 million, respectively, were for investigation and remediation work in the upland areas that were not in dispute in the Consolidated Rider MGP Proceedings.

Q. PLEASE DESCRIBE THE GENERAL PROCESS USED TO ENSURE THE REASONABLENESS OF COSTS INCURRED TO INVESTIGATE AND/OR REMEDIATE THE EAST END AND WEST END SITES, INCLUDING WORK PERFORMED AT THE AREA WEST OF THE WEST PARCEL AND IN AND ALONG THE RIVER.

A. As detailed in the Commission's Order, Duke Energy Ohio employs and has continued to employ a number of procedures to ensure that the scope of investigation and cleanup work is appropriate and that the cost to perform that work is reasonable and prudent. Duke Energy project managers work closely with Ohio EPA VAP CPs and experienced environmental consultants to evaluate different options based on various criteria, including compliance with environmental regulations, protection of human health and the environment, best practices, feasibility, constructability, safety, prior experience, and cost. These considerations are built into the solicitation of bids and estimates through Duke Energy's "Request for Proposals" process. Bids are screened first on their technical merit, and then

evaluated for cost. Work that is awarded without going through all aspects of this process must be justified to and approved by Duke Energy management. Scope modifications that are made in the field due to new or changing field conditions must be approved by Duke Energy project managers and may also require approval from Duke Energy management and/or Duke Energy's finance department depending on the extent of the modification and other circumstances.

Q. DOES DUKE ENERGY OHIO HAVE INVOICES TO SUPPORT THE INVESTIGATION AND REMEDIATION WORK PERFORMED BY CONTRACTORS?

A. Yes, it does.

Q. DID THESE INVOICES INDICATE THE PHASE OF WORK FOR WHICH COSTS WERE INCURRED AND THE AREA IN WHICH THE WORK WAS PERFORMED AT THE EAST END SITE?

A. Many of the investigation and remedial activities involved the entire East End site or multiple "parcels" which comprise the East End site. As is customary with environmental projects such as this, the invoices are structured to coincide with the contracts and workplans, which were broken out by task.

Some of the invoices specifically reference the phase of work that was being performed or referenced the contract or scope of work that described the specific phase of work or area in which the work was performed. The only active remediation work that occurred in the Area West of the West Parcel was performed in the Phase 2 Area, and was completed in 2017. However, invoices related to the site restoration work identified costs by "phase", including the Phase 2 Area.

There are several tasks that were performed on a site-wide basis, including groundwater monitoring and the riverbank investigation, which could not as easily be identified by specific area or phase, but can be reasonably allocated based upon the nature and scope of the work being performed, as summarized above.

Q. HAS DUKE ENERGY OHIO SEGREGATED THE EAST END SITE COSTS OUT BY PARCEL FOR THIS PROCEEDING?

A. Not for all costs. It is impractical, if not impossible, to separate all costs by parcel as the East End site investigation and remediation projects did not do so from the beginning and all tasks were not scoped on a parcel-by-parcel basis. However, I have reviewed the invoices for costs incurred in 2019 and have prepared a reasonable allocation calculation, which is summarized in Amended TLB-3.

To the extent possible, I have identified costs specifically related to the Area West of the West Parcel. For example, some of the costs were tasked and invoiced separately, like the limited remediation of the riverbank at the East End site, so the process of identifying the costs was straightforward.

In other instances, some invoices identified that the work was done in the "Phase 2 Area" at the East End site (which is mostly in the Area West of the West Parcel, although some of it is in the West Parcel). While I can identify those costs, I can understand how it can be confusing to others who are not as familiar with the work as I am. Similarly, the limited remediation of the riverbank was only in the Area West of the West Parcel, so those costs were allocated in the Area West of the West Parcel. These costs are shown on the table contained in Amended TLB-3.

Some of the work that was performed was on a site-wide basis, for example, the groundwater monitoring. Groundwater monitoring costs were apportioned based on the percentage of wells that were sampled in the Area West of the West Parcel as compared to the total number of wells across the entire site. There are two wells in the Area West of the West Parcel and 14 total wells were sampled across the entire East End site. Similarly, the costs associated with the sampling work along the riverbank was apportioned based on the number of borings located in the Area West of the West Parcel compared to the number across the entire site. There were two borings installed on the riverbank in the Area West of the West Parcel and ten total borings across the entire East End site. These costs and the apportionment are explained on the table for the Area West of the West Parcel in Amended TLB-3.

Q. HOW ARE YOU ABLE TO IDENTIFY WHAT COSTS WERE INCURRED IN THE AREA WEST OF THE WEST PARCEL AT THE EAST END SITE?

A. As I testified earlier, active upland remediation was completed in the Area West of the West Parcel in 2017. I identified costs associated with the Area West of the West Parcel by reviewing invoices for work performed in 2019. TLB-1 provides a summary timeline of when work was performed and Amended TLB-3 provides a summary of 2019 costs allocable to the Area West of the West Parcel. On Amended TLB-3, the Area West of the West Parcel costs/invoices fall within four task categories: (1) groundwater monitoring; (2) riverbank investigation; (3) Phase 2 Area restoration; and (4) limited riverbank remediation. Example invoices

referenced on Amended TLB-3 are attached in CONFIDENTIAL TLB-4 through TLB-10, highlighted in pertinent areas, and discussed in the questions below.

Q. PLEASE PROVIDE EXAMPLES OF HOW YOU ALLOCATED COSTS TO THE AREA WEST OF THE WEST PARCEL FOR GROUNDWATER MONITORING.

A. Groundwater monitoring is performed on a site-wide basis, and only two out of total fourteen wells are in the Area West of the West Parcel at the East End site. The first invoice listed on Amended TLB-3 and attached as CONFIDENTIAL TLB-4 is Haley & Aldrich IN00037560 dated 3/7/2019 for $1,869.25. On the invoice, the project name is "Duke EEGW Consulting and Investigation" and the work is conducted under Purchase Order 5771836, which is the purchase order for groundwater monitoring. The total cost reflects Haley & Aldrich's costs incurred in 2019 to write the 2018 annual groundwater report. To calculate the allocated cost for the Area West of the West Parcel, the total invoice was multiplied by 2/14 (the number of wells in the Area West of the West Parcel divided by the total number of wells sampled), resulting in $267.04, as shown on Amended TLB-3.

The third invoice listed on Amended TLB-3 and attached as CONFIDENTIAL TLB-5, IN00039231 dated 4/29/2019 for $16,465, reflects Haley & Aldrich's costs to conduct quarterly groundwater monitoring fieldwork at the East End site. The same method of allocation was used where the total invoice was multiplied by 2/14 (the number of wells in the Area West of the West Parcel divided by the total number of wells sampled), so $2,352.14 was allocated to the Area West of the West Parcel, as shown on Amended TLB-3.

Q. PLEASE PROVIDE AN EXAMPLE OF HOW YOU ALLOCATED COSTS FOR THE AREA WEST OF THE WEST PARCEL ON THE RIVERBANK INVESTIGATION INVOICES.

A. On Amended TLB-3, the first "EMS Inc./HEPACO" invoice, FY19-011531REV dated 12/10/2019 for $175,000, and attached as CONFIDENTIAL TLB-6, is for the riverbank investigation fieldwork performed at the East End site. Ten borings were installed across the East End site riverbank and two were in the Area West of the West Parcel. To calculate the cost to be allocated to the Area West of the West Parcel, the total invoice was multiplied by 2/10 (the number of wells in the Area West of the West Parcel over the total number of riverbank wells sampled), resulting in $35,000.

Q. PLEASE PROVIDE EXAMPLES OF HOW YOU ALLOCATED COSTS FOR THE AREA WEST OF THE WEST PARCEL ON THE PHASE 2 RESTORATION INVOICES.

A. On Amended TLB-3, the first "Phase 2 Area Restoration" invoice, IN00042448 dated 8/6/2019 for $530,970.22, is actually an invoice for Haley and Aldrich's remedial construction and site restoration work in the Middle Parcel and the Area West of the West Parcel and is attached as CONFIDENTIAL TLB-7. As remedial construction was only performed in the Middle Parcel during 2019, and site restoration was the only work performed in the Area West of the West Parcel and included in this invoice (and the other invoices listed under the same category), these invoices have been categorized as Phase 2 Area Restoration. On pages 1 and 2 of this invoice, you will find shaded headers. The first shaded header states

"Remedial Construction Phase 1, (Duke Middle & West of the West Parcel), Cincinnati, OH"; the second shaded header says, "Remedial Construction Phase 2, (Duke Middle & West of the West Parcel), Cincinnati, OH"; the third shaded header reads "Remedial Construction Phase 4, (Duke Middle & West of the West Parcel), Cincinnati, OH"; and the last shaded header on page 2 says "Remedial Construction Phase 6, (Duke Middle & West of the West Parcel), Cincinnati, OH." The numbered Phases correspond to the areas shown in TLB-8, which shows the various remediation phases of the Middle Parcel and the Area West of the West Parcel at the East End Site. As shown in TLB-8, only the Phase 2 Area is located in the Area West of the West Parcel, and all the other phases are located in the Middle Parcel. The reference to "Duke Middle & West of the West Parcel" is tied to the original scope of work defined in the remedial design documents and proposals prepared by Haley & Aldrich in 2014, but the specific location of the work is determined by the reference to the phase.

$530,970.22 was the total amount invoiced in CONFIDENTIAL TLB-7, but the costs incurred in the Phase 2 Area were $40,934.58 as shown on page 1 of the invoice. I did not include the $4,548.29 described as retainage on the invoice, because retainage costs were paid in invoice IN00045385-RET received at the end of 2019. The invoice for the retainage is attached as CONFIDENTIAL TLB-9, which specifies the retainage that had previously been withheld for each phase, including for the Phase 2 Area, and was disbursed in connection with this invoice. Retainage is a portion of the contract price that is withheld until the work is

substantially complete, which is a standard practice in the construction industry to assure that the project is completed.

Q. HOW WERE THE COSTS OF THE LIMITED RIVERBANK REMEDIATION ALLOCATED?

A. The limited riverbank remediation addressed an area that was located in the Area West of the West Parcel, as that was the area where impacts were observed and had been reported to Ohio EPA. The source of impacts is not clear other than that they are associated with the former MGP operation. Thus, the total cost included in the limited riverbank remediation invoices was allocated to the Area West of the West Parcel based on the location of the work. For example, the first EMS Inc./HEPACO limited riverbank remediation invoice, FY19-007720 dated 8/20/2019 for $155,507.21, is attached as CONFIDENTIAL TLB-10. This invoice captured costs for the Reactive Core Mat materials and installation activities along the riverbank area of the Area West of the West Parcel. Thus, there was no allocation because the entire invoice is for Area West of the West Parcel costs. This method applies to all the other limited riverbank remediation invoices listed.

Q. HOW ARE YOU ABLE TO IDENTIFY WHAT COSTS WERE INCURRED IN THE OHIO RIVER AT THE EAST END SITE AND WEST END SITE?

A. The Ohio River investigations for the East End site and the West End site were performed under separate purchase orders and scopes of work from the work performed in the uplands, so it was much easier to identify the costs associated with the Ohio River at each site. Amended TLB-3 includes all the 2019 costs that were incurred under the purchase orders associated with the Ohio River investigation at

the East End site and the West End site, and incorporates the corrections discussed earlier.

Q. BASED ON YOUR EXPERIENCE, DID DUKE ENERGY OHIO REASONABLY AND PRUDENTLY INCUR APPROXIMATELY $39.4 MILLION IN INVESTIGATION AND REMEDIATION COSTS IN 2019?

A. Yes. These costs were incurred in the investigation and remediation of MGP contamination at the East End and West End sites and were conducted consistent with the procedures previously found reasonable and prudent by the Commission's Order in the 2012 Natural Gas Rate Case. The approach and scope of the remedial activity that has been conducted at the East End and West End sites in 2019 (and all years prior) have been consistent with what was deemed to be reasonable and prudent in the Commission's Order in the 2012 Natural Gas Rate Case involving, among other things, excavation and ISS in areas with OLM and TLM. All expenses incurred were in response to the Company's obligation to investigate and remediate impacts that stem from the operation of the two former MGP sites. All costs included in the Company's Amended Application were for investigation and remediation of MGP-related byproducts, contaminants, and impacts. Based on my experience with remediating contaminated sites, including MGP sites like East End and West End, the approximately $39.4 million represents reasonable and prudent costs for the work that was performed in 2019.

Q. PLEASE DISCUSS THE TIMING AND ACTIVITIES PLANNED TO BE PERFORMED AT THE EAST END AND WEST END SITES IN 2020.

A. These types of environmental projects are iterative in nature, particularly at sites

that are as large and complicated as the East End and West End sites. Duke Energy Ohio has phased the remediation in a prudent fashion to avoid needless expense and in a manner that protects the safety of Duke Energy Ohio's employees and the community and avoids potential disruptions to natural gas and electric services. As is typical for these types of cleanups, the upland areas where the former MGP processes were located are the first to be evaluated and remediated. Much of the upland active remedial work has been completed. Duke Energy Ohio is in the process of evaluating potential impacts in the Ohio River at both the East End site and West End site, to determine whether impacts are present and to determine what remediation will be required, if any.

At the East End site, there is currently a high-risk gas facility with sensitive underground propane infrastructure that continues to operate. This facility is located in the East End Middle Parcel. This area, while currently inaccessible for remediation, will require remediation once these facilities can be safely retired. On November 21, 2019, the Ohio Power Siting Board issued an Opinion, Order and Certificate[10] for the construction of the C314V Central Corridor Extension, which when completed and in service, will allow the propane peaking equipment and sensitive underground infrastructure to eventually be taken out of service and decommissioned and, thereafter, allow for remediation in areas that were previously inaccessible due to the sensitive infrastructure. Until that occurs, extra security and safety precautions must be taken when remediating and investigating

[10] *In the Matter of the Application of Duke Energy Ohio, Inc. for a Certificate of Environmental Compatibility and Public Need for the C314V Central Corridor Pipeline Extension Project*, Case No. 16-253-GA-BTX, Opinion, Order and Certificate (November 21, 2019).

this site to ensure the safety of Duke Energy Ohio's employees as well as the surrounding community. Work planned in 2020 at the East End site includes the installation of soil and bedrock borings along the southern border of the uplands along the top of the riverbank. In addition, a series of groundwater monitoring wells will be installed to replace those that had to be abandoned during recent remedial activities. All site-wide groundwater monitoring wells will continue to be sampled on a quarterly basis in 2020. The upland Remedial Action Completion Report will be prepared to document the work that has been completed in the Middle Parcel and Area West of the West Parcel. As discussed above, the Ohio River investigation and evaluation at the East End site will continue, including preparation of environmental reports.

At the West End site, the site-wide groundwater monitoring wells will continue to be sampled on a quarterly basis. The upland Remedial Action Completion Report will also be prepared to provide a summary of the remedial work completed in the Phase 3 and Tower Areas. As discussed above, the Ohio River investigation and evaluation at the West End site will continue, including preparation of environmental reports.

IV. CONCLUSION

Q. WERE ALL ATTACHMENTS, INCLUDING AMENDED TLB-3, PREPARED BY YOU OR AT YOUR DIRECTION AND UNDER YOUR CONTROL?

A. Yes.

Q. DOES THIS CONCLUDE YOUR AMENDED TESTIMONY?

A. Yes.

Duke Energy Ohio MGP Consol. Cases

2019 Investigation and Remediation Costs for Recovery - Area West of the West Parcel

Invoice Date	Vendor	Invoice #	Description/Task	Invoice Total	Allocated Cost	Explanation
3/7/2019	Haley Aldrich	IN00037560	Groundwater Monitoring	$ 1,869.25	$ 267.04	Site-wide Groundwater Monitoring; Tech Staff preparing 2018 groundwater report. Pro-rated based upon 2 of 14 wells in the Area West of the West Parcel.
4/29/2019	Haley Aldrich	IN00039227	Groundwater Monitoring	$ 1,441.25	$ 205.89	Site-wide Groundwater Monitoring; Tech Staff preparing 2018 groundwater report. Pro-rated based upon 2 of 14 wells in the Area West of the West Parcel.
4/29/2019	Haley Aldrich	IN00039231	Groundwater Monitoring	$ 16,465.00	$ 2,352.14	Site-wide Groundwater Monitoring; Tech Staff conducting field work. Pro-rated based upon 2 of 14 wells in the Area West of the West Parcel.
6/20/2019	Haley Aldrich	IN00040907	Groundwater Monitoring	$ 16,222.75	$ 2,317.54	Site-wide Groundwater Monitoring; Tech Staff conducting field work. Pro-rated based upon 2 of 14 wells in the Area West of the West Parcel.
8/23/2019	Haley Aldrich	IN00043096	Groundwater Monitoring	$ 15,685.50	$ 2,240.79	Site-wide Groundwater Monitoring; Tech Staff conducting field work. Pro-rated based upon 2 of 14 wells in the Area West of the West Parcel.
12/20/2019	Haley Aldrich	IN00046999	Groundwater Monitoring	$ 17,112.25	$ 2,444.61	Site-wide Groundwater Monitoring; Tech Staff conducting field work. Pro-rated based upon 2 of 14 wells in the Area West of the West Parcel.
3/7/2019	Haley Aldrich	IN00037561	Riverbank Investigation	$ 3,409.25	$ 681.85	Riverbank investigation field work. Pro-rated based upon 2 of 10 borings located in the Area West of the West Parcel.
11/22/2019	Haley Aldrich	IN00046030	Riverbank Investigation	$ 111,455.11	$ 22,291.02	Riverbank investigation field work. Pro-rated based upon 2 of 10 borings located in the Area West of the West Parcel.
12/10/2019	EMS Inc/HEPACO	FY19-011531REV	Riverbank Investigation	$ 175,000.00	$ 35,000.00	Riverbank investigation field work. Pro-rated based upon 2 of 10 borings located in the Area West of the West Parcel.
12/20/2019	Haley Aldrich	IN00047006	Riverbank Investigation	$ 16,584.40	$ 3,316.88	Riverbank investigation field work. Pro-rated based upon 2 of 10 borings located in the Area West of the West Parcel.
11/8/2019	Pace Analytical Services LLC	1950124891	Riverbank Investigation	$ 5,820.00	$ 1,444.00	Riverbank investigation analytical samples for Borings SB19-51 and SB19-44 which were located in the Area West of the West Parcel. Allocation amount is equal to the charges only associated with these two borings.
11/15/2019	Pace Analytical Services LLC	1950125544	Riverbank Investigation	$ 5,391.24	$ 5,391.24	Riverbank investigation analytical sample for Boring SB19-51 which was located in the Area West of the West Parcel.
11/21/2019	Pace Analytical Services LLC	1950126093	Riverbank Investigation	$ 8,908.68	$ 8,908.68	Riverbank investigation analytical sample for Boring SB19-44 which was located in the Area West of the West Parcel.
8/6/2019	Haley Aldrich	IN00042448	Phase 2 Area Restoration	$ 530,970.22	$ 40,934.58	Total invoice is for remedial construction and site restoration in Phases 1, 4, and 5 (Middle Parcel) and Phase 2 (Area West of the West Parcel); allocation costs only include the costs (less retainage) associated with Phase 2 in the Area West of the West Parcel as shown on the invoice.
10/2/2019	Haley Aldrich	IN00044331	Phase 2 Area Restoration	$ 564,937.08	$ 27,869.57	Total invoice is for remedial construction and site restoration in Phases 1, 3, 4, and 5 (Middle Parcel) and Phase 2 (Area West of the West Parcel); allocation costs only include the costs (less retainage) associated with Phase 2 in the Area West of the West Parcel as shown on the invoice.
11/5/2019	Haley Aldrich	IN00045385	Phase 2 Area Restoration	$ 327,961.07	$ 1,201.20	Total invoice is for remedial construction and site restoration in Phases 1, 3, 4, and 5 (Middle Parcel) and Phase 2 (Area West of the West Parcel); allocation cost only include the costs associated with Phase 2 in the Area West of the West Parcel as shown on the invoice.
12/10/2019	Haley Aldrich	IN00045385-RET	Phase 2 Area Restoration	$ 1,109,649.38	$ 6,037.78	Total invoice is for remedial construction and site restoration in Phases 1, 3, 4, and 5 (Middle Parcel) and Phase 2 (Area West of the West Parcel); allocation cost includes the retainage release associated with Phase 2 in the Area West of the West Parcel as shown on the invoice.
8/2/2019	Lewis Tree Service	181689	Limited Riverbank Remediation	$ 3,715.02	$ 3,715.02	Removal of trees and brush to facilitate the installation of the Reactive Core Mat on the riverbank within the Area West of the West Parcel.
8/20/2019	EMS Inc/HEPACO	FY19-007720	Limited Riverbank Remediation	$ 155,507.21	$ 155,507.21	Contractor's purchase of Reactive Core Mat materials and installation activities along riverbank area of the Area West of the West Parcel to perform limited remediation.
8/28/2019	EMS Inc/HEPACO	FY19-008077	Limited Riverbank Remediation	$ 120,228.24	$ 120,228.24	Contractor installation of Reactive Core Mat along riverbank area of the Area West of the West Parcel.
8/23/2019	Haley Aldrich	IN00043105	Limited Riverbank Remediation	$ 53,864.01	$ 53,864.01	Engineering fee for design services associated with the limited remediation of the riverbank area of the Area West of the West Parcel to perform limited remediation.
9/27/2019	Haley Aldrich	IN00044229	Limited Riverbank Remediation	$ 7,930.27	$ 7,930.27	Technical fee associated with sample data review associated with the limited remediation of the riverbank area of the Area West of the West Parcel.
				Total	$ 504,149.55	

Duke Energy Ohio MGP Consol. Cases

2019 Investigation and Remediation Costs Submitted for Recovery- Ohio River at East End Site

Date	Vendor	Invoice #	Description	Total Invoice
8/30/2019	PACE ANALYTICAL SERVICES LLC	1950119398	East End MGP Sediment Sample Analysis	$ 4,481.25
9/4/2019	PACE ANALYTICAL SERVICES LLC	1950119042	East End MGP Sediment Sample Analysis	$ 1,861.92
9/4/2019	PACE ANALYTICAL SERVICES LLC	1950119043	East End MGP Sediment Sample Analysis	$ 700.00
9/4/2019	PACE ANALYTICAL SERVICES LLC	1950119044	East End MGP Sediment Sample Analysis	$ 1,400.00
9/4/2019	PACE ANALYTICAL SERVICES LLC	1950119045	East End MGP Sediment Sample Analysis	$ 280.00
9/4/2019	PACE ANALYTICAL SERVICES LLC	1950119136	East End MGP Sediment Sample Analysis	$ 2,100.00
9/4/2019	PACE ANALYTICAL SERVICES LLC	1950119380	East End MGP Sediment Sample Analysis	$ 1,820.00
9/4/2019	PACE ANALYTICAL SERVICES LLC	1950119489	East End MGP Sediment Sample Analysis	$ 1,039.44
9/4/2019	PACE ANALYTICAL SERVICES LLC	1950119502	East End MGP Sediment Sample Analysis	$ 8,875.80
9/4/2019	PACE ANALYTICAL SERVICES LLC	1950119611	East End MGP Sediment Sample Analysis	$ 2,380.00
9/4/2019	PACE ANALYTICAL SERVICES LLC	1950119612	East End MGP Sediment Sample Analysis	$ 1,260.00
9/1/2019	PACE ANALYTICAL SERVICES LLC	1950119613	East End MGP Sediment Sample Analysis	$ 280.00
9/2/2019	PACE ANALYTICAL SERVICES LLC	1950119614	East End MGP Sediment Sample Analysis	$ 1,820.00
9/5/2019	PACE ANALYTICAL SERVICES LLC	1950119812	East End MGP Sediment Sample Analysis	$ 980.00
9/9/2019	PACE ANALYTICAL SERVICES LLC	1950120083	East End MGP Sediment Sample Analysis	$ 11,812.68
9/9/2019	PACE ANALYTICAL SERVICES LLC	1950120084	East End MGP Sediment Sample Analysis	$ 18,986.16
9/10/2019	PACE ANALYTICAL SERVICES LLC	1950120213	East End MGP Sediment Sample Analysis	$ 8,748.36
9/10/2019	PACE ANALYTICAL SERVICES LLC	1950120146	East End MGP Sediment Sample Analysis	$ 6,465.48
9/11/2019	PACE ANALYTICAL SERVICES LLC	1950120328	East End MGP Sediment Sample Analysis	$ 3,641.76
10/2/2019	PACE ANALYTICAL SERVICES LLC	1950121907	East End MGP Sediment Sample Analysis	$ 901.80
10/2/2019	PACE ANALYTICAL SERVICES LLC	1950121908	East End MGP Sediment Sample Analysis	$ 879.48
10/2/2019	PACE ANALYTICAL SERVICES LLC	1950121909	East End MGP Sediment Sample Analysis	$ 645.84
10/2/2019	PACE ANALYTICAL SERVICES LLC	1950121910	East End MGP Sediment Sample Analysis	$ 326.64
10/3/2019	PACE ANALYTICAL SERVICES LLC	1950122003	East End MGP Sediment Sample Analysis	$ 619.80
11/7/2019	PACE ANALYTICAL SERVICES LLC	1950124773	East End MGP Sediment Sample Analysis	$ 16,332.60
1/3/2020	PACE ANALYTICAL SERVICES LLC	2050129687	East End MGP Sediment Sample Analysis	$ 18.60
1/3/2020	PACE ANALYTICAL SERVICES LLC	2050129688	East End MGP Sediment Sample Analysis	$ 14.88
01/03/2020	PACE ANALYTICAL SERVICES LLC	2050129686	East End MGP Sediment Sample Analysis	$ 7.44
4/15/2018	TestAmerica	49279261	East End MGP Sediment Sample Analysis	$4,200.00
11/26/2019	PACIFIC ECORISK INC	15938	East End MGP Sediment Sample Analysis	$ 36,412.14
12/4/2018	Anchor QEA	1905	East End MGP Sediment Investigation Work	$ 53,731.34
12/31/2018	Anchor QEA	1983	East End MGP Sediment Investigation Work	$ 65,577.93
1/23/2019	Anchor QEA	2056	East End MGP Sediment Investigation Work	$ 71,903.50
2/15/2019	Anchor QEA	2080	East End MGP Sediment Investigation Work	$ 18,461.50
7/16/2019	EMS Inc	20426	East End MGP Sediment Investigation Work - Field Boats & Barge	$ 131,774.93
7/31/2019	EMS Inc	20592	East End MGP Sediment Investigation Work - Field Boats & Barge	$ 355,942.00
10/22/2019	EMS Inc	20804	East End MGP Sediment Investigation Work - Field Boats & Barge	$ 220,369.78
12/6/2019	EMS Inc/HEPACO	FY19-011526	East End MGP Sediment Investigation Work - IDW Disposal Costs	$ 2,584.00
12/17/2019	EMS Inc/HEPACO	FY19-011953	East End MGP Sediment Investigation Work - Field Boats & Barge	$ 5,112.19
4/29/2019	Haley Aldrich Inc.	IN00039232	East End Sediment Investigation - Data Review	$ 14,602.75
6/3/2019	Haley Aldrich Inc.	IN00040435	East End Sediment Investigation - Data Review	$ 24,220.25
6/10/2019	Haley Aldrich Inc.	IN00040620	East End Sediment Investigation - Data Review	$ 22,298.25
6/20/2019	Haley Aldrich Inc.	IN00040908	East End Sediment Investigation - Data Review	$ 14,372.25
6/20/2019	Haley Aldrich Inc.	IN00040910	East End Sediment Investigation - Data Review	$ 17,819.97
7/26/2019	Haley Aldrich Inc.	IN00042181	East End Sediment Investigation - Field Work TarGOST Drilling	$ 145,699.76
8/23/2019	Haley Aldrich Inc.	IN00043101	East End Sediment Investigation - Field Work TarGOST Drilling	$ 159,515.93
8/23/2019	Haley Aldrich Inc.	IN00043110	East End Sediment Investigation - Field Work Sonic Drilling	$ 299,297.03
9/27/2019	Haley Aldrich Inc.	IN00044231	East End Sediment Investigation - Field Work Sonic Drilling	$ 157,188.42
9/27/2019	Haley Aldrich Inc.	IN00044225	East End Sediment Investigation - Data Review	$ 6,191.00
11/1/2019	Haley Aldrich Inc.	IN00045263	East End Sediment Investigation - Field Work Sonic Drilling	$ 21,116.42
11/1/2019	Haley Aldrich Inc.	IN00045261	East End Sediment Investigation - Data Review	$ 10,142.00
11/22/2019	Haley Aldrich Inc.	IN00046028	East End Sediment Investigation - Field Work Boring Log Development	$ 38,721.19
11/22/2019	Haley Aldrich Inc.	IN00046027	East End Sediment Investigation - Data Review	$ 10,883.75
12/20/2019	Haley Aldrich Inc.	IN00047003	East End Sediment Investigation - Field Work Data Development	$ 35,828.00
			Total	**$ 2,042,646.21**

Duke Energy Ohio MGP Consol. Cases

Investigation and Remediation Costs - Ohio River at West End Site

Date	Vendor	Invoice Number	Description	Total Invoice
09/10/2019	PACE ANALYTICAL SERVICES LLC	1950120133	West End MGP Sediment Sample Analysis	$ 290.00
09/11/2019	PACE ANALYTICAL SERVICES LLC	1950120220	West End MGP Sediment Sample Analysis	$ 700.00
09/13/2019	PACE ANALYTICAL SERVICES LLC	1950120462	West End MGP Sediment Sample Analysis	$ 1,705.00
09/13/2019	PACE ANALYTICAL SERVICES LLC	1950120463	West End MGP Sediment Sample Analysis	$ 915.00
09/17/2019	PACE ANALYTICAL SERVICES LLC	1950120612	West End MGP Sediment Sample Analysis	$ 13,321.56
09/19/2019	PACE ANALYTICAL SERVICES LLC	1950120868	West End MGP Sediment Sample Analysis	$ 12,747.84
09/20/2019	PACE ANALYTICAL SERVICES LLC	1950120977	West End MGP Sediment Sample Analysis	$ 2,598.60
09/20/2019	PACE ANALYTICAL SERVICES LLC	1950121000	West End MGP Sediment Sample Analysis	$ 2,400.00
09/23/2019	PACE ANALYTICAL SERVICES LLC	1950121092	West End MGP Sediment Sample Analysis	$ 10,607.52
09/23/2019	PACE ANALYTICAL SERVICES LLC	1950121093	West End MGP Sediment Sample Analysis	$ 1,270.00
10/01/2019	PACE ANALYTICAL SERVICES LLC	1950121581	West End MGP Sediment Sample Analysis	$ 4,157.76
10/01/2019	PACE ANALYTICAL SERVICES LLC	1950121763	West End MGP Sediment Sample Analysis	$ 594.00
10/02/2019	PACE ANALYTICAL SERVICES LLC	1950121899	West End MGP Sediment Sample Analysis	$ 6,236.64
10/02/2019	PACE ANALYTICAL SERVICES LLC	1950121900	West End MGP Sediment Sample Analysis	$ 8,315.52
10/02/2019	PACE ANALYTICAL SERVICES LLC	1950121901	West End MGP Sediment Sample Analysis	$ 4,157.76
10/03/2019	PACE ANALYTICAL SERVICES LLC	1950122004	West End MGP Sediment Sample Analysis	$ 6,876.36
10/04/2019	PACE ANALYTICAL SERVICES LLC	1950122111	West End MGP Sediment Sample Analysis	$ 8,304.36
10/22/2019	PACE ANALYTICAL SERVICES LLC	1950123442	West End MGP Sediment Sample Analysis	$ 582.60
10/22/2019	PACE ANALYTICAL SERVICES LLC	1950123443	West End MGP Sediment Sample Analysis	$ 1,209.84
10/22/2019	PACE ANALYTICAL SERVICES LLC	1950123444	West End MGP Sediment Sample Analysis	$ 660.72
10/22/2019	PACE ANALYTICAL SERVICES LLC	1950123445	West End MGP Sediment Sample Analysis	$ 304.32
10/22/2019	PACE ANALYTICAL SERVICES LLC	1950123446	West End MGP Sediment Sample Analysis	$ 1,465.80
10/22/2019	PACE ANALYTICAL SERVICES LLC	1950123447	West End MGP Sediment Sample Analysis	$ 326.64
10/30/2019	PACE ANALYTICAL SERVICES LLC	1950124106	West End MGP Sediment Sample Analysis	$ 337.80
10/30/2019	PACE ANALYTICAL SERVICES LLC	1950124107	West End MGP Sediment Sample Analysis	$ 901.80
10/30/2019	PACE ANALYTICAL SERVICES LLC	1950124108	West End MGP Sediment Sample Analysis	$ 586.32
10/30/2019	PACE ANALYTICAL SERVICES LLC	1950124109	West End MGP Sediment Sample Analysis	$ 883.20
10/30/2019	PACE ANALYTICAL SERVICES LLC	1950124114	West End MGP Sediment Sample Analysis	$ 1,168.92
11/07/2019	PACE ANALYTICAL SERVICES LLC	1950124774	West End MGP Sediment Sample Analysis	$ 5,586.60
01/10/2020	PACE ANALYTICAL SERVICES LLC	1950124988	West End MGP Sediment Sample Analysis	$ 5,633.00
01/10/2020	PACE ANALYTICAL SERVICES LLC	1950124990	West End MGP Sediment Sample Analysis	$ 6,772.00
01/10/2020	PACE ANALYTICAL SERVICES LLC	1950124991	West End MGP Sediment Sample Analysis	$ 12,207.00
01/10/2020	PACE ANALYTICAL SERVICES LLC	1950125045	West End MGP Sediment Sample Analysis	$ 7,175.00
12/18/2019	PACE ANALYTICAL SERVICES LLC	1950128325	West End MGP Sediment Sample Analysis	$ 17,251.00
12/19/2019	PACE ANALYTICAL SERVICES LLC	1950128423	West End MGP Sediment Sample Analysis	$ 9,940.00
12/19/2019	PACE ANALYTICAL SERVICES LLC	1950128424	West End MGP Sediment Sample Analysis	$ 4,345.00
12/19/2019	PACE ANALYTICAL SERVICES LLC	1950128425	West End MGP Sediment Sample Analysis	$ 6,405.00
01/02/2020	PACE ANALYTICAL SERVICES LLC	1950129299	West End MGP Sediment Sample Analysis	$ 3,471.00
01/27/2020	PACE ANALYTICAL SERVICES LLC	2050131300	West End MGP Sediment Sample Analysis	$ 210.00
07/11/2019	TestAmerica	4900004255A	West End MGP Sediment Sample Analysis	$ 61,429.26
11/26/2019	PACIFIC ECORISK INC	15976	West End Sediment Investigation	$ 85,750.90
12/04/2018	Anchor QEA	1906	West End Sediment Investigation	$ 61,210.50
12/31/2018	Anchor QEA	1984	West End Sediment Investigation	$ 37,136.61
1/23/2019	Anchor QEA	2057	West End Sediment Investigation	$ 50,446.25
1/29/2019	Anchor QEA	2073	West End Sediment Investigation	$ 9,969.75
2/15/2019	Anchor QEA	2079	West End Sediment Investigation	$ 23,724.75
3/14/2019	Anchor QEA	2147	West End Sediment Investigation	$ 7,457.25
9/25/2019	EMS Inc./HEPACO	FY19-009515	West End MGP Sediment Investigation Work - Field Boats & Barge	$ 240,870.00
12/6/2019	EMS Inc./HEPACO	FY19-011529	West End MGP Sediment Investigation Work - IDW Disposal Costs	$ 2,584.00
4/29/2019	Haley Aldrich	IN00039224	West End Sediment Investigation	$ 28,587.50
6/3/2019	Haley Aldrich	IN00040433	West End Sediment Investigation	$ 35,064.25
6/10/2019	Haley Aldrich	IN00040613	West End Sediment Investigation -Risk Analysis	$ 2,761.00
6/10/2019	Haley Aldrich	IN00040617	West End Sediment Investigation	$ 43,548.23
6/20/2019	Haley Aldrich	IN00040903	West End Sediment Investigation -Risk Analysis	$ 1,099.50
6/20/2019	Haley Aldrich	IN00040905	West End Sediment Investigation	$ 8,484.00
7/26/2019	Haley Aldrich	IN00042173	West End Sediment Investigation	$ 6,977.50
9/27/2019	Haley Aldrich	IN00044219	West End Sediment Investigation Field Work	$ 331,796.49
11/1/2019	Haley Aldrich	IN00045256	West End Sediment Investigation Field Work	$ 31,281.83
11/22/2019	Haley Aldrich	IN00046023	West End Sediment Investigation Field Work	$ 27,774.15
12/20/2019	Haley Aldrich	IN00046994	West End Sediment Investigation Field Work	$ 44,516.00
			Total	**$ 1,315,091.20**

Summary: Testimony Amended Testimony of Todd L. Bachand on Behalf of Duke Energy Ohio, Inc. electronically filed by Carys Cochern on behalf of Duke Energy