Clean Air Act Compliance Inspection Report

United States Environmental Protection Agency
Region 10 – Seattle, WA

Partial Compliance Evaluation
Emission Test Observation

City of Lynnwood Wastewater Treatment Plant
Edmonds, Washington

Inspection Dates: May 10-12, 2021

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Zach Hedgpeth, PE
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Manager Signature Date

Katie McClintock
Supervisor, Air & Toxics Enforcement Section
EPA Region 10

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Attachments

1. Basic Facility and Inspection Information

Facility:	City of Lynnwood Wastewater Treatment Plant 17000 76th Avenue West Edmonds, WA 98026
Mailing Address:	19100 44th Avenue West Lynnwood, WA 98036
AFS/FRS Number:	WAPSC0005306116096
Permit Number:	Title V permit has not been issued
Facility Contacts:	John Ewell, PE – Treatment Plant Supervisor 425-670-5250, jewell@LynnwoodWA.gov
Agency Inspectors:	Zach Hedgpeth, PE – EPA Region 10 206-553-1217, hedgpeth.zach@epa.gov Sara Conley – EPA Region 10 206-553-6914, conley.sara@epa.gov
Inspection: Inspection Report:	May 10-12, 2021 July 15, 2021
Inspection Notice:	Announced

Disclaimer

This report is a summary of observations and information gathered from the facility at the time of the inspection. The information provided does not constitute a final decision regarding compliance with the Clean Air Act (CAA) and applicable regulations or permits, nor is it meant to be a comprehensive report of all activities and processes conducted at the facility.

2. Introduction

a) The primary purpose of this inspection was to observe emission testing conducted pursuant to the Federal Plan Requirements for Sewage Sludge Incineration Units Constructed On or Before October 14, 2010, Chapter 40 of the Code of Federal Regulations, Part 62, Subpart LLL (40 CFR 62, subpart LLL). According to the 4/9/21 notification letter (see Attachment 3), the testing is the annual compliance testing, which is required under 40 CFR 62.16000(a).
b) The secondary purpose of this inspection was to gain an understanding of the incinerator and control device process, physical configuration, and operating practices.
c) I provided advance notice of the inspection on May 3, 2021 via a phone call to John Ewell, the Treatment Plant Supervisor. I also placed a call to Steve Van Slyke, Compliance Director at Puget Sound Clean Air Agency (PSCAA), and left a message notifying him of EPA's intent to observe the emission testing and inviting PSCAA to send a representative to participate in the inspection. No response was received from PSCAA, and no representatives from the local agency attended the inspection.

3. Inspection Elements and Field Observations – May 10, 2021

a) The inspectors arrived at the facility around 08:00 and proceeded to the office, where we were greeted by Mr. Ewell and Steve Nelson of Coal Creek Environmental, air quality consultant to the facility. Following introductions, I presented my inspector credential and explained that EPA considers test observation as an inspection, and I also reviewed the purposes of the inspection (described above). I explained that I would be the lead inspector, and that the inspection would serve as on-the-job training for Sara Conley as part of her formal EPA inspector credentialing process.
b) Opening Conference (approximately 08:00-08:30)
    1. The opening conference was held informally in the facility office hall and a small conference/lunchroom near the entrance. The discussion was attended by both inspectors as well as Mr. Ewell and Mr. Nelson.
    2. I explained that the inspection would include taking photographs, and Mr. Ewell stated that was fine. Regarding confidential business information (CBI), Mr. Ewell stated there was nothing at the facility that would be considered CBI.
    3. A basic facility process description was provided by Mr. Ewell. Mr. Nelson explained that the testing schedule called for the required annual compliance testing to be completed Monday through Wednesday, but that the facility planned to conduct additional engineering testing on Thursday and Friday.
    4. The recent test failures for emissions of particulate matter (PM) were discussed. Mr. Ewell and Mr. Nelson explained that EnviroCare, the scrubber manufacturer, was onsite recently and recommended replacement of the mist eliminator. Their theory was that degradation or buildup on the mist eliminator was introducing PM into the exhaust gas stream post-scrubber. Based on this recommendation the mist eliminator was replaced shortly before this testing. The former mist eliminator was retained onsite and was examined by the inspectors, as described later in this report. The former mist eliminator had been cleaned, but some buildup was noted by the inspectors.

5. Mr. Ewell and Mr. Nelson reported that periodically over several years, the incinerator has experienced severe solids carryover out of the incinerator chamber and into downstream ducting, specifically in the "crossover" duct between the incinerator outlet and the inlet to the primary heat exchanger as well as downstream ducting (see photos 202-204 in Attachment 1). Mr. Ewell provided hard copies of photographs on 5/11/21 showing the internal buildup in the upper crossover duct between the incinerator outlet and the inlet to the primary heat exchanger, the inlet to the primary heat exchanger, and the lower crossover duct downstream of the primary heat exchanger. The photographs are included as Attachment 4 to this report.

c) Field Observations

1. Inspection Structure – The structure/format of this inspection differed somewhat from a traditional linear approach because the majority of the field observations related to emission testing. The inspectors generally moved between the facility offices/lunchroom, incinerator control room, stack and meter boxes, and testing truck (mobile lab & sample recovery location) throughout the three days onsite. At times the inspectors were together, and at other times we split up in order to observe two different components of the testing at the same time. Field observations are recorded approximately in chronological order, organized by physical location. An overall facility tour and detailed walk-through of the incinerator and control equipment occurred on May 11, 2021 and is described later in this report.
2. Control Room – Following the opening conference, all four attendees paid a brief visit to the incinerator control room, where we met the senior operator, Ryan Reynolds along with additional operators Zack and Caleb.
3. Stack/Meter Boxes – At approximately 08:40 the inspectors met the testing staff from Montrose Environmental at the meter boxes, near the incinerator stack. Carl Slimp introduced himself at this time as the testing field lead. Two other testing technicians (Nick and one other) assisted Mr. Slimp. At this time the inspectors noted the testers had both Method 5/29 and Method 23 sampling trains assembled. One level down inside the building, the inspectors met incinerator operator Tanner, who is the facility staff person who operates the Method 30B mercury testing train.
4. Control Room – The inspectors had a discussion with Mr. Nelson in the facility control room at around 09:20 to discuss the operating parameters of interest during the testing. The parameters discussed at this time included the following:
    i. Differential pressure across the venturi section of the scrubber (venturi ΔP, inches of water column, in. w.c.).
    ii. Differential pressure across the mercury modules (Hg module ΔP, inches of water column, in. w.c.).
    iii. Differential pressure across the entire scrubber system (scrubber ΔP, inches of water column, in.w.c.).
    iv. Flow rate to the venturi (venturi flow rate, gpm).
    v. Flow rate to the tray section of the scrubber (tray flow rate, gpm).
    vi. pH at the outlet/drain.

vii. Temperature after the quench section of the scrubber (quench temperature, °F).
viii. Incinerator combustion temperature in the sand bed (incinerator temperature, °F).
ix. Solids loading rate to the incinerator. Mr. Nelson explained that the maximum allowable solids loading rate would be calculated by dividing the rate charged to the incinerator during the dioxin/furan emission testing by 0.9.

5. Control Room – At around 09:45 Mr. Slimp informed the inspectors that testing was delayed because the Method 30B testing train was not passing the leak check. While in the control room, the inspectors had a discussion with operators Ryan, Zack, and Caleb regarding operation of the incinerator.
   i. During this time, the inspectors noted that the flow rate of the screw press feed pump was approximately 38 gallons per minute (gpm). This is the flow rate of the liquid feed to the dewatering equipment. Assuming the solids content is relatively steady, this flow rate gives a relative indication of the dry solids loading rate to the incinerator. The actual dry solids loading rate is determined by dry solids analysis of grab samples of the dewatered sludge fed into the incinerator, generally collected every 15 minutes during the testing[1]. The dry solids analyses are conducted in the onsite lab. During the inspection, Sara Conley noted the following data related to the dry solids loading rate:
      1. April 2021 monthly average values were recorded as:
         a. Daily operating hours: 22.8 hrs/day
         b. Solids feed rate: 32.2 gpm
         c. Dry solids content: 2.39%
      2. Solids feed rate (24-hr average)
         a. 5/7/21: 36.5 gpm
         b. 5/8/21: 35.9 gpm
         c. 5/9/21: 31.6 gpm
         d. 5/10/21: 35.9 gpm
      3. Dry solids content (%)
         a. 5/7/21: 1.81%
         b. 5/8/21: 1.95%
         c. 5/9/21: 2.01%
   ii. The operators explained that there are two liquid flow rates to the venturi section of the scrubber. The "venturi throat" flow rate is the liquid delivered counter current to the exhaust flow which is sprayed "backwards" into the venturi throats. The "venturi inlet" flow rate is the liquid delivered to the inlet side of the venturi section of the scrubber. The venturi inlet flow rate is held steady at 10 gpm, while the venturi throat

[1] As the testing proceeded, collection of grab samples on 15-minute frequency was not maintained through the later portions of the testing due to unavailability of sample containers. The frequency of grab sample collection was reduced because the onsite lab was not able to process the samples quickly enough to provide cleaned sample containers.

flow rate is automatically adjusted by the control system to achieve a target venturi ΔP. The following parameters were recorded by the inspectors:[2]

1. Venturi ΔP = 26-27 in. w.c.
2. Venturi throat flow rate = 6 gpm (adjusted to hit ΔP target)
3. Venturi inlet flow rate = 10 gpm (held constant)

iii. The mercury module control efficiency is measured quarterly using EPA Method 30B. The unit is equipped with three mercury sorbent modules arranged in series. If Method 30B testing indicates a drop in mercury control efficiency below a specified value, the bottommost module is removed, the other two are moved lower in the unit, and a new module is placed at the top.

iv. At approximately 10:45 the inspectors were notified that Run 1 had started. At 11:15 Mr. Nelson informed the inspectors that the testing schedule had been shifted back due to the delayed start. The new plan was to conduct only the first Method 5/29 and Method 23 test run that day (conducted simultaneously, the stack is equipped with two sets of test ports). This was expected to shift completion of the compliance testing to be completed later in the day on Wednesday.

6. Office/Lunchroom – Starting around 12:10 the inspectors discussed the following topics, primarily with Mr. Nelson, in the facility office.

i. The operating parameters listed above were discussed further, and we reviewed a table entitled "Performance Test Objectives" that Mr. Nelson had prepared for use by the incinerator operators during the testing (see photo 145 in Attachment 1). This table describes certain aspects of incinerator operations during each phase of the emission testing and ties operational goals to specific operating parameter minimum and/or maximum values that are to be set during specific test phases.

ii. Excessive solids buildup/carryover in the ducts downstream of the incinerator was also discussed. A more detailed discussion of this issue occurred the following day and included Mr. Ewell.

iii. At around 12:20 Mr. Slimp informed the group that the tester's CO2 analyzer had drifted. The analyzer was consistently reading around 3% CO2, but then drifted down to 0.5% for about 40 minutes. Mr. Slimp asked the inspectors to approve this deviation from the method to allow the run to continue, but the inspectors stated they could not provide a field approval for a method deviation. Mr. Nelson instructed Mr. Slimp to continue the testing run and note the deviation, indicating that this deviation shouldn't be a problem since it relates only to stack gas molecular weight.

iv. Parameter-specific notes are included below. The parametric values cited were read off a screen located in the facility office/lunchroom:

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[2] These three parameters were also recorded at the following times and were found not to vary, except that the venturi pressure drop could be either 26 or 27 in. w.c.: May 10, 2021 – 10:59 and 12:30; May 11, 2021 – 9:58 and 17:15; May 12, 2021 – 10:25.

1. It was noted that the minimum value for venturi flow rate is set using the sum of the "throat" and "inlet" flow rates.
2. Venturi pressure drop was noted to be between 26-27 in. w.c.
3. Pressure drop across the mercury modules was noted to be around 0.01 in. w.c. The purpose of monitoring this parameter is to indicate plugging of the modules.
4. Minimum combustion temperature is set using the average of the three temperature probes positioned within the incinerator sand bed. The temperature values of the three probes were noted to be between 1,282-1,290°F.
5. Maximum "subcool" temperature (immediately following the quench) was noted to be around 155°F.

7. At approximately 13:00, I departed the site for the remainder of the day. Sara Conley remained onsite until the completion of testing activities for the day.
8. Stack/Meter Boxes/Test Truck – Run 1 of the concurrent Method 23 and Method 29 testing concluded at 14:57. Sara Conley observed the sample recovery procedures at the stack and in the mobile laboratory/test truck and recorded the following notes:
    i. The filter boxes from both sampling trains (Methods 23 and 29) were disassembled on the stack platform. The nozzles were handled with work gloves and then the nozzle was cooled with ice.
    ii. A leak check was performed at 15:06 and passed. The tester was wearing a nitrile glove.
    iii. For Method 29, Run 1, the temperature of the gas flow through the filter was 261°F.
    iv. Method 23 probe and nozzle recovery was conducted on the stack platform and observed to begin with acetone rinses (3) and brushing (3). The volume of the acetone used to rinse the front half of the sampling train was not measured.
    v. Method 29 probe and nozzle recovery was not observed.

4. Inspection Elements and Field Observations – May 11, 2021

a) The EPA inspectors arrived at the facility at approximately 07:35. Before entering the building, photos of the exterior of the facility were taken, including views of the incinerator stack from the Method 9 visible emissions observation location. No visible emissions were observed at this time. Upon checking in at the stack test truck, Mr. Slimp informed us that the start time for Run 2 of the concurrent Method 5/29 and Method 23 testing was 07:40. Mr. Ewell and Mr. Nelson were not onsite at the time of our arrival.

b) Mr. Ewell arrived shortly after the inspectors entered the facility offices, and a follow-up discussion occurred regarding the solids carry-over into the ducting downstream of the incinerator as well as the PM emission issues. Mr. Ewell provided the following additional details, along with hard copies of the photos shown in Attachment 4:
    1. The buildup has been a repeat issue for the facility dating back at least to 2017. The inspectors viewed photos showing the issue through the past, compiled into a 3-ring binder. The timing of the issue has varied, and does not necessarily

coincide with emission testing, as it did this time. The facility cleaned out the ducting shortly before this emission testing.

2. The consistency of the solids does vary somewhat, but generally is relatively loose such that it can be manually removed by hand tools such as shovels, etc.
3. The facility has hired a consultant to work on the solids/plugging issue (Chevron Barry). The consultant has recommended adding clay and lime to the sludge cake after the screw press. This work may be implemented in the new few months.
4. The facility had the scrubber manufacturer, Envirocare, out to inspect the unit just prior to this testing effort. John Fosgate with Envirocare was onsite and inspected the scrubber, and indicated the unit was in good shape. Envirocare did recommend replacing the mist eliminator prior to testing, which the facility did.
5. In order to investigate whether possible bleed through from the secondary heat exchanger could be contaminating the plume suppression air with PM, the facility conducted engineering testing of the plume suppression air in December 2020 via EPA Method 5. The results showed that the plume suppression air was clean, according to Mr. Ewell, indicating that bleed through in the secondary heat exchanger was likely not the cause of the failed PM test.

c) Field Observations

1. Control Room – Between approximately 09:15 and 10:45, I recorded the following data and had the following discussions with incinerator operators Ryan Reynolds, Caleb, and Steve.
    i. At around 09:15, I recorded the following operating parameters:
        1. Venturi throat flow rate: 6 gpm
        2. Venturi inlet flow rate: 10 gpm
        3. Venturi ΔP: 26 in. w.c.
        4. Mercury module ΔP: 0 in. w.c.
        5. Incinerator sand bed temperature: 1,294°F[3]
        6. Quench temperature: 156°F
        7. Solids Feed Rate: 40.7 gpm
    ii. At around 09:45, I examined the mist eliminator that had been removed from the scrubber with operator Caleb. The mist eliminator was located outside the control room nearby inside the incinerator building. The mist eliminator was a wire mesh pad about 6 inches in thickness and designed in three pieces (two semi-circles, and a rectangular piece) that would combine to form a circle across the incinerator stack (see photo 144). I observed that the mist eliminator was fairly clean but had a small amount of cementitious granular material stuck onto the edges of the wire mesh. This material came loose when crushed between my fingers. Caleb explained that the mist eliminator had been removed from the stack about a month ago and had been cleaned with a pressure washer. He stated that when it was first removed from the stack, the mist eliminator had more of the material buildup than now.
    iii. While in the control room, the operators explained that the sludge feed equipment is not well designed, resulting in uneven sludge feed to the two

[3] Senior Operator Ryan Reynolds clarified that the middle temperature probe in the sand bed is used.

feed lines leading into the incinerator. Specifically, the two feed lines are supplied by a single pump while one feed line is much shorter than the other. This results in most if not all the sludge flowing into the incinerator through the shorter feed line. This uneven feed limits the operating rate of the incinerator and results in the unit being operated at a higher sludge moisture content than is ideal, in order to promote sludge flow through the longer feed line.

2. Stack/Meter Boxes – Between approximately 09:15 and 10:45 Sara Conley observed emission testing activities at the incinerator stack and the testing meter boxes located inside the top floor of the building. Run 2 of the concurrent EPA Methods 23 and 29 testing was underway. The following notes were recorded:
    i. The cyclonic flow/EPA Method 1 data sheet is dated 5/7/21.
    ii. No leak check was conducted during the port change.
    iii. The XAD resin used with the Method 23 train was provided by Enthalpy Labs and had a prep date of 4/26/21. The testers plan to deliver the samples to the lab on 5/18/21 for analysis.
3. Site Tour – Between approximately 10:45 and 11:30, both inspectors accompanied Mr. Ewell on an overall site tour of the treatment plant. The following areas of the plant were briefly observed: headworks, primary clarifiers, secondary treatment, detergent odor scrubber, grit/solids removal, chlorination.
4. Stack/Meter Boxes – Following the plant tour, both inspectors observed emission testing activities at the stack and meter boxes. The following notes were recorded describing testing activities at the end of Run 2 of the Method 23 and 29 testing, including activities to prepare for Run 3:
    i. Testers were observed to conduct a post-run leak check. I noted that the testers rubbed an ice cube on the nozzle tip prior to the leak check and wore blue nitrile gloves when sealing both glass nozzles on the two sampling trains for the leak checks. A syringe and plunger were used on both sides of the pitot tubes on both trains.
    ii. The filter boxes from both sampling trains (Methods 23 and 29) were disassembled on the stack platform and the inlet/outlet on both were wrapped with Teflon tape.
    iii. Method 29 probe and nozzle recovery was conducted on the stack platform and observed to begin with nitric acid rinses (4) and brushing (3). All rinses were collected in a brown glass bottle. Next the probe was rinsed once using acetone with no brushing.
    iv. Method 23 probe and nozzle recovery was conducted on the stack platform and observed to begin with acetone rinses (4) and brushing (3). Next the probe was rinsed once using toluene with no brushing.
    v. No probe rotation occurred during either the Method 29 or Method 23 recovery.
    vi. Following recovery rinses, the nozzles were replaced onto the ends of the probes. I noted that the testers re-used the same probes and nozzles from Run 2 for Run 3. When I asked Nick about this, he stated that his understanding was that it is acceptable to re-use the nozzle and probe if they are rinsed and brushed.

vii. The testers re-assembled both sampling trains for Run 3. A delay occurred due to the Method 29 train failing the pre-run leak check. After troubleshooting, Nick informed me that the filter housing was the source of the leak. The testers took it apart and then re-assembled it, after which the train passed the leak check.
viii. We departed the stack around 13:00 and left the site around 13:30 for lunch.

5. Incinerator Building – Following the lunch break, we returned to the site around 14:20 and met with Mr. Nelson and Mr. Reynolds to discuss and tour the incinerator and scrubber control equipment in more detail. The following notes were recorded:
    i. Each section of the incinerator and scrubber were examined, and multiple photographs were taken (see Attachment 1, photos 181-227). The following specific items were observed:
        1. Combustion and plume suppression air intakes.
        2. Combustion air inlet duct to incinerator.
        3. Diesel injection nozzles.
        4. Sludge feed lines.
        5. Incinerator thermocouples.
        6. Exterior of incinerator.
        7. Incinerator outlet duct, primary and secondary heat exchangers.
        8. Scrubber quench stage.
        9. Scrubber water drain lines.
        10. Venturi drain pH meter.
        11. Scrubber tray section exterior and water supply lines.
        12. Scrubber venturi section exterior and water supply lines.
        13. Scrubber mist eliminator and Hg module section exteriors.
        14. Method 30B sampling probes at inlet and outlet of Hg module section of scrubber.
        15. Method 30B sampling equipment and screenshots.
        16. Plume suppression air duct.
        17. Exhaust stack exiting through roof.
    ii. In reviewing the scrubber piping and instrumentation diagram (P&ID), regarding the venturi flow rates; “inlet” is a low pressure flow directed into the inlet side of the venturi’s, concurrent to the gas flow, while “throat” is a high pressure flow directed into the outlet side of the venturi’s, countercurrent to the gas flow.
    iii. While observing the quench portion of the scrubber, Mr. Nelson expressed his view that the monitoring being requested for this portion of the scrubber by EPA Region 10 (pressure drop and flow rate) was unwarranted since the quench cannot be adjusted, other than minor adjustments to the flow rate. I recorded his comments but stated that we could not engage in this debate at this time. I suggested he contact EPA Region 10 Air and Radiation Division staff to discuss this topic.
    iv. Mr. Reynolds explained how the combustion air enters the bottom of the incinerator (below the sand bed) and creates the fluidized bed condition.

The combustion air enters the lowest portion of the incinerator, below a brick-lined floor that holds the sand bed above. There are multiple penetrations through the brick floor that allow the combustion air to travel upwards, entering the bottom of the sand bed and creating the fluidized bed. These penetrations are referred to as “tweers”. The “tweers” were described as essentially holes through the brick which are equipped with caps that prevent the sand from falling down into the holes. There are gaps below the caps on each “tweer” that allow the combustion air to pass through upwards into the sand.

v. Regarding the scrubber drains; drains from the upper portions of the scrubber, such as the venturi section, are conveyed back to the treatment plant headworks, while drains from the lower portions of the scrubber are conveyed to the ash clarifier since they contain higher portions of ash or particulate matter.

6. Stack/Meter Boxes – At around 17:00 I returned to the stack to observe the end of testing activities at the end of Run 3 of the Method 23 and 29 testing. The following notes were recorded:
    i. I spoke with Nick regarding the method used to ensure sampling is conducted at the correct traverse points. Nick explained that the traverse points were measured and then marked on the sampling probes using a Sharpie. I visually checked and verified the marks, which were numbered 1 through 4 on each of the two probes.
    ii. Method 23 probe and nozzle recovery was conducted on the stack platform and observed to begin with acetone rinses (4) and brushing (3) of the probe. After the probe rinses, the brush was rinsed followed by the nozzle. Next the probe and nozzle were rinsed once using toluene with no brushing.
    iii. Nozzles and brushes were stored in used ziplock bags. Brushes were re-used but did appear to be designated for each solvent.
    iv. Method 29 probe and nozzle recovery was conducted on the stack platform and observed to begin with nitric acid rinses (4) and brushing (3) of the probe. After the probe rinses, the brush was rinsed followed by the nozzle. Next the probe and nozzle were rinsed once using acetone with no brushing.
    v. No probe rotation occurred during either the Method 29 or Method 23 recovery.
    vi. The impingers and filter were changed out on the Method 23 sampling train in order to construct the Method 26A train for use the following day. The probe and nozzle from the Method 23 train were used in the Method 26A train.
    vii. A pre-run leak check was conducted on the Method 26A train to save time the following morning. Initially the train did not pass the leak check. Troubleshooting identified an improperly seated impinger, but the train still did not pass after fixing this issue. A second leak was located at the filter holder. The train passed the leak check after fixing this issue. Nick

stated that another leak check would be conducted prior to beginning testing in the morning.

viii. The testers then checked various thermocouple temperature readings against a handheld thermometer. Nick stated they were following EPA Method ALT-011 – Alternative Method 2 Thermocouple Calibration. I listened to some of the readings and recorded the following temperature values:
    1. Impinger exit: 69.9°F and 70°F
    2. Filter box: 72°F and 73°F
    3. Probe hotbox: 68.5°F and 70°F

ix. I departed the stack at 18:53.

d) The inspectors departed the facility at around 19:05.

5. Inspection Elements and Field Observations – May 12, 2021

a) The EPA inspectors arrived at the facility at approximately 07:45.

b) Field Observations

1. Control Room – Between approximately 08:00 and 09:45, I recorded the following data and had the following discussions with incinerator Senior Operator Ryan Reynolds.
    i. pH discussions[4]
        1. Method 26A testing operational conditions include setting the minimum pH showing compliance during emission testing with applicable emission limits.
        2. While in the control room, I recorded the instantaneous pH as 6.14 with the 3-hour average at 6.25 at this time. The pH is measured at the venturi drain, see Attachment 5.
        3. The venturi water feed is supplied from the chlorine contact chamber, which is essentially the chlorinated effluent from the plant.
        4. In the past, pH has dropped to around 6 or even slightly below this, due to the characteristics of the wastewater that is sent to the plant.
        5. During emission testing, the facility tries to lower the pH as much as possible by slightly increasing the chlorine contact treatment, which has a minor effect on pH. The chlorine contact treatment is designed for disinfection, not pH adjustment.
    ii. Operations during testing.
        1. EPA rules result in testing the incinerator under worst case conditions that never actually exist under normal operations.

[4] Sara Conley recorded the following pH values during the inspection:
5/10/21, 11:10 – pH = 6.18
5/11/21, 09:57 – pH = 6.18
5/11/21, 17:17 – pH = 6.23
5/12/21, 10:23 – pH = 6.18

Operating conditions for each testing scenario are unique and none of them reflect normal operations.
    2. Stressing the plant to operate under these worst-case conditions can result in other problems, such as plugging, equipment performance issues, and overall treatment plant performance issues.
    3. Acceptable minimum/maximum values are set, but they are not representative of the parametric values during normal operation.
2. Stack/Meter Boxes – Sara Conley observed emission testing activities at the incinerator stack and the testing meter boxes located inside the top floor of the building. The following notes were recorded:
    i. Discussion with Nick regarding cyclonic flow check, indicating this check was conducted once prior to testing. The check is conducted as part of EPA Method 1, and the testers recorded the flow angle at each traverse point.
    ii. Oxygen and SO2 analyzer testing is also being conducted at this time via a second probe positioned in the second set of sampling ports. The sample gas is routed through a heated line to a gas conditioner where the gas is cooled to remove moisture. From there the cool, dry gas is routed to the analyzers in the testing truck.
3. Testing Truck – From around 09:45 until 12:30 I was in the testing truck with Mr. Slimp, and recorded the following notes:
    i. Run 1 of the Method 26A testing ended at 09:45. Start of the run was delayed this morning due to moisture in the sampling line leading to the continuous analyzers. This moisture was scrubbing SO2. Mr. Slimp explained that instrumental testing for SO2, CO, and molecular weight are running concurrent with the Method 26A testing.
    ii. In terms of sampling temperature, Mr. Slimp stated that Nick has the box set at around 255°F, and mentioned the temperature requirements of Method 26A as 248+25°F. When I stated my understanding that the temperature could not drop below 250°F, he agreed the acceptable temperature range does not extend down like it does with Method 5.
    iii. Notes on recovery of Run 1, Method 26A:
        1. The filter and probe were not recovered.
        2. Three impingers were emptied into a single bottle after weighing.
        3. Each impinger was rinsed three times using deionized water and the rinsate was added to the bottle with the impinger contents. Rinsate volume did not appear to be measured.
        4. After rinsing the impingers, the sampling train was re-assembled for the next run, using the same impingers.
    iv. Filter notes: I asked Mr. Slimp what type of filter is used for Method 26A, and he stated that the filter is quartz. I stated my understanding was that the filter needed to be Teflon. When I raised this question, he attempted to look up the answer in the method language but did not have internet access at that time.

v. I departed the truck around 12:30 and both inspectors then departed the site for lunch.

4. Incinerator Building – Following the lunch break, I returned to the site around 13:30 and checked in with Mr. Nelson in the offices at around 13:45. Sara Conley did not return to the site following lunch.
5. Testing Truck – At 13:50, I checked in with Mr. Slimp and learned that the testers were about to do the port change on Run 3 of the Method 26A testing.
6. Control Room – I stopped by the control room at 14:00 and recorded the pH at 6.17. Senior Operator Ryan Reynolds expressed concern that the facility is likely to have deviations at certain times of the year where the pH drops below this value.
7. Stack/Meter Boxes – At around 14:15 I returned to the stack to observe testing activities at the end of Run 3 of the Method 26A testing. The following notes were recorded:
    i. A post-run leak check was conducted on the Method 26A train. I observed leak check activities at the meter box with Nick. The procedure followed was to set the dry gas meter vacuum at 10 inches of mercury and watch for leakage flow for a minimum of 1 minute. Total volume of leakage observed was 0.04 cubic feet. The pitot tubes were also checked on both sides using a rubber tube with a syringe.
    ii. I observed the setup of the Method 4 train and noted that the probe was bent in several places.
    iii. I departed the stack/meter box area at around 15:12.
8. Control Room – I returned to the control room at 15:30 and was informed by Senior Operator Ryan Reynolds that the incinerator was being switched to the NOx testing operational scenario, where supplemental diesel firing is used to raise the temperature inside the sand bed[5]. I recorded the temperature measured by the middle thermocouple inside the sand bed at 1,370°F, where this temperature had been closer to 1,300°F during the Method 26A testing. Mr. Reynolds was watching the freeboard temperature (above the sand bed) carefully because they do not want to see that value increase. I recorded the freeboard temperature at approximately 1,475°F, which is approximately the same as it was before the sand bed temperature was raised using supplemental diesel firing. Based on experience, the facility operators stated that increased freeboard temperature along with increased solids loading rate are the conditions when the incinerator has experienced solids carryover/plugging in the downstream ducting. At this time, I noted that the flow rate of the screw press feed pump had been reduced from approximately 40 gpm to around 35 gpm. This is adjusted by lowering the screw press feed rate.

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[5] Sara Conley recorded the following combustion chamber temperature data during the inspection:
5/10/21, 11:08: Freeboard = 1,471°F, Top level of sand bed = 1,300°F
5/11/21, 09:55: Freeboard = 1,475°F, Top level of sand bed = 1,291°F
5/11/21, 17:17: Freeboard = 1,474°F, Top level of sand bed = 1,291°F, Middle level of sand bed = 1,303°F
5/12/21, 10:23: Freeboard = 1,462°F, Top level of sand bed = 1,290°F, Middle level of sand bed = 1,299°F

9. Closing Conference – See Section 6 below. The closing conference was held between 17:00 and 17:40, before completion of the testing, since not all staff attending would be remaining onsite until the completion of testing.
10. Office/Lunchroom – Following the closing conference, I discussed EPA's records request associated with this inspection with Mr. Ewell and Mr. Nelson. I explained that EPA would likely request 1-minute data for the key operating parameters over the testing period. Mr. Ewell indicated that two weeks would be sufficient for the facility to provide this information.
11. Test Truck/Stack/Meter Boxes – I checked in with Mr. Slimp in the test truck and learned that Run 2 of the NOx testing had ended at 18:15. At 18:25 I returned to the stack and observed the leak check between Runs 2 and 3 of the NOx testing.
12. Control Room – I returned to the control room at around 19:05 and recorded the following parametric data:
    i. Freeboard temperature: 1,467°F
    ii. Sand bed temperature (middle TC): 1,369°F
    iii. Venturi throat flow rate: 6 gpm
    iv. Venturi inlet flow rate: 10 gpm
    v. Venturi ΔP: 26 in. w.c.
    vi. Solids Feed Rate: 35.7 gpm

6. Closing Conference

a) A closing conference was held in the facility office/lunchroom from approximately 17:00-17:40. The conference was attended by John Ewell, Steve Nelson, Ryan Reynolds, and Zach Hedgpeth.
b) I provided an overview of the EPA Region 10 compliance and enforcement process and discussed the timeline for issuance of the inspection report. Compliance and enforcement staff and management relevant to this project were discussed.
c) The following potential compliance concerns were discussed. The facility's past test results documenting emissions of particulate matter in excess of applicable emission limits was identified. Additionally, I explained that acceptance of the emission test would be determined by EPA at a later date, specifically, that a lack of comments expressed in the field should not be interpreted as EPA acceptance of the test.

I departed the facility at approximately 20:00.