Continuous Air Monitoring System (CAMS) and Passive Air Monitoring System (PAMS) Fenceline Monitoring and Quality Assurance Project Plan (QAPP)

Shell Chemical Appalachia LLC

Beaver County, PA

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CAMS	Continuous Air Monitoring System
CFR	Code of Federal Regulations
COC	Chain of custody
DCS	Distributed Control System
DEP	Pennsylvania Department of Environmental Protection
DQO	Data Quality Objectives
FLM	Fenceline monitoring
GC/MS	Gas chromatography/mass spectroscopy
LDAR	Leak Detection and Repair
MRL	Method Reporting Limits
NMNEVOC	Non-methane, non-ethane hydrocarbon
PAMS	Passive Air Monitoring System
PI	PI System™ (application software for real-time data management)
PID	Photoionization Detector

ppbv	Parts per billion by volume normalized to normal temperature and pressure (68 degrees Fahrenheit and 29.92 inches of mercury)
QA/QC	Quality assurance/quality control
QAPP	Quality Assurance Project Plan

DEFINITIONS

A. Definitions – The following terms shall be defined as follows for the purposes of this Appendix:

i. "Action Level" shall mean either:

a. with respect to Continuous Air Monitoring System (CAMS), an occurrence when the net Non-Methane Non-Ethane Volatile Organic Compound (NMNEVOC) concentration arising from the Facility over a 15-minute block averaging period is greater than 56 ppbv for CAMS 1, 63 ppbv for CAMS 2, and 48 ppbv for CAMS 4 (the "Initial Action Levels") or as reset by Paragraph B.xi. below. The net NMNEVOC concentration on a 15-minute averaging period shall be determined as the average of three 5-minute block concentrations where each 5-minute concentration is calculated by subtracting the background NMNEVOC concentration from NMNEVOC concentration at CAMS 1, 2 or 4. For purposes of this Appendix, a reference to a 5-minute average shall mean a 5- minute block average unless otherwise specified. The background NMNEVOC concentration shall be defined on a 5-minute averaging period as: (1) the CAMS 3 NMNEVOC concentration when the PID Analyzer returns a concentration at or above its detection limit, the 5-minute average wind speed is greater than 1 mile per hour, and the 5-minute average wind direction originates from 191 degrees to 326 degrees, as measured clockwise from due north, or (2) in all other cases, the 6-year average (2010-2015) NMNEVOC concentration as measured from the Beaver Falls DEP VOC monitor (12.986 ppbv). Wind speed and direction shall be measured by the Meteorological Station; or

b. with respect to PAMS, a two-week average Δc value for benzene that is greater than 9 µg/m3 (approximately 2.77 ppbv), where Δc shall be determined from the highest and lowest sample results in accordance with 40 C.F.R. § 63.658(f)(1)(i).

ii. "Calendar Days" for establishing shipping deadlines in this Appendix shall exclude legal holidays.

iii. "Chemicals of Potential Concern" shall mean benzene, 1,3-butadiene, n-hexane, naphthalene, and toluene.

iv. "Continuous Air Monitoring System" or "CAMS" shall mean a system consisting of one PID Analyzer and one Summa canister. The PID Analyzers shall collect data continuously and reduce and record data in 5-minute averages. When the Action Level is reached, a solenoid valve will be actuated that will fill a six (6) liter evacuated Summa canister for 30 minutes and send a signal to a Shell representative. On weekdays, Shell will collect and replace the Summa canister within 24 hours of actuation and shall send the Summa canister to a third-party laboratory within two (2) Calendar Days of sample collection. On weekends (Friday at 3:00 p.m. through Monday morning at 7:00 a.m.) or legal holidays, Shell will collect and replace the Summa canister no later than the morning of the next business day and send the Summa canister to a third-party laboratory that same day.

v. "Data Acquisition System" shall mean a computer-based data collection system that collects, organizes, and presents the data collected by the CAMS. Data from the PID Analyzers shall be recorded in 5-minute averages, continuously.

vi. "Field Investigation" shall mean the investigatory process by which Shell investigates the potential cause(s) of an Action Level exceedance.

vii. "Investigation Team" shall mean one or more Shell employees or contractors that conduct Field Investigations in response to an Action Level exceedance. Shell shall ensure that members of the Investigation Team, before conducting a Field Investigation, have received appropriate training necessary to enable the team members to carry out their responsibilities on the Investigation Team.

viii. "Meteorological Station" shall mean a station that includes: (i) an anemometer for measuring wind speed and direction; and (ii) temperature and barometric pressure sensors for standardizing gas concentration data. The Meteorological Station shall be connected to the Data Acquisition System. The data averaging for the wind speed, wind direction, temperature, and barometric pressure shall be timed to be contemporaneous with the gas concentration measurements taken by the PID Analyzers. The location of the Meteorological Station shall be determined in accordance with Section 8.3 of Method 325A.

ix. "NMNEVOC" shall mean total non-methane, non-ethane hydrocarbon as determined by the PID Analyzer.

x. "Passive Air Monitoring System" or "PAMS" shall mean a location that contains Carbopack-X monitoring sorbent tubes or a functionally equivalent or better alternative sorbent(s) capable of detecting the Chemicals of Potential Concern in accordance with Section 7.1 of Method 325B of appendix A of 40 C.F.R. Part 63. The sorbent tubes shall be installed at each location in accordance with Method 325A of appendix A of 40 C.F.R. Part 63 and the number and locations shall be determined in accordance with Section 8.2 of Method 325A of appendix A of 40 C.F.R. Part 63. The principal of the analysis is passive adsorption of organic molecules on solid media followed by thermal desorption and analysis by GC/MS. PAMS samples shall be collected every two weeks from each monitoring location (or if the regular collection day falls on a holiday, the collection may occur on plus or minus one business day), in accordance with the requirements of 40 C.F.R. § 63.658(e)(1)-(2) and sent to the lab within 2 Calendar Days of collection.

xi. "PID Analyzer" shall mean a Total Volatile Organic Compound Photo Ionization Detector Analyzer. The PID Analyzers shall be capable of achieving a minimum detection limit of 20 ppbv using isobutylene as the calibration gas. The PID Analyzer shall be capable of ionizing gases with an ionization potential below 10.6 eVolts. The PID Analyzer shall be capable of measuring and registering Total NMNEVOC concentrations on a continuous basis and reducing the data to 5-minute averages.

xii. "ppbv" shall mean parts per billion by volume normalized to normal temperature and pressure (68 degrees Fahrenheit and 29.92 inches of mercury).

xiii. "Regular Facility Operations" shall mean all emissions from operations at the Facility, excluding emissions from upsets, startups, shutdowns, malfunctions, emissions not authorized by the Plan Approval, and leaks above the leak detection thresholds in the Plan Approval (*see* Section C, Condition #026 of the Plan Approval).

INTRODUCTION

On June 18, 2015, the Pennsylvania Department of Environmental Protection (DEP) issued Plan Approval No. 04-00740A to Shell Chemical Appalachia LLC (Shell) for a petrochemical complex to be located in Potter and Center Townships, Beaver County, Pennsylvania. The Clean Air Council and the Environmental Integrity Project filed an appeal to DEP's approval with the Pennsylvania Hearing Board. The parties negotiated a mutually acceptable resolution of the appeal in lieu of litigation. The terms of the settlement are documented in the "Settlement Agreement Between Shell Chemical Appalachia LLC and Clean Air Council and Environmental Integrity Project," signed by both parties on August 25, 2017. As part of this Settlement Agreement, Shell will implement a Fenceline Monitoring program (FLM) beginning no later than 30 days from the date Shell commences "normal operations", as defined in the Settlement Agreement, and continue the program for five years. Additionally, Appendix A, Section B(ix) states that:

"Shell shall develop and implement a quality assurance project plan (QAPP) to ensure the accuracy, validity, representativeness, and usability of the data obtained by all monitoring equipment. The QAPP shall comply with the guidelines available in the following publication: "EPA Requirements for Quality Assurance Project Plans, EPA QA/R-5, March 2001." Air monitoring system data quality objectives shall be applied to collected data, including measurement parameter, data quality objective, acceptance criteria, recommended frequencies and corrective actions."

This document is the QAPP and provides instructions for the Continuous Air Monitoring System (CAMS) and Passive Air Monitoring System (PAMS) to ensure the accuracy, validity, representativeness, and usability of all collected data.

Shell is not required by regulation to do fenceline monitoring but utilizes certain methods and guidelines set forth by the United States Environmental Protection Agency (USEPA) to implement the fenceline monitoring program.

1.0 SITE SELECTION PROCESS

CAMS locations are placed upwind and downwind according to the Appendix A Section 2(ii) of the Settlement Agreement. PAMS locations are placed around the perimeter of the facility according to the requirements of EPA Method 325A. State Plane Coordinates used, NAD 83. Figure 1 shows CAMS and PAMS sample locations and Table 1 shows coordinates for each sample location. Sections 2.1 and 2.2 provide details of the criteria used to site the CAMS and PAMS, respectively.

NOTE: PAMS placement of 002, 004, and 006 are not subject to EPA Method 325 A & B

Figure 1 CAMS and PAMS Sample Locations

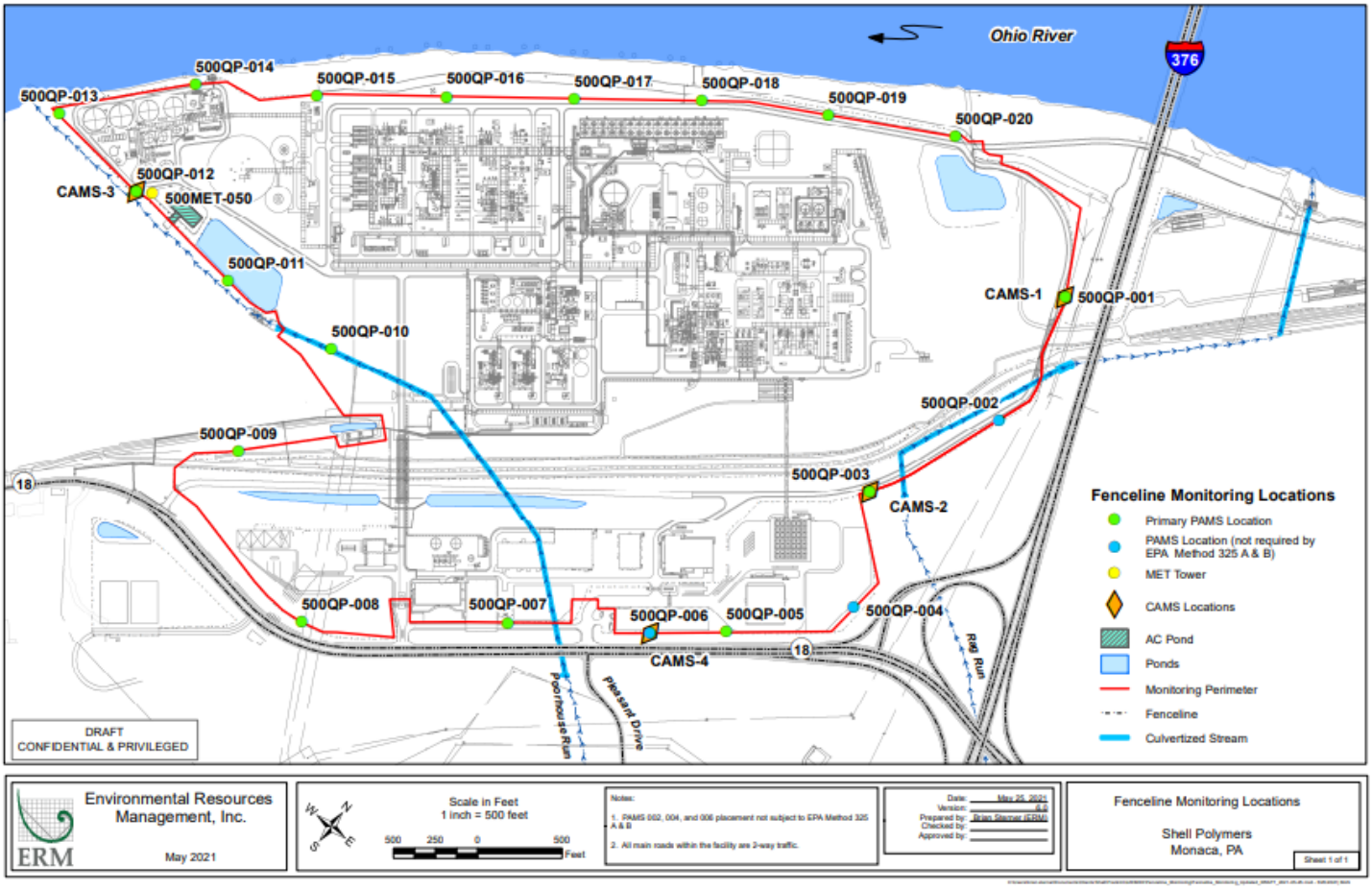


Table 1: CAMS and PAMS Sample Locations

Sample ID	Latitude	Longitude
CAMS 01	498931.7	1253074.81
CAMS 02	497307.56	1252899.85
CAMS 03	495956.82	1248400.56
CAMS 04	495837.37	1252415.82
PAMS-01	498931.7	1253074.81
PAMS-02	498118.93	1253227.92
PAMS-03	497307.53	1252899.84
PAMS-04	496711.25	1253256.73
PAMS-05	496126.77	1252761.87
PAMS-06	495837.37	1252415.82
PAMS-07	495355.58	1251721.82
PAMS-08	494589.03	1250768.21
PAMS-09	495139.18	1249840.3
PAMS-10	495953.25	1249890.6
PAMS-11	495884.06	1249160.81
PAMS-12	495956.85	1248400.58
PAMS-13	496025.21	1247756.28
PAMS-14	496666.36	1248278.84
PAMS-15	497068.4	1248879.09
PAMS-16	497547.1	1249478.66
PAMS-17	498015.73	1250073.89
PAMS-18	498481.6	1250668.9
PAMS-19	498884.82	1251308.73
PAMS-20	499261.63	1251972.53

1.1 SELECTION PROCESS FOR THE PROPOSED CONTINUOUS MONITORING SITE LOCATIONS

The upwind and downwind locations of the CAMS as shown in Exhibit 1 to the Settlement Agreement were established using 5-year wind rose data, dispersion modeling, security, and consideration of the potential impact of other proximal sources, both stationary and mobile. CAMS 3 is located at or near the facility fenceline in the predominant upwind direction and CAMS 1, 2, and 4 are located at or near the fenceline in the predominant downwind direction. The final placement of the CAMS equipment is within 50 feet of the proposed locations and is no farther from the fenceline than the expected locations. See section B(ii) and Exhibit 1 of Appendix A of the Settlement Agreement for details on CAMS siting.

1.2 SELECTION PROCESS FOR THE PROPOSED PASSIVE MONITORING SITE LOCATIONS

Sample locations may be placed along the monitoring perimeter according to either the radial method in Section 8.2.2 of Method 325A or the linear method in Section 8.2.3. The size, shape, and "known source" configuration within a facility all influence whether the radial or linear method is preferable.

The monitoring perimeter should be outside of all emission sources and may be located anywhere between the property boundary and any "known source," as long as it is at least 50 meters (164 feet) from the nearest "known source." If a "known source" is within 50 meters (164 feet) of the property boundary, the property boundary must be used as the monitoring perimeter near that source. The monitoring perimeter at the facility generally follows the property boundary on three sides. The eastern side of the monitoring perimeter does not include the laydown yard east of Interstate 376, where there are no known sources (see below for definition utilized) of air emissions. The monitoring perimeter was also moved inward around the intersection of Interstate 376 and Highway 18 to minimize potential contamination from vehicle emissions at that busy intersection.

"Known source" is not a defined term within Method 325A. Under the refinery MACT rule (40 CFR 63 Subpart CC), it is stated "*known sources of VOCs, as used in Section 8.2.1.3 in Method 325A of appendix A of this part for siting passive monitors, means a wastewater treatment unit, process unit, or any emission source requiring control according to the*

requirements of this subpart, including marine vessel loading operations. For marine vessel loading operations, one passive monitor should be sited on the shoreline adjacent to the dock." The facility is not a refinery and not directly subject to 40 CFR 63 Subpart CC, however known sources in this context would include the wastewater treatment plant, process, units, storage vessels, and loading racks.

Sample locations have been determined in accordance with Option 2 (linear method) outlined in Section 8.2.3 of Method 325A. The linear method was chosen to establish monitoring locations the are more evenly distributed around the facility perimeter. The monitoring perimeter around the facility is 19,117 feet. Since it is less than 24,000 feet, 12 sample locations were evenly placed around the monitoring perimeter between 1,434 – 1,752 feet apart, with an average of 1,593 feet apart. Extra samplers were placed where a "known source" is within 50 meters of the monitoring perimeter and is between two primary sample locations. PAMS were spaced, where possible, such that PAMS are co-located with CAMS. Optional PAMS were added where the Method 325A spacing requirements do not naturally overlap CAMS locations, so that each CAMS is co-located with a PAMS. This adds an additional level of quality assurance to the data. There are 12 primary, 5 secondary (near known sources), and 3 optional PAMS sample locations.

1.3 SITING OF METEOROLOGICAL STATION

Shell is required by the Settlement Agreement to establish an onsite meteorological station, which must include a thermometer for measuring temperature, a barometer for measuring barometric pressure, and an anemometer for measuring wind speed and direction. EPA Method 325B states that complex terrain may require the use of more than one meteorological station. The site has been graded so that it is mostly flat and therefore, Shell believes that a single met station is sufficient. The met tower is a self-supporting tilt down tower rated to withstand 90 mile per hour winds.

The location for the met tower is at an elevation of 48 feet above sea level at coordinates X=1248484.07 / Y=496004.39, elevation 744. The tower location satisfies EPA siting guidelines to the extent possible regarding distance away from structures or other potential interferences. Notably, the following considerations have been satisfied for the siting of meteorological stations consistent with Section 8.3 of Method 325A:

- Place meteorological station in a location with representative conditions affecting the transport and dispersion of pollutants in the area of interest
- Deploy wind instruments over level, open terrain at a height of 10 meters (33 feet). If possible, locate wind instruments at a distance away from nearby structures that is equal to at least 10 times the height of the structure.
- Protect meteorological instruments from thermal radiation and adequately ventilate them using aspirated shields. The temperature sensor must be located at a distance away from any nearby structures that is equal to at least four times the height of the structure. Temperature sensors must be located at least 30 meters (98 feet) from large paved areas.

2.0 MONITORING EQUIPMENT

Monitoring equipment requirements have been defined in the Settlement Agreement which Shell has agreed to.

2.1 CONTINUOUS MONITORING EQUIPMENT

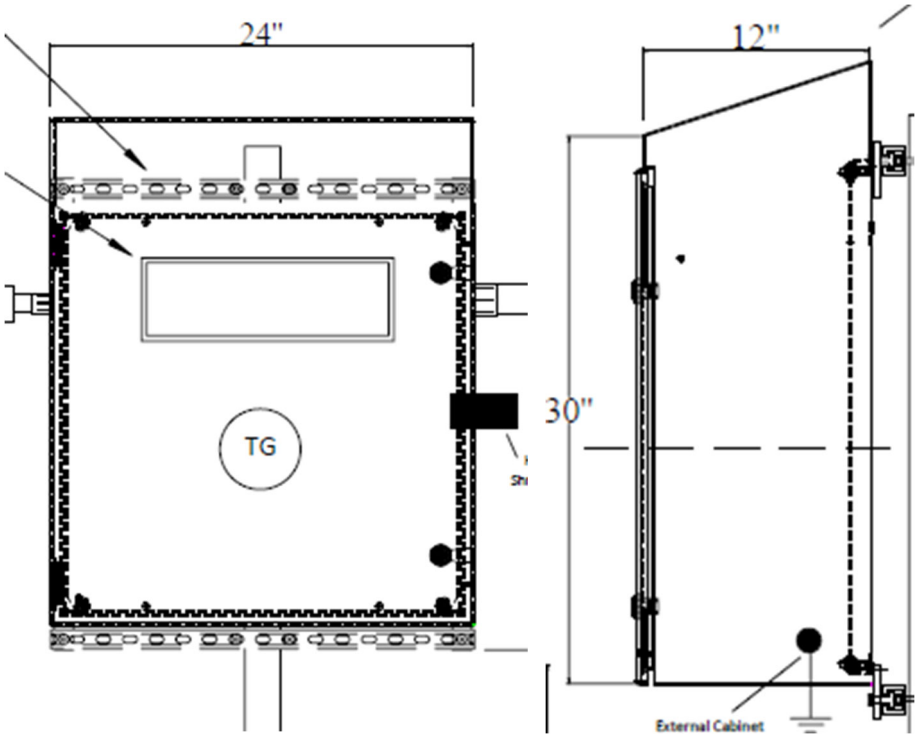
Continuous monitoring equipment was defined in the Settlement Agreement and has been procured by Shell for continuous monitoring requirements.

2.1.1 SHELTER

The CAMS sampling equipment is contained in a 24"x12"x30" NEMA 4 enclosure.

An example of a CAMS sampling location is shown in Figure 2 below.

Figure 2: CAMS Sample Shelter



2.2 PID ANALYZER

The Photoionization Detector (PID) analyzer is a Falco FAXSXBXX-10P Total Volatile Organic Compound (VOC) Photoionization Detector (PID) Analyzer that measures total VOC concentrations continually and reduces the data to 5-minute block averages, which are then averaged to 15-minute periods. The PID is capable of measuring VOCs between .001-10 ppm using isobutylene as the calibration gas and of ionizing gases with an ionization potential below 10.6 eVolts. The PID analyzers connect to the distributed control system (DCS).

2.2.1 PID CALIBRATION EQUIPMENT

Calibration of PID analyzers are performed to manufacturers specifications.

2.3 SUMMA CANISTERS

The pre-cleaned and batch certified Summa canisters are provided by a third-party laboratory. One canister is placed at each CAMS sampling location and mounted within the CAMS NEMA enclosure to allow sampling at approximately 5 to 6 feet above ground level, representative of the breathing zone. The sampling locations are away from walls, buildings, roadways, and foliage, to the extent possible, to collect representative samples of the area.

2.4 DATA ACQUISITION

The data acquisition system is a computer-based data collection system that collects, organizes, and presents the data collected by the PID analyzers and MET station. It integrates the gas concentration and meteorological data in order to correlate gas concentrations with wind direction. Data will be collected by PI, which is embedded in the Emerson Delta V DCS. The DCS and historian will collect data and calculate the required 5-minute and 15-minute block averages that are described in more detail in section 4.1.1. Passive Monitoring Equipment

2.5 PASSIVE AIR MONITORING HOUSING

Sample shelters (Figure 3) were provided by CAMSCO. Each unit is mounted with the open end facing down, at a height of 1.68 meters (~5.5 feet) above ground level using a pole or other secure structure (i.e. fence post, light post, etc.). Where possible, shelters are not placed near or against solid structures such as buildings, solid fences, large tanks, etc. or anywhere where the structure itself could affect the surrounding ambient air flow to the sampler. Each sample location is identified with a sign or other type of indicator that displays the sample location ID. This provides an easy way for field personnel to identify the location and ensure that the sample locations are not mixed up on the Field Data Sheet/COC during sample tube deployment.

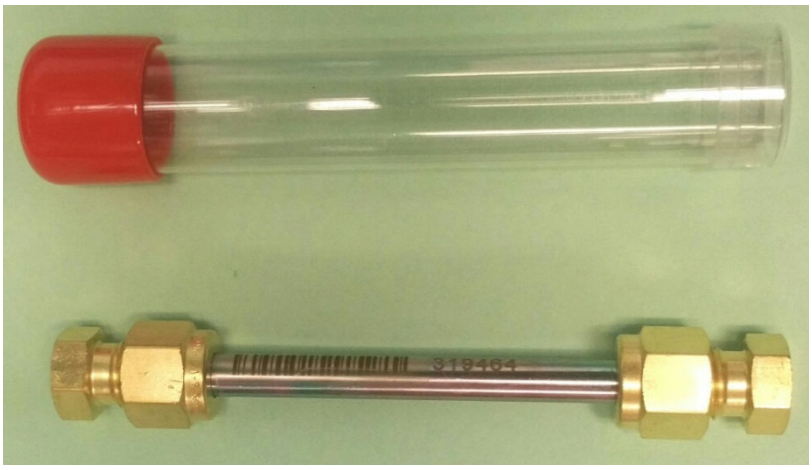
Figure 3: Sample Shelter

2.6 CARBOPACK MONITORING SORBENT TUBES

Sampling tubes will be shipped from the certified third-party laboratory. The cooler will arrive at the facility about a week prior to each round of sampling. The sample media used for this program are FLM Carbopack sorbent tubes or functionally equivalent or better alternative sorbent(s) capable of detecting the Chemicals of Potential Concern. The tubes are ¼-inch outer diameter stainless steel with interior coating, 3.5 inches in length, and are uniquely identified with a sample tube serial number and barcode. Brass long-term storage caps with white polytetrafluoroethylene (PTFE) ferrules are fitted to each end of the tube to seal the media for storage prior to deployment and following sample recovery for shipping to the laboratory. Figure 4 presents an example of a passive diffusive sample tube. Each tube will arrive inside its own plastic tube. In

addition, the cooler includes ice packs for return shipping. This is not a requirement, but a standard practice by the laboratory.

Figure 4: Passive Diffusive Sampling Tube with Plastic Sleeve and Storage Caps



2.7 METEOROLOGICAL STATION

The station will collect and record meteorological data, including wind speed, wind direction, temperature and barometric pressure on an hourly basis. Calculate average unit vector wind direction, sigma theta, temperature and barometric pressure per sampling period to enable calculation of concentrations at standard conditions.

The data averaging for meteorological data is timed to be contemporaneous with the gas concentration measurements taken by the PID analyzers. The meteorological station connects to the DCS.

3 ROUTINE OPERATIONS

The FLM program will start no later than 30-days after Shell begins Normal Operations, as defined in the Settlement Agreement and will continue for a period of five years. Shell will operate the FLM program instruments on a continuous basis except during calibration, maintenance, or sudden, infrequent, and not reasonably preventable failure of monitoring equipment to operate in a normal or usual manner.

3.1 CAMS ROUTINE OPERATION

CAMS 1, 2, and 4 consist of one PID Analyzer and one Summa canister. The PID Analyzers collect data continuously and reduce and record data in 5-minute averages. The system subtracts the background NMNEVOC concentration from each 5-minute block at CAMS 1, 2, and 4, where necessary, and calculates the 15-minute average NMNEVOC concentration by averaging three (3) 5-minute blocks. Each 15-minute NMNEVOC concentration is compared to the action level, which is set for CAMS 1, 2, and 4 individually. CAMS 3 does not have an action level since it represents the background concentration.

3.1.1 CAMS ACTION LEVEL DETERMINATION

To determine results at each CAMS location, it is necessary to first determine the background NMNEVOC concentration. The background concentration equals the 5-minute average reading at CAMS 3 when all of the following conditions are met:

- the CAMS 3 NMNEVOC concentration is at or above the detection limit,
- the 5-minute average wind speed is greater than 1 mile per hour, as determined by the onsite met station, and
- the 5-minute average wind direction originates from 191 degrees to 326 degrees, as measured clockwise from due north by the onsite met station.
  If these conditions are not met, then the background concentration is defined to be 12.986 ppbv, which is the 6-year average (2010-2015) NMNEVOC concentration measured from the Beaver Falls DEP VOC monitor.

Then determine the net NMNEVOC concentration on a 15-minute averaging period by averaging three 5-minute block concentrations where each 5-minute concentration is calculated by subtracting the background NMNEVOC concentration from NMNEVOC concentration at CAMS 1, 2 or 4. Each 5-minute block concentration is only included in one 15-minute averaging period.

Initial action levels are a net NMNEVOC concentration of 56 ppbv for CAMS 1, 63 ppbv for CAMS 2, and 48 ppbv for CAMS 4.

More details on these calculations are found in Section 7.1.

3.1.2 CAMS SUMMA CANISTER SAMPLING

If the action level is exceeded, a solenoid valve will be actuated that will fill a 6-liter evacuated Summa canister for 30 minutes and environmental will be contacted through the Environmental on Duty phone that the canister needs to be collected. When a canister is retrieved, the appropriate information on the Canister Sampling Field Data Sheet will be completed and the canister and data sheet are sent to the third-party laboratory for analysis. Summa canister analysis will be performed in accordance with EPA Method TO-15 of Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second Edition (1999) by TestAmerica.

3.1.3 CAMS FIELD INVESTIGATION

Shell must perform a field investigation if the Action Level (as defined in the Settlement Agreement) for any CAMS exceeds the current action level for that site. See Section 7.2 for more details.

3.2 PAMS ROUTINE OPERATIONS

PAMS must start prior to Normal Operations and beginning no later than 30 days after the startup of the ethane cracker unit, though no action level will be applicable until the commencement of Normal Operations.

3.2.1 ACTION LEVEL

The action level is a two-week average Δc value for benzene that is greater than 9 $\mu g/m^3$ (approximately 2.77 ppbv), where Δc is determined by subtracting the lowest sample result from the highest sample result for each sample period. If the

lowest sample result is a non-detect, it should be treated as "0" in the Δc calculation. If all sample results are non-detects, the Δc equals the method detection limit.

3.2.2 SAMPLE PREPARATION AND PRE-DEPLOYMENT

Each shipment should contain the following items:

- Tube storage containers with a numbered cap each containing a clean, certified sorbent tube;
- Sorbent tubes sealed with long-term storage caps on each end. Storage caps include a nut and PTFE white ferrule. Spare sorbent tubes are provided for additional sample collection or as a replacement;
- Diffusion screen caps for each tube, plus extras;
- Custody seal zip ties;
- Ball-point pen;
- Ice packs for maintaining low sample media temperature during shipment to the laboratory;
- Powder free Nitrile gloves;
- 9/16" and 1/2" wrenches for removing storage caps;
- Field Data/Chain-of-Custody (COC) forms;
- Overnight return shipping label.

Verify the contents of the kit when it arrives and store tubes inside a temperature-controlled building until sample deployment. Use tubes within 30 days of lab conditioning.

Figure 5 presents a photo of the shipment and its contents. Spare tubes and diffusion caps are to be used only if needed (i.e. a tube or diffusion cap gets lost or damaged). Unused items should be placed in the cooler to be returned to the laboratory with each shipment (i.e., extras should be returned and not removed and "saved").

Figure 5: Sample Case with Contents

Remove the ice packs from the cooler and place them in a freezer until ready for use in the return shipment of the recovered sample media. The sample tubes should be left inside the storage tubes until deployed at the sample location. Allow the sample tubes to equilibrate to ambient temperature before deployment (approximately 30 minutes to 1 hour).

Field Data Sheets/COCs may be partially pre-filled or completed as the sample media tubes are deployed into the field. This site will be utilizing the TubeTrack fenceline monitoring device. This device will record the start and stop times as tubes are deployed/retrieved. When complete, each COC will identify the sample period ID, location ID, Sample type (sample, blank, or duplicate), as well as other program information such as the facility name, address, contact, etc. For each tube deployed into the field for sampling, generate a unique sample ID that will adhere to the following format:

AAAA-BBB-CC-DDDDDDDD

Where:

AAAA = Predetermined Facility ID, up to 5 characters. For Shell Polymers Monaca Site, this ID will be SPMS.

BBB = Sample Location ID, limited to 4 characters. These are numerical or, in the case of "extra" sites, alphanumerical (e.g. "P01"); P for PAMS, C for CAMS

CC = Sample and Tube Type – S for sample (SX -Sample CarboPack X, SB Sample CarboPack B), D for duplicate, B for blank; followed by X for CarboPack X, B for CarboPack B.

DDDDDDDD = Sample event start date in the format yyyymmdd

An example would be:

SPMS-P03-DX-20190101 for Shell Polymers Monaca Site at PAMS Sample Location No. 3, duplicate tube, for the sample period starting January 1, 2019. In addition to the items in the cooler, ensure the FLM Focal Point should have the following items prior to going out into the field for sample deployment:

- TubeTracker handheld device with integrated camera;
- Location map with coordinates;
- Sample protocol;
- Extra Pens;
- Work gloves;
- Extra powder free Nitrile gloves;
- Sample Kit;
- General toolbox and;
- Field Data Sheet/COC for previous and current deployment as backup

For each trip except the first, the FLM Focal Point will have two cases, one containing conditioned tubes that are ready for deployment and one to collect

used tubes, ready to be returned to the laboratory for EPA Method 325B analysis. Sampled tubes must never be placed in the same shipping container as clean conditioned sampling tubes.

3.2.3 SAMPLE TUBE DEPLOYMENT

Once all sample shelters are securely mounted in place at the designated locations, the sample tubes can be deployed. Ideally, a sequence of deployment for the sample locations should be determined and followed for the duration of the sampling program. This will maintain consistency in the sample times and will help to ensure the proper exposure time for each sampler.

The following steps describe the procedures for sample tube deployment at each location:

1. Upon arrival at the sample location with TubeTrack handheld data tool, ensure all of the required facility information is correct.

2. Check the sample shelter and ensure that it is secured and stable and has not become loose or dislodged. Check also that both the inside and outside are clear of debris, such as insect nests or fallen materials.

3. Note any unusual activities near the sample location and detail them on the TubeTracker.

4. A location ID will be written on the sleeve cap that corresponds to each sample location. There will be two tubes attributed to locations where a blank or duplicate is to be deployed. Select the appropriate sample tube from the lot.

5. Wearing powder-free nitrile gloves, remove the sample tube from the plastic storage tube and check to make sure station location ID and tube barcode are correct in TubeTracker.

6. Generate the sample ID in the format as described in section 4.0. Verify the site location and sample ID on the TubeTrack handheld tool.

7. Move to a position directly next to the sample shelter where the tube will be placed prior to opening the inlet side of the tube. This ensures that the tube only samples at the monitoring location. For example, if the tube is opened up somewhere other than the actual sampling location, the tube will initially sample ambient air at a location other than where it was intended, which could potentially bias the results.

8. The arrow points to the non-sampling side. This side can also be identified by the absence of a groove (Figure 6). This side will remain sealed with a brass fitting during the entire sample period. Ensure this that the brass fitting on this end is tight. Do not over tighten the brass fittings as this could damage the PTFE ferrule inside the fitting and compromise the seal.

9. Remove the brass fitting from the inlet end of the sampling tube. The arrow points away from the inlet end. The inlet end is also identified by a groove on the outside of the tube (Figure 6). The brass plug does not have to be fully separated from the nut, only loosen the nut and it will slide off the tube. This will retain the PTFE ferrule inside the sealing fitting, so it is not misplaced. Place the removed brass fitting back into the storage tube and replace the lid. Return the storage tube back to the cooler. Place screen cap on end of sample tube. All samples will be returned to the storage tubes for transport to the laboratory. If black powder comes out when the sample end is opened, the tube is leaking. Do not use a tube if it is leaking, has loose or missing storage cap(s), or if the tube is bent, crimped, or damaged. Return unusable tubes to the lab with a notification of the problem and use a different tube. If you accidently remove the storage cap from the outlet end, use an extra tube if one is available. If an extra is not available, put the storage cap back onto the outlet end and deploy it normally – note that the outlet end storage cap was briefly removed on the chain-of-custody.

10. The tube carriage has four slip locations on the edge. Slide the sample tube into the tube carriage slip, with the diffusive cap pointed toward the ground so that the storage cap sits on the tube clip. Arrow on the tube should be pointing up.

11. The tube is now ready for sampling and should look similar to the example in Figure 7.

12. TubeTrack handheld will record the start date and start time. The average temperature and pressure for the entire sample period will be provided from the meteorological data, so these parameters do not need to be collected in the field.

13. There should be two co-located duplicates deployed each sample period. For locations with a duplicate, deploy two tubes under the sample shelter.

14. There should be one field blank deployed each sample period. **Do not remove the storage caps of the field blank.** For the location with a field blank, deploy two tubes under the sample shelter. One of the tubes should be inserted with a diffusion cap according to the instructions above. The other tube, the field blank, must be inserted in the slip so that the storage cap does not need to be removed.

15. Repeat this procedure for each monitoring station.

Figure 6: Inlet End of Passive Diffusive Sampling Tube

Figure 7: Sample tube secured inside tube carriage

3.2.4 SAMPLE RECOVERY AND RE-DEPLOYMENT

Return to each station with two kits, the empty one from the prior deployment and the new one that contains clean tubes. When recovering samples and re-deploying new tubes, take the following steps:

1. Prior to the sample stop time, prepare new sample tubes for deployment.

2. Wearing clean powder-free nitrile gloves, remove the used sample tube from the sample shelter and remove the diffusion cap.

3. Seal the end of the used sample tube with the brass fitting that came with the tube. Tighten the fitting finger tight and then give it a ¼ turn using the wrenches. Do not over tighten as this could damage the ferrule inside the fitting and compromise the seal.

4. Verify the tube ID and location against the information in the TubeTracker.

5. Place the tube back into the plastic storage sleeve that corresponds to the sample location, replace the lid, place the sleeve in the original case, and place tube in the foam insert for protection. **Do not put used tubes into the case with unused tubes or unused tubes into the case with used tubes.**

6. Ensure the diffusion cap is not damaged or unusually dirty. It is unlikely, but if necessary, replace the diffusion cap with a new one. Extras will be provided with each shipment.

7. Deploy a clean tube, as well as a blank or duplicate as necessary, at the station following the deployment procedures in section 4.2.

3.3 FLM FOCAL POINT AND FIELD SUPPORT TRAINING

The FLM Focal Point will have primary ownership of Fenceline Monitoring implementation and quality assurance and will ensure that relevant personnel have completed any necessary training. All employees will receive fenceline monitoring awareness training as part of the general Environmental training that is part of the onboarding process. All new and existing personnel who will interact with the program will receive training necessary to enable them to carry out their responsibilities prior to performing job duties.

4 PROJECT MANAGEMENT AND ORGANIZATION

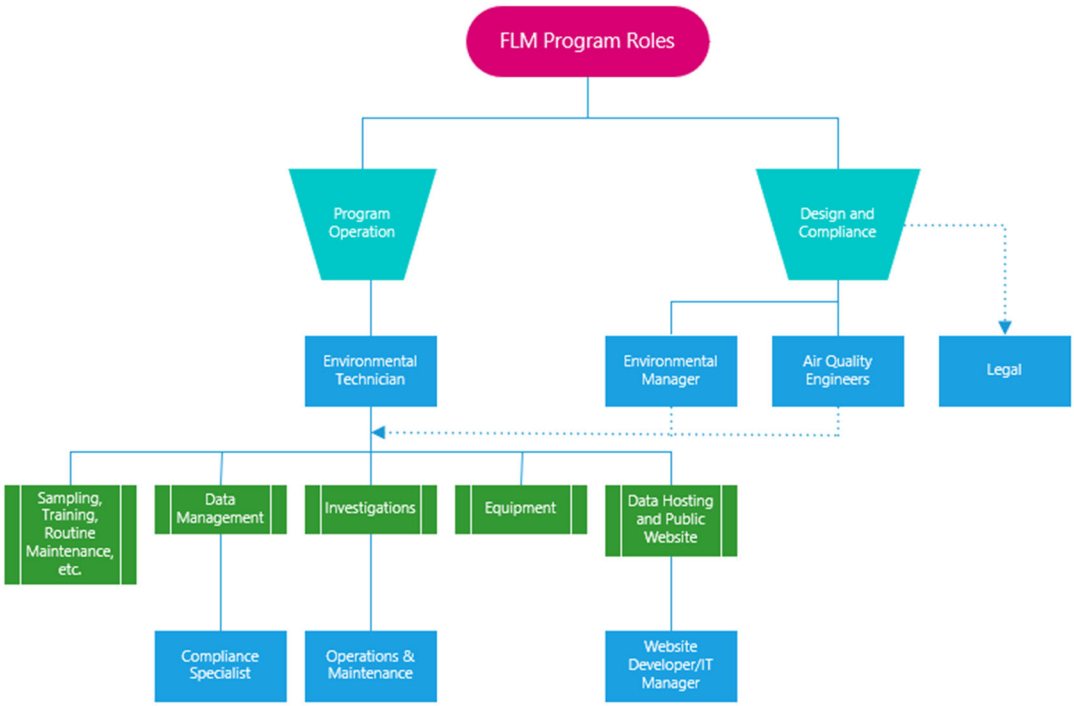
Effective management of Shell's fenceline monitoring program will require engagement from many different people and groups within Shell's organization. Each role in program

implementation, from setup to data management, has been assigned to an individual or group of individuals. The organizational chart in Figure 8 highlights key roles and staff for the fenceline monitoring program. Details of each role and the responsible individual(s) are described below.

- **Program Operation - FLM Focal Point:** The FLM Focal Point will oversee the overall fenceline monitoring program, such as routine operations like collecting and deploying PAMS samples, coordinating sample delivery to the lab, and overseeing quality assurance/quality control (QA/QC) and data validation. The FLM Focal Point will also train personnel who will interact with the program, determine future action levels based on the Action Level Adjustment Schedule described in section 7.1.1, manage the public website, support root cause analyses, and oversee general maintenance and upkeep of fenceline equipment supported by Shell Maintenance, Shell Instrumentation, and/or the vendor, as necessary.
- **Design and Compliance – Environmental Manager/Air Quality Engineers:** The Environmental Manager and Air Quality Engineers ensure that the Fenceline Monitoring program meets the Settlement Agreement, meets all referenced methods and guidelines, and is technically sound. They also provide support for future action levels in conjunction with Legal. The Environmental Manager and Air Quality Engineers will update the Fenceline Monitoring program and QAPP and will have secondary coverage of the FLM Focal Point program responsibilities.
- **Data Management - Compliance Specialist:** The Compliance Specialist will manage the data created by the program.
- **Field Investigations– Shell Operations and Maintenance:** Shell Operations and Maintenance will oversee field investigations in response to readings that exceed the action level, or as necessary to prevent an exceedance. The team will also oversee any equipment maintenance resulting from investigations and provide support for root cause statement. Environmental will coordinate the activities and ensure they are completed.
- **Equipment –Shell Projects and Technologies:** Shell Projects and Technologies will provide the Fenceline Monitoring program equipment and data generating capabilities to the Shell Asset team. Their responsibilities end after handover to the Asset.

- **Data Hosting and Public Website - Website developer/Information Technology (IT) Manager:** The Website Developer/IT Manager and FLM Focal Point will create and manage the website communicating fence line monitoring data to the public.

Figure 8: Organizational Chart for Fenceline Monitoring Program



5.0 QUALITY CONTROL/QUALITY ASSURANCE

Shell employs many QA/QC procedures throughout the monitoring study to ensure the collection of high-quality data. Procedures include calibration of the PID analyzer, ensuring use of clean Summa canisters for the continuous monitoring system and the use of field blanks and duplicate samples for the passive monitoring. All samples will be accompanied by appropriate chain-of-custody forms and documentation. These measures are described in the following sections.

Shell will initiate corrective action we will follow site MOC process and update QAPP and post changes to website as necessary.

5.1 CAMS QA/QC

CAMS QA/QC have been outlined in the Settlement Agreement and Shell will follow the guidance provided.

5.1.1 CONTINUOUS PID ANALYZER DATA

Continuous PID Analyzer data requirements have been identified in the Settlement Agreement and Shell will follow the guidance provided.

5.1.1.1 DATA REVIEW

Real-time data generated by the CAMS equipment undergoes review throughout the measurement and reporting process. This includes automated QA/QC checks that occur before data is reported on the real-time website as well as data quality checks for monitoring data that is reconciled on a daily basis. Data review will be overseen by the Environmental Engineer, Compliance Specialist and FLM Focal Point. Automated data checks are listed in Table 2.

Table 2: Real-time Data Quality Checks

Activity	Check	Action
Low Signal Alarm	Signal Threshold Test	If the signal is below the threshold value, a "Low Signal" alert is generated.
Instrument Code Error	Instrument Code Error	DCS generates an "offline" message. The website message board is updated to inform community that analyzer troubleshooting was performed. The website is updated with downtime.
Instrument Workstation Offline	Instrument Communication Check	DCS generates an "offline" message. The website message board is updated to inform community that analyzer troubleshooting was performed. The website is updated again with downtime
High Detection	Validation of Action Level exceedance	DCS indicates a detection above the alarm threshold. The Environmental Department will examine the raw data to validate the detection. The message board on the website will be updated with information when available.

5.1.1.2 INSTRUMENT QUALITY CHECKS

Each analyzer is checked throughout the measurement process to make sure the data quality output reflects the Data Quality Objectives (DQO) of the Fenceline Monitoring program. DQO includes ensuring the data obtained from the fenceline systems meets the quality standards for presentation to the public.

To meet these standards, the entire fenceline monitoring system, including the instruments, workstations, and Internet communication hardware, are continually monitored for system performance. Periodic gas checks and continuous system error monitoring are used to verify that these objectives are met. Table 3 provides more details on these quality assurance activities. If an element of the system fails to meet performance criteria, an automatic message is sent to key personnel at Shell who will begin activities to correct

the problem. If an issue cannot be immediately corrected, the website will be updated with a notification explaining the problem and the corrective action activities. Table 4 describes the real-time instrument performance checks and the notifications and actions taken when a performance check fails.

Table 3: Schedule of Instrument Quality Assurance Activities

Activity / Check	Frequency	Description	Measurement Quality Objective	Acceptance Criteria	Corrective Action
Monitor system error codes	Continuously	PID includes internal status flags that record whether the data point is considered to be valid.	Evaluate status flags to assist in assessing whether the OGD air monitoring equipment is operating within manufacturer specifications.	If the status flags read "normal" no additional action is necessary. If the status flags output an error code, Shell Personnel will be notified the system is not working correctly.	Upon notification that the system has generated an error flag, Shell Personnel will begin the process of troubleshooting the system to determine the cause of the error flag and correct the problem.
Gas Check	Quarterly	This MQO is to check the response of the OGDs by introducing a calibration gas and noting the instrument response.	The measurement quality objective is to validate the operation of the OGDs by challenging them with a known quantity of test gas and checking the system response.	The MQO will be considered to have been met if the quantified result is within 25% of the expected value.	If the system does not meet the acceptance criteria, the site maintenance will be contacted to troubleshoot and repair the issue.

Table 4: Real-time Instrument Performance Checks

Problem	Notification	Action
Analyzer has no signal	Through DCS	Website will be updated with no signal message for the specific analyzer. Site maintenance will be contacted to troubleshoot and repair the issue.
Analyzer offline	Through DCS	Website will be updated with an analyzer offline message. Site maintenance will be contacted to troubleshoot and repair the issue.
Analyzer failure	Through DCS	Website will be updated with an analyzer offline message. Site maintenance will be contacted to troubleshoot and repair the issue.

5.1.1.3 MAINTENANCE

Specific tasks for periodic testing, inspection, and maintenance are required to ensure the CAMS equipment remains within the manufacturer's operating specifications, which is necessary to ensure that the project quality goals are met. Initial testing is conducted on each piece of equipment to ensure the equipment is operating within the manufacturer's specifications. Operational checks are repeated during installation, before initial calibration, and are used as field measurements. Shell will follow each monitor's manufacturer-recommended maintenance schedules, which are found in the operating manuals provided at the monitoring stations. Additionally, according to the requirements of the Settlement Agreement, Shell will monitor periods of downtime. Periods of downtime may not exceed five percent of the 15-minute blocks of the total operating time annually.

Table 5: Schedule of PID Maintenance Activities

Activity	Monthly	Annually	As Needed
Visually inspect the system	✔		
Check system performance indicators	✔		
Annual service check		✔	
Vendor recommended maintenance			✔

5.1.2 SUMMA CANISTERS

Summa canisters will be procured through a third-party lab in the size of 6L as requested in the Settlement Agreement.

5.1.2.1 SAMPLE COLLECTION SCHEDULE

Summa canisters are not collected on a regular schedule, rather only when a CAMS action level is exceeded. When the action level is exceeded, a solenoid valve actuates to fill a 6-liter evacuated Summa canister for 30 minutes and sends a signal to a Shell representative. On weekdays, Shell will collect and replace the Summa canister within 24 hours of actuation and will send the Summa canister to the third-party laboratory within two calendar days of sample collection. On weekends (Friday at 3:00 p.m. through Monday morning at 7:00 a.m.) or legal holidays, Shell will collect and replace the Summa canister no later than the morning of the next business day and will send the Summa canister to the third-party laboratory that same day.

5.1.2.2 SAMPLE HANDLING AND CUSTODY

Canisters are returned under chain-of-custody via overnight courier to third-party certified lab for analysis by gas chromatography/ mass spectroscopy (GC/MS) following Method TO-15. Table 6 depicts the Method Reporting Limits (MRLs) for the "Chemicals of Potential Concern." As shown, the majority of the compounds have GC/MS MRLs below 0.2 parts per billion by volume (ppbv).

Table 6: Chemicals of Potential Concern

CAS #	Compound	MRL (ug/m3)	MRL (ppbv)
106-99-0	1,3-Butadiene	0.5	0.23
110-54-3	n-Hexane	0.5	0.14
71-43-2	Benzene	0.5	0.16
108-88-3	Toluene	0.5	0.13
91-20-3	Naphthalene	0.5	0.095

5.1.2.3 SUMMA ANALYSIS QUALITY CONTROL

The 6-liter Summa canisters are batch certified "clean" by the lab. Prior to deployment, each canister is filled with zero air and analyzed by GC/MS to verify no detectable concentrations of any of the target analytes. The Summa canisters will be monitored on a monthly basis to ensure the vacuum is in place. If it is found no longer at "0", Summa canister will be sent back to lab for batch certification and returned.

A QA/QC review of the speciated data from Summa canister sampling results will be completed no later than seven calendar days following the date on which the sample results are received from the laboratory. This process will include a review of the laboratory report and any notes provided.

5.1.2.4 LAB QA/QC

The certified third-party laboratory, who will analyze passive tubes, and summa canisters, maintains numerous accreditations, including the American Industrial Hygiene Association and the National Environmental Laboratory Accreditation Programs. Laboratory QA/QC follow the requirements of the applicable methods and include:

- Method Blanks;
- Surrogate Spikes;
- Laboratory Control Samples;
- Duplicate Laboratory Control Samples; and
- Initial and Continuing Calibration Verification.

5.2 PAMS QA/QC

QA/QC methods for the PAMS have been identified in the Settlement Agreement and Shell will follow the recommended methods.

5.2.1 SORBENT TUBE SAMPLING

Sorbent tubes will be provided through a third-party company that will ensure quality of samples through testing period.

5.2.1.1 SAMPLE CHANGE-OUT SCHEDULE

Recover samples the same day every other week, such that the routine sampling period is 14 days. In accordance with 40 C.F.R. § 63.658(e)(1)-(2), the sampling period may be no shorter than 13 calendar days and no longer than 15 calendar days, but the routine sampling period shall be 14 calendar days. The beginning of the next 14-day sampling period begins immediately upon the completion of the previous 14-day sampling period. Ideally, recover samples in the same location sequence as deployment and at the same time of day.

5.2.1.2 FIELD QUALITY CONTROL

Once the samples from all locations have been recovered and new samples have been deployed, the following quality assurance/quality control (QA/QC) checks should be completed before leaving the facility:

1. Check the sample tube serial numbers of newly deployed tubes on the COC against the shipment log to ensure that all ID's have been correctly transcribed. If any tubes do not match the provided shipment log, check against the prior round's log to ensure that no tubes were mistakenly re-deployed. If any samples were mistakenly re-deployed, return to the sampling site and replace with a fresh tube noting on the prior log the time which the collected tube was re-deployed along with its location.

2. Check collected sample tube serial numbers against the COC ensuring that all samples have been collected for analysis.

When both checks of sampling have been completed, proceed to sample packaging and shipping procedures in section 6.2.1.5.

5.2.1.3 BLANKS

Deploy 2 co-located (one each for CarboPack B and Carbopack X) blank during each sample period. Field blanks must contain no greater than one-third of the measured target analyte or compliance limit for field samples. If either field blank fails, flag all data that do not meet this criterion with a note that the associated results are estimated and likely to be biased high due to field blank background.

5.2.1.4 DUPLICATES

Deploy four (two each for Carbopack X, and two each for Carbopack B) co-located duplicates each sample period. The facility has 20 PAMS locations, two sample tubes per location. However, only 17 PAMS are required and 3 are optional. CAMSCO recommends locating duplicates across from one

another. The level of agreement between duplicate field samples is a measure of the precision achievable for the entire sampling and analysis procedure. Flag data sets for which the duplicate samples do not agree within 30 percent.

$$Field\ Precision = \frac{\left(\left|F1 - F2\right|\right)}{\overline{F}} \times 100 \qquad \text{Eq. 9.3}$$

Co-located sample/duplicate pairs should be averaged together for the purposes of determining the benzene concentration for that sampling location, and, if applicable, for determining ΔC.

5.2.1.5 SAMPLE HANDLING AND CUSTODY

Once the samples from all locations have been recovered and new samples have been deployed, recovered samples should be shipped to the analytical laboratory as soon as possible. If shipping is not done on the same day as sample recovery, place the samples into a refrigerator for storage and ensure the ice packs are frozen before being placed into the shipping case. Samples must be sent within two (2) calendar days of collection, excluding legal holidays. Observe the following shipping instructions:

1. Place the frozen ice packs that came with the samples back into the case when ready for shipping. Unused tubes will be returned with recovered samples. Ice packs do not need to be taken into the field during sample collection. Cooling the samples is not a requirement of the methodology. However, it is a measure of insurance to aid in preservation of the adsorbed species during shipping.

2. When ready for shipping, sign the chain-of-custody the "Relinquished By" box and enter the date and time. Indicate the selected shipping agency in the "Received by" section. Make a copy of the signed document and keep in a project file. Put the original inside the sampling kit, along with the

used tubes, old diffusion caps, unused tubes, and any other supplies that came in the kit. Since the sample case will be sealed and the Field Data Sheet/COC will be within the case, it will not be possible for the shipping agency to physically sign the document. Therefore, simply indicating the shipping agency name in this section is acceptable.

3. Close and lock the cooler lid with the included chain of custody seal. Ensure number matches the one provided in TubeTracker

4. Affix return shipping label that arrived with in the sample kit to outside of case. Ship the samples via overnight shipping (i.e. delivery by 10am) to the following address, which will be printed on the included shipping label:

   Eurofins Air Toxics*
   180 Blue Ravine Road, Suite B
   Folsom, CA 95630
   T: (916) 985-1000

*Or other third-party certified contractor

Figure 9: Example of a Chain of Custody Seal

5.2.2 PASSIVE TUBE ANALYSIS QUALITY CONTROL

A QA/QC review of the results from the laboratory passive tube analysis will be completed no later than seven calendar days following the date on which the sample results are received from the laboratory. This process will include, but is not limited to, review of the laboratory report to confirm there are no irregularities or deviations from the Method 325B.

5.2.3 LAB QA/QC

Third-party certified lab will perform summa canister analysis. Refer to section 6.1.3 for information on the lab's qualifications and QA/QC checks.

5.3 METEOROLOGICAL INSTRUMENTS

Meteorological instruments will be designed and placed as per the Settlement Agreement.

5.3.1 LOCATION

Siting criteria are discussed previously in Section 2.3.

5.3.2 MAINTENANCE AND CALIBRATION

Shell follows the calibration and standardization procedures for meteorological measurements in EPA's Quality Assurance Handbook for Air Pollution Measurement Systems Volume IV: Meteorological Measurements Version 2.0 (Final) (EPA–454/B–08–002) as it pertains to the onsite met station. This document requires semi-annual maintenance and calibration. During each maintenance and calibration event, several readings should be taken for each sensor initially, as the equipment is found. Then the equipment should be cleaned thoroughly and inspected to ensure that it is in good working order and then calibrated. Details for each sensor are as follows:

Thermometer: Record before and after readings and compare them to a certified federal transfer standard. Average the absolute difference between each standard reading versus the actual reading. Errors in temperatures should not exceed 0.5°C.

Barometer: Record before and after readings and compare them to a certified federal transfer standard. Average the absolute difference between each standard reading versus the actual reading. The tolerance for barometric pressure monitoring is ±3.0 millibars (2.25 mmHg at 0°C).

Anemometer: Determine whether the anemometer has shifted off of true north and re-align the unit if necessary to get it as close as possible to true north. This is done using a certified compass and the corresponding wind direction output is verified for accuracy based on the cross-arm alignment. The tolerance for wind direction monitoring is ±5.0 degrees. A box test, in which the anemometer is subjected to still air, should produce a reading of 0 mph. The anemometer must be factory recertified each year. Shell maintains a certified backup anemometer that is swapped out when recertification is due to minimize downtime. In lieu of sending the anemometer back to factory, Shell may consider verifying the wind speed in the field using a NIST-traceable synchronous motor.

6.0 DATA MANAGEMENT, ACTION LEVEL REVIEW, AND REPORTING

Data management, action level review, and reporting guidelines have been provided in the Settlement Agreement and Shell agrees to follow them.

6.1 DATA MANAGEMENT

Data management will be followed as per the Settlement Agreement.

6.1.1 POST-PROCESSED DATA MANAGEMENT

Data from the fenceline system will be reviewed and validated monthly with the validated results stored in a separate database from the raw data. Data review and validation include but are not limited to non-field data such as calibration data, spurious data associated with power or mechanical issues, and data with a low signal below predetermined thresholds. Data review will be overseen by the Air Engineer. Data that has been flagged as nonvalid will be retained along with a

notation for the reason it was flagged. Table 7 summarizes the process by which monitoring data is reviewed and post processed.

Table 7: Post-Process Data Review

Post-process Data Check	Check	Action
Non-field Data Check	Maintenance logs and QA/QC logs will be checked to see when systems were not in normal operating mode.	The Air Engineer will flag any data that meets these criteria and the data will be excluded from the QA/QC report.
Spurious Data	Instrument error codes will be checked and flagged if instrument error codes are recorded.	The Air Engineer will flag any data that meet these criteria the data will be excluded from the QA/QC report.
Low Signal	Data will be reviewed for periods with a low signal. If a low signal is recorded, the data will be flagged and the reason for the low signal will be recorded (weather, system misalignment, etc.).	The Air Engineer will flag any data that meet these criteria the data will be excluded from the QA/QC report.
Gas Detection Validation	The Air Engineer will review data detections.	The Air Engineer includes any verified data in the QA/QC report.

6.1.2 CAMS DATA ASSESSMENTS AND ACTION LEVELS

After 180 days of FLM data are available, technical representatives of Shell and the Appellants shall meet and review available FLM data, including NMNEVOC concentration data collected by the PIDs, the biweekly concentration data collected by the PAMS, meteorological data, additional background VOC data, any Action Level exceedances, and associated data produced therefrom, including Field Investigations, corrective actions taken (if appropriate), and previous adjustments to the Action Level(s). The parties will determine whether it is

necessary to amend the Initial Action Levels. If both parties agree to new action levels, those new action levels will apply. Any adjusted Action Levels should consider the number and frequency of exceedances of the Initial Action Level and should be based on actual measurements of the facility's net NMNEVOC concentrations at each CAMS, using a subset of cumulative "Regular Operations Data."

If the action levels need to be revised but the parties cannot reach an agreement, the Default Protocol will govern resetting of the action levels. The Default Protocol will go into effect 10 days after the 6-month meeting, unless the parties agree to different action levels before the end of the 10-day period. Table 8 shows the schedule and conditions required to adjust CAMS action levels. In addition, the following requirements apply from the settlement agreement:

- Excluding the adjustment protocol at the end of the first year, if the action level for any given CAMS has been adjusted via the immediate revision provisions, field investigations counted in that adjustment do not count again under the default or adjustment protocols.
- Only field investigations triggered during regular facility operations, as defined by the settlement agreement, should be counted when determining whether an action level should be adjusted under the default, schedule adjustment, or immediate adjustment protocols. If an action level exceedance is determined to have been caused an event or situation other than regular facility operations, then no action level adjustment is triggered based on that instance.
- Excluding the immediate adjustment protocol during the first 180 days, there may be no more than two immediate revisions to raise the action level and two immediate revisions to lower the action level for any given CAMS in a single FLM program year.

Other than for CAMS 4, no Action Level for a CAMS shall be lowered below 40 ppbv. Revisions to the action levels shall not in any way extend or otherwise amend Shell's obligation with respect to the FLM program.

Table 8: Action Level Adjustment Schedule

Number of Field Investigations	Action Level Change
Default Protocol or as agreed - after 180 days	
≥ 8 during previous 180 days	+10%
≤ 4 during previous 180 days	-10%
Adjustment Protocol - after 1 year	
≥ 8 during previous 180 days	+10%
≤ 4 during previous 180 days	-10%
Adjustment Protocol - after 2 years	
≥ 10 during previous year	+10%
≤ 6 during previous year	-10%
Adjustment Protocol - after 3 years	
≥ 6 during previous year	+10%
≤ 2 during previous year	-10%
Adjustment Protocol - after 4 years	
≥ 6 during previous year	+10%
≤ 2 during previous year	-10%
Immediate Adjustment - during first 180 days	
≥ 4 during any calendar month	+10%
0 during two consecutive calendar months	-10%
Immediate Adjustment - during years 2 - 5	
≥ 4 during any calendar month	+5%

6.1.3 PAMS ASSESSMENT AND RESPONSE ACTIONS

Shell must perform a field investigation if the action level for any sample period exceeds the Benzene 9 µg/m^3 action level. There are currently no plans to potentially adjust this action level.

6.2 FIELD INVESTIGATION

Shell will begin a field investigation as soon as possible but no later than 24 hours after receiving data demonstrating an exceedance of a CAMS or PAMS action level. No more than one field investigation needs to take place within a 24-hour period. If an exceedance occurs on weekends (Friday at 3:00 p.m. through Monday morning at 7:00 a.m.) or legal holidays, Shell will start an investigation on the next business day.

The field investigation shall proceed as follows:

1. As soon as practicable, but within 24 hours of beginning of a field investigation, evaluate the data underlying the action level exceedance in accordance with the data validation procedures in section 7.2 of this document to determine whether the data is valid.

2. If the investigation team determines that the data is valid, identify potential sources in accordance with Leak Detection and Repair (LDAR). Examples of potential sources include, but are not limited to piping, pressure relief devices, process vents, etc.

3. If the investigation team discovers that the action level exceedance was caused by an equipment leak at the facility, take corrective action according to the timelines prescribed in Section C, Condition #026 of the Plan Approval. Within 15 days following completing corrective actions, monitor the source according to the terms of Section C, Condition #026 to verify that the corrective action was effective.

6.3 DATA REPORTING

Data reporting will be done in accordance to the guidance provided in the Settlement Agreement.

6.3.1 REPORTS TO MANAGEMENT

CAMS PID analyzer data is collected in PI which is embedded with the data for users in the Shell network. The Compliance Specialist will connect to PI through the Environmental OpsAir database for air compliance data. PAMS sorbent tube and CAMS Summa canister data will also be stored in the OpsAir database.

6.3.2 MONITORING DATA WEBSITE

Shell's publicly accessible monitoring data website is located here:

Shell Polymers | Shell United States

The website provides an overview of the equipment installed to implement Shell's FLM program, the current action level, a history of revisions to the action level – including the date and reason for each revision, the QAPP, and monitoring data. PAMS data includes concentrations of chemicals of potential concern for each sample period and each monitoring location.[1] CAMS data includes the total unspeciated NMNEVOC concentration from each PID analyzer on a 15-minute block average - posted by the next business day following its collection). Meteorological data is also posted to the website and includes the 5-minute block average wind speed and direction collected by the onsite met station. This data will be posted to the website, in a tabular format, within 30 days of the start of the FLM program and within seven days of when sample results (for PAMS) are received from the lab.

Additional information will be posted if an action level exceedance occurs. If triggered by a CAMS action level exceedance, Shell will post the concentration data for each Chemical of Potential Concern from any associated Summa canister

[1] PAMS monitoring will start prior to normal operations but Shell will not be required to post any data collected prior to normal operations to the website. Instead, Shell will provide results to the appellants' counsel for each two-week sampling period for all locations within 7 days after receiving results from the laboratory. These data are not considered part of the FLM program.

sampling, within seven days of when results are received from the lab. If triggered by a PAMS action level exceedance, Shell will post the Δc value for benzene that exceeded the action level. Regardless of the trigger, Shell will also post the total unspeciated NMNEVOC concentration from each PID Analyzer on a 5-minute average, a summary of each field investigation, including a brief statement of the root cause of the excess emission if identified, and a description of any actions taken in response to the field investigation. This information will also be presented in a tabular format.

Finally, the website will include a record of downtime for the monitoring equipment, including the duration and reason for downtime. The reason for downtime will include information on the specific component that failed, the cause of the failure, and any measures taken to prevent the reoccurrence of the failure.