PERMIT ATTACHMENT APPENDIX XXIII

SUBPART FF COMPLIANCE PLAN

This document was altered from the April 2018 permit application since it had errors. The Region used the 2014 application submittal for this appendix that was accurate.

September 2018

APPENDIX XXIII

SUBPART FF COMPLIANCE PLAN

FOR

EVOQUA WATER TECHNOLOGIES

PARKER REACTIVATION FACILITY

PARKER, ARIZONA

Revision 9
March 2014

SUBPART FF COMPLIANCE PLAN

Revision 9 –March 2014

EVOQUA WATER TECHNOLOGIES
PARKER, ARIZONA FACILITY

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1. INTRODUCTION

This document summarizes the applicable National Emission Standards for Hazardous Air Pollutants (NESHAP) for Benzene Waste Operations (Subpart FF) requirements and compliance plan for the Evoqua Water Technologies, Parker, Arizona facility. The main purpose of the document is to assist facility management and staff in understanding the relevant NESHAP Subpart FF requirements, and provide a tool for maintaining and tracking compliance documentation. Portions of the Facility's operations are also subject to RCRA Subpart CC, which controls emissions of volatile organics, including benzene. Subpart CC has provisions that can be more or less stringent than Subpart FF, and it also contains an exemption for certain facilities equipped with and operating air emission controls in compliance with Subpart FF. This plan does not address Subpart CC requirements.

The NESHAP regulations covered include:

- Subpart A - General Provisions (40 CFR 61.01, et seq.)
- Subpart FF - National Emission Standard for Benzene Waste Operations (40 CFR §61.340, et seq.)

Subpart A details the general provisions of the NESHAP regulations and applies to all facilities that trigger one or more of the emission standards outlined in the subsequent subparts. Subpart FF details the specific requirements for controlling benzene emissions from chemical manufacturing plants, petroleum refineries, and coke by-product recovery plants. This subpart also applies to facilities that treat wastes generated by facilities subject to Subpart FF; it is for this reason that the Parker, Arizona facility must comply with Subpart FF requirements (see §61.340(b)). The relevant texts from Subparts A and FF are provided in Appendix A for reference.

This document assumes that the total annual benzene quantity (TAB) for the Facility is less than 10 megagrams (Mg) per year. The Facility implements a TAB tracking system to closely monitor the facility TAB throughout the year, as changes to Facility practices, including additional controls, must be implemented before the Facility TAB equals or exceeds 10 Mg/yr.

The sections that follow describe the treatment processes at the Parker, Arizona facility, summarize the relevant rule requirements, and outline the facility's compliance plan.

2. FACILITY DESCRIPTION

The Parker, Arizona facility reactivates spent carbon from both facilities subject to and exempt from the requirements of Subpart FF. The spent carbon is deposited in one of two hoppers (H-1 and H-2) whose emissions are controlled by carbon absorber WS-2. The spent carbon is stored in tanks (T-1, T-2, T-5, and T-6) prior to treatment. From the storage tanks, the slurry is pumped to the furnace feed tank (T-18) and is then dewatered before being introduced into the reactivation unit. The storage tanks and furnace feed tank are connected to carbon adsorbers (WS-1 and WS-3) to treat any volatile organic compounds (VOC) that may be present in the tank vapors.

Spent carbon is reactivated in the facility reactivation treatment unit, which consists of a multiple hearth furnace (RF-2) and an afterburner (AB-2). In this treatment unit, organic contaminants such as benzene are thermally destroyed by high temperatures to achieve destruction and removal efficiency greater than 99%. Under the language of Subpart FF and EPA guidance, the regenerated carbon is considered a product, not a waste. As such, the Facility is not required to demonstrate compliance with the benzene removal or destruction requirements in the regenerated carbon, provided the carbon is legitimately redeployed as a regenerated carbon product. The Facility confirms this by ensuring its regenerated carbon meets product specifications and is placed into inventory for reuse.

Reactivated carbon product is cooled before it is stored, packaged, and shipped. The hot gases from the reactivation treatment unit are further treated by air pollution control equipment prior to being routed through a stack to atmosphere.

The Parker, Arizona facility currently operates as an interim status facility under the Resource Conservation and Recovery Act (RCRA) and is limited to a maximum spent carbon feed to the furnace of 2760 lb/hr.

Sources of potential benzene emissions from Subpart FF waste include:

- Carbon adsorbers (WS-1, WS-2, and WS-3), which control spent carbon storage and furnace feed tank VOC emissions, including benzene.
- Emissions associated with the reactivation treatment unit (RF-2 and AB-2).
- Fugitive emissions from the unloading of spent carbon into hoppers H-1 and H-2.
- Fugitive emissions from containers of Subpart FF waste.

The processes subject to Benzene Neshap compliance are highlighted in the facility process flow diagram located in Appendix L.

3.0 MANAGEMENT SUMMARY OF RULE REQUIREMENTS

3.1 Applicability Criteria for Designation of Affected Facilities (40 CFR §60.340)

Subpart FF applies to chemical manufacturing plants, coke by-product recovery plants, and petroleum refineries, and to treatment, storage and disposal facilities (TSDFs) that treat, store, or dispose, of hazardous wastes containing benzene generated by these facilities (e.g., the Facility) (see §61.340(a) and (b)). Because the Facility's TAB is less than 10 Mg/yr, it is subject only to TAB recordkeeping and reporting requirements under this section of the rule.

Subpart FF also applies to any facility that receives waste that is accompanied by a notice that the waste must be managed in accordance with Subpart FF (See 40 CFR §61.342(f)). The Facility receives wastes that have been designated as Subpart FF wastes under these provisions. All incoming wastes with a Subpart FF notice, including any subsequent

mixtures of these wastes with any other materials, must be managed in compliance with Subpart FF requirements.

Incoming wastes from plants that are subject to Subpart FF (e.g., wastes from refineries, coke by-product recovery plants and chemical plants) which do not have a Subpart FF notice are presumed to not require Subpart FF controls at the Facility. If a generator provides a Subpart FF notice for a type of waste after prior shipments of that type have already been received, it is presumed that Subpart FF controls are required only from the date the Subpart FF notice is received.

3.2 Definitions (40 CFR 61.02 and 61.341)

Outlined below is a list of useful definitions that apply under NESHAP regulations. This list is not exhaustive and facility staff should reference the applicable subpart for additional information.

- ***Chemical Manufacturing Plant*** - any facility engaged in the production of chemicals by chemical, thermal, physical, or biological processes for use as a product, co-product, by-product, or intermediate including but not limited to industrial organic chemicals, organic pesticide products, pharmaceutical preparations, paint and allied products, fertilizers, and agricultural chemicals. See the definition at 40 CFR §61.341 for examples of some of the applicable process units.

- ***Capital Expenditure*** - An expenditure for a physical or operational change to a stationary source which exceeds a minimum threshold. The importance of the capital expenditure provisions is that modifications to existing facilities that result in an increase in emissions are not subject to NESHAP permitting requirements if the modifications can be accomplished without a “capital expenditure”. The difficulty with determining whether a modification triggers the “capital expenditure” threshold is that the Internal Revenue Service (IRS) guidelines cited by EPA as the means of making this determination are no longer published. EPA recognizes that the IRS form is no longer available, and intends to modify this definition. In the meantime, EPA uses the following definition:

  Capital Expenditure > (Original Equipment Cost)(0.07)

  Capital expenditures are analyzed on a per project basis to determine if a modification will result from a change in operation.

- ***Closed Vent System*** - A system that is not open to the atmosphere and is composed of piping, ductwork, connections, and, if necessary, flow inducing devices that transport gas or vapor from an emission source to a control device.

- ***Coke By-Product Recovery Plant*** - any facility designed and operated for the separation and recovery of coal tar derivatives (by-products) evolved from coal during the coking process of a coke oven battery.

- ***Commencement of Construction*** - Construction commences when an owner or operator has undertaken a continuous program of construction or modification, or when an owner has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of construction or modification. Under a strict reading of this definition, construction commences when an owner signs a contract for the construction of a new or modified emission unit subject to NESHAP regulations. However, this is not how EPA applies this definition. EPA has issued guidance to the effect that construction commences when any component of an emissions unit subject to NESHAP is affixed to a foundation. Under this guidance, the laying of a foundation or permanent installation of piping or electrical conduit associated with a NESHAP source is considered to be commencement of construction. Notably, EPA does allow the shipment of pre-fabricated equipment to a site, provided that equipment is not affixed to a foundation upon arrival at the NESHAP facility.

- ***Construction*** - Fabrication, erection, or installation of a facility subject to NESHAP regulations. More notably, construction of a facility subject to NESHAP regulations cannot be commenced without a permit from EPA or its delegated administrator.

- ***Container*** - Any portable waste management unit in which a material is stored, transported, treated, or otherwise handled. Examples of containers are drums, barrels, tank trucks, dumpsters, tank cars, and dump trucks.

- ***Cover*** - A device or system which is placed on or over a waste placed in a waste management unit so that the entire waste surface area is enclosed and sealed to minimize air emissions. A cover may have openings necessary for operation, inspection, and maintenance of the waste management unit such as access hatches, sampling ports, and gauge wells provided that each opening is closed and sealed when not in use. Examples of covers include a fixed roof installed on a tank, a lid installed on a container, and an air-supported enclosure installed over a waste management unit.

- ***Individual Drain System*** – A system used to convey waste from a process unit, product storage tank, or waste management unit to a waste management unit. This term includes all process drains and associated sewer lines down to the receiving waste management unit.

- ***No Detectable Emissions*** - Less than 500 parts per million by volume (ppmv) above background levels, as measured by a detection instrument reading in accordance with the procedures specified in §61.355(h) of this subpart.

- ***Modification*** - Any physical or operational change to an existing facility that results in an increase in the emission rate to which a NESHAP regulation applies. The following changes are not considered modifications:

    - Maintenance, repair, and routine replacement, if such physical change does not increase the maximum potential to emit of a pollutant to which NESHAP regulations apply.

- An increase in production rate (i.e., feed rate) if that increase can be accomplished without a capital expenditure.

- An increase in the hours of operation.

The relocation or change in ownership of a stationary source. However, such activities must be reported to EPA, as discussed in Section 3.4 below.

- ***Petroleum Refinery*** - any facility engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oils, lubricants, or other products through the distillation of petroleum, or through the redistillation, cracking, or reforming of unfinished petroleum derivatives.

- ***Point of Waste Generation*** - The location where the waste stream exits the process unit component or storage tank prior to handling or treatment in an operation that is not an integral part of the production process, or in the case of waste management units that generate new wastes.

- ***Tank*** - A stationary waste management unit that is designed to contain an accumulation of waste and is constructed primarily of non-earthen materials which provide structural support.

- ***Total Annual Benzene Quantity (TAB)*** - the sum of the annual benzene quantity for each hazardous waste stream from a chemical manufacturing plant, a coke by-product recovery plant, or a petroleum refinery received at the Facility that has a flow-weighted annual average water content greater than 10 percent or that is mixed with water, or other wastes, at any time and the mixture has an annual average water content greater than 10 percent, calculated in accordance with 40 CFR §61.355.

- ***Waste*** - Any material resulting from industrial, commercial, mining or agricultural operations, or from community activities that is discarded or is being accumulated, stored, or physically, chemically, thermally, or biologically treated prior to being discarded, recycled, or discharged.

- ***Waste Management Unit*** – A piece of equipment, structure, or transport mechanism used in handling, storage, treatment, or disposal of waste. Examples of a waste management unit include a tank, surface impoundment, container, oil-water separator, individual drain system, steam stripping unit, thin-film evaporation unit, waste incinerator, and landfill.

- ***Waste stream*** - The waste generated by a particular process unit, product tank, or waste management unit. The characteristics of the waste stream (e.g., flow rate, benzene concentration, water content) are determined at the point of waste generation. Examples of a waste stream include process wastewater, product tank drawdown, sludge and slop oil removed from waste management units, and landfill leachate.

3.3 Permitting for New and Modified Facilities (40 CFR §§61.07 - 61.08)

Prior to commencement of construction or modification of a facility subject to NESHAP regulations, an owner or operator must submit an application to EPA or its delegated administrator. For the Parker, Arizona facility, the application should be submitted to EPA Region IX at the following address:

Mr. Jack Broadbent
Director, Air and Toxics Division (A-1)
United States Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105

The contents of the application should include:

- The name and address of the applicant.
- The location of the proposed source.
- Technical information describing the proposed nature, size, design, operating design capacity, and method of operation, including a description of any equipment to be used to control emissions. Such technical information shall include calculations of emissions in sufficient detail so that EPA can assess the validity of the calculations and determine compliance with the applicable standards.
- Applications for modifications should also include a description of the proposed nature of the changes, the productive capacity of the facility before and after the changes are completed, and calculations of emissions before and after the changes are completed. The calculations should be in sufficient detail so that EPA can validate them and determine compliance with applicable standards.

After submittal of the application, EPA Region IX will determine if the application is complete. If deemed complete, EPA will notify the applicant within 60 days of its intention to approve or deny the application. If EPA determines that the new or modified source will comply with the applicable NESHAP standards, construction will be approved.

Construction may be commenced as soon as EPA issues its approval of the application.

3.4 Notifications (40 CFR §§61.09, 61.10, 61.13(c), and 61.342(f))

The following written notifications shall be submitted to EPA Region IX:

- Anticipated start-up notification. This notification shall be provided no more than 60 days nor less than 30 days before start-up.
- Actual start-up notification. The notification of actual start-up shall be submitted within 15 days after the date of start-up.
- Existing source notification. This notification should have been submitted by April 7,

1993. The contents of this notification are outlined in 40 CFR 61.10

- Change in information notification. If any of the information provided in a permit application or in the existing source notification is changed even though the change does not constitute a modification (e.g., change in ownership, address, etc.), a notification shall be submitted within 30 days after the change.

- Emission testing notification. This notification should be submitted at least 30 days prior to testing.

- Subpart FF waste disposal notification. If Subpart FF wastes are shipped offsite for treatment at another facility, a notification must accompany each shipment stating that the wastes contain benzene, which is required to be managed and treated in accordance with the provisions of Subpart FF (See 40 CFR §61.342(f)).

3.5 General Standards for Treatment Facilities (40 CFR §61.348)

The facility shall treat the waste received from Subpart FF waste generators to at least one of the following standards:

1. Remove benzene from the waste stream to a level less than 10 ppmw on a flow weighted annual average basis. The reduction of benzene concentration by dilution is not allowed [§61.348(a)(1)(I)].

2. Remove benzene from the waste stream by 99 percent or more on a mass basis [§61.348(a)(1)(ii)].

3. Destroy benzene in the waste stream by incinerating the waste in a combustion unit that achieves a destruction efficiency of 99 percent or greater for benzene [§61.348(a)(1)(iii)].

4. Return the waste to a process to generate a new product [§61.342(c)(1)(iii)].

Under the language of Subpart FF and EPA guidance, the regenerated carbon is considered a product, not a waste. As such, the Facility is not required to demonstrate compliance with the benzene removal or destruction requirements in the regenerated carbon, provided the carbon is legitimately redeployed as a regenerated carbon product. The Facility confirms this by ensuring its regenerated carbon meets product specifications and is placed into inventory for reuse. However, all equipment used to manage the spent carbon up to and including the multiple hearth and afterburner must be managed in accordance with Subpart FF equipment standards. These standards are set forth in 40 CFR §61.343 through §61.349 (as applicable). The requirements for each type of equipment are covered in the following section except for surface impoundments and oil-water separators, which are not present at the Facility.

The Facility may occasionally generate a wastewater from the discard of motive water used in the Facility's production process to slurry incoming spent carbon prior to reactivation. The motive water is assumed to become a waste at the point that the Facility determines it is no longer useable for its intended purpose. At that point of waste generation, if the

wastewater has a flow-weighted annual average benzene content of less than 10 ppmw, then it is exempt from further control requirements under §61.342(c)(2). If the flow-weighted annual average benzene concentration of discarded motive water is 10 ppmw or greater, the wastewater would need to be treated using a control device regulated by Subpart FF to achieve either a benzene content below 10 ppmw on a flow weighted annual average or 99% or more benzene removal on a mass basis, pursuant to §61.348(a)(1)(i) or (ii), or sent to a facility with a 61.342(f) notice that Subpart FF treatment is required.

All access doors or other potential openings shall be sealed and kept closed at all times when waste is being treated, except during inspection and maintenance. Visual inspections of each sealed opening shall be performed initially and quarterly thereafter to ensure that no cracks or gaps occur and that openings are sealed closed. All repairs of any identified gaps or broken seals shall be made within 15 days. Repairs may be delayed until the next unit shutdown if they cannot be completed without a partial or complete facility shutdown.

Facilities complying with standards numbered one and two above must also comply with the standards of 40 CFR §61.343 through §61.347, and §61.349 (if applicable). These sections provide the requirements for tanks, containers, surface impoundments, individual drain systems, oil-water separators, and closed vent systems. Since the Parker, Arizona facility does not operate surface impoundments, and oil-water separators subject to NESHAP regulations, these requirements will not be covered in the following section.

3.6 Standards for Tanks, Containers, Individual Drain Systems and Closed Vent Systems (40 CFR §§61.343, 61.345, 61.346, and 61.349)

Table 1 summarizes the equipment design, inspection, and repair requirement outlined in 40 CFR 60.343, 61.345, 61.346 and 61.349. These standards apply to:

- Tanks
- Containers
- Individual Drain Systems
- Closed Vent Systems
- Control Devices

Defects or other problems detected during equipment inspections must be corrected within the time frames outlined in Table 1. Repair may be delayed until the next facility shutdown if it is technically infeasible to make the repair or correction without a partial or complete facility shutdown.

Table 1 – Summary of Subpart FF Requirements

Component	Equipment Design	Inspection Methods	Inspection Frequency	Repair Deadline
Tanks (§61.343)	Fixed roof connected by closed vent to a control device; all potential openings shall be sealed closed except during inspection, repair, maintenance, removal, or sampling; the closed vent system and control device shall meet the requirements of §61.349 (discussed below).	Visual inspection for cracks and broken seals; Method 21 to verify fugitives < 500 ppmv.	Initial and quarterly visual inspections; Initial and annual Method 21 inspections.	45 days
	Fixed roof with pressure relief device maintained in a closed position except during relief events (limitations apply, see note below).	Visual inspection for cracks and broken seals; Method 21 to verify fugitives < 500 ppmv.	Initial and quarterly visual inspections; Initial and annual Method 21 inspections.	45 days
Note: *A tank may be operated without a closed vent system if:* *1) average water content is less than 10% by volume and maximum organic vapor pressure is less than 0.75 psia;* *2) maximum organic vapor pressure is less than 4.0 psia and tank capacity is less than 40,000 gallons;* **or** 3) *maximum organic vapor pressure is less than 11.1 psia and tank capacity is less than 20,000 gallons.*				
Containers (§61.345)	All containers shall remain sealed closed except during periods of loading, unloading, inspection, or sampling; liquids pumped into a container must be done with a submerged fill pipe.	Visual inspection for cracks and broken seals; Method 21 to verify fugitives < 500 ppmv for containers >111 gallons	Initial and quarterly visual inspections; Annual Method 21 inspections.	15 days
Note: *Wastes treated within containers must be equipped with a closed vent system meeting the requirements of §61.349 (discussed below). Containers shipped offsite for treatment must meet the notification requirements of §61.342(f).*				

Component	Equipment Design	Inspection Methods	Inspection Frequency	Repair Deadline
Individual Drain Systems (§61.346)	*Compliance option of §61.346(a):* Each individual drain system opening must be equipped with a closed vent system and control device. *Compliance option of §61.346(b):* Each drain must be equipped with water seal controls or a tightly sealed cap or plug; each sewer line shall be covered or enclosed with no visual gaps or cracks.	Visual inspection for cracks and broken seals. Method 21 to verify fugitive emissions <500 ppmv	Initial and quarterly visual inspections. Initial and annual Method 21 inspections.	15 days
Treatment Processes (§61.348)	Each treatment process must remove benzene to < 10 ppmw (dilution is not allowed), or remove or destroy benzene by ≥ 99 wt%; each treatment process must comply with the standards of §§61.343 - 61.347; compliance must be demonstrated either by engineering calculations (§61.356(e)) or performance tests (§61.355); all potential openings shall be sealed closed except during inspection and maintenance or return waste to a process to generate a new product (§61.342(c)(1)(iii).	Visual inspection for cracks and broken seals; inspection of units according to §§61.343 - 61.347.	Initial and quarterly visual inspections; inspection of units according to §§61.343 - 61.347.	15 days
Closed-vent Systems and Control Devices(§61.349)	The vent system shall remain closed and connected to a control device; bypass lines shall have a flow indicator or a car-seal or lock-and-key seal; all gauging and sampling devices shall be gas-tight except when gauging or sampling; control device must be monitored according to §61.354(c) (see note below); control device must be operated at all times when waste is present, except for maintenance and repair requires shutdown;	Visual inspection; Method 21 to verify fugitives < 500 ppmv.	Initial and quarterly visual inspections; Initial and annual Method 21 inspections.	First attempt: 5 days; Full repair: 15 days.
	An enclosed combustion device (e.g., a vapor incinerator, boiler, or process heater) must: reduce organic emissions by 95 wt%; achieve organic concentration ≤ 20 ppmv, corrected to 3% oxygen; or provide minimum residence time of 0.5 sec at minimum temperature of 760°C; vent must be introduced into flame zone of boiler or process heater (§61.349(a)(2)(i)).	Visual inspection; monitoring according to §61.354(c) (see note below).	Initial and quarterly visual inspections; daily monitoring device inspections (see note below).	First attempt: 5 days; Full repair: 15 days.

Component	Equipment Design	Inspection Methods	Inspection Frequency	Repair Deadline
	A vapor recovery system (e.g., carbon adsorption system or condenser) must: recover or control organic emissions by 95 wt%, or recover or control benzene emissions by 98 wt%; carbon canisters must be replaced immediately upon breakthrough (§61.349(a)(2)(ii)).	Visual inspection; monitoring according to §61.354(c) (see note below).	Initial and quarterly visual inspections; daily monitoring device inspections (see note below).	First attempt: 5 days; Full repair: 15 days.
	Any other control device must achieve organic control of 95 wt% or benzene control of 98 wt%.	Visual inspection; monitoring according to §61.354(c) (see note below).	Initial and quarterly visual inspections; daily monitoring device inspections (see note below).	First attempt: 5 days; Full repair: 15 days.

Note: *§61.354(c) specifies the following required monitoring of operations for control devices subject to §61.349; the data recorded by the monitoring equipment must be inspected at least* ***once*** *each operating day to ensure proper operation of the control device, which in pertinent part are as follows:*
(1) for a thermal vapor incinerator, a temperature monitoring device equipped with a continuous recorder;
(2) for a control device subject to §61.349(a)(2)(iv) (other devices), devices to monitor the parameters specified in §61.349(a)(2)(iv)(C); **and** *§61.354(d) specifies the required monitoring of carbon adsorption systems that do not regenerate the carbon bed directly on site (e.g., carbon canisters): organic or benzene outlet concentrations shall be monitored daily,* or *at intervals no greater than 20% of the design carbon replacement interval (whichever is greater), to indicate when breakthrough has occurred or replace carbon earlier than the design breakthrough period.*

3.7 Compliance Demonstration (40 CFR §§61.13, 61.355, and 61.356(e) - (f))

Subpart FF requires the owner or operator to demonstrate compliance with the applicable general standards for hazardous waste treatment facilities and the applicable standards for closed vent systems and control devices. Compliance may be demonstrated either through engineering calculations or performance testing, which are discussed in turn below.

3.7.1 Engineering Calculations (40 CFR §61.348(c)(1))

Compliance with the general standards for hazardous waste treatment facilities [§61.348(a)(1)(I) - (iii)] may be demonstrated with engineering calculations. These calculations must demonstrate compliance at maximum waste flow rate and maximum benzene content conditions and be available prior to facility start-up. As discussed in Section 3.9, these calculations shall be maintained for the life of the facility and include all supporting technical information (e.g., design specifications, drawings, etc.). See 40 CFR 61.356(e)(2) for additional information.

Carbon canisters and their associated closed vent systems must meet specific calculation requirements of 40 CFR 61.356(f)(2)(i)(G). Briefly, this analysis must consider the vent stream composition, benzene and constituent concentration, flow rate, relative humidity, and temperature. Based on these data, the operator must calculate the effective control capacity of the carbon canister and define the appropriate replacement interval to assure that the carbon canister maintains its control effectiveness.

For the afterburner, the specific calculation requirements are set forth in 40 CFR §61.356(f)(2)(i)(A). In general, this analysis must consider the vent stream composition, constituent concentrations, and flow rate. The design analysis shall also establish the design minimum and average temperature in the combustion zone and the combustion zone residence time.

3.7.2 Performance Testing (40 CFR §61.348(c)(2))

If emissions testing is used to demonstrate compliance, the tests must be performed within 90 days of start-up for new units, or April 7, 1993 for existing units. Additionally, the EPA can at anytime require that such testing be performed to demonstrate compliance with Subpart FF requirements [40 CFR 61.13(b)]. The results of the emissions tests shall be reported to EPA Region IX within 31 days following the completion of testing. As discussed in Section 3.9, the results should be retained for the life of the facility.

The specific source tests that may be performed in lieu of engineering calculations are as follows:

COMPLIANCE STANDARD	TEST METHODS REFERENCE
Remove benzene to a 10 ppmw concentration [§61.348(a)(1)(i)]	See §61.355(d)
Remove benzene from the waste stream by 99 percent or more on a mass basis [§61.348(a)(1)(ii)]	See §61.355(e)

COMPLIANCE STANDARD	TEST METHODS REFERENCE
Destroy benzene in the waste stream by incinerating the waste in a combustion unit that achieves a destruction efficiency of 99 percent or greater for benzene [§61.348(a)(1)(iii)]	See §61.355(f)
Meet control device performance requirements specified in §61.349(a)(2)	See §61.355(i)

3.7.3 Method 21 Testing (40 CFR §61.355(h))

All inspections performed using an organic vapor analyzer (OVA) shall be performed consistent with the requirements of EPA Method 21 from Appendix A of 40 CFR 60. Calibrations and testing shall also be performed consistent with 40 CFR 61.355(h).

3.8 Monitoring of Operations (40 CFR §§61.14 and 61.354)

Compliance monitoring must be performed as outlined below:

COMPLIANCE STANDARD	MONITORING METHODS AND FREQUENCY
Remove benzene to a 10 ppmw concentration [§61.348(a)(1)(l)].	Sample exiting streams on a monthly basis using the methods prescribed by §61.355(c); or, monitor a parameter or parameters on a continuous basis to assure proper system operation and inspect recorded data daily for each monitored parameter.
Remove benzene from the waste stream by 99 percent or more on a mass basis [§61.348(a)(1)(ii)].	Monitor a parameter or parameters on a continuous basis to assure proper system operation and inspect recorded data daily for each monitored parameter.
Destroy benzene in the waste stream by incinerating the waste in a combustion unit that achieves a destruction efficiency of 99 percent or greater for benzene [§61.348(a)(1)(iii)].	Monitor a parameter or parameters (e.g., temperature) on a continuous basis to assure proper system operation and inspect recorded data daily for each monitored parameter.
Meet control device performance requirements for carbon canisters as specified in §61.349(a)(2)	Replace canister at a specified interval as determined through engineering calculations; or, monitor the VOC content in the exhaust on a daily basis or at an interval not to exceed 20% of the design carbon replacement interval.

3.9 Recordkeeping Requirements (40 CFR §61.356)

All records required by Subpart FF shall be maintained in a readily accessible location at the facility site for a period not less than two years, unless otherwise specified below. The records that must be maintained include:

- A list of the streams subject to Subpart FF compliance and whether or not the waste stream is controlled for benzene emissions (§61.356(b)).

- For each waste stream not controlled in accordance with Subpart FF, all test results and other documentation used to define the stream identification, water content, whether or not the waste stream is process wastewater, annual waste quantity, range of benzene concentrations, annual average flow-weighted benzene concentration, and annual benzene quantity (§61.356(b)(1)).

- For each waste shipment sent offsite for treatment, the date the waste is shipped offsite, quantity of waste shipped offsite, the name and address of the facility receiving the waste, and a copy of the notice sent with the waste shipment (§61.356(c)).

- Engineering design documentation for all control equipment. The documentation should be retained for the life of the facility (§61.356(d)).

- A signed and dated statement certifying that the treatment unit is designed to operate at the documented performance level when the waste stream entering the facility is at the highest flow rate and benzene concentration. This signed statement should be retained for the life of the facility (§61.356(e)(1)).

- For closed-vent systems and control devices, a signed and dated statement certifying that each system and device is designed to operate at the documented performance level when the waste management unit vented to the control device is or would be operating at the highest load or capacity expected to occur. This signed statement must be retained for the life of the unit (§61.356(f)).

- If engineering calculations are used to demonstrate compliance with the general standards for treatment facilities [§61.348(a)(1)(I) - (iii)], a complete design analysis that includes supporting technical information (e.g., design specifications, etc.) should be maintained for the life of the facility (§61.356(e)(2)).

- For all performance test results used to demonstrate compliance with the general standards for treatment facilities [§61.348(a)(1)(I) - (iii)], maintain for the life of the facility the documentation required in 40 CFR §61.356(e)(3).

- A signed and dated statement certifying that the closed vent system and control device is designed to operate at the documented performance level at the highest load or capacity expected to occur (§61.356(f)(1)).

- If engineering calculations are used to determine control device performance, then a design analysis should be retained for the life of the control device that includes specifications, drawings, and other documentation supporting the calculations. For carbon canisters, the design analysis should include information required in 40 CFR §61.356(f)(2)(I)(G).

- For all test results used to determine control device performance, maintain testing results for the life of the control device as outlined in 40 CFR §61.356(f)(3).

- Visual inspection records that include the date of each inspection, the treatment unit or control equipment inspected, description of any problem identified, a description of the corrective action taken, and the date the corrective action was completed (§61.356(g)).

- Method 21 inspection records that include the dates of inspection, background level measured, and the maximum concentration measured at each potential leak interface. If a leak is detected, then the records shall include the location where the leak was detected, a description of the problem, a description of the corrective action taken, and the date the corrective action was completed (§61.356(h)).

- Dates of start-up and shutdown of the treatment unit, and periods when the treatment unit is not operating as designed (§61.356(i)(1) & (5)).

- Dates of start-up and shutdown of the closed-vent system, and periods when the closed-vent system is not operating as designed (§61.356(i)(1) & (3)).

- Testing results from all monthly waste stream sampling performed in accordance with 40 CFR §61.354(a)(1). The results should also include the date each test is performed (§61.356(i)(2)).

- Descriptions of any process parameters that are monitored to ensure the treatment unit is operating in compliance with Subpart FF. The descriptions should include reasons why the parameter(s) was/were selected. This documentation should be maintained for the life of the facility (§61.356(i)(3)).

- Descriptions of any process parameters that are continuously monitored to ensure the control device is operating in compliance with Subpart FF. The descriptions should include the control device's specifications, and reasons why the parameter(s) was/were selected. This documentation should be maintained for the life of the facility (§61.356(j)(2)).

- Periods and durations when the closed-vent system and control device are not operated as designed (§61.356(j)(3)).

- Date and time when the carbon canisters are monitored (if applicable), when breakthrough is measured (if applicable), and when the canister is replaced (§61.356(j)(10)).

3.10 Reporting Requirements (40 CFR §§61. 13(f) and 61.357)

The following reports shall be submitted to EPA Region IX:

- Performance test reports. These reports shall be submitted within 31 days following testing and should include the information required in 40 CFR §61.356(e)(3) or §61.356(f)(3), as applicable (§61.13(f)).

- Initial Subpart FF report. This report should have been submitted by April 7, 1993 for existing facilities, and be submitted at start-up for facilities constructed after January 7, 1993. The contents of the report are outlined in 40 CFR §61.357(a)(1) - (3).

Annual Subpart FF TAB report (Appendix D).1 As outlined in the rules, if the total amount of benzene waste included in the Facility TAB is equal to or greater than 1.0 Mg/yr (1.1 ton/yr), but less than 10 Mg/yr (11 ton/yr), the operator shall submit a report by April 7 each year updating the TAB, identifying the controlled/uncontrolled and organic/aqueous designations of each waste stream, along with other data described in 40 CFR §61.357(a)(1)-(3) (§61.357(c)).[2] If the Facility's TAB is 10 Mg/yr or greater, additional reporting is required pursuant to 40 CFR §61.357(d), including certification of equipment installation and quarterly reporting. The Facility may be deemed to know its TAB calculation throughout the year as wastes are received, and it is therefore essential that the Facility track this information continuously so that it can respond immediately before its TAB ever equals or exceeds 10 Mg/yr.

4.0 EVOQUA WATER TECHNOLOGIES, PARKER, ARIZONA FACILITY COMPLIANCE PLAN

4.1 NESHAP Subpart FF Applicability to the Parker, Arizona Facility

NESHAP Subparts A and FF apply to the spent carbon storage and treatment processes within the facility. All affected process units and storage tanks are equipped with controls to benzene emissions to the atmosphere.

The specific process components subject to Subpart FF compliance are as follows:

I.D. NO.	DESCRIPTION	APPLICABLE STANDARD	COMMENTS
N/A	Spent Carbon Containers	§61.345	Subpart FF wastes are stored in drums, vessels, and supersacks.
N/A	Debris Bin and Associated Drums	§61.345 §61.342(f)	Benzene wastes shipped offsite must meet the container reqts., and offsite

1 If the facility TAB is less than 1 Mg/yr, then no TAB report is required unless there is a change that could cause the TAB to increase to 1 Mg/yr or more.

2 Chemical plants, coke by-product recovery plants and refineries with a TAB equal to or greater than 1 Mg and less than 10 Mg/yr are usually not subject to BWON control requirements. 40 C.F.R. §61.342(a). Thus, the purpose of the annual report for these facilities is typically to confirm that the TAB remains below 10 Mg. However, TSD facilities that treat BWON-regulated wastes received from off-site facilities must provide the same degree of control as the generating facility would so they may be subject to BWON control even if their TAB is less than 10 Mg/yr.

I.D. NO.	DESCRIPTION	APPLICABLE STANDARD	COMMENTS
			shipment reqts.
H-1 H-2	Spent Carbon Unloading Hoppers Nos. 1 and 2 and associated transfer lines	§61.346(b)	These hoppers are individual drain systems, which are equipped with covers; additional controls of fugitive emissions from the hoppers is provided by carbon adsorption (WS-2).
T-1	Spent Carbon Storage Tank	§61.343	Tank vapors controlled by carbon adsorption (WS-1).
T-2	Spent Carbon Storage Tank	§61.343	Tank vapors controlled by carbon adsorption (WS-1).
T-5	Spent Carbon Storage Tank	§61.343	Tank vapors controlled by carbon adsorption (WS-1).
T-6	Spent Carbon Storage Tank	§61.343	Tank vapors controlled by carbon adsorption (WS-1).
T-9	Spent Carbon Storage Tank	§61.343	Tank vapors controlled by carbon adsorption (WS-1).
T-18	Furnace Feed Hopper	§61.343	Tank vapors controlled by carbon adsorption (WS-3)
RF-2	Reactivation Furnace No.2	§61.348	Regenerated carbon must meet product specifications
AB-2	Afterburner No. 2	§61.349(a)(2)(i)(c)	Minimum residence time of 0.5 seconds at a minimum temperature of 1400 F
C-5	Dewater Screw	§61.346(a)	Emissions routed to the afterburner (AB-2)
C-16	Weight belt	§61.346(a)	Emissions routed to the afterburner (AB-2)
WS-1	Carbon Adsorber No. 1	§61.349	Carbon Canister replaced prior to design breakthrough
WS-2	Carbon Adsorber No. 2	§61.349	Carbon Canister replaced prior to design breakthrough
WS-3	Carbon Adsorber No. 3	§61.349	Carbon Canister replaced prior to design breakthrough

The Parker, Arizona facility is required to regenerate spent carbon to a useful product. Compliance with 40 CFR §61.348 also requires that the upstream tanks, containers, individual drain systems and control devices noted in the table above must meet the applicable requirements of Subpart FF (i.e., §61.343, §61.345, §61.346 and §61.349).

The debris bin and associated drums, which are used to store FF wastes from the facility, must not only meet the container requirements of 40 CFR §61.345, but also the requirements of 40 CFR §342(f). Section 342(f) requires that a notice accompany each waste shipment indicating that the wastes must be treated in accordance with the standards of Subpart FF. Records must be maintained indicating the date the waste is shipped offsite, quantity of waste shipped offsite, the name and address of the facility receiving the waste, and a copy of the notice sent with the waste shipment (§61.356(c)).

Hoppers H-1 and H-2 are used to convey Subpart FF wastes from containers and other waste management units to the regeneration system. As such, these units are considered individual drain systems, which meet Subpart FF requirements under 61.346(b). Each of the units is equipped with a cover, which is kept closed when the hoppers are not being used to convey Subpart FF wastes. The associated lines that convey Subpart FF wastes from H-1 and H-2 to the Spent Carbon Storage Tanks (T-1, T-2, T-5 and T-6) are hard piping are inspected quarterly for any evidence of leaks (open valves, indications of low liquid levels, rips, tears, or cracks in equipment, etc.). Any repairs that are identified as required during these quarterly inspections are performed within 15 days, as required (See Section 4.4, below).

The process wastewater stream associated with the wet scrubber control system has been specifically excluded from NESHAP applicability since it does not come in contact with Subpart FF waste streams. Additionally, water that comes in contact with Subpart FF waste is also exempt from Subpart FF treatment requirements under 40 CFR §61.342(c) since it contains less than 10 ppmw total benzene on an annual weighted average basis. The drain system is also exempt from Subpart FF compliance since it does not handle Subpart FF waste. Subpart FF wastes, which are contained in closed drums and roll-offs are managed so that none of these materials is allowed to enter the maintenance drains within the facility during surface cleaning operations.

4.2 Compliance Responsibilities

The Plant Manager has the primary responsibility for overseeing the NESHAP Subpart FF compliance program for the Parker, Arizona facility. More specifically, the Plant Manager assures that all permitting, notifications, monitoring, inspections, recordkeeping, and reporting are performed in accordance with the applicable regulations. The Plant Manager is responsible for assuring that all needed repairs and other maintenance activities are performed as required. The Plant Operator is responsible for monitoring the day-to-day operation of the facility.

4.3 Permitting and Notifications

All proposed changes to the Parker, Arizona facility are reviewed by the Plant Manager or his designee to determine if the modification provisions of the NESHAP regulations have been triggered. In making this determination, the Environmental Plant Manager or his/her designee will determine whether or not the changes can potentially increase benzene emissions. If the changes will not increase benzene emissions, then the NESHAP modification provisions are not triggered. If the changes have the potential to increase facility benzene emissions, then the Environmental Health and Safety Manager or his/her designee will determine if the capital expenditure threshold will be exceeded by the project. As noted in Section 3.2, a capital expenditure is incurred for NESHAP applicability when the cost of the changes exceeds seven percent of the original facility cost.

If the changes are deemed as “modifications”, the Environmental Health and Safety Manager or his/her designee will prepare a permit application that conforms to the requirement of Section 3.3 and submit it to EPA Region IX. No facility changes will be made until EPA approves the application.

The Environmental Health and Safety Manager or his/her designee is responsible for making all notifications required by NESHAP Subpart A and Subpart FF. The contents of these notifications are outlined in Section 3.4. Copies of relevant notifications are maintained in Appendix B of this plan.

4.4 Inspection and Repair

The Environmental Health and Safety Manager or his/her designee performs all routine quarterly visual inspections of the facility. During these inspections, the Environmental Health and Safety Manager or his/her designee examines the stationary equipment listed in Section 4.1 and its interconnecting piping for cracks, gaps, or other problems. In addition, the Environmental Health and Safety Manager or his/her designee visually inspects all spent carbon containers maintained onsite for more than one quarter year. Each visual inspection is documented on the Visual Inspection Form and copies of completed forms are maintained in Appendix E.

The Environmental Health and Safety Manager or his/her designee performs the Method 21 inspections annually during periods when the facility is processing Subpart FF waste. During these inspections, the Environmental Health and Safety Manager or his/her designee inspects all potential leak sources listed on the Annual Method 21 Inspection Form (See Appendix F). The Environmental Health and Safety Manager or his/her designee documents the results of the inspection on the Annual Method 21 Inspection Form and maintains copies of the completed forms in Appendix F. Spent carbon containers maintained onsite for more than one year must be included in this inspection.

The initial inspections of Subpart FF waste containers delivered to the Parker, Arizona facility are completed by the respective generator of the waste. This inspection includes both a visual inspection of the container and a Method 21 inspection of all potential leak interfaces. As noted above, containers maintained for more than one quarter year at the facility, will be visually inspected by the Environmental Health and Safety Manager or his/her designee during the routine quarterly visual inspection. Furthermore, containers maintained onsite for more than one year must be inspected using Method 21.

The debris bin and baghouse drum shall be visually inspected and inspected using Method 21 by the Environmental Health and Safety Manager or his designee following initial loading with Subpart FF containing wastes. In addition, the debris bin and containers will be visually re-inspected if it is onsite for more than 90 days (with the exception of the debris bin which cannot be stored longer than 90 days). These inspections shall be documented in the Debris Bin and Associated Drums Inspection Log found in Appendix G.

All leaks (defined as an instrument reading exceeding 500 ppmv over background), openings, cracks or other problems identified during the visual and Method 21 inspections will be repaired within the time frames established in Table 1 (see Section 3.6, above). The Environmental Health and Safety Manager or his/her designee who detects the leak will work with the Plant Manager or his/her designee to complete the repair. Completed repairs will be documented on the affected inspection forms in Appendices F, G, or H.

If a repair cannot be completed within the specified time without a partial or complete facility shutdown, the Environmental Health and Safety Manager or his/her designee will document

in the affected inspection form in Appendices F, G, or H the reason why the repair is delayed. The Environmental Health and Safety Manager or his/her designee will ensure that all repairs are completed during the next process unit shutdown, and document in the affected inspection form the completion of the repair.

4.5 Monitoring

Compliance with the general treatment requirements are monitored as follows:

EQUIPMENT COMPONENT / MATERIAL	APPLICABLE STANDARD	MONITORING METHOD	FREQUENCY
Afterburner (AB-2)	§61.349(a)(2)(i)(c)	Temperature	Continuous
Wastewater in Contact with Spent Carbon Discharged to POTW	§61.342(c)(2)	Benzene concentration (minimum of three (3) samples) determined by methods prescribed by §61.355(c)(2)	Annual
Carbon Adsorber (WS-1)	§61.349(a)(2)(ii)	Calculations in Appendix C show that the canister must be replaced at least every 7.88 days.	7.88 days at a maximum or more frequently
Carbon Adsorber (WS-2)	§61.349(a)(2)(ii)	Calculations in Appendix C show that the canister must be replaced at least every 100 days.	100 days at a maximum or more frequently
Carbon Adsorber (WS-3)	§61.349(a)(2)(ii)	Calculations in Appendix C show that the canister must be replaced at least every 38 days.	38 days at a maximum or more frequently

The Plant Operator reviews all temperature readings on a daily basis to assure that the reactivation furnace is operating as designed, and the afterburner is maintained at a temperature greater than 760^{o}C (1400^{o}F). If the temperature data for the afterburner indicate a performance problem, the Plant Operator will correct the problem as soon as possible. The reasons justifying the use of temperature as the main monitoring parameter are provided in Appendix H.

To comply with the requirements of 40 CFR §61.356(b), the Environmental Health and Safety Manager or his/her designee shall verify on an annual basis the annual flow rate and the benzene concentration in the untreated wastewater in contact with spent carbon (minimum of 3 samples). Determinations shall assure that the benzene concentration in

the wastewater is less than 10 ppmw and records will be maintained in Appendix J.

The Plant Manager or his/her designee will replace the carbon in adsorbers WS-1, WS-2, and WS-3 in accordance with the schedule identified above. Immediately following adsorber replacement, the Plant Manager or his designee will document the change-out in the Carbon Canister Replacement Log included in Appendix I.

Any periods of malfunction, equipment start-up and shutdown will be logged by the Plant Operator in the Process Monitoring log. These logs are maintained in the file room.

4.6 Performance Testing

No emissions testing has been performed to demonstrate compliance with the applicable standards of Subpart FF. All compliance determinations have been performed through engineering calculations. Calculations documenting the performance of the carbon adsorbers are included in Appendix C.

4.7 Recordkeeping

The following table identifies all applicable Subpart A and FF records required to be maintained at the Parker, Arizona facility, the individual responsible for its maintenance, and the location where the records are stored. Unless otherwise noted in the table, the records will be maintained for a minimum of two years, as required by NESHAP regulations.

NESHAP FF RECORDKEEPING PLAN
EVOQUA WATER TECHNOLOGIES
PARKER, ARIZONA FACILITY

Record Description	Individual Responsible	Comments/Location
Notifications (§§61.09, 61.10, 61.13(c), and 61.342(f)) – *Note: the initial notification should be retained for the life of the facility*	Plant Manager	Appendix B of the Compliance Plan (see Section 3.4)
List of streams subject to Subpart FF	Plant Manager	Section 4.1 of the Compliance Plan
Total annual benzene reports	Plant Manager	Appendix D of the Compliance Plan
Date the debris bin and associated drums shipped offsite, quantity of waste shipped offsite, name and address of facility receiving waste (§61.356(c))	Plant Manager	Waste manifests in Plant Manager's office
Engineering design documentation of control equipment (§61.356(d))*	Plant Manager	Plant Manager's office

NESHAP FF RECORDKEEPING PLAN
EVOQUA WATER TECHNOLOGIES
PARKER, ARIZONA FACILITY

Record Description	Individual Responsible	Comments/Location
Engineering calculations demonstrating Control Equipment performance (§61.356(f)(2)(i)(G))*	Plant Manager	Appendix C of Compliance Plan
Test results demonstrating control equipment performance (§61.356(f)(3))*	N/A	Not Applicable. Calculations have been used in lieu of testing results.
Visual inspection records (§61.356(g))	Plant Manager	Appendices F and H of the Compliance Plan
Method 21 inspection records (§61.356(h))	Plant Manager	Appendices G and H of the Compliance Plan
Dates of start-up, shutdown, and malfunction of treatment unit (§61.356(i)(1) & (5))	Plant Operator	Process Monitoring Log maintained in Plant Manager's office
Testing results from all monthly sampling (§61.356(i)(3))	N/A	Not Applicable. No monthly sampling of regenerated carbon required since regenerated carbon is a product
Descriptions of process parameters monitored to ensure treatment unit performance (§61.356(i)(3))*	Plant Manager	Appendix H of the Compliance Plan
Dates of startup, shutdown, and malfunction of the carbon absorbers (§61.356(j)(1) & (3))	Plant Operator	Process Monitoring Log maintained in Plant Manager's office
Descriptions of process parameters monitored to ensure control device performance (§61.356(j)(2))*	N/A	Not Applicable. The Carbon Absorbers (WS-1, WS-2 and WS-3) are changed-out on a predetermined frequency; no monitoring is performed. See Appendix C of the Compliance Plan.
Date and time when the carbon absorbers are monitored and replaced (§61.356(j)(10))	Plant Manager	Replacement Logs are maintained in Appendix I of the Compliance Plan; monitoring for these units not required.

Records noted with an asterisk (*) must be maintained for the life of the facility. Otherwise, facility is to maintain records for two years (§61.356(a)).

4.8 Reporting

The Environmental Health and Safety Manager or his/her designee shall prepare the Annual Subpart FF Report and submit it to EPA to EPA Region IX by April 7th of each year whenever the facility TAB is 1 Mg/yr or greater. This report will cover the previous calendar year's activities and meet the requirements of 40 CFR 61.357(a)(1)-(3). Copies of the

report will be maintained in Appendix D.

APPENDIX A - RELEVANT TEXT OF NESHAP SUBPARTS A AND FF

for a source that has an initial startup date after the effective date.

(1) Periods of operation where there were exceedances of monitored parameters recorded under § 61.305(b).

(2) All periods recorded under § 61.305(c)(1) when the vent stream is diverted from the control device.

(3) All periods recorded under § 61.305(d) when the steam generating unit or process heater was not operating.

(4) All periods recorded under § 61.305(e) in which the pilot flame of the flare was absent.

(5) All times recorded under § 61.305(c)(2) when maintenance is performed on car-sealed valves, when the car seal is broken, and when the valve position is changed.

(g) The owner or operator of an affected facility shall keep the vapor-tightness documentation required under § 61.302 (d) and (e) on file at the affected facility in a permanent form available for inspection.

(h) The owner or operator of an affected facility shall update the documentation file required under § 61.302 (d) and (e) for each tank truck, railcar, or marine vessel at least once per year to reflect current test results as determined by the appropriate method. The owner or operator shall include, as a minimum, the following information in this documentation:

(1) Test title;

(2) Tank truck, railcar, or marine vessel owner and address;

(3) Tank truck, railcar, or marine vessel identification number;

(4) Testing location;

(5) Date of test;

(6) Tester name and signature;

(7) Witnessing inspector: name, signature, and affiliation; and

(8) Test results, including, for railcars and tank trucks, the initial pressure up to which the tank was pressured at the start of the test.

(i) Each owner or operator of an affected facility complying with § 61.300(b) or § 61.300(d) shall record the following information. The first year after promulgation the owner or operator shall submit a report containing the requested information to the Director of the Emission Standards Division, (MD–13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711. After the first year, the owner or operator shall continue to record; however, no reporting is required. The information shall be made available if requested. The information shall include, as a minimum:

(1) The affected facility's name and address;

(2) The weight percent of the benzene loaded;

(3) The type of vessel loaded (i.e., tank truck, railcar, or marine vessel); and

(4) The annual amount of benzene loaded into each type of vessel.

[55 FR 8341, Mar. 7, 1990, as amended at 65 FR 62159, Oct. 17, 2000]

§ 61.306 Delegation of authority.

(a) In delegating implementation and enforcement authority to a State under section 112(d) of the Act, the authorities contained in paragraph (b) of this section shall be retained by the Administrator and not transferred to a State.

(b) Authorities which will not be delegated to States: No restrictions.

Subparts CC–EE [Reserved]

Subpart FF—National Emission Standard for Benzene Waste Operations

SOURCE: 55 FR 8346, Mar. 7, 1990, unless otherwise noted.

§ 61.340 Applicability.

(a) The provisions of this subpart apply to owners and operators of chemical manufacturing plants, coke by-product recovery plants, and petroleum refineries.

(b) The provisions of this subpart apply to owners and operators of hazardous waste treatment, storage, and disposal facilities that treat, store, or dispose of hazardous waste generated by any facility listed in paragraph (a) of this section. The waste streams at hazardous waste treatment, storage, and disposal facilities subject to the provisions of this subpart are the benzene-containing hazardous waste from any facility listed in paragraph (a) of

this section. A hazardous waste treatment, storage, and disposal facility is a facility that must obtain a hazardous waste management permit under subtitle C of the Solid Waste Disposal Act.

(c) At each facility identified in paragraph (a) or (b) of this section, the following waste is exempt from the requirements of this subpart:

(1) Waste in the form of gases or vapors that is emitted from process fluids:

(2) Waste that is contained in a segregated stormwater sewer system.

(d) At each facility identified in paragraph (a) or (b) of this section, any gaseous stream from a waste management unit, treatment process, or wastewater treatment system routed to a fuel gas system, as defined in § 61.341, is exempt from this subpart. No testing, monitoring, recordkeeping, or reporting is required under this subpart for any gaseous stream from a waste management unit, treatment process, or wastewater treatment unit routed to a fuel gas system.

[55 FR 8346, Mar. 7, 1990, as amended at 55 FR 37231, Sept. 10, 1990; 58 FR 3095, Jan. 7, 1993; 67 FR 68531, Nov. 12, 2002]

§ 61.341 Definitions.

Benzene concentration means the fraction by weight of benzene in a waste as determined in accordance with the procedures specified in § 61.355 of this subpart.

Car-seal means a seal that is placed on a device that is used to change the position of a valve (e.g., from opened to closed) in such a way that the position of the valve cannot be changed without breaking the seal.

Chemical manufacturing plant means any facility engaged in the production of chemicals by chemical, thermal, physical, or biological processes for use as a product, co-product, by-product, or intermediate including but not limited to industrial organic chemicals, organic pesticide products, pharmaceutical preparations, paint and allied products, fertilizers, and agricultural chemicals. Examples of chemical manufacturing plants include facilities at which process units are operated to produce one or more of the following chemicals: benzenesulfonic acid, benzene, chlorobenzene, cumene, cyclohexane, ethylene, ethylbenzene, hydroquinone, linear alklylbenzene, nitrobenzene, resorcinol, sulfolane, or styrene.

Closed-vent system means a system that is not open to the atmosphere and is composed of piping, ductwork, connections, and, if necessary, flow inducing devices that transport gas or vapor from an emission source to a control device.

Coke by-product recovery plant means any facility designed and operated for the separation and recovery of coal tar derivatives (by-products) evolved from coal during the coking process of a coke oven battery.

Container means any portable waste management unit in which a material is stored, transported, treated, or otherwise handled. Examples of containers are drums, barrels, tank trucks, barges, dumpsters, tank cars, dump trucks, and ships.

Control device means an enclosed combustion device, vapor recovery system, or flare.

Cover means a device or system which is placed on or over a waste placed in a waste management unit so that the entire waste surface area is enclosed and sealed to minimize air emissions. A cover may have openings necessary for operation, inspection, and maintenance of the waste management unit such as access hatches, sampling ports, and gauge wells provided that each opening is closed and sealed when not in use. Example of covers include a fixed roof installed on a tank, a lid installed on a container, and an air-supported enclosure installed over a waste management unit.

External floating roof means a pontoon-type or double-deck type cover with certain rim sealing mechanisms that rests on the liquid surface in a waste management unit with no fixed roof.

Facility means all process units and product tanks that generate waste within a stationary source, and all waste management units that are used for waste treatment, storage, or disposal within a stationary source.

Fixed roof means a cover that is mounted on a waste management unit in a stationary manner and that does

not move with fluctuations in liquid level.

Floating roof means a cover with certain rim sealing mechanisms consisting of a double deck, pontoon single deck, internal floating cover or covered floating roof, which rests upon and is supported by the liquid being contained, and is equipped with a closure seal or seals to close the space between the roof edge and unit wall.

Flow indicator means a device which indicates whether gas flow is present in a line or vent system.

Fuel gas system means the offsite and onsite piping and control system that gathers gaseous streams generated by facility operations, may blend them with sources of gas, if available, and transports the blended gaseous fuel at suitable pressures for use as fuel in heaters, furnaces, boilers, incinerators, gas turbines, and other combustion devices located within or outside the facility. The fuel is piped directly to each individual combustion device, and the system typically operates at pressures over atmospheric.

Individual drain system means the system used to convey waste from a process unit, product storage tank, or waste management unit to a waste management unit. The term includes all process drains and common junction boxes, together with their associated sewer lines and other junction boxes, down to the receiving waste management unit.

Internal floating roof means a cover that rests or floats on the liquid surface inside a waste management unit that has a fixed roof.

Liquid-mounted seal means a foam or liquid-filled primary seal mounted in contact with the liquid between the waste management unit wall and the floating roof continuously around the circumference.

Loading means the introduction of waste into a waste management unit but not necessarily to complete capacity (also referred to as filling).

Maximum organic vapor pressure means the equilibrium partial pressure exerted by the waste at the temperature equal to the highest calendar-month average of the waste storage temperature for waste stored above or below the ambient temperature or at the local maximum monthly average temperature as reported by the National Weather Service for waste stored at the ambient temperature, as determined:

(1) In accordance with § 60.17(c); or

(2) As obtained from standard reference texts; or

(3) In accordance with § 60.17(a)(37); or

(4) Any other method approved by the Administrator.

No detectable emissions means less than 500 parts per million by volume (ppmv) above background levels, as measured by a detection instrument reading in accordance with the procedures specified in § 61.355(h) of this subpart.

Oil-water separator means a waste management unit, generally a tank or surface impoundment, used to separate oil from water. An oil-water separator consists of not only the separation unit but also the forebay and other separator basins, skimmers, weirs, grit chambers, sludge hoppers, and bar screens that are located directly after the individual drain system and prior to additional treatment units such as an air flotation unit, clarifier, or biological treatment unit. Examples of an oil-water separator incude an API separator, parallel-plate interceptor, and corrugated-plate interceptor with the associated ancillary equipment.

Petroleum refinery means any facility engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oils, lubricants, or other products through the distillation of petroleum, or through the redistillation, cracking, or reforming of unfinished petroleum derivatives.

Petroleum means the crude oil removed from the earth and the oils derived from tar sands, shale, and coal.

Point of waste generation means the location where the waste stream exits the process unit component or storage tank prior to handling or treatment in an operation that is not an integral part of the production process, or in the case of waste management units that generate new wastes after treatment, the location where the waste stream exits the waste management unit component.

Process unit means equipment assembled and connected by pipes or ducts to

produce intermediate or final products. A process unit can be operated independently if supplied with sufficient fuel or raw materials and sufficient product storage facilities.

Process unit turnaround means the shutting down of the operations of a process unit, the purging of the contents of the process unit, the maintenance or repair work, followed by restarting of the process.

Process unit turnaround waste means a waste that is generated as a result of a process unit turnaround.

Process wastewater means water which comes in contact with benzene during manufacturing or processing operations conducted within a process unit. Process wastewater is not organic wastes, process fluids, product tank drawdown, cooling tower blowdown, steam trap condensate, or landfill leachate.

Process wastewater stream means a waste stream that contains only process wastewater.

Product tank means a stationary unit that is designed to contain an accumulation of materials that are fed to or produced by a process unit, and is constructed primarily of non-earthen materials (e.g., wood, concrete, steel, plastic) which provide structural support.

Product tank drawdown means any material or mixture of materials discharged from a product tank for the purpose of removing water or other contaminants from the product tank.

Safety device means a closure device such as a pressure relief valve, frangible disc, fusible plug, or any other type of device which functions exclusively to prevent physical damage or permanent deformation to a unit or its air emission control equipment by venting gases or vapors directly to the atmosphere during unsafe conditions resulting from an unplanned, accidental, or emergency event. For the purpose of this subpart, a safety device is not used for routine venting of gases or vapors from the vapor headspace underneath a cover such as during filling of the unit or to adjust the pressure in this vapor headspace in response to normal daily diurnal ambient temperature fluctuations. A safety device is designed to remain in a closed position during normal operations and open only when the internal pressure, or another relevant parameter, exceeds the device threshold setting applicable to the air emission control equipment as determined by the owner or operator based on manufacturer recommendations, applicable regulations, fire protection and prevention codes, standard engineering codes and practices, or other requirements for the safe handling of flammable, ignitable, explosive, reactive, or hazardous materials.

Segregated stormwater sewer system means a drain and collection system designed and operated for the sole purpose of collecting rainfall runoff at a facility, and which is segregated from all other individual drain systems.

Sewer line means a lateral, trunk line, branch line, or other enclosed conduit used to convey waste to a downstream waste management unit.

Slop oil means the floating oil and solids that accumulate on the surface of an oil-water separator.

Sour water stream means a stream that:

(1) Contains ammonia or sulfur compounds (usually hydrogen sulfide) at concentrations of 10 ppm by weight or more;

(2) Is generated from separation of water from a feed stock, intermediate, or product that contained ammonia or sulfur compounds; and

(3) Requires treatment to remove the ammonia or sulfur compounds.

Sour water stripper means a unit that:

(1) Is designed and operated to remove ammonia or sulfur compounds (usually hydrogen sulfide) from sour water streams;

(2) Has the sour water streams transferred to the stripper through hard piping or other enclosed system; and

(3) Is operated in such a manner that the offgases are sent to a sulfur recovery unit, processing unit, incinerator, flare, or other combustion device.

Surface impoundment means a waste management unit which is a natural topographic depression, man-made excavation, or diked area formed primarily of earthen materials (although it may be lined with man-made materials), which is designed to hold an accumulation of liquid wastes or waste containing free liquids, and which is

not an injection well. Examples of surface impoundments are holding, storage, settling, and aeration pits, ponds, and lagoons.

Tank means a stationary waste management unit that is designed to contain an accumulation of waste and is constructed primarily of nonearthen materials (e.g., wood, concrete, steel, plastic) which provide structural support.

Treatment process means a stream stripping unit, thin-film evaporation unit, waste incinerator, or any other process used to comply with §61.348 of this subpart.

Vapor-mounted seal means a foam-filled primary seal mounted continuously around the perimeter of a waste management unit so there is an annular vapor space underneath the seal. The annular vapor space is bounded by the bottom of the primary seal, the unit wall, the liquid surface, and the floating roof.

Waste means any material resulting from industrial, commercial, mining or agricultural operations, or from community activities that is discarded or is being accumulated, stored, or physically, chemically, thermally, or biologically treated prior to being discarded, recycled, or discharged.

Waste management unit means a piece of equipment, structure, or transport mechanism used in handling, storage, treatment, or disposal of waste. Examples of a waste management unit include a tank, surface impoundment, container, oil-water separator, individual drain system, steam stripping unit, thin-film evaporation unit, waste incinerator, and landfill.

Waste stream means the waste generated by a particular process unit, product tank, or waste management unit. The characteristics of the waste stream (e.g., flow rate, benzene concentration, water content) are determined at the point of waste generation. Examples of a waste stream include process wastewater, product tank drawdown, sludge and slop oil removed from waste management units, and landfill leachate.

Wastewater treatment system means any component, piece of equipment, or installation that receives, manages, or treats process wastewater, product tank drawdown, or landfill leachate prior to direct or indirect discharge in accordance with the National Pollutant Discharge Elimination System permit regulations under 40 CFR part 122. These systems typically include individual drain systems, oil-water separators, air flotation units, equalization tanks, and biological treatment units.

Water seal controls means a seal pot, p-leg trap, or other type of trap filled with water (e.g., flooded sewers that maintain water levels adequate to prevent air flow through the system) that creates a water barrier between the sewer line and the atmosphere. The water level of the seal must be maintained in the vertical leg of a drain in order to be considered a water seal.

[55 FR 8346, Mar. 7, 1990; 55 FR 12444, Apr. 3, 1990, as amended at 58 FR 3095, Jan. 7, 1993; 67 FR 68531, Nov. 12, 2002]

§61.342 Standards: General.

(a) An owner or operator of a facility at which the total annual benzene quantity from facility waste is less than 10 megagrams per year (Mg/yr) (11 ton/yr) shall be exempt from the requirements of paragraphs (b) and (c) of this section. The total annual benzene quantity from facility waste is the sum of the annual benzene quantity for each waste stream at the facility that has a flow-weighted annual average water content greater than 10 percent or that is mixed with water, or other wastes, at any time and the mixture has an annual average water content greater than 10 percent. The benzene quantity in a waste stream is to be counted only once without multiple counting if other waste streams are mixed with or generated from the original waste stream. Other specific requirements for calculating the total annual benzene waste quantity are as follows:

(1) Wastes that are exempted from control under §§61.342(c)(2) and 61.342(c)(3) are included in the calculation of the total annual benzene quantity if they have an annual average water content greater than 10 percent, or if they are mixed with water or other wastes at any time and the mixture has an annual average water content greater than 10 percent.

(2) The benzene in a material subject to this subpart that is sold is included in the calculation of the total annual benzene quantity if the material has an annual average water content greater than 10 percent.

(3) Benzene in wastes generated by remediation activities conducted at the facility, such as the excavation of contaminated soil, pumping and treatment of groundwater, and the recovery of product from soil or groundwater, are not included in the calculation of total annual benzene quantity for that facility. If the facility's total annual benzene quantity is 10 Mg/yr (11 ton/yr) or more, wastes generated by remediation activities are subject to the requirements of paragraphs (c) through (h) of this section. If the facility is managing remediation waste generated offsite, the benzene in this waste shall be included in the calculation of total annual benzene quantity in facility waste, if the waste streams have an annual average water content greater than 10 percent, or if they are mixed with water or other wastes at any time and the mixture has an annual average water content greater than 10 percent.

(4) The total annual benzene quantity is determined based upon the quantity of benzene in the waste before any waste treatment occurs to remove the benzene except as specified in § 61.355(c)(1)(i) (A) through (C).

(b) Each owner or operator of a facility at which the total annual benzene quantity from facility waste is equal to or greater than 10 Mg/yr (11 ton/yr) as determined in paragraph (a) of this section shall be in compliance with the requirements of paragraphs (c) through (h) of this section no later than 90 days following the effective date, unless a waiver of compliance has been obtained under § 61.11, or by the initial startup for a new source with an initial startup after the effective date.

(1) The owner or operator of an existing source unable to comply with the rule within the required time may request a waiver of compliance under § 61.10.

(2) As part of the waiver application, the owner or operator shall submit to the Administrator a plan under § 61.10(b)(3) that is an enforceable commitment to obtain environmental benefits to mitigate the benzene emissions that result from extending the compliance date. The plan shall include the following information:

(i) A description of the method of compliance, including the control approach, schedule for installing controls, and quantity of the benzene emissions that result from extending the compliance date;

(ii) If the control approach involves a compliance strategy designed to obtain integrated compliance with multiple regulatory requirements, a description of the other regulations involved and their effective dates; and

(iii) A description of the actions to be taken at the facility to obtain mitigating environmental benefits, including how the benefits will be obtained, the schedule for these actions, and an estimate of the quantifiable benefits that directly result from these actions.

(c) Each owner or operator of a facility at which the total annual benzene quantity from facility waste is equal to or greater than 10 Mg/yr (11 ton/yr) as determined in paragraph (a) of this section shall manage and treat the facility waste as follows:

(1) For each waste stream that contains benzene, including (but not limited to) organic waste streams that contain less than 10 percent water and aqueous waste streams, even if the wastes are not discharged to an individual drain system, the owner or operator shall:

(i) Remove or destroy the benzene contained in the waste using a treatment process or wastewater treatment system that complies with the standards specified in § 61.348 of this subpart.

(ii) Comply with the standards specified in §§ 61.343 through 61.347 of this subpart for each waste management unit that receives or manages the waste stream prior to and during treatment of the waste stream in accordance with paragraph (c)(1)(i) of this section.

(iii) Each waste management unit used to manage or treat waste streams that will be recycled to a process shall comply with the standards specified in §§ 61.343 through 61.347. Once the waste stream is recycled to a process, including to a tank used for the storage of production process feed, product, or

product intermediates, unless this tank is used primarily for the storage of wastes, the material is no longer subject to paragraph (c) of this section.

(2) A waste stream is exempt from paragraph (c)(1) of this section provided that the owner or operator demonstrates initially and, thereafter, at least once per year that the flow-weighted annual average benzene concentration for the waste stream is less than 10 ppmw as determined by the procedures specified in § 61.355(c)(2) or § 61.355(c)(3).

(3) A waste stream is exempt from paragraph (c)(1) of this section provided that the owner or operator demonstrates initially and, thereafter, at least once per year that the conditions specified in either paragraph (c)(3)(i) or (c)(3)(ii) of this section are met.

(i) The waste stream is process wastewater that has a flow rate less than 0.02 liters per minute (0.005 gallons per minute) or an annual wastewater quantity of less than 10 Mg/yr (11 ton/yr); or

(ii) All of the following conditions are met:

(A) The owner or operator does not choose to exempt process wastewater under paragraph (c)(3)(i) of this section,

(B) The total annual benzene quantity in all waste streams chosen for exemption in paragraph (c)(3)(ii) of this section does not exceed 2.0 Mg/yr (2.2 ton/yr) as determined in the procedures in § 61.355(j), and

(C) The total annual benzene quantity in a waste stream chosen for exemption, including process unit turnaround waste, is determined for the year in which the waste is generated.

(d) As an alternative to the requirements specified in paragraphs (c) and (e) of this section, an owner or operator of a facility at which the total annual benzene quantity from facility waste is equal to or greater than 10 Mg/yr (11 ton/yr) as determined in paragraph (a) of this section may elect to manage and treat the facility waste as follows:

(1) The owner or operator shall manage and treat facility waste other than process wastewater in accordance with the requirements of paragraph (c)(1) of this section.

(2) The owner or operator shall manage and treat process wastewater in accordance with the following requirements:

(i) Process wastewater shall be treated to achieve a total annual benzene quantity from facility process wastewater less than 1 Mg/yr (1.1 ton/yr). Total annual benzene from facility process wastewater shall be determined by adding together the annual benzene quantity at the point of waste generation for each untreated process wastewater stream plus the annual benzene quantity exiting the treatment process for each process wastewater stream treated in accordance with the requirements of paragraph (c)(1)(i) of this section.

(ii) Each treated process wastewater stream identified in paragraph (d)(2)(i) of this section shall be managed and treated in accordance with paragraph (c)(1) of this section.

(iii) Each untreated process wastewater stream identified in paragraph (d)(2)(i) of this section is exempt from the requirements of paragraph (c)(1) of this section.

(e) As an alternative to the requirements specified in paragraphs (c) and (d) of this section, an owner or operator of a facility at which the total annual benzene quantity from facility waste is equal to or greater than 10 Mg/yr (11 ton/yr) as determined in paragraph (a) of this section may elect to manage and treat the facility waste as follows:

(1) The owner or operator shall manage and treat facility waste with a flow-weighted annual average water content of less than 10 percent in accordance with the requirements of paragraph (c)(1) of this section; and

(2) The owner or operator shall manage and treat facility waste (including remediation and process unit turnaround waste) with a flow-weighted annual average water content of 10 percent or greater, on a volume basis as total water, and each waste stream that is mixed with water or wastes at any time such that the resulting mixture has an annual water content greater than 10 percent, in accordance with the following:

(i) The benzene quantity for the wastes described in paragraph (e)(2) of

this section must be equal to or less than 6.0 Mg/yr (6.6 ton/yr), as determined in § 61.355(k). Wastes as described in paragraph (e)(2) of this section that are transferred offsite shall be included in the determination of benzene quantity as provided in § 61.355(k). The provisions of paragraph (f) of this section shall not apply to any owner or operator who elects to comply with the provisions of paragraph (e) of this section.

(ii) The determination of benzene quantity for each waste stream defined in paragraph (e)(2) of this section shall be made in accordance with § 61.355(k).

(f) Rather than treating the waste onsite, an owner or operator may elect to comply with paragraph (c)(1)(i) of this section by transferring the waste offsite to another facility where the waste is treated in accordance with the requirements of paragraph (c)(1)(i) of this section. The owner or operator transferring the waste shall:

(1) Comply with the standards specified in §§ 61.343 through 61.347 of this subpart for each waste management unit that receives or manages the waste prior to shipment of the waste offsite.

(2) Include with each offsite waste shipment a notice stating that the waste contains benzene which is required to be managed and treated in accordance with the provisions of this subpart.

(g) Compliance with this subpart will be determined by review of facility records and results from tests and inspections using methods and procedures specified in § 61.355 of this subpart.

(h) Permission to use an alternative means of compliance to meet the requirements of §§ 61.342 through 61.352 of this subpart may be granted by the Administrator as provided in § 61.353 of this subpart.

[55 FR 8346, Mar. 7, 1990, as amended at 58 FR 3095, Jan. 7, 1993; 65 FR 62159, 62160, Oct. 17, 2000]

§ 61.343 Standards: Tanks.

(a) Except as provided in paragraph (b) of this section and in § 61.351, the owner or operator must meet the standards in paragraph (a)(1) or (2) of this section for each tank in which the waste stream is placed in accordance with § 61.342 (c)(1)(ii). The standards in this section apply to the treatment and storage of the waste stream in a tank, including dewatering.

(1) The owner or operator shall install, operate, and maintain a fixed-roof and closed-vent system that routes all organic vapors vented from the tank to a control device.

(i) The fixed-roof shall meet the following requirements:

(A) The cover and all openings (e.g., access hatches, sampling ports, and gauge wells) shall be designed to operate with no detectable emissions as indicated by an instrument reading of less than 500 ppmv above background, as determined initially and thereafter at least once per year by the methods specified in § 61.355(h) of this subpart.

(B) Each opening shall be maintained in a closed, sealed position (e.g., covered by a lid that is gasketed and latched) at all times that waste is in the tank except when it is necessary to use the opening for waste sampling or removal, or for equipment inspection, maintenance, or repair.

(C) If the cover and closed-vent system operate such that the tank is maintained at a pressure less than atmospheric pressure, then paragraph (a)(1)(i)(B) of this section does not apply to any opening that meets all of thefollowing conditions:

(*1*) The purpose of the opening is to provide dilution air to reduce the explosion hazard;

(*2*) The opening is designed to operate with no detectable emissions as indicated by an instrument reading of less than 500 ppmv above background, as determined initially and thereafter at least once per year by the methods specified in § 61.355(h); and

(*3*) The pressure is monitored continuously to ensure that the pressure in the tank remains below atmospheric pressure.

(ii) The closed-vent system and control device shall be designed and operated in accordance with the requirements of § 61.349 of this subpart.

(2) The owner or operator must install, operate, and maintain an enclosure and closed-vent system that routes all organic vapors vented from the tank, located inside the enclosure, to a control device in accordance with

the requirements specified in paragraph (e) of this section.

(b) For a tank that meets all the conditions specified in paragraph (b)(1) of this section, the owner or operator may elect to comply with paragraph (b)(2) of this section as an alternative to the requirements specified in paragraph (a)(1) of this section.

(1) The waste managed in the tank complying with paragraph (b)(2) of this section shall meet all of the following conditions:

(i) Each waste stream managed in the tank must have a flow-weighted annual average water content less than or equal to 10 percent water, on a volume basis as total water.

(ii) The waste managed in the tank either:

(A) Has a maximum organic vapor pressure less than 5.2 kilopascals (kPa) (0.75 pounds per square inch (psi));

(B) Has a maximum organic vapor pressure less than 27.6 kPa (4.0 psi) and is managed in a tank having design capacity less than 151 m^3 (40,000 gal); or

(C) Has a maximum organic vapor pressure less than 76.6 kPa (11.1 psi) and is managed in a tank having a design capacity less than 75 m^3 (20,000 gal).

(2) The owner or operator shall install, operate, and maintain a fixed roof as specified in paragraph (a)(1)(i).

(3) For each tank complying with paragraph (b) of this section, one or more devices which vent directly to the atmosphere may be used on the tank provided each device remains in a closed, sealed position during normal operations except when the device needs to open to prevent physical damage or permanent deformation of the tank or cover resulting from filling or emptying the tank, diurnal temperature changes, atmospheric pressure changes or malfunction of the unit in accordance with good engineering and safety practices for handling flammable, explosive, or other hazardous materials.

(c) Each fixed-roof, seal, access door, and all other openings shall be checked by visual inspection initially and quarterly thereafter to ensure that no cracks or gaps occur and that access doors and other openings are closed and gasketed properly.

(d) Except as provided in § 61.350 of this subpart, when a broken seal or gasket or other problem is identified, or when detectable emissions are measured, first efforts at repair shall be made as soon as practicable, but not later than 45 calendar days after identification.

(e) Each owner or operator who controls air pollutant emissions by using an enclosure vented through a closed-vent system to a control device must meet the requirements specified in paragraphs (e)(1) through (4) of this section.

(1) The tank must be located inside a total enclosure. The enclosure must be designed and operated in accordance with the criteria for a permanent total enclosure as specified in ''Procedure T—Criteria for and Verification of a Permanent or Temporary Total Enclosure'' in 40 CFR 52.741, appendix B. The enclosure may have permanent or temporary openings to allow worker access; passage of material into or out of the enclosure by conveyor, vehicles, or other mechanical means; entry of permanent mechanical or electrical equipment; or direct airflow into the enclosure. The owner or operator must perform the verification procedure for the enclosure as specified in section 5.0 of Procedure T initially when the enclosure is first installed and, thereafter, annually. A facility that has conducted an initial compliance demonstration and that performs annual compliance demonstrations in accordance with the requirements for Tank Level 2 control requirements 40 CFR 264.1084(i) or 40 CFR 265(i) is not required to make repeat demonstrations of initial and continuous compliance for the purposes of this subpart.

(2) The enclosure must be vented through a closed-vent system to a control device that is designed and operated in accordance with the standards for control devices specified in § 61.349.

(3) Safety devices, as defined in this subpart, may be installed and operated as necessary on any enclosure, closed-vent system, or control device used to comply with the requirements of paragraphs (e)(1) and (2) of this section.

(4) The closed-vent system must be designed and operated in accordance with the requirements of § 61.349.

[55 FR 8346, Mar. 7, 1990, as amended at 55 FR 18331, May 2, 1990; 58 FR 3096, Jan. 7, 1993; 67 FR 68532, Nov. 12, 2002; 68 FR 6082, Feb. 6, 2003; 68 FR 67935, Dec. 4, 2003]

§ 61.344 Standards: Surface impoundments.

(a) The owner or operator shall meet the following standards for each surface impoundment in which waste is placed in accordance with § 61.342(c)(1)(ii) of this subpart:

(1) The owner or operator shall install, operate, and maintain on each surface impoundment a cover (e.g., air-supported structure or rigid cover) and closed-vent system that routes all organic vapors vented from the surface impoundment to a control device.

(i) The cover shall meet the following requirements:

(A) The cover and all openings (e.g., access hatches, sampling ports, and gauge wells) shall be designed to operate with no detectable emissions as indicated by an instrument reading of less than 500 ppmv above background, initially and thereafter at least once per year by the methods specified in § 61.355(h) of this subpart.

(B) Each opening shall be maintained in a closed, sealed position (e.g., covered by a lid that is gasketed and latched) at all times that waste is in the surface impoundment except when it is necessary to use the opening for waste sampling or removal, or for equipment inspection, maintenance, or repair.

(C) If the cover and closed-vent system operate such that the enclosure of the surface impoundment is maintained at a pressure less than atmospheric pressure, then paragraph (a)(1)(i)(B) of this section does not apply to any opening that meets all of the following conditions:

(*1*) The purpose of the opening is to provide dilution air to reduce the explosion hazard;

(*2*) The opening is designed to operate with no detectable emissions as indicated by an instrument reading of less than 500 ppmv above background, as determined initially and thereafter at least once per year by the methods specified in § 61.355(h) of this subpart; and

(*3*) The pressure is monitored continuously to ensure that the pressure in the enclosure of the surface impoundment remains below atmospheric pressure.

(D) The cover shall be used at all times that waste is placed in the surface impoundment except during removal of treatment residuals in accordance with 40 CFR 268.4 or closure of the surface impoundment in accordance with 40 CFR 264.228. (Note: the treatment residuals generated by these activities may be subject to the requirements of this part.)

(ii) The closed-vent system and control device shall be designed and operated in accordance with § 61.349 of this subpart.

(b) Each cover seal, access hatch, and all other openings shall be checked by visual inspection initially and quarterly thereafter to ensure that no cracks or gaps occur and that access hatches and other openings are closed and gasketed properly.

(c) Except as provided in § 61.350 of this subpart, when a broken seal or gasket or other problem is identified, or when detectable emissions are measured, first efforts at repair shall be made as soon as practicable, but not later than 15 calendar days after identification.

[55 FR 8346, Mar. 7, 1990, as amended at 58 FR 3097, Jan. 7, 1993]

§ 61.345 Standards: Containers.

(a) The owner or operator shall meet the following standards for each container in which waste is placed in accordance with § 61.342(c)(1)(ii) of this subpart:

(1) The owner or operator shall install, operate, and maintain a cover on each container used to handle, transfer, or store waste in accordance with the following requirements:

(i) The cover and all openings (e.g., bungs, hatches, and sampling ports) shall be designed to operate with no detectable emissions as indicated by an instrument reading of less than 500 ppmv above background, initially and thereafter at least once per year by the methods specified in § 61.355(h) of this subpart.

(ii) Except as provided in paragraph (a)(4) of this section, each opening shall be maintained in a closed, sealed position (e.g., covered by a lid that is gasketed and latched) at all times that waste is in the container except when it is necessary to use the opening for waste loading, removal, inspection, or sampling.

(2) When a waste is transferred into a container by pumping, the owner or operator shall perform the transfer using a submerged fill pipe. The submerged fill pipe outlet shall extend to within two fill pipe diameters of the bottom of the container while the container is being loaded. During loading of the waste, the cover shall remain in place and all openings shall be maintained in a closed, sealed position except for those openings required for the submerged fill pipe, those openings required for venting of the container to prevent physical damage or permanent deformation of the container or cover, and any openings complying with paragraph (a)(4) of this section.

(3) Treatment of a waste in a container, including aeration, thermal or other treatment, must be performed by the owner or operator in a manner such that while the waste is being treated the container meets the standards specified in paragraphs (a)(3)(i) through (iii) of this section, except for covers and closed-vent systems that meet the requirements in paragraph (a)(4) of this section.

(i) The owner or operator must either:

(A) Vent the container inside a total enclosure which is exhausted through a closed-vent system to a control device in accordance with the requirements of paragraphs (a)(3)(ii)(A) and (B) of this section; or

(B) Vent the covered or closed container directly through a closed-vent system to a control device in accordance with the requirements of paragraphs (a)(3)(ii)(B) and (C) of this section.

(ii) The owner or operator must meet the following requirements, as applicable to the type of air emission control equipment selected by the owner or operator:

(A) The total enclosure must be designed and operated in accordance with the criteria for a permanent total enclosure as specified in section 5 of the ''Procedure T—Criteria for and Verification of a Permanent or Temporary Total Enclosure'' in 40 CFR 52.741, appendix B. The enclosure may have permanent or temporary openings to allow worker access; passage of containers through the enclosure by conveyor or other mechanical means; entry of permanent mechanical or electrical equipment; or direct airflow into the enclosure. The owner or operator must perform the verification procedure for the enclosure as specified in section 5.0 of ''Procedure T—Criteria for and Verification of a Permanent or Temporary Total Enclosure'' initially when the enclosure is first installed and, thereafter, annually. A facility that has conducted an initial compliance demonstration and that performs annual compliance demonstrations in accordance with the Container Level 3 control requirements in 40 CFR 264.1086(e)(2)(i) or 40 CFR 265.1086(e)(2)(i) is not required to make repeat demonstrations of initial and continuous compliance for the purposes of this subpart.

(B) The closed-vent system and control device must be designed and operated in accordance with the requirements of § 61.349.

(C) For a container cover, the cover and all openings (*e.g.*, doors, hatches) must be designed to operate with no detectable emissions as indicated by an instrument reading of less than 500 ppmv above background, initially and thereafter at least once per year by the methods specified in § 61.355(h).

(iii) Safety devices, as defined in this subpart, may be installed and operated as necessary on any container, enclosure, closed-vent system, or control device used to comply with the requirements of paragraph (a)(3)(i) of this section.

(4) If the cover and closed-vent system operate such that the container is maintained at a pressure less than atmospheric pressure, the owner or operator may operate the system with an opening that is not sealed and kept closed at all times if the following conditions are met:

(i) The purpose of the opening is to provide dilution air to reduce the explosion hazard;

(ii) The opening is designed to operate with no detectable emissions as indicated by an instrument reading of less than 500 ppmv above background, as determined initially and thereafter at least once per year by methods specified in § 61.355(h); and

(iii) The pressure is monitored continuously to ensure that the pressure in the container remains below atmospheric pressure.

(b) Each cover and all openings shall be visually inspected initially and quarterly thereafter to ensure that they are closed and gasketed properly.

(c) Except as provided in § 61.350 of this subpart, when a broken seal or gasket or other problem is identified, first efforts at repair shall be made as soon as practicable, but not later than 15 calendar days after identification.

[55 FR 8346, Mar. 7, 1990, as amended at 58 FR 3097, Jan. 7, 1993; 67 FR 68532, Nov. 12, 2002; 68 FR 67936, Dec. 4, 2003]

§ 61.346 Standards: Individual drain systems.

(a) Except as provided in paragraph (b) of this section, the owner or operator shall meet the following standards for each individual drain system in which waste is placed in accordance with § 61.342(c)(1)(ii) of this subpart:

(1) The owner or operator shall install, operate, and maintain on each drain system opening a cover and closed-vent system that routes all organic vapors vented from the drain system to a control device.

(i) The cover shall meet the following requirements:

(A) The cover and all openings (e.g., access hatches, sampling ports) shall be designed to operate with no detactable emissions as indicated by an instrument reading of less than 500 ppmv above background, initially and thereafter at least once per year by the methods specified in § 61.355(h) of this subpart.

(B) Each opening shall be maintained in a closed, sealed position (e.g., covered by a lid that is gasketed and latched) at all times that waste is in the drain system except when it is necessary to use the opening for waste sampling or removal, or for equipment inspection, maintenance, or repair.

(C) If the cover and closed-vent system operate such that the individual drain system is maintained at a pressure less than atmospheric pressure, then paragraph (a)(1)(i)(B) of this section does not apply to any opening that meets all of the following conditions:

(*1*) The purpose of the opening is to provide dilution air to reduce the explosion hazard;

(*2*) The opening is designed to operate with no detectable emissions as indicated by an instrument reading of less than 500 ppmv above background, as determined initially and thereafter at least once per year by the methods specified in § 61.355(h); and

(*3*) The pressure is monitored continuously to ensure that the pressure in the individual drain system remains below atmospheric pressure.

(ii) The closed-vent system and control device shall be designed and operated in accordance with § 61.349 of this subpart.

(2) Each cover seal, access hatch, and all other openings shall be checked by visual inspection initially and quarterly thereafter to ensure that no cracks or gaps occur and that access hatches and other openings are closed and gasketed properly.

(3) Except as provided in § 61.350 of this subpart, when a broken seal or gasket or other problem is identified, or when detectable emissions are measured, first efforts at repair shall be made as soon as practicable, but not later than 15 calendar days after identification.

(b) As an alternative to complying with paragraph (a) of this section, an owner or operator may elect to comply with the following requirements:

(1) Each drain shall be equipped with water seal controls or a tightly sealed cap or plug.

(2) Each junction box shall be equipped with a cover and may have a vent pipe. The vent pipe shall be at least 90 cm (3 ft) in length and shall not exceed 10.2 cm (4 in) in diameter.

(i) Junction box covers shall have a tight seal around the edge and shall be kept in place at all times, except during inspection and maintenance.

(ii) One of the following methods shall be used to control emissions from the junction box vent pipe to the atmosphere:

(A) Equip the junction box with a system to prevent the flow of organic vapors from the junction box vent pipe to the atmosphere during normal operation. An example of such a system includes use of water seal controls on the junction box. A flow indicator shall be installed, operated, and maintained on each junction box vent pipe to ensure that organic vapors are not vented from the junction box to the atmosphere during normal operation.

(B) Connect the junction box vent pipe to a closed-vent system and control device in accordance with § 61.349 of this subpart.

(3) Each sewer line shall not be open to the atmosphere and shall be covered or enclosed in a manner so as to have no visual gaps or cracks in joints, seals, or other emission interfaces.

(4) Equipment installed in accordance with paragraphs (b)(1), (b)(2), or (b)(3) of this section shall be inspected as follows:

(i) Each drain using water seal controls shall be checked by visual or physical inspection initially and thereafter quarterly for indications of low water levels or other conditions that would reduce the effectiveness of water seal controls.

(ii) Each drain using a tightly sealed cap or plug shall be visually inspected initially and thereafter quarterly to ensure caps or plugs are in place and properly installed.

(iii) Each junction box shall be visually inspected initially and thereafter quarterly to ensure that the cover is in place and to ensure that the cover has a tight seal around the edge.

(iv) The unburied portion of each sewer line shall be visually inspected initially and thereafter quarterly for indication of cracks, gaps, or other problems that could result in benzene emissions.

(5) Except as provided in § 61.350 of this subpart, when a broken seal, gap, crack or other problem is identified, first efforts at repair shall be made as soon as practicable, but not later than 15 calendar days after identification.

[55 FR 8346, Mar. 7, 1990, as amended at 55 FR 37231, Sept. 10, 1990; 58 FR 3097, Jan. 7, 1993]

§ 61.347 Standards: Oil-water separators.

(a) Except as provided in § 61.352 of this subpart, the owner or operator shall meet the following standards for each oil-water separator in which waste is placed in accordance with § 61.342(c)(1)(ii) of this subpart:

(1) The owner or operator shall install, operate, and maintain a fixed-roof and closed-vent system that routes all organic vapors vented from the oil-water separator to a control device.

(i) The fixed-roof shall meet the following requirements:

(A) The cover and all openings (e.g., access hatches, sampling ports, and gauge wells) shall be designed to operate with no detectable emissions as indicated by an instrument reading of less than 500 ppmv above background, as determined initially and thereafter at least once per year by the methods specified in § 61.355(h) of this subpart.

(B) Each opening shall be maintained in a closed, sealed position (e.g., covered by a lid that is gasketed and latched) at all times that waste is in the oil-water separator except when it is necessary to use the opening for waste sampling or removal, or for equipment inspection, maintenance, or repair.

(C) If the cover and closed-vent system operate such that the oil-water separator is maintained at a pressure less than atmospheric pressure, then paragraph (a)(1)(i)(B) of this section does not apply to any opening that meets all of the following conditions:

(*1*) The purpose of the opening is to provide dilution air to reduce the explosion hazard;

(*2*) The opening is designed to operate with no detectable emissions as indicated by an instrument reading of less than 500 ppmv above background, as determined initially and thereafter at least once per year by the methods specified in § 61.355(h); and

(*3*) The pressure is monitored continuously to ensure that the pressure

in the oil-water separator remains below atmospheric pressure.

(ii) The closed-vent system and control device shall be designed and operated in accordance with the requirements of § 61.349 of this subpart.

(b) Each cover seal, access hatch, and all other openings shall be checked by visual inspection initially and quarterly thereafter to ensure that no cracks or gaps occur between the cover and oil-water separator wall and that access hatches and other openings are closed and gasketed properly.

(c) Except as provided in § 61.350 of this subpart, when a broken seal or gasket or other problem is identified, or when detectable emissions are measured, first efforts at repair shall be made as soon as practicable, but not later than 15 calendar days after identification.

[55 FR 8346, Mar. 7, 1990, as amended at 58 FR 3098, Jan. 7, 1993]

§ 61.348 Standards: Treatment processes.

(a) Except as provided in paragraph (a)(5) of this section, the owner or operator shall treat the waste stream in accordance with the following requirements:

(1) The owner or operator shall design, install, operate, and maintain a treatment process that either:

(i) Removes benzene from the waste stream to a level less than 10 parts per million by weight (ppmw) on a flow-weighted annual average basis,

(ii) Removes benzene from the waste stream by 99 percent or more on a mass basis, or

(iii) Destroys benzene in the waste stream by incinerating the waste in a combustion unit that achieves a destruction efficiency of 99 percent or greater for benzene.

(2) Each treatment process complying with paragraphs (a)(1)(i) or (a)(1)(ii) of this section shall be designed and operated in accordance with the appropriate waste management unit standards specified in §§ 61.343 through 61.347 of this subpart. For example, if a treatment process is a tank, then the owner or operator shall comply with § 61.343 of this subpart.

(3) For the purpose of complying with the requirements specified in paragraph (a)(1)(i) of this section, the intentional or unintentional reduction in the benzene concentration of a waste stream by dilution of the waste stream with other wastes or materials is not allowed.

(4) An owner or operator may aggregate or mix together individual waste streams to create a combined waste stream for the purpose of facilitating treatment of waste to comply with the requirements of paragraph (a)(1) of this section except as provided in paragraph (a)(5) of this section.

(5) If an owner or operator aggregates or mixes any combination of process wastewater, product tank drawdown, or landfill leachate subject to § 61.342(c)(1) of this subpart together with other waste streams to create a combined waste stream for the purpose of facilitating management or treatment of waste in a wastewater treatment system, then the wastewater treatment system shall be operated in accordance with paragraph (b) of this section. These provisions apply to above-ground wastewater treatment systems as well as those that are at or below ground level.

(b) Except for facilities complying with § 61.342(e), the owner or operator that aggregates or mixes individual waste streams as defined in paragraph (a)(5) of this section for management and treatment in a wastewater treatment system shall comply with the following requirements:

(1) The owner or operator shall design and operate each waste management unit that comprises the wastewater treatment system in accordance with the appropriate standards specified in §§ 61.343 through 61.347 of this subpart.

(2) The provisions of paragraph (b)(1) of this section do not apply to any waste management unit that the owner or operator demonstrates to meet the following conditions initially and, thereafter, at least once per year:

(i) The benzene content of each waste stream entering the waste management unit is less than 10 ppmw on a flow-weighted annual average basis as determined by the procedures specified in § 61.355(c) of this subpart; and

(ii) The total annual benzene quantity contained in all waste streams

managed or treated in exempt waste management units comprising the facility wastewater treatment systems is less than 1 Mg/yr (1.1 ton/yr). For this determination, total annual benzene quantity shall be calculated as follows:

(A) The total annual benzene quantity shall be calculated as the sum of the individual benzene quantities determined at each location where a waste stream first enters an exempt waste management unit. The benzene quantity discharged from an exempt waste management unit shall not be included in this calculation.

(B) The annual benzene quantity in a waste stream managed or treated in an enhanced biodegradation unit shall not be included in the calculation of the total annual benzene quantity, if the enhanced biodegradation unit is the first exempt unit in which the waste is managed or treated. A unit shall be considered enhanced biodegradation if it is a suspended-growth process that generates biomass, uses recycled biomass, and periodically removes biomass from the process. An enhanced biodegradation unit typically operates at a food-to-microorganism ratio in the range of 0.05 to 1.0 kg of biological oxygen demand per kg of biomass per day, a mixed liquor suspended solids ratio in the range of 1 to 8 grams per liter (0.008 to 0.7 pounds per liter), and a residence time in the range of 3 to 36 hours.

(c) The owner and operator shall demonstrate that each treatment process or wastewater treatment system unit, except as provided in paragraph (d) of this section, achieves the appropriate conditions specified in paragraphs (a) or (b) of this section in accordance with the following requirements:

(1) Engineering calculations in accordance with requirements specified in § 61.356(e) of this subpart; or

(2) Performance tests conducted using the test methods and procedures that meet the requirements specified in § 61.355 of this subpart.

(d) A treatment process or waste stream is in compliance with the requirements of this subpart and exempt from the requirements of paragraph (c) of this section provided that the owner or operator documents that the treatment process or waste stream is in compliance with other regulatory requirements as follows:

(1) The treatment process is a hazardous waste incinerator for which the owner or operator has been issued a final permit under 40 CFR part 270 and complies with the requirements of 40 CFR part 264, subpart O;

(2) The treatment process is an industrial furnace or boiler burning hazardous waste for energy recovery for which the owner or operator has been issued a final permit under 40 CFR part 270 and complies with the requirements of 40 CFR part 266, subpart D;

(3) The waste stream is treated by a means or to a level that meets benzene-specific treatment standards in accordance with the Land Disposal Restrictions under 40 CFR part 268, and the treatment process is designed and operated with a closed-vent system and control device meeting the requirements of § 61.349 of this subpart;

(4) The waste stream is treated by a means or to a level that meets benzene-specific effluent limitations or performance standards in accordance with the Effluent Guidelines and Standards under 40 CFR parts 401–464, and the treatment process is designed and operated with a closed-vent system and control device meeting the requirements of § 61.349 of this subpart; or

(5) The waste stream is discharged to an underground injection well for which the owner or operator has been issued a final permit under 40 CFR part 270 and complies with the requirements of 40 CFR part 122.

(e) Except as specified in paragraph (e)(3) of this section, if the treatment process or wastewater treatment system unit has any openings (e.g., access doors, hatches, etc.), all such openings shall be sealed (e.g., gasketed, latched, etc.) and kept closed at all times when waste is being treated, except during inspection and maintenance.

(1) Each seal, access door, and all other openings shall be checked by visual inspections initially and quarterly thereafter to ensure that no cracks or gaps occur and that openings are closed and gasketed properly.

(2) Except as provided in § 61.350 of this subpart, when a broken seal or gasket or other problem is identified, first efforts at repair shall be made as

soon as practicable, but not later than 15 calendar days after identification.

(3) If the cover and closed-vent system operate such that the treatment process and wastewater treatment system unit are maintained at a pressure less than atmospheric pressure, the owner or operator may operate the system with an opening that is not sealed and kept closed at all times if the following conditions are met:

(i) The purpose of the opening is to provide dilution air to reduce the explosion hazard;

(ii) The opening is designed to operate with no detectable emissions as indicated by an instrument reading of less than 500 ppmv above background, as determined initially and thereafter at least once per year by the methods specified in § 61.355(h); and

(iii) The pressure is monitored continuously to ensure that the pressure in the treatment process and wastewater treatment system unit remain below atmospheric pressure.

(f) Except for treatment processes complying with paragraph (d) of this section, the Administrator may request at any time an owner or operator demonstrate that a treatment process or wastewater treatment system unit meets the applicable requirements specified in paragraphs (a) or (b) of this section by conducting a performance test using the test methods and procedures as required in § 61.355 of this subpart.

(g) The owner or operator of a treatment process or wastewater treatment system unit that is used to comply with the provisions of this section shall monitor the unit in accordance with the applicable requirements in § 61.354 of this subpart.

[55 FR 8346, Mar. 7, 1990, as amended at 55 FR 37231, Sept. 10, 1990; 58 FR 3098, Jan. 7, 1993; 65 FR 62160, Oct. 17, 2000]

§ 61.349 Standards: Closed-vent systems and control devices.

(a) For each closed-vent system and control device used to comply with standards in accordance with §§ 61.343 through 61.348 of this subpart, the owner or operator shall properly design, install, operate, and maintain the closed-vent system and control device in accordance with the following requirements:

(1) The closed-vent system shall:

(i) Be designed to operate with no detectable emissions as indicated by an instrument reading of less than 500 ppmv above background, as determined initially and thereafter at least once per year by the methods specified in § 61.355(h) of this subpart.

(ii) Vent systems that contain any bypass line that could divert the vent stream away from a control device used to comply with the provisions of this subpart shall install, maintain, and operate according to the manufacturer's specifications a flow indicator that provides a record of vent stream flow away from the control device at least once every 15 minutes, except as provided in paragraph (a)(1)(ii)(B) of this section.

(A) The flow indicator shall be installed at the entrance to any bypass line that could divert the vent stream away from the control device to the atmosphere.

(B) Where the bypass line valve is secured in the closed position with a car-seal or a lock-and-key type configuration, a flow indicator is not required.

(iii) All gauging and sampling devices shall be gas-tight except when gauging or sampling is taking place.

(iv) For each closed-vent system complying with paragraph (a) of this section, one or more devices which vent directly to the atmosphere may be used on the closed-vent system provided each device remains in a closed, sealed position during normal operations except when the device needs to open to prevent physical damage or permanent deformation of the closed-vent system resulting from malfunction of the unit in accordance with good engineering and safety practices for handling flammable, explosive, or other hazardous materials.

(2) The control device shall be designed and operated in accordance with the following conditions:

(i) An enclosed combustion device (e.g., a vapor incinerator, boiler, or process heater) shall meet one of the following conditions:

(A) Reduce the organic emissions vented to it by 95 weight percent or greater;

(B) Achieve a total organic compound concentration of 20 ppmv (as the sum of the concentrations for individual compounds using Method 18) on a dry basis corrected to 3 percent oxygen; or

(C) Provide a minimum residence time of 0.5 seconds at a minimum temperature of 760 °C (1,400 °F). If a boiler or process heater issued as the control device, then the vent stream shall be introduced into the flame zone of the boiler or process heater.

(ii) A vapor recovery system (e.g., a carbon adsorption system or a condenser) shall recover or control the organic emissions vented to it with an efficiency of 95 weight percent or greater, or shall recover or control the benzene emissions vented to it with an efficiency of 98 weight percent or greater.

(iii) A flare shall comply with the requirements of 40 CFR 60.18.

(iv) A control device other than those described in paragraphs (a)(2) (i) through (iii) of this section may be used provided that the following conditions are met:

(A) The device shall recover or control the organic emissions vented to it with an efficiency of 95 weight percent or greater, or shall recover or control the benzene emissions vented to it with an efficiency of 98 weight percent or greater.

(B) The owner or operator shall develop test data and design information that documents the control device will achieve an emission control efficiency of either 95 percent or greater for organic compounds or 98 percent or greater for benzene.

(C) The owner or operator shall identify:

(*1*) The critical operating parameters that affect the emission control performance of the device;

(*2*) The range of values of these operating parameters that ensure the emission control efficiency specified in paragraph (a)(2)(iv)(A) of this section is maintained during operation of the device; and

(*3*) How these operating parameters will be monitored to ensure the proper operation and maintenance of the device.

(D) The owner or operator shall submit the information and data specified in paragraphs (a)(2)(iv) (B) and (C) of this section to the Administrator prior to operation of the alternative control device.

(E) The Administrator will determine, based on the information submitted under paragraph (a)(2)(iv)(D) of this section, if the control device subject to paragraph (a)(2)(iv) of this section meets the requirements of §61.349. The control device subject to paragraph (a)(2)(iv) of this section may be operated prior to receiving approval from the Administrator. However, if the Administrator determines that the control device does not meet the requirements of §61.349, the facility may be subject to enforcement action beginning from the time the control device began operation.

(b) Each closed-vent system and control device used to comply with this subpart shall be operated at all times when waste is placed in the waste management unit vented to the control device except when maintenance or repair of the waste management unit cannot be completed without a shutdown of the control device.

(c) An owner and operator shall demonstrate that each control device, except for a flare, achieves the appropriate conditions specified in paragraph (a)(2) of this section by using one of the following methods:

(1) Engineering calculations in accordance with requirements specified in §61.356(f) of this subpart; or

(2) Performance tests conducted using the test methods and procedures that meet the requirements specified in §61.355 of this subpart.

(d) An owner or operator shall demonstrate compliance of each flare in accordance with paragraph (a)(2)(iii) of this section.

(e) The Administrator may request at any time an owner or operator demonstrate that a control device meets the applicable conditions specified in paragraph (a)(2) of this section by conducting a performance test using the test methods and procedures as required in §61.355, and for control devices subject to paragraph (a)(2)(iv) of this section, the Administrator may specify alternative test methods and procedures, as appropriate.

(f) Each closed-vent system and control device shall be visually inspected initially and quarterly thereafter. The visual inspection shall include inspection of ductwork and piping and connections to covers and control devices for evidence of visable defects such as holes in ductwork or piping and loose connections.

(g) Except as provided in § 61.350 of this subpart, if visible defects are observed during an inspection, or if other problems are identified, or if detectable emissions are measured, a first effort to repair the closed-vent system and control device shall be made as soon as practicable but no later than 5 calendar days after detection. Repair shall be completed no later than 15 calendar days after the emissions are detected or the visible defect is observed.

(h) The owner or operator of a control device that is used to comply with the provisions of this section shall monitor the control device in accordance with § 61.354(c) of this subpart.

[55 FR 8346, Mar. 7, 1990; 55 FR 12444, Apr. 3, 1990, as amended at 55 FR 37231, Sept. 10, 1990; 58 FR 3098, Jan. 7, 1993; 65 FR 62160, Oct. 17, 2000]

§ 61.350 Standards: Delay of repair.

(a) Delay of repair of facilities or units that are subject to the provisions of this subpart will be allowed if the repair is technically impossible without a complete or partial facility or unit shutdown.

(b) Repair of such equipment shall occur before the end of the next facility or unit shutdown.

§ 61.351 Alternative standards for tanks.

(a) As an alternative to the standards for tanks specified in § 61.343 of this subpart, an owner or operator may elect to comply with one of the following:

(1) A fixed roof and internal floating roof meeting the requirements in 40 CFR 60.112b(a)(1);

(2) An external floating roof meeting the requirements of 40 CFR 60.112b (a)(2); or

(3) An alternative means of emission limitation as described in 40 CFR 60.114b.

(b) If an owner or operator elects to comply with the provisions of this section, then the owner or operator is exempt from the provisions of § 61.343 of this subpart applicable to the same facilities.

[55 FR 8346, Mar. 7, 1990, as amended at 55 FR 37231, Sept. 10, 1990]

§ 61.352 Alternative standards for oil-water separators.

(a) As an alternative to the standards for oil-water separators specified in § 61.347 of this subpart, an owner or operator may elect to comply with one of the following:

(1) A floating roof meeting the requirements in 40 CFR 60.693–2(a); or

(2) An alternative means of emission limitation as described in 40 CFR 60.694.

(b) For portions of the oil-water separator where it is infeasible to construct and operate a floating roof, such as over the weir mechanism, a fixed roof vented to a vapor control device that meets the requirements in §§ 61.347 and 61.349 of this subpart shall be installed and operated.

(c) Except as provided in paragraph (b) of this section, if an owner or operator elects to comply with the provisions of this section, then the owner or operator is exempt from the provisions in § 61.347 of this subpart applicable to the same facilities.

§ 61.353 Alternative means of emission limitation.

(a) If, in the Administrator's judgment, an alternative means of emission limitation will achieve a reduction in benzene emissions at least equivalent to the reduction in benzene emissions from the source achieved by the applicable design, equipment, work practice, or operational requirements in §§ 61.342 through 61.349, the Administrator will publish in the FEDERAL REGISTER a notice permitting the use of the alternative means for purposes of compliance with that requirement. The notice may condition the permission on requirements related to the operation and maintenance of the alternative means.

(b) Any notice under paragraph (a) of this section shall be published only

after public notice and an opportunity for a hearing.

(c) Any person seeking permission under this section shall collect, verify, and submit to the Administrator information showing that the alternative means achieves equivalent emission reductions.

[55 FR 8346, Mar. 7, 1990, as amended at 58 FR 3099, Jan. 7, 1993]

§ 61.354 Monitoring of operations.

(a) Except for a treatment process or waste stream complying with § 61.348(d), the owner or operator shall monitor each treatment process or wastewater treatment system unit to ensure the unit is properly operated and maintained by one of the following monitoring procedures:

(1) Measure the benzene concentration of the waste stream exiting the treatment process complying with § 61.348(a)(1)(i) at least once per month by collecting and analyzing one or more samples using the procedures specified in § 61.355(c)(3).

(2) Install, calibrate, operate, and maintain according to manufacturer's specifications equipment to continuously monitor and record a process parameter (or parameters) for the treatment process or wastewater treatment system unit that indicates proper system operation. The owner or operator shall inspect at least once each operating day the data recorded by the monitoring equipment (e.g., temperature monitor or flow indicator) to ensure that the unit is operating properly.

(b) If an owner or operator complies with the requirements of § 61.348(b), then the owner or operator shall monitor each wastewater treatment system to ensure the unit is properly operated and maintained by the appropriate monitoring procedure as follows:

(1) For the first exempt waste management unit in each waste treatment train, other than an enhanced biodegradation unit, measure the flow rate, using the procedures of § 61.355(b), and the benzene concentration of each waste stream entering the unit at least once per month by collecting and analyzing one or more samples using the procedures specified in § 61.355(c)(3).

(2) For each enhanced biodegradation unit that is the first exempt waste management unit in a treatment train, measure the benzene concentration of each waste stream entering the unit at least once per month by collecting and analyzing one or more samples using the procedures specified in § 61.355(c)(3).

(c) An owner or operator subject to the requirements in § 61.349 of this subpart shall install, calibrate, maintain, and operate according to the manufacturer's specifications a device to continuously monitor the control device operation as specified in the following paragraphs, unless alternative monitoring procedures or requirements are approved for that facility by the Administrator. The owner or operator shall inspect at least once each operating day the data recorded by the monitoring equipment (e.g., temperature monitor or flow indicator) to ensure that the control device is operating properly.

(1) For a thermal vapor incinerator, a temperature monitoring device equipped with a continuous recorder. The device shall have an accuracy of ±1 percent of the temperature being monitored in °C or ±0.5 °C, whichever is greater. The temperature sensor shall be installed at a representative location in the combustion chamber.

(2) For a catalytic vapor incinerator, a temperature monitoring device equipped with a continuous recorder. The device shall be capable of monitoring temperature at two locations, and have an accuracy of ±1 percent of the temperature being monitored in °C or ±0.5 °C, whichever is greater. One temperature sensor shall be installed in the vent stream at the nearest feasible point to the catalyst bed inlet and a second temperature sensor shall be installed in the vent stream at the nearest feasible point to the catalyst bed outlet.

(3) For a flare, a monitoring device in accordance with 40 CFR 60.18(f)(2) equipped with a continuous recorder.

(4) For a boiler or process heater having a design heat input capacity less than 44 MW (150×10^6 BTU/hr), a temperature monitoring device equipped with a continuous recorder. The device shall have an accuracy of ±1 percent of the temperature being monitored in °C

or ±0.5 °C, whichever is greater. The temperature sensor shall be installed at a representative location in the combustion chamber.

(5) For a boiler or process heater having a design heat input capacity greater than or equal to 44 MW (150×10^6 BTU/hr), a monitoring device equipped with a continuous recorder to measure a parameter(s) that indicates good combustion operating practices are being used.

(6) For a condenser, either:

(i) A monitoring device equipped with a continuous recorder to measure either the concentration level of the organic compounds or the concentration level of benzene in the exhaust vent stream from the condenser; or

(ii) A temperature monitoring device equipped with a continuous recorder. The device shall be capable of monitoring temperature at two locations, and have an accuracy of ±1 percent of the temperature being monitored in °C or ±0.5 °C, whichever is greater. One temperature sensor shall be installed at a location in the exhaust stream from the condenser, and a second temperature sensor shall be installed at a location in the coolant fluid exiting the condenser.

(7) For a carbon adsorption system that regenerates the carbon bed directly in the control device such as a fixed-bed carbon adsorber, either:

(i) A monitoring device equipped with a continuous recorder to measure either the concentration level of the organic compounds or the benzene concentration level in the exhaust vent stream from the carbon bed; or

(ii) A monitoring device equipped with a continuous recorder to measure a parameter that indicates the carbon bed is regenerated on a regular, predetermined time cycle.

(8) For a vapor recovery system other than a condenser or carbon adsorption system, a monitoring device equipped with a continuous recorder to measure either the concentration level of the organic compounds or the benzene concentration level in the exhaust vent stream from the control device.

(9) For a control device subject to the requirements of §61.349(a)(2)(iv), devices to monitor the parameters as specified in §61.349(a)(2)(iv)(C).

(d) For a carbon adsorption system that does not regenerate the carbon bed directly on site in the control device (e.g., a carbon canister), either the concentration level of the organic compounds or the concentration level of benzene in the exhaust vent stream from the carbon adsorption system shall be monitored on a regular schedule, and the existing carbon shall be replaced with fresh carbon immediately when carbon breakthrough is indicated. The device shall be monitored on a daily basis or at intervals no greater than 20 percent of the design carbon replacement interval, whichever is greater. As an alternative to conducting this monitoring, an owner or operator may replace the carbon in the carbon adsorption system with fresh carbon at a regular predetermined time interval that is less than the carbon replacement interval that is determined by the maximum design flow rate and either the organic concentration or the benzene concentration in the gas stream vented to the carbon adsorption system.

(e) An alternative operation or process parameter may be monitored if it can be demonstrated that another parameter will ensure that the control device is operated in conformance with these standards and the control device's design specifications.

(f) Owners or operators using a closed-vent system that contains any bypass line that could divert a vent stream from a control device used to comply with the provisions of this subpart shall do the following:

(1) Visually inspect the bypass line valve at least once every month, checking the position of the valve and the condition of the car-seal or closure mechanism required under §61.349(a)(1)(ii) to ensure that the valve is maintained in the closed position and the vent stream is not diverted through the bypass line.

(2) Visually inspect the readings from each flow monitoring device required by §61.349(a)(1)(ii) at least once each operating day to check that vapors are being routed to the control device as required.

(g) Each owner or operator who uses a system for emission control that is

maintained at a pressure less than atmospheric pressure with openings to provide dilution air shall install, calibrate, maintain, and operate according to the manufacturer's specifications a device equipped with a continuous recorder to monitor the pressure in the unit to ensure that it is less than atmospheric pressure.

[55 FR 8346, Mar. 7, 1990, as amended at 58 FR 3099, Jan. 7, 1993; 65 FR 62160, Oct. 17, 2000]

§ 61.355 Test methods, procedures, and compliance provisions.

(a) An owner or operator shall determine the total annual benzene quantity from facility waste by the following procedure:

(1) For each waste stream subject to this subpart having a flow-weighted annual average water content greater than 10 percent water, on a volume basis as total water, or is mixed with water or other wastes at any time and the resulting mixture has an annual average water content greater than 10 percent as specified in § 61.342(a), the owner or operator shall:

(i) Determine the annual waste quantity for each waste stream using the procedures specified in paragraph (b) of this section.

(ii) Determine the flow-weighted annual average benzene concentration for each waste stream using the procedures specified in paragraph (c) of this section.

(iii) Calculate the annual benzene quantity for each waste stream by multiplying the annual waste quantity of the waste stream times the flow-weighted annual average benzene concentration.

(2) Total annual benzene quantity from facility waste is calculated by adding together the annual benzene quantity for each waste stream generated during the year and the annual benzene quantity for each process unit turnaround waste annualized according to paragraph (b)(4) of this section.

(3) If the total annual benzene quantity from facility waste is equal to or greater than 10 Mg/yr (11 ton/yr), then the owner or operator shall comply with the requirements of § 61.342 (c), (d), or (e).

(4) If the total annual benzene quantity from facility waste is less than 10 Mg/yr (11 ton/yr) but is equal to or greater than 1 Mg/yr (1.1 ton/yr), then the owner or operator shall:

(i) Comply with the recordkeeping requirements of § 61.356 and reporting requirements of § 61.357 of this subpart; and

(ii) Repeat the determination of total annual benzene quantity from facility waste at least once per year and whenever there is a change in the process generating the waste that could cause the total annual benzene quantity from facility waste to increase to 10 Mg/yr (11 ton/yr) or more.

(5) If the total annual benzene quantity from facility waste is less than 1 Mg/yr (1.1 ton/yr), then the owner or operator shall:

(i) Comply with the recordkeeping requirements of § 61.356 and reporting requirements of § 61.357 of this subpart; and

(ii) Repeat the determination of total annual benzene quantity from facility waste whenever there is a change in the process generating the waste that could cause the total annual benzene quantity from facility waste to increase to 1 Mg/yr (1.1 ton/yr) or more.

(6) The benzene quantity in a waste stream that is generated less than one time per year, except as provided for process unit turnaround waste in paragraph (b)(4) of this section, shall be included in the determination of total annual benzene quantity from facility waste for the year in which the waste is generated unless the waste stream is otherwise excluded from the determination of total annual benzene quantity from facility waste in accordance with paragraphs (a) through (c) of this section. The benzene quantity in this waste stream shall not be annualized or averaged over the time interval between the activities that resulted in generation of the waste, for purposes of determining the total annual benzene quantity from facility waste.

(b) For purposes of the calculation required by paragraph (a) of this section, an owner or operator shall determine the annual waste quantity at the point of waste generation, unless otherwise provided in paragraphs (b) (1), (2), (3), and (4) of this section, by one of the methods given in paragraphs (b) (5) through (7) of this section.

(1) The determination of annual waste quantity for sour water streams that are processed in sour water strippers shall be made at the point that the water exits the sour water stripper.

(2) The determination of annual waste quantity for wastes at coke by-product plants subject to and complying with the control requirements of § 61.132, 61.133, 61.134, or 61.139 of subpart L of this part shall be made at the location that the waste stream exits the process unit component or waste management unit controlled by that subpart or at the exit of the ammonia still, provided that the following conditions are met:

(i) The transfer of wastes between units complying with the control requirements of subpart L of this part, process units, and the ammonia still is made through hard piping or other enclosed system.

(ii) The ammonia still meets the definition of a sour water stripper in § 61.341.

(3) The determination of annual waste quantity for wastes that are received at hazardous waste treatment, storage, or disposal facilities from offsite shall be made at the point where the waste enters the hazardous waste treatment, storage, or disposal facility.

(4) The determination of annual waste quantity for each process unit turnaround waste generated only at 2 year or greater intervals, may be made by dividing the total quantity of waste generated during the most recent process unit turnaround by the time period (in the nearest tenth of a year) between the turnaround resulting in generation of the waste and the most recent preceding process turnaround for the unit. The resulting annual waste quantity shall be included in the calculation of the annual benzene quantity as provided in paragraph (a)(1)(iii) of this section for the year in which the turnaround occurs and for each subsequent year until the unit undergoes the next process turnaround. For estimates of total annual benzene quantity as specified in the 90-day report, required under § 61.357(a)(1), the owner or operator shall estimate the waste quantity generated during the most recent turnaround, and the time period between turnarounds in accordance with good engineering practices. If the owner or operator chooses not to annualize process unit turnaround waste, as specified in this paragraph, then the process unit turnaround waste quantity shall be included in the calculation of the annual benzene quantity for the year in which the turnaround occurs.

(5) Select the highest annual quantity of waste managed from historical records representing the most recent 5 years of operation or, if the facility has been in service for less than 5 years but at least 1 year, from historical records representing the total operating life of the facility;

(6) Use the maximum design capacity of the waste management unit; or

(7) Use measurements that are representative of maximum waste generation rates.

(c) For the purposes of the calculation required by §§ 61.355(a) of this subpart, an owner or operator shall determine the flow-weighted annual average ben- zene concentration in a manner that meets the requirements given in paragraph (c)(1) of this section using either of the methods given in paragraphs (c)(2) and (c)(3) of this section.

(1) The determination of flow-weighted annual average benzene concentration shall meet all of the following criteria:

(i) The determination shall be made at the point of waste generation except for the specific cases given in paragraphs (c)(1)(i)(A) through (D) of this section.

(A) The determination for sour water streams that are processed in sour water strippers shall be made at the point that the water exits the sour water stripper.

(B) The determination for wastes at coke by-product plants subject to and complying with the control requirements of § 61.132, 61.133, 61.134, or 61.139 of subpart L of this part shall be made at the location that the waste stream exits the process unit component or waste management unit controlled by that subpart or at the exit of the ammonia still, provided that the following conditions are met:

(*1*) The transfer of wastes between units complying with the control requirements of subpart L of this part, process units, and the ammonia still is

made through hard piping or other enclosed system.

(*2*) The ammonia still meets the definition of a sour water stripper in § 61.341.

(C) The determination for wastes that are received from offsite shall be made at the point where the waste enters the hazardous waste treatment, storage, or disposal facility.

(D) The determination of flow-weighted annual average benzene concentration for process unit turnaround waste shall be made using either of the methods given in paragraph (c)(2) or (c)(3) of this section. The resulting flow-weighted annual average benzene concentration shall be included in the calculation of annual benzene quantity as provided in paragraph (a)(1)(iii) of this section for the year in which the turnaround occurs and for each subsequent year until the unit undergoes the next process unit turnaround.

(ii) Volatilization of the benzene by exposure to air shall not be used in the determination to reduce the benzene concentration.

(iii) Mixing or diluting the waste stream with other wastes or other materials shall not be used in the determination—to reduce the benzene concentration.

(iv) The determination shall be made prior to any treatment of the waste that removes benzene, except as specified in paragraphs (c)(1)(i)(A) through (D) of this section.

(v) For wastes with multiple phases, the determination shall provide the weighted-average benzene concentration based on the benzene concentration in each phase of the waste and the relative proportion of the phases.

(2) *Knowledge of the waste.* The owner or operator shall provide sufficient information to document the flow-weighted annual average benzene concentration of each waste stream. Examples of information that could constitute knowledge include material balances, records of chemicals purchases, or previous test results provided the results are still relevant to the current waste stream conditions. If test data are used, then the owner or operator shall provide documentation describing the testing protocol and the means by which sampling variability and analytical variability were accounted for in the determination of the flow-weighted annual average benzene concentration for the waste stream. When an owner or operator and the Administrator do not agree on determinations of the flow-weighted annual average benzene concentration based on knowledge of the waste, the procedures under paragraph (c)(3) of this section shall be used to resolve the disagreement.

(3) Measurements of the benzene concentration in the waste stream in accordance with the following procedures:

(i) Collect a minimum of three representative samples from each waste stream. Where feasible, samples shall be taken from an enclosed pipe prior to the waste being exposed to the atmosphere.

(ii) For waste in enclosed pipes, the following procedures shall be used:

(A) Samples shall be collected prior to the waste being exposed to the atmosphere in order to minimize the loss of benzene prior to sampling.

(B) A static mixer shall be installed in the process line or in a by-pass line unless the owner or operator demonstrates that installation of a static mixer in the line is not necessary to accurately determine the benzene concentration of the waste stream.

(C) The sampling tap shall be located within two pipe diameters of the static mixer outlet.

(D) Prior to the initiation of sampling, sample lines and cooling coil shall be purged with at least four volumes of waste.

(E) After purging, the sample flow shall be directed to a sample container and the tip of the sampling tube shall be kept below the surface of the waste during sampling to minimize contact with the atmosphere.

(F) Samples shall be collected at a flow rate such that the cooling coil is able to maintain a waste temperature less than 10 °C (50 °F).

(G) After filling, the sample container shall be capped immediately (within 5 seconds) to leave a minimum headspace in the container.

(H) The sample containers shall immediately be cooled and maintained at

a temperature below 10 °C (50 °F) for transfer to the laboratory.

(iii) When sampling from an enclosed pipe is not feasible, a minimum of three representative samples shall be collected in a manner to minimize exposure of the sample to the atmosphere and loss of benzene prior to sampling.

(iv) Each waste sample shall be analyzed using one of the following test methods for determining the benzene concentration in a waste stream:

(A) Method 8020, Aromatic Volatile Organics, in ''Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,'' EPA Publication No. SW–846 (incorporation by reference as specified in § 61.18 of this part);

(B) Method 8021, Volatile Organic Compounds in Water by Purge and Trap Capillary Column Gas Chromatography with Photoionization and Electrolytic Conductivity Detectors in Series in ''Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,'' EPA Publication No. SW–846 (incorporation by reference as specified in § 61.18 of this part);

(C) Method 8240, Gas Chromatography/Mass Spectrometry for Volatile Organics in ''Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,'' EPA Publication No. SW–846 (incorporation by reference as specified in § 61.18 of this part);

(D) Method 8260, Gas Chromatography/Mass Spectrometry for Volatile Organics: Capillary Column Technique in ''Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,'' EPA Publication No. SW–846 (incorporation by reference as specified in § 61.18 of this part);

(E) Method 602, Purgeable Aromatics, as described in 40 CFR part 136, appendix A, Test Procedures for Analysis of Organic Pollutants, for wastewaters for which this is an approved EPA methods; or

(F) Method 624, Purgeables, as described in 40 CFR part 136, appendix A, Test Procedures for Analysis of Organic Pollutants, for wastewaters for which this is an approved EPA method.

(v) The flow-weighted annual average benzene concentration shall be calculated by averaging the results of the sample analyses as follows:

$$\overline{C} = \frac{1}{Q_t} \times \sum_{i=1}^{n} (Q_i)(C_i)$$

Where:

$\overline{C}$=Flow-weighted annual average benzene concentration for waste stream, ppmw.

Q_t=Total annual waste quantity for waste stream, kg/yr (lb/yr).

n=Number of waste samples (at least 3).

Q_i=Annual waste quantity for waste stream represented by C_i, kg/yr (lb/yr).

C_i=Measured concentration of benzene in waste sample i, ppmw.

(d) An owner or operator using performance tests to demonstrate compliance of a treatment process with § 61.348 (a)(1)(i) shall measure the flow-weighted annual average benzene concentration of the waste stream exiting the treatment process by collecting and analyzing a minimum of three representative samples of the waste stream using the procedures in paragraph (c)(3) of this section. The test shall be conducted under conditions that exist when the treatment process is operating at the highest inlet waste stream flow rate and benzene content expected to occur. Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a test. The owner or operator shall record all process information as is necessary to document the operating conditions during the test.

(e) An owner or operator using performance tests to demonstrate compliance of a treatment process with § 61.348(a)(1)(ii) of this subpart shall determine the percent reduction of benzene in the waste stream on a mass basis by the following procedure:

(1) The test shall be conducted under conditions that exist when the treatment process is operating at the highest inlet waste stream flow rate and benzene content expected to occur. Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a test. The owner or operator shall record all process information as is necessary to document the operating conditions during the test.

(2) All testing equipment shall be prepared and installed as specified in the appropriate test methods.

(3) The mass flow rate of benzene entering the treatment process (E_b) shall be determined by computing the product of the flow rate of the waste stream entering the treatment process, as determined by the inlet flow meter, and the benzene concentration of the waste stream, as determined using the sampling and analytical procedures specified in paragraph (c)(2) or (c)(3) of this section. Three grab samples of the waste shall be taken at equally spaced time intervals over a 1-hour period. Each 1-hour period constitutes a run, and the performance test shall consist of a minimum of 3 runs conducted over a 3-hour period. The mass flow rate of benzene entering the treatment process is calculated as follows:

$$E_b = \frac{K}{n \times 10^6}\left[\sum_{i=1}^{n} V_i C_i\right]$$

Where:

E_b = Mass flow rate of benzene entering the treatment process, kg/hr (lb/hr).

K = Density of the waste stream, kg/m^3 (lb/ft^3).

V_i = Average volume flow rate of waste entering the treatment process during each run i, m^3/hr (ft^3/hr).

C_i = Average concentration of benzene in the waste stream entering the treatment process during each run i, ppmw.

n = Number of runs.

10^6 = Conversion factor for ppmw.

(4) The mass flow rate of benzene exiting the treatment process (E_a) shall be determined by computing the product of the flow rate of the waste stream exiting the treatment process, as determined by the outlet flow meter or the inlet flow meter, and the benzene concentration of the waste stream, as determined using the sampling and analytical procedures specified in paragraph (c)(2) or (c)(3) of this section. Three grab samples of the waste shall be taken at equally spaced time intervals over a 1-hour period. Each 1-hour period constitutes a run, and the performance test shall consist of a minimum of 3 runs conducted over the same 3-hour period at which the mass flow rate of benzene entering the treatment process is determined. The mass flow rate of benzene exiting the treatment process is calculated as follows:

$$E_a = \frac{K}{n \times 10^6}\left[\sum_{i=1}^{n} V_i C_i\right]$$

Where:

E_a = Mass flow rate of benzene exiting the treatment process, kg/hr (lb/hr).

K = Density of the waste stream, kg/m^3 (lb/ft^3).

V_i = Average volume flow rate of waste exiting the treatment process during each run i, m^3/hr (ft^3/hr).

C_i = Average concentration of benzene in the waste stream exiting the treatment process during each run i, ppmw.

n = Number of runs.

10^6 = Conversion factor for ppmw.

(f) An owner or operator using performance tests to demonstrate compliance of a treatment process with § 61.348(a)(1)(iii) of this subpart shall determine the benzene destruction efficiency for the combustion unit by the following procedure:

(1) The test shall be conducted under conditions that exist when the combustion unit is operating at the highest inlet waste stream flow rate and benzene content expected to occur. Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a test. The owner or operator shall record all process information necessary to document the operating conditions during the test.

(2) All testing equipment shall be prepared and installed as specified in the appropriate test methods.

(3) The mass flow rate of benzene entering the combustion unit shall be determined by computing the product of the flow rate of the waste stream entering the combustion unit, as determined by the inlet flow meter, and the benzene concentration of the waste stream, as determined using the sampling procedures in paragraph (c)(2) or (c)(3) of this section. Three grab samples of the waste shall be taken at equally spaced time intervals over a 1-hour period. Each 1-hour period constitutes a run, and the performance test shall consist of a minimum of 3 runs conducted over a 3-hour period. The mass flow rate of benzene into the combustion unit is calculated as follows:

$$E_b = \frac{K}{n \times 10^6}\left[\sum_{i=1}^{n} V_i C_i\right]$$

Where:

E_b = Mass flow rate of benzene entering the combustion unit, kg/hr (lb/hr).
K = Density of the waste stream, kg/m³ (lb/ft³).
V_i = Average volume flow rate of waste entering the combustion unit during each run i, m³/hr (ft³/hr).
C_i = Average concentration of benzene in the waste stream entering the combustion unit during each run i, ppmw.
n = Number of runs.
10^6 = Conversion factor for ppmw.

(4) The mass flow rate of benzene exiting the combustion unit exhaust stack shall be determined as follows:

(i) The time period for the test shall not be less than 3 hours during which at least 3 stack gas samples are collected and be the same time period at which the mass flow rate of benzene entering the treatment process is determined. Each sample shall be collected over a 1-hour period (e.g., in a tedlar bag) to represent a time-integrated composite sample and each 1-hour period shall correspond to the periods when the waste feed is sampled.

(ii) A run shall consist of a 1-hour period during the test. For each run:

(A) The reading from each measurement shall be recorded;

(B) The volume exhausted shall be determined using Method 2, 2A, 2C, or 2D from appendix A of 40 CFR part 60, as appropriate.

(C) The average benzene concentration in the exhaust downstream of the combustion unit shall be determined using Method 18 from appendix A of 40 CFR part 60.

(iii) The mass of benzene emitted during each run shall be calculated as follows:

$$M_i = D_b V C\left(10^{-6}\right)$$

Where:

M_i = Mass of benzene emitted during run i, kg (lb).
V = Volume of air-vapor mixture exhausted at standard conditions, m³ (ft³).
C = Concentration of benzene measured in the exhaust, ppmv.
D_b = Density of benzene, 3.24 kg/m³ (0.202 lb/ft³).
10^6 = Conversion factor for ppmv.

(iv) The benzene mass emission rate in the exhaust shall be calculated as follows:

$$E_a = \left(\sum_{i=1}^{n} M_i\right) / T$$

Where:

E_a = Mass flow rate of benzene emitted from the combustion unit, kg/hr (lb/hr).
M_i = Mass of benzene emitted from the combustion unit during run i, kg (lb).
T = Total time of all runs, hr.
n = Number of runs.

(5) The benzene destruction efficiency for the combustion unit shall be calculated as follows:

$$R = \frac{E_b - E_a}{E_b} \times 100$$

Where:

R = Benzene destruction efficiency for the combustion unit, percent.
E_b = Mass flow rate of benzene entering the combustion unit, kg/hr (lb/hr).
E_a = Mass flow rate of benzene emitted from the combustion unit, kg/hr (lb/hr).

(g) An owner or operator using performance tests to demonstrate compliance of a wastewater treatment system unit with § 61.348(b) shall measure the flow-weighted annual average benzene concentration of the wastewater stream where the waste stream enters an exempt waste management unit by collecting and analyzing a minimum of three representative samples of the waste stream using the procedures in paragraph (c)(3) of this section. The test shall be conducted under conditions that exist when the wastewater treatment system is operating at the highest inlet wastewater stream flow rate and benzene content expected to occur. Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a test. The owner or operator shall record all process information as is necessary to document the operating conditions during the test.

(h) An owner or operator shall test equipment for compliance with no detectable emissions as required in §§ 61.343 through 61.347, and § 61.349 of

this subpart in accordance with the following requirements:

(1) Monitoring shall comply with Method 21 from appendix A of 40 CFR part 60.

(2) The detection instrument shall meet the performance criteria of Method 21.

(3) The instrument shall be calibrated before use on each day of its use by the procedures specified in Method 21.

(4) Calibration gases shall be:

(i) Zero air (less than 10 ppm of hydrocarbon in air); and

(ii) A mixture of methane or n-hexane and air at a concentration of approximately, but less than, 10,000 ppm methane or n-hexane.

(5) The background level shall be determined as set forth in Method 21.

(6) The instrument probe shall be traversed around all potential leak interfaces as close as possible to the interface as described in Method 21.

(7) The arithmetic difference between the maximum concentration indicated by the instrument and the background level is compared to 500 ppm for determining compliance.

(i) An owner or operator using a performance test to demonstrate compliance of a control device with either the organic reduction efficiency requirement or the benzene reduction efficiency requirement specified under § 61.349(a)(2) shall use the following procedures:

(1) The test shall be conducted under conditions that exist when the waste management unit vented to the control device is operating at the highest load or capacity level expected to occur. Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a test. The owner or operator shall record all process information necessary to document the operating conditions during the test.

(2) Sampling sites shall be selected using Method 1 or 1A from appendix A of 40 CFR part 60, as appropriate.

(3) The mass flow rate of either the organics or benzene entering and exiting the control device shall be determined as follows:

(i) The time period for the test shall not be less than 3 hours during which at least 3 stack gas samples are collected. Samples of the vent stream entering and exiting the control device shall be collected during the same time period. Each sample shall be collected over a 1-hour period (e.g., in a tedlar bag) to represent a time-integrated composite sample.

(ii) A run shall consist of a 1-hour period during the test. For each run:

(A) The reading from each measurement shall be recorded;

(B) The volume exhausted shall be determined using Method 2, 2A, 2C, or 2D from appendix A of 40 CFR part 60, as appropriate;

(C) The organic concentration or the benzene concentration, as appropriate, in the vent stream entering and exiting the control shall be determined using Method 18 from appendix A of 40 CFR part 60.

(iii) The mass of organics or benzene entering and exiting the control device during each run shall be calculated as follows:

$$M_{aj} = \frac{K_1 V_{aj}}{10^6}\left(\sum_{i=1}^{n} C_{ai} MW_i\right)$$

$$M_{bj} = \frac{K_1 V_{bj}}{10^6}\left(\sum_{i=1}^{n} C_{bi} MW_i\right)$$

M_{aj} = Mass of organics or benzene in the vent stream entering the control device during run j, kg (lb).

M_{bj} = Mass of organics or benzene in the vent stream exiting the control device during run j, kg (lb).

V_{aj} = Volume of vent stream entering the control device during run j, at standard conditions, m^3 (ft^3).

V_{bj} = Volume of vent stream exiting the control device during run j, at standard conditions, m^3 (ft^3).

C_{ai} = Organic concentration of compound i or the benzene concentration measured in the vent stream entering the control device as determined by Method 18, ppm by volume on a dry basis.

C_{bi} = Organic concentration of compound i or the benzene concentration measured in the vent stream exiting the control device as determined by Method 18, ppm by volume on a dry basis.

MW_i = Molecular weight of organic compound i in the vent stream, or the molecular weight of benzene, kg/kg-mol (lb/lb-mole).

n = Number of organic compounds in the vent stream; if benzene reduction efficiency is being demonstrated, then n=1.
K_1 = Conversion factor for molar volume at standard conditions (293 K and 760 mm Hg (527 R and 14.7 psia))
= 0.0416 kg-mol/m^3 (0.00118 lb-mol/ft^3)
10^{-6}=Conversion factor for ppmv.

(iv) The mass flow rate of organics or benzene entering and exiting the control device shall be calculated as follows:

$$E_a - \left(\sum_{j=1}^{n} M_{aj} \right) / T$$

$$E_b - \left(\sum_{j=1}^{n} M_{bj} \right) / T$$

Where:
E_a = Mass flow rate of organics or benzene entering the control device, kg/hr (lb/hr).
E_b = Mass flow rate of organics or benzene exiting the control device, kg/hr (lb/hr).
M_{aj} = Mass of organics or benzene in the vent stream entering the control device during run j, kg (lb).
M_{bj} = Mass of organics or benzene in the vent stream exiting the control device during run j, kg (lb).
T = Total time of all runs, hr.
n = Number of runs.

(4) The organic reduction efficiency or the benzene reduction efficiency for the control device shall be calculated as follows:

$$R = \frac{E_a - E_b}{E_a} \times 100$$

Where:
R = Total organic reduction of efficiency or benzene reduction efficiency for the control device, percent.
E_b = Mass flow rate of organics or benzene entering the control device, kg/hr (lb/hr).
E_a = Mass flow rate of organic or benzene emitted from the control device, kg/hr (lb/hr).

(j) An owner or operator shall determine the benzene quantity for the purposes of the calculation required by § 61.342 (c)(3)(ii)(B) according to the provisions of paragraph (a) of this section, except that the procedures in paragraph (a) of this section shall also apply to wastes with a water content of 10 percent or less.

(k) An owner or operator shall determine the benzene quantity for the purposes of the calculation required by § 61.342(e)(2) by the following procedure:

(1) For each waste stream that is not controlled for air emissions in accordance with § 61.343. 61.344, 61.345, 61.346, 61.347, or 61.348(a), as applicable to the waste management unit that manages the waste, the benzene quantity shall be determined as specified in paragraph (a) of this section, except that paragraph (b)(4) of this section shall not apply, i.e., the waste quantity for process unit turnaround waste is not annualized but shall be included in the determination of benzene quantity for the year in which the waste is generated for the purposes of the calculation required by § 61.342(e)(2).

(2) For each waste stream that is controlled for air emissions in accordance with § 61.343. 61.344, 61.345, 61.346, 61.347, or 61.348(a), as applicable to the waste management unit that manages the waste, the determination of annual waste quantity and flow-weighted annual average benzene concentration shall be made at the first applicable location as described in paragraphs (k)(2)(i), (k)(2)(ii), and (k)(2)(iii) of this section and prior to any reduction of benzene concentration through volatilization of the benzene, using the methods given in (k)(2)(iv) and (k)(2)(v) of this section.

(i) Where the waste stream enters the first waste management unit not complying with §§ 61.343, 61.344, 61.345, 61.346, 61.347, and 61.348(a) that are applicable to the waste management unit,

(ii) For each waste stream that is managed or treated only in compliance with §§ 61.343 through 61.348(a) up to the point of final direct discharge from the facility, the determination of benzene quantity shall be prior to any reduction of benzene concentration through volatilization of the benzene, or

(iii) For wastes managed in units controlled for air emissions in accordance with §§ 61.343, 61.344, 61.345, 61.346, 61.347, and 61.348(a), and then transferred offsite, facilities shall use the first applicable offsite location as described in paragraphs (k)(2)(i) and

(k)(2)(ii) of this section if they have documentation from the offsite facility of the benzene quantity at this location. Facilities without this documentation for offsite wastes shall use the benzene quantity determined at the point where the transferred waste leaves the facility.

(iv) Annual waste quantity shall be determined using the procedures in paragraphs (b)(5), (6), or (7) of this section, and

(v) The flow-weighted annual average benzene concentration shall be determined using the procedures in paragraphs (c)(2) or (3) of this section.

(3) The benzene quantity in a waste stream that is generated less than one time per year, including process unit turnaround waste, shall be included in the determination of benzene quantity as determined in paragraph (k)(6) of this section for the year in which the waste is generated. The benzene quantity in this waste stream shall not be annualized or averaged over the time interval between the activities that resulted in generation of the waste for purposes of determining benzene quantity as determined in paragraph (k)(6) of this section.

(4) The benzene in waste entering an enhanced biodegradation unit, as defined in §61.348(b)(2)(ii)(B), shall not be included in the determination of benzene quantity, determined in paragraph (k)(6) of this section, if the following conditions are met:

(i) The benzene concentration for each waste stream entering the enhanced biodegradation unit is less than 10 ppmw on a flow-weighted annual average basis, and

(ii) All prior waste management units managing the waste comply with §§61.343, 61.344, 61.345, 61.346, 61.347 and 61.348(a).

(5) The benzene quantity for each waste stream in paragraph (k)(2) of this section shall be determined by multiplying the annual waste quantity of each waste stream times its flow-weighted annual average benzene concentration.

(6) The total benzene quantity for the purposes of the calculation required by §61.342(e)(2) shall be determined by adding together the benzene quantities determined in paragraphs (k)(1) and (k)(5) of this section for each applicable waste stream.

(7) If the benzene quantity determined in paragraph (6) of this section exceeds 6.0 Mg/yr (6.6 ton/yr) only because of multiple counting of the benzene quantity for a waste stream, the owner or operator may use the following procedures for the purposes of the calculation required by §61.342(e)(2):

(i) Determine which waste management units are involved in the multiple counting of benzene;

(ii) Determine the quantity of benzene that is emitted, recovered, or removed from the affected units identified in paragraph (k)(7)(i) of this section, or destroyed in the units if applicable, using either direct measurements or the best available estimation techniques developed or approved by the Administrator.

(iii) Adjust the benzene quantity to eliminate the multiple counting of benzene based on the results from paragraph (k)(7)(ii) of this section and determine the total benzene quantity for the purposes of the calculation required by §61.342(e)(2).

(iv) Submit in the annual report required under §61.357(a) a description of the methods used and the resulting calculations for the alternative procedure under paragraph (k)(7) of this section, the benzene quantity determination from paragraph (k)(6) of this section, and the adjusted benzene quantity determination from paragraph (k)(7)(iii) of this section.

[55 FR 8346, Mar. 7, 1990; 55 FR 12444, Apr. 3, 1990, as amended at 55 FR 37231, Sept. 10, 1990; 58 FR 3099, Jan. 7, 1993; 65 FR 62160, Oct. 17, 2000]

§61.356 Recordkeeping requirements.

(a) Each owner or operator of a facility subject to the provisions of this subpart shall comply with the recordkeeping requirements of this section. Each record shall be maintained in a readily accessible location at the facility site for a period not less than two years from the date the information is recorded unless otherwise specified.

(b) Each owner or operator shall maintain records that identify each waste stream at the facility subject to this subpart, and indicate whether or

not the waste stream is controlled for benzene emissions in accordance with this subpart. In addition the owner or operator shall maintain the following records:

(1) For each waste stream not controlled for benzene emissions in accordance with this subpart, the records shall include all test results, measurements, calculations, and other documentation used to determine the following information for the waste stream: waste stream identification, water content, whether or not the waste stream is a process wastewater stream, annual waste quantity, range of benzene concentrations, annual average flow-weighted benzene concentration, and annual benzene quantity.

(2) For each waste stream exempt from § 61.342(c)(1) in accordance with § 61.342(c)(3), the records shall include:

(i) All measurements, calculations, and other documentation used to determine that the continuous flow of process wastewater is less than 0.02 liters (0.005 gallons) per minute or the annual waste quantity of process wastewater is less than 10 Mg/yr (11 ton/yr) in accordance with § 61.342(c)(3)(i), or

(ii) All measurements, calculations, and other documentation used to determine that the sum of the total annual benzene quantity in all exempt waste streams does not exceed 2.0 Mg/yr (2.2 ton/yr) in accordance with § 61.342(c)(3)(ii).

(3) For each facility where process wastewater streams are controlled for benzene emissions in accordance with § 61.342(d) of this subpart, the records shall include for each treated process wastewater stream all measurements, calculations, and other documentation used to determine the annual benzene quantity in the process wastewater stream exiting the treatment process.

(4) For each facility where waste streams are controlled for benzene emissions in accordance with § 61.342(e), the records shall include for each waste stream all measurements, including the locations of the measurements, calculations, and other documentation used to determine that the total benzene quantity does not exceed 6.0 Mg/yr (6.6 ton/yr).

(5) For each facility where the annual waste quantity for process unit turnaround waste is determined in accordance with § 61.355(b)(5), the records shall include all test results, measurements, calculations, and other documentation used to determine the following information: identification of each process unit at the facility that undergoes turnarounds, the date of the most recent turnaround for each process unit, identification of each process unit turnaround waste, the water content of each process unit turnaround waste, the annual waste quantity determined in accordance with § 61.355(b)(5), the range of benzene concentrations in the waste, the annual average flow-weighted benzene concentration of the waste, and the annual benzene quantity calculated in accordance with § 61.355(a)(1)(iii) of this section.

(6) For each facility where wastewater streams are controlled for benzene emissions in accordance with § 61.348(b)(2), the records shall include all measurements, calculations, and other documentation used to determine the annual benzene content of the waste streams and the total annual benzene quantity contained in all waste streams managed or treated in exempt waste management units.

(c) An owner or operator transferring waste off-site to another facility for treatment in accordance with § 61.342(f) shall maintain documentation for each offsite waste shipment that includes the following information: Date waste is shipped offsite, quantity of waste shipped offsite, name and address of the facility receiving the waste, and a copy of the notice sent with the waste shipment.

(d) An owner or operator using control equipment in accordance with §§ 61.343 through 61.347 shall maintain engineering design documentation for all control equipment that is installed on the waste management unit. The documentation shall be retained for the life of the control equipment. If a control device is used, then the owner or operator shall maintain the control device records required by paragraph (f) of this section.

(e) An owner or operator using a treatment process or wastewater treatment system unit in accordance with § 61.348 of this subpart shall maintain the following records. The documentation shall be retained for the life of the unit.

(1) A statement signed and dated by the owner or operator certifying that the unit is designed to operate at the documented performance level when the waste stream entering the unit is at the highest waste stream flow rate and benzene content expected to occur.

(2) If engineering calculations are used to determine treatment process or wastewater treatment system unit performance, then the owner or operator shall maintain the complete design analysis for the unit. The design analysis shall include for example the following information: Design specifications, drawings, schematics, piping and instrumentation diagrams, and other documentation necessary to demonstrate the unit performance.

(3) If performance tests are used to determine treatment process or wastewater treatment system unit performance, then the owner or operator shall maintain all test information necessary to demonstrate the unit performance.

(i) A description of the unit including the following information: type of treatment process; manufacturer name and model number; and for each waste stream entering and exiting the unit, the waste stream type (e.g., process wastewater, sludge, slurry, etc.), and the design flow rate and benzene content.

(ii) Documentation describing the test protocol and the means by which sampling variability and analytical variability were accounted for in the determination of the unit performance. The description of the test protocol shall include the following information: sampling locations, sampling method, sampling frequency, and analytical procedures used for sample analysis.

(iii) Records of unit operating conditions during each test run including all key process parameters.

(iv) All test results.

(4) If a control device is used, then the owner or operator shall maintain the control device records required by paragraph (f) of this section.

(f) An owner or operator using a closed-vent system and control device in accordance with § 61.349 of this subpart shall maintain the following records. The documentation shall be retained for the life of the control device.

(1) A statement signed and dated by the owner or operator certifying that the closed-vent system and control device is designed to operate at the documented performance level when the waste management unit vented to the control device is or would be operating at the highest load or capacity expected to occur.

(2) If engineering calculations are used to determine control device performance in accordance with § 61.349(c), then a design analysis for the control device that includes for example:

(i) Specifications, drawings, schematics, and piping and instrumentation diagrams prepared by the owner or operator, or the control device manufacturer or vendor that describe the control device design based on acceptable engineering texts. The design analysis shall address the following vent stream characteristics and control device operating parameters:

(A) For a thermal vapor incinerator, the design analysis shall consider the vent stream composition, constituent concentrations, and flow rate. The design analysis shall also establish the design minimum and average temperature in the combustion zone and the combustion zone residence time.

(B) For a catalytic vapor incinerator, the design analysis shall consider the vent stream composition, constituent concentrations, and flow rate. The design analysis shall also establish the design minimum and average temperatures across the catalyst bed inlet and outlet.

(C) For a boiler or process heater, the design analysis shall consider the vent stream composition, constituent concentrations, and flow rate. The design analysis shall also establish the design minimum and average flame zone temperatures, combustion zone residence time, and description of method and location where the vent stream is introduced into the flame zone.

(D) For a flare, the design analysis shall consider the vent stream composition, constituent concentrations, and flow rate. The design analysis shall also consider the requirements specified in 40 CFR 60.18.

(E) For a condenser, the design analysis shall consider the vent stream composition, constituent concentration, flow rate, relative humidity, and temperature. The design analysis shall also establish the design outlet organic compound concentration level or the design outlet benzene concentration level, design average temperature of the condenser exhaust vent stream, and the design average temperatures of the coolant fluid at the condenser inlet and outlet.

(F) For a carbon adsorption system that regenerates the carbon bed directly on-site in the control device such as a fixed-bed adsorber, the design analysis shall consider the vent stream composition, constituent concentration, flow rate, relative humidity, and temperature. The design analysis shall also establish the design exhaust vent stream organic compound concentration level or the design exhaust vent stream benzene concentration level, number and capacity of carbon beds, type and working capacity of activated carbon used for carbon beds, design total steam flow over the period of each complete carbon bed regeneration cycle, duration of the carbon bed steaming and cooling/drying cycles, design carbon bed temperature after regeneration, design carbon bed regeneration time, and design service life of carbon.

(G) For a carbon adsorption system that does not regenerate the carbon bed directly on-site in the control device, such as a carbon canister, the design analysis shall consider the vent stream composition, constituent concentration, flow rate, relative humidity, and temperature. The design analysis shall also establish the design exhaust vent stream organic compound concentration level or the design exhaust vent stream benzene concentration level, capacity of carbon bed, type and working capacity of activated carbon used for carbon bed, and design carbon replacement interval based on the total carbon working capacity of the control device and source operating schedule.

(H) For a control device subject to the requirements of § 61.349(a)(2)(iv), the design analysis shall consider the vent stream composition, constituent concentration, and flow rate. The design analysis shall also include all of the information submitted under § 61.349 (a)(2)(iv).

(ii) [Reserved]

(3) If performance tests are used to determine control device performance in accordance with § 61.349(c) of this subpart:

(i) A description of how it is determined that the test is conducted when the waste management unit or treatment process is operating at the highest load or capacity level. This description shall include the estimated or design flow rate and organic content of each vent stream and definition of the acceptable operating ranges of key process and control parameters during the test program.

(ii) A description of the control device including the type of control device, control device manufacturer's name and model number, control device dimensions, capacity, and construction materials.

(iii) A detailed description of sampling and monitoring procedures, including sampling and monitoring locations in the system, the equipment to be used, sampling and monitoring frequency, and planned analytical procedures for sample analysis.

(iv) All test results.

(g) An owner or operator shall maintain a record for each visual inspection required by §§ 61.343 through 61.347 of this subpart that identifies a problem (such as a broken seal, gap or other problem) which could result in benzene emissions. The record shall include the date of the inspection, waste management unit and control equipment location where the problem is identified, a description of the problem, a description of the corrective action taken, and the date the corrective action was completed.

(h) An owner or operator shall maintain a record for each test of no detectable emissions required by §§ 61.343

through 61.347 and §61.349 of this subpart. The record shall include the following information: date the test is performed, background level measured during test, and maximum concentration indicated by the instrument reading measured for each potential leak interface. If detectable emissions are measured at a leak interface, then the record shall also include the waste management unit, control equipment, and leak interface location where detectable emissions were measured, a description of the problem, a description of the corrective action taken, and the date the corrective action was completed.

(i) For each treatment process and wastewater treatment system unit operated to comply with §61.348, the owner or operator shall maintain documentation that includes the following information regarding the unit operation:

(1) Dates of startup and shutdown of the unit.

(2) If measurements of waste stream benzene concentration are performed in accordance with §61.354(a)(1) of this subpart, the owner or operator shall maintain records that include date each test is performed and all test results.

(3) If a process parameter is continuously monitored in accordance with §61.354(a)(2) of this subpart, the owner or operator shall maintain records that include a description of the operating parameter (or parameters) to be monitored to ensure that the unit will be operated in conformance with these standards and the unit's design specifications, and an explanation of the criteria used for selection of that parameter (or parameters). This documentation shall be kept for the life of the unit.

(4) If measurements of waste stream benzene concentration are performed in accordance with §61.354(b), the owner or operator shall maintain records that include the date each test is performed and all test results.

(5) Periods when the unit is not operated as designed.

(j) For each control device, the owner or operator shall maintain documentation that includes the following information regarding the control device operation:

(1) Dates of startup and shutdown of the closed-vent system and control device.

(2) A description of the operating parameter (or parameters) to be monitored to ensure that the control device will be operated in conformance with these standards and the control device's design specifications and an explanation of the criteria used for selection of that parameter (or parameters). This documentation shall be kept for the life of the control device.

(3) Periods when the closed-vent system and control device are not operated as designed including all periods and the duration when:

(i) Any valve car-seal or closure mechanism required under §61.349(a)(1)(ii) is broken or the by-pass line valve position has changed.

(ii) The flow monitoring devices required under §61.349(a)(1)(ii) indicate that vapors are not routed to the control device as required.

(4) If a thermal vapor incinerator is used, then the owner or operator shall maintain continuous records of the temperature of the gas stream in the combustion zone of the incinerator and records of all 3-hour periods of operation during which the average temperature of the gas stream in the combustion zone is more than 28 °C (50 °F) below the design combustion zone temperature.

(5) If a catalytic vapor incinerator is used, then the owner or operator shall maintain continuous records of the temperature of the gas stream both upstream and downstream of the catalyst bed of the incinerator, records of all 3-hour periods of operation during which the average temperature measured before the catalyst bed is more than 28 °C (50 °F) below the design gas stream temperature, and records of all 3-hour periods of operation during which the average temperature difference across the catalyst bed is less than 80 percent of the design temperature difference.

(6) If a boiler or process heater is used, then the owner or operator shall maintain records of each occurrence when there is a change in the location at which the vent stream is introduced into the flame zone as required by

§ 61.349(a)(2)(i)(C). For a boiler or process heater having a design heat input capacity less than 44 MW (150 × 106 BTU/hr), the owner or operator shall maintain continuous records of the temperature of the gas stream in the combustion zone of the boiler or process heater and records of all 3-hour periods of operation during which the average temperature of the gas stream in the combustion zone is more than 28 °C (50 °F) below the design combustion zone temperature. For a boiler or process heater having a design heat input capacity greater than or equal to 44 MW (150 × 106 BTU/hr), the owner or operator shall maintain continuous records of the parameter(s) monitored in accordance with the requirements of § 61.354(c)(5).

(7) If a flare is used, then the owner or operator shall maintain continuous records of the flare pilot flame monitoring and records of all periods during which the pilot flame is absent.

(8) If a condenser is used, then the owner or operator shall maintain records from the monitoring device of the parameters selected to be monitored in accordance with § 61.354(c)(6). If concentration of organics or concentration of benzene in the control device outlet gas stream is monitored, then the owner or operator shall record all 3-hour periods of operation during which the concentration of organics or the concentration of benzene in the exhaust stream is more than 20 percent greater than the design value. If the temperature of the condenser exhaust stream and coolant fluid is monitored, then the owner or operator shall record all 3-hour periods of operation during which the temperature of the condenser exhaust vent stream is more than 6 °C (11 °F) above the design average exhaust vent stream temperature, or the temperature of the coolant fluid exiting the condenser is more than 6 °C (11 °F) above the design average coolant fluid temperature at the condenser outlet.

(9) If a carbon adsorber is used, then the owner or operator shall maintain records from the monitoring device of the concentration of organics or the concentration of benzene in the control device outlet gas stream. If the concentration of organics or the concentration of benzene in the control device outlet gas stream is monitored, then the owner or operator shall record all 3-hour periods of operation during which the concentration of organics or the concentration of benzene in the exhaust stream is more than 20 percent greater than the design value. If the carbon bed regeneration interval is monitored, then the owner or operator shall record each occurrence when the vent stream continues to flow through the control device beyond the predetermined carbon bed regeneration time.

(10) If a carbon adsorber that is not regenerated directly on site in the control device is used, then the owner or operator shall maintain records of dates and times when the control device is monitored, when breakthrough is measured, and shall record the date and time then the existing carbon in the control device is replaced with fresh carbon.

(11) If an alternative operational or process parameter is monitored for a control device, as allowed in § 61.354(e) of this subpart, then the owner or operator shall maintain records of the continuously monitored parameter, including periods when the device is not operated as designed.

(12) If a control device subject to the requirements of § 61.349(a)(2)(iv) is used, then the owner or operator shall maintain records of the parameters that are monitored and each occurrence when the parameters monitored are outside the range of values specified in § 61.349(a)(2)(iv)(C), or other records as specified by the Administrator.

(k) An owner or operator who elects to install and operate the control equipment in § 61.351 of this subpart shall comply with the recordkeeping requirements in 40 CFR 60.115b.

(l) An owner or operator who elects to install and operate the control equipment in § 61.352 of this subpart shall maintain records of the following:

(1) The date, location, and corrective action for each visual inspection required by 40 CFR 60.693–2(a)(5), during which a broken seal, gap, or other problem is identified that could result in benzene emissions.

(2) Results of the seal gap measurements required by 40 CFR 60.693–2(a).

(m) If a system is used for emission control that is maintained at a pressure less than atmospheric pressure with openings to provide dilution air, then the owner or operator shall maintain records of the monitoring device and records of all periods during which the pressure in the unit is operated at a pressure that is equal to or greater than atmospheric pressure.

(n) Each owner or operator using a total enclosure to comply with control requirements for tanks in § 61.343 or the control requirements for containers in § 61.345 must keep the records required in paragraphs (n)(1) and (2) of this section. Owners or operators may use records as required in 40 CFR 264.1089(b)(2)(iv) or 40 CFR 265.1090(b)(2)(iv) for a tank or as required in 40 CFR 264.1089(d)(1) or 40 CFR 265.1090(d)(1) for a container to meet the recordkeeping requirement in paragraph (n)(1) of this section. The owner or operator must make the records of each verification of a total enclosure available for inspection upon request.

(1) Records of the most recent set of calculations and measurements performed to verify that the enclosure meets the criteria of a permanent total enclosure as specified in ''Procedure T—Criteria for and Verification of a Permanent or Temporary Total Enclosure'' in 40 CFR 52.741, appendix B;

(2) Records required for a closed-vent system and control device according to the requirements in paragraphs (d) (f), and (j) of this section.

[55 FR 8346, Mar. 7, 1990; 55 FR 12444, Apr. 3, 1990; 55 FR 18331, May 2, 1990, as amended at 58 FR 3103, Jan. 7, 1993; 65 FR 62161, Oct. 17, 2000; 67 FR 68533, Nov. 12, 2002]

§ 61.357 Reporting requirements.

(a) Each owner or operator of a chemical plant, petroleum refinery, coke by-product recovery plant, and any facility managing wastes from these industries shall submit to the Administrator within 90 days after January 7, 1993, or by the initial startup for a new source with an initial startup after the effective date, a report that summarizes the regulatory status of each waste stream subject to § 61.342 and is determined by the procedures specified in § 61.355(c) to contain benzene. Each owner or operator subject to this subpart who has no benzene onsite in wastes, products, by-products, or intermediates shall submit an initial report that is a statement to this effect. For all other owners or operators subject to this subpart, the report shall include the following information:

(1) Total annual benzene quantity from facility waste determined in accordance with § 61.355(a) of this subpart.

(2) A table identifying each waste stream and whether or not the waste stream will be controlled for benzene emissions in accordance with the requirements of this subpart.

(3) For each waste stream identified as not being controlled for benzene emissions in accordance with the requirements of this subpart the following information shall be added to the table:

(i) Whether or not the water content of the waste stream is greater than 10 percent;

(ii) Whether or not the waste stream is a process wastewater stream, product tank drawdown, or landfill leachate;

(iii) Annual waste quantity for the waste stream;

(iv) Range of benzene concentrations for the waste stream;

(v) Annual average flow-weighted benzene concentration for the waste stream; and

(vi) Annual benzene quantity for the waste stream.

(4) The information required in paragraphs (a) (1), (2), and (3) of this section should represent the waste stream characteristics based on current configuration and operating conditions. An owner or operator only needs to list in the report those waste streams that contact materials containing benzene. The report does not need to include a description of the controls to be installed to comply with the standard or other information required in § 61.10(a).

(b) If the total annual benzene quantity from facility waste is less than 1 Mg/yr (1.1 ton/yr), then the owner or operator shall submit to the Administrator a report that updates the information listed in paragraphs (a)(1) through (a)(3) of this section whenever

there is a change in the process generating the waste stream that could cause the total annual benzene quantity from facility waste to increase to 1 Mg/yr (1.1 ton/yr) or more.

(c) If the total annual benzene quantity from facility waste is less than 10 Mg/yr (11 ton/yr) but is equal to or greater than 1 Mg/yr (1.1 ton/yr), then the owner or operator shall submit to the Administrator a report that updates the information listed in paragraphs (a)(1) through (a)(3) of this section. The report shall be submitted annually and whenever there is a change in the process generating the waste stream that could cause the total annual benzene quantity from facility waste to increase to 10 Mg/yr (11 ton/yr) or more. If the information in the annual report required by paragraphs (a)(1) through (a)(3) of this section is not changed in the following year, the owner or operator may submit a statement to that effect.

(d) If the total annual benzene quantity from facility waste is equal to or greater than 10 Mg/yr (11 ton/yr), then the owner or operator shall submit to the Administrator the following reports:

(1) Within 90 days after January 7, 1993, unless a waiver of compliance under § 61.11 of this part is granted, or by the date of initial startup for a new source with an initial startup after the effective date, a certification that the equipment necessary to comply with these standards has been installed and that the required initial inspections or tests have been carried out in accordance with this subpart. If a waiver of compliance is granted under § 61.11, the certification of equipment necessary to comply with these standards shall be submitted by the date the waiver of compliance expires.

(2) Beginning on the date that the equipment necessary to comply with these standards has been certified in accordance with paragraph (d)(1) of this section, the owner or operator shall submit annually to the Administrator a report that updates the information listed in paragraphs (a)(1) through (a)(3) of this section. If the information in the annual report required by paragraphs (a)(1) through (a)(3) of this section is not changed in the following year, the owner or operator may submit a statement to that effect.

(3) If an owner or operator elects to comply with the requirements of § 61.342(c)(3)(ii), then the report required by paragraph (d)(2) of this section shall include a table identifying each waste stream chosen for exemption and the total annual benzene quantity in these exempted streams.

(4) If an owner or operator elects to comply with the alternative requirements of § 61.342(d) of this subpart, then he shall include in the report required by paragraph (d)(2) of this section a table presenting the following information for each process wastewater stream:

(i) Whether or not the process wastewater stream is being controlled for benzene emissions in accordance with the requirements of this subpart;

(ii) For each process wastewater stream identified as not being controlled for benzene emissions in accordance with the requirements of this subpart, the table shall report the following information for the process wastewater stream as determined at the point of waste generation: annual waste quantity, range of benzene concentrations, annual average flow-weighted benzene concentration, and annual benzene quantity;

(iii) For each process wastewater stream identified as being controlled for benzene emissions in accordance with the requirements of this subpart, the table shall report the following information for the process wastewater stream as determined at the exit to the treatment process: Annual waste quantity, range of benzene concentrations, annual average flow-weighted benzene concentration, and annual benzene quantity.

(5) If an owner or operator elects to comply with the alternative requirements of § 61.342(e), then the report required by paragraph (d)(2) of this section shall include a table presenting the following information for each waste stream:

(i) For each waste stream identified as not being controlled for benzene emissions in accordance with the requirements of this subpart; the table shall report the following information

for the waste stream as determined at the point of waste generation: annual waste quantity, range of benzene concentrations, annual average flow-weighted benzene concentration, and annual benzene quantity;

(ii) For each waste stream identified as being controlled for benzene emissions in accordance with the requirements of this subpart; the table shall report the following information for the waste stream as determined at the applicable location described in §61.355(k)(2): Annual waste quantity, range of benzene concentrations, annual average flow-weighted benzene concentration, and annual benzene quantity.

(6) Beginning 3 months after the date that the equipment necessary to comply with these standards has been certified in accordance with paragraph (d)(1) of this section, the owner or operator shall submit quarterly to the Administrator a certification that all of the required inspections have been carried out in accordance with the requirements of this subpart.

(7) Beginning 3 months after the date that the equipment necessary to comply with these standards has been certified in accordance with paragraph (d)(1) of this section, the owner or operator shall submit a report quarterly to the Administrator that includes:

(i) If a treatment process or wastewater treatment system unit is monitored in accordance with §61.354(a)(1) of this subpart, then each period of operation during which the concentration of benzene in the monitored waste stream exiting the unit is equal to or greater than 10 ppmw.

(ii) If a treatment process or wastewater treatment system unit is monitored in accordance with §61.354(a)(2) of this subpart, then each 3-hour period of operation during which the average value of the monitored parameter is outside the range of acceptable values or during which the unit is not operating as designed.

(iii) If a treatment process or wastewater treatment system unit is monitored in accordance with §61.354(b), then each period of operation during which the flow-weighted annual average concentration of benzene in the monitored waste stream entering the unit is equal to or greater than 10 ppmw and/or the total annual benzene quantity is equal to or greater than 1.0 mg/yr.

(iv) For a control device monitored in accordance with §61.354(c) of this subpart, each period of operation monitored during which any of the following conditions occur, as applicable to the control device:

(A) Each 3-hour period of operation during which the average temperature of the gas stream in the combustion zone of a thermal vapor incinerator, as measured by the temperature monitoring device, is more than 28 °C (50 °F) below the design combustion zone temperature.

(B) Each 3-hour period of operation during which the average temperature of the gas stream immediately before the catalyst bed of a catalytic vapor incinerator, as measured by the temperature monitoring device, is more than 28 °C (50 °F) below the design gas stream temperature, and any 3-hour period during which the average temperature difference across the catalyst bed (i.e., the difference between the temperatures of the gas stream immediately before and after the catalyst bed), as measured by the temperature monitoring device, is less than 80 percent of the design temperature difference.

(C) Each 3-hour period of operation during which the average temperature of the gas stream in the combustion zone of a boiler or process heater having a design heat input capacity less than 44 MW (150 × 106 BTU/hr), as mesured by the temperature monitoring device, is more than 28 °C (50 °F) below the design combustion zone temperature.

(D) Each 3-hour period of operation during which the average concentration of organics or the average concentration of benzene in the exhaust gases from a carbon adsorber, condenser, or other vapor recovery system is more than 20 percent greater than the design concentration level of organics or benzene in the exhaust gas.

(E) Each 3-hour period of operation during which the temperature of the condenser exhaust vent stream is more than 6 °C (11 °F) above the design average exhaust vent stream temperature,

or the temperature of the coolant fluid exiting the condenser is more than 6 °C (11 °F) above the design average coolant fluid temperature at the condenser outlet.

(F) Each period in which the pilot flame of a flare is absent.

(G) Each occurrence when there is a change in the location at which the vent stream is introduced into the flame zone of a boiler or process heater as required by § 61.349(a)(2)(i)(C) of this subpart.

(H) Each occurrence when the carbon in a carbon adsorber system that is regenerated directly on site in the control device is not regenerated at the predetermined carbon bed regeneration time.

(I) Each occurrence when the carbon in a carbon adsorber system that is not regenerated directly on site in the control device is not replaced at the predetermined interval specified in § 61.354(c) of this subpart.

(J) Each 3-hour period of operation during which the parameters monitored are outside the range of values specified in § 61.349(a)(2)(iv)(C), or any other periods specified by the Administrator for a control device subject to the requirements of § 61.349(a)(2)(iv).

(v) For a cover and closed-vent system monitored in accordance with § 61.354(g), the owner or operator shall submit a report quarterly to the Administrator that identifies any period in which the pressure in the waste management unit is equal to or greater than atmospheric pressure.

(8) Beginning one year after the date that the equipment necessary to comply with these standards has been certified in accordance with paragraph (d)(1) of this section, the owner or operator shall submit annually to the Administrator a report that summarizes all inspections required by §§ 61.342 through 61.354 during which detectable emissions are measured or a problem (such as a broken seal, gap or other problem) that could result in benzone emissions is identified, including information about the repairs or corrective action taken.

(e) An owner or operator electing to comply with the provisions of §§ 61.351 or 61.352 of this subpart shall notify the Administrator of the alternative standard selected in the report required under § 61.07 or § 61.10 of this part.

(f) An owner or operator who elects to install and operate the control equipment in § 61.351 of this subpart shall comply with the reporting requirements in 40 CFR 60.115b.

(g) An owner or operator who elects to install and operate the control equipment in § 61.352 of this subpart shall submit initial and quarterly reports that identify all seal gap measurements, as required in 40 CFR 60.693–2(a), that are outside the prescribed limits.

[55 FR 8346, Mar. 7 1990; 55 FR 12444, Apr. 3, 1990, as amended at 55 FR 37231, Sept. 10, 1990; 58 FR 3105, Jan. 7, 1993; 65 FR 62161, Oct. 17, 2000]

§ 61.358 Delegation of authority.

(a) In delegating implementation and enforcement authority to a State under section 112(d) of the Clean Air Act, the authorities contained in paragraph (b) of this section shall be retained by the Administrator and not transferred to a State.

(b) Alternative means of emission limitation under § 61.353 of this subpart will not be delegated to States.

§ 61.359 [Reserved]

APPENDIX B
COPIES OF NOTIFICATIONS

Westates Carbon-Arizona, Inc.

2523 Mutahar Street
Post Office Box E
Parker, AZ 85344
Tel. 602-669-5758
Fax. 602-669-5775/5776

BY HAND DELIVERY

June 6, 1995

Mr. David Howecamp
Director, Air and Toxics Division (A-1)
U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105

FILE COPY

RE: Westates Carbon-Arizona, Inc. (WCAI)
Notifications Pursuant to Benzene NESHAP

Dear Mr. Howecamp:

Please find enclosed one copy of the following documents with respect to the WCAI facility in Parker, Arizona:

1) Existing Source Notification as required by 40 CFR §61.10;

2) Supplement to regulatory status notification as required by 40 CFR §61.357(a); and

3) Subpart FF annual reports for calendar years 1993 and 1994.

Representatives of WCAI discussed the applicability of Subpart FF with Mr. Eric Auer of EPA Region IX by telephone on May 25, 1995, and requested a meeting to discuss related issues.

A meeting has been scheduled at Region IX on the date of this letter and is expected to include representatives of WCAI and Mr. Auer and Ms. Jennifer Fox of EPA Region IX.

As discussed previously with Mr. Auer, WCAI conducted an extensive internal compliance audit earlier this year and determined that Subpart FF requirements were applicable at its facility to an extent not previously understood. WCAI immediately located and hired a consultant with experience in Subpart FF compliance who prepared a program to ensure our facility would fully comply with all Subpart FF requirements. The enclosed documents are a direct result of these activities and ensure that WCAI achieves full compliance with Subpart FF.

We anticipate a discussion of these documents with Mr. Auer and Ms. Fox today and remain ready to work with Region IX to ensure continuous compliance with this complex set of regulations.

Sincerely,

Monte McCue
Plant Manager

EXISTING SOURCE NOTIFICATION REQUIRED BY 40 CFR 61.10
WESTATES CARBON - ARIZONA, INC.

The following information is provided as required by 40 CFR 61.10:

1. **Name and Address of the Owner or Operator [§61.10(a)(1)]:**

Westates Carbon - Arizona, Inc.
P.O. Box E
2523 Mutahar Street
Parker, Arizona 85344

Contact: Mr. Monte McCue, Plant Manager
Phone: (520) 669 - 5758
FAX: (520) 669 - 5775

2. **The Location of the Source [§61.10(a)(2)]:**

The facility is located in La Paz County, Arizona near the city of Parker. The facility is located within the Colorado River Indian Tribes (CRIT) reservation lands. EPA retains jurisdiction over this facility as its authority has not been delegated to tribal authorities [See 40 CFR 52.120 et seq.].

3. **Type of Hazardous Air Pollutants Emitted [§61.10(a)(3)]:**

This facility potentially emits benzene, a substance which is regulated under Subpart FF - National Emission Standard for Benzene Waste Operations (§61.340 et seq.). Additional hazardous air pollutants potentially emitted from the facility in trace amounts include, but are not limited to the following:

Aniline	Benzo(a)Anthracene
Benzo(b)Fluoranthene	Carbon Tetrachloride
Chlorobenzene	Chloroform
Cresol	Dibenzofuran
Dioxane (1,4 -)	Ethylbenzene
Hexane	Hexane (1 -)
Methyl Ethyl Ketone	Methyl Isobutyl Ketone
Methyltertiarybutyl Ether	Naphthalene
Pentachlorophenol	Phenol
Propylbenzene	Tetrahydrofuran
Toluene	Triethylamine
Xylene	Arsenic
Cadmium	Chromium
Beryllium	Lead
Mercury	Nickel
Selenium	Antimony

The above list is a conservative representation of potential hazardous air pollutants emitted from the facility because it has been based on analyses of Subpart FF waste received, and not upon emission testing results. The remaining sections of this notice will discuss the control of benzene emissions as it is the only hazardous air pollutant regulated by Subpart FF.

4. Brief Description of the Operation [§61.10(a)(4)]:

The Westates Carbon-Arizona, Inc. (WCAI) Parker, Arizona facility is an existing carbon reactivation facility. Activated carbon is used in pollution control equipment to remove organic compounds and other materials from liquid and vapor phase process and waste streams. Once the carbon is "spent" (i.e., utilized to its adsorptive capacity), it must either be disposed of or reactivated at a facility such as WCAI's Parker, Arizona facility. Some of the spent carbon processed at the Parker facility is received from facilities subject to Subpart FF.

Spent carbon is reactivated in the facility reactivation treatment unit, which consists of a multiple hearth furnace (RF-1) and an afterburner (AB-1). In this treatment unit, organic contaminants such as benzene are thermally destroyed by high temperatures to achieve a destruction and removal efficiency greater than 99%. Reactivated carbon is produced from the treatment unit such that the reactivated carbon contains less than 10 ppmw benzene.

The facility currently operates as an interim status facility under the Resource Conservation and Recovery Act (RCRA) and is limited to a maximum production capacity of 1200 lb/hr of reactivated carbon. However, the existing reactivation treatment unit has a nominal production capacity of 600 lb/hr of reactivated carbon.

Sources of potential benzene emissions from Subpart FF waste include:

- Carbon adsorbers (WS-1 and WS-2), which control spent carbon storage and furnace feed tank volatile organic compound (VOC) emissions, including benzene.
- Emissions associated with the reactivation treatment unit (RF-1 and AB-1).
- Fugitive emissions from the unloading of spent carbon into hoppers H-1 and H-2.

5. The Average Weight Per Month of Hazardous Materials Processed [§61.10(a)(5)]:

The facility commenced operation in August 1992 and processed 90.24 pounds of benzene prior to May 1, 1993. The average weight per month of benzene processed was approximately 10 pounds. This monthly amount of benzene processed has been averaged over the nine month period from August 1992 though April 1993.

6. Description of Existing Control Equipment [§61.10(a)(6)]:

WS-1 and WS-2

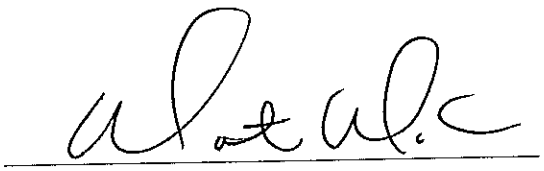
Carbon adsorbers WS-1 and WS-2 remove VOCs from the spent carbon storage and furnace feed tanks. WS-1 is a carbon canister that contains approximately 1,000 pounds of activated carbon. WS-2 contains 4,500 pounds of activated carbon. These devices are designed to control organic emissions by at least 95%, or benzene by at least 98%.

H-1 and H-2

No specific Subpart FF emissions standards apply to the unloading hoppers (H-1 and H-2). However, in an effort to minimize fugitive dust emissions that potentially contain benzene, WCAI has implemented water spray controls during the unloading operation.

7. **Statement of Compliance [§61.10(a)(7)]:**

The emissions from the WCAI Parker, Arizona facility can meet the emission limitations contained in the National Emission Standards as of the date of this notification.



Mr. Monte McCue
Manager

6-6-95

Date

Westates Carbon-Arizona, Inc.

2523 Mutahar Street
Post Office Box E
Parker, AZ 85344
Tel. 520-669-5758
Fax. 520-669-5775/5776

VIA CERTIFIED MAIL - RECEIPT # Z 371 117 810

July 17, 1996

Mr. David Howekamp (or Successor)
Director, Air and Toxics Division (A-1)
United States Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105

FILE COPY

Re: Subpart FF Startup Notification - 40 CFR 61.09
Westates Carbon-Arizona, Inc. - Unit RF-2
EPA ID # AZD 982 441 263

Dear Mr. Howekamp:

In accordance with the Westates Carbon-Arizona, Inc. (WCAI) Benzene Neshap Compliance Plan and 40 CFR 61.09, which requires notification within 15 days after actual startup, this letter will serve as the notification that the expanded facility (2760 lb/hr) started operations on July 11, 1996.

Recently, our EH&S manager departed WCAI and as I reviewed the file for the first notice required by 40 CFR 61.09 (notification to EPA no more than 60 days and not less than 30 days prior to startup), I did not find a copy in our file. I would like to confirm with your office that it was in fact sent by the EH&S manager.

As an additional note, a letter was sent on June 10, 1996 to Mr. Michael Feeley, Chief, Permits and Solid Waste Branch that the RF-1 unit had been disabled and the commencement of the RF-2 (2760 lb/hr) unit phase II construction had begun. Approximately 32 days had elapsed between the letter sent to Mr. Feeley and the actual startup.

If you have any questions, please feel free to call the undersigned at (520) 669-5758.

Sincerely,

Monte McCue
Plant Manager

cc: Bill Carlson (WESI-Shasta)
Matt Killeen (WESI-Hampton)
Steve Richmond (WESI-Hampton)
B/N Compliance Plan File

APPENDIX C
ENGINEERING CALCULATIONS SUPPORTING CONTROL DEVICE PERFORMANCE

Appendix C
Engineering Calculations Supporting Control Device Performance

The Siemens Water Technologies, Inc. (SWT) Parker, Arizona facility operates three carbon adsorbers (WS-1, WS-2, and WS-3), which will treat the vapors from the spent carbon storage tanks, recycle water tank and furnace feed tank. WS-1 treats vapors from spent carbon storage tanks T-1, T-2, T-5, T-6 and T-9. WS-2 treats the vapors from hoppers H-1 and H-2. WS-3 treats vapors from furnace feed tank T-18. These control devices have been designed as follows:

DESIGN PARAMETER	**WS-1** (T-1,2,5,6,9)	**WS-2** (H-1, H-2)	**WS-3** (T-18)
Maximum Flow Rate (cfm)	115	2500	5.9
Inlet Benzene Concentration (ppmv)	4,540	4	4,540
Relative Humidity (%)	50%	50%	50%
Temperature	Ambient	Ambient	Ambient
Type of Carbon	Granulated Activated Carbon	Granulated Activated Carbon	Granulated Activated Carbon
Capacity of Carbon Canister (lbs.)	4000	4500	1000
Working Capacity of Activated Carbon	30%	6.5%	30%
Source Operating Schedule	Continuous	Continuous	Continuous
Theoretical Design Control Efficiency (%)	100	100	100
Design Carbon Replacement Period (Days)	7.88	100	38
Theoretical Outlet Benzene Concentration (ppmv)	0	0	0

Calculations and technical data to support the above design parameters are provided below:

Flow Rate

The flow rates to WS-1 and WS-3 are based on the actual observed maximum flow rates. The maximum daily flow rates used in the calculations below more accurately reflect maximum conditions anticipated during the life of each carbon bed. The flow rate to WS-2 is based on the capacity of fan that pushes the vapors to the control device.

Inlet Benzene Concentration

The inlet vent stream composition consists of air, water vapor, and entrained hydrocarbon from the spent carbon received at the facility. In preparing this analysis, it is assumed that the total hydrocarbon concentration of the spent carbon can be as high as 30%, and that the maximum benzene concentration can be as high as 15%.

The inlet benzene concentration for WS-1 is calculated assuming that all of the benzene absorbed by the water in contact with spent carbon is liberated in the spent carbon storage tanks. Using the attached isotherm, a 15% benzene concentration in the waste would correspond to a 30 ppmw (mg/l) concentration of benzene in the water. The inlet benzene concentration is determined for WS-1 as follows:

- Determine the amount of benzene being liberated from the water in the spent carbon storage tanks.

  $\mathbf{B_{WS1}}$ = (FR)(C)(WF)(28.32 L/ft^3)(2.2 x 10^{-6} lb/mg) (60 min/hr)

  where:

  $\mathbf{B_{WS1}}$ = Amount of Benzene Directed to WS-1 (lb/hr)
  FR = Amount of Slurry Being Added to the Tanks or Vapor Directed to WS-1 (cfm)
  C = Concentration of Benzene in the Water (30 mg/L)
  WF = Fraction of Water by Volume in the Slurry(0.50)

  $\mathbf{B_{WS1}}$ = (115 cfm)(30 mg/L)(0.5)(28.32 L/ft^3)(2.2 x 10^{-6} lb/mg)(60 min/hr)

  $\mathbf{B_{WS1}}$ = 6.448 lb/hr

- Determine the concentration of benzene (ppmv) being liberated to WS-1**.**

  $$\mathbf{CONC} = \frac{[(B_{WS1}) / (MW_B)](1{,}000{,}000)]}{[(FR)(60\ min/hr)] / (MVOL)]}$$

  where:

  CONC = The Inlet Benzene Concentration to WS-1 (ppmv)
  $\mathbf{B_{WS1}}$ = Amount of Benzene Directed to WS-1 (lb/hr)

MW_B = Molecular Weight of Benzene (78.12 lb/lb-mol)
FR = Vapor Flow Rate to WS-1 (cfm)
MVOL = Molar Volume of Gas (379 ft^3/lb-mol)

$$\textbf{CONC} = \frac{[(6.448 \text{ lb/hr}) / (78.12 \text{ lb/lb-mol})](1{,}000{,}000)}{[(115 \text{ cfm})(60 \text{ min/hr})] / (379 \text{ ft}^3\text{/lb-mol})]}$$

CONC = 4,534 ppmv

For calculation purposes, the concentration of benzene is assumed the same at WS-1 and WS-3.

The maximum inlet benzene concentration at WS-2 is assumed to be 4 ppmv. This is based on organic vapor analyzer (OVA) data collected at the site. To be conservative, all hydrocarbon detected is assumed to be benzene.

Working Capacity of the Activated Carbon

The working capacity of the carbon is determined using the attached isotherm. This isotherm indicates that the working capacity of WS-1 and WS-3 is approximately 30% for benzene. For WS-2, the working capacity is approximately 6.5% for benzene.

Design Replacement Period

The design replacement period is calculated using the following equation:

$$Y = \frac{(ACgac / 100)\ (Wgac)}{[(Ci - Co) / 10^6](Qf)(D)(1440 \text{ min/day})]}$$

where:

Y = Carbon Bed Life (days)
ACgac = Adsorption Capacity of Carbon for Benzene (wt. %)
Wgac = Mass of Carbon Bed (lb)
Ci = Inlet Concentration Benzene (ppmv)
Co = Outlet Concentration Benzene (0 ppmv)
Qf = Gas Flow Rate Through Adsorber (cfm)
D = Density of Benzene (0.2028 lb/ft^3)

- Calculate the design carbon replacement period for **WS-1** using the above equation.

$$Y = \frac{(30 / 100)(4000 \text{ lb})}{((4540 - 0) / 10^6)(115 \text{ cfm})(0.2028 \text{ lb/ft}^3)(1440 \text{ min/day}))}$$

Y = **7.88 days**

- Calculate the design carbon replacement period for **WS-2** using the above equation.

$$Y = \frac{(6.5 / 100)(5000\ lb)}{((80 - 0) / 10^6)(2500\ cfm)(0.2028\ lb/ft^3)(1440\ min/day))}$$

Y = **100 days**

- Calculate the design carbon replacement period for **WS-3** using the above equation.

$$Y = \frac{(30 / 100)(1000\ lb)}{((4534 - 0) / 10^6)(5.9\ cfm)(0.2028\ lb/ft^3)(1440\ min/day))}$$

Y = **38 days**

CALCULATION OF BENZENE REMOVAL IN THE
12'-10" OD X 5 HEARTH CARBON REACTIVATION FURNACE (RF-2)

EVOQUA WATER TECHNOLOGIES
PARKER, AZ FACILITY

Assumptions:

1) Inlet benzene concentration = 150,000 ppmwd.
2) Outlet benzene concentration <_ 10 ppmwd.

Given:

1) RF-2 capacity = 1200 lbs/hr dry regenerated carbon.

2) RF-2 carbon residence time = 37.8 minutes total at centershaft speed of one revolution per 54 seconds (50% on VFD).

3) Only vapor-phase carbon can contain 15% by weight benzene and is subject to 40CFR61, Subpart FF. Maximum adsorbate loading on vapor-phase carbon is thirty percent by weight (on-half of loading is benzene). Maximum adsorbate loading on liquid-phase carbon is only five percent by weight.

4) RF-2 furnace temperature profile during regeneration of vapor-phase carbon:

	Gas Temperatures, °F
Hearth 1	500
Hearth 2	700
Hearth 3	1000
Hearth 4	1400
Hearth 5	1400

All temperatures shown are minimum values, actual gas phase temperatures during reactivation of vapor-phase carbons with 30 wt.% adsorbate loading will typically be 100°F to 500°F higher.

5) RF-2 is a 12'10" OD X 5 hearth furnace with a total of 356 ft² hearth area:

Hearth 1 = 60.0 ft²
Hearth 2 = 77.0 ft²
Hearth 3 = 60.0 ft²
Hearth 4 = 77.0 ft²
Hearth 5 = 81.5 ft²

Total = 355.5 ft²

6) The overall heat transfer coefficient, U, with the units of BTU/hr-ft²-°F can be approximated by Tgas/100 in a multiple hearth furnace.

Calculate the location in RF-2 when carbon reaches the critical temperature for benzene (553°F):

Inlet benzene mass rate = 1200 lbs/hr X 150,000 ppmwd / 1,000,000
= 180 lbs/hr benzene

Outlet benzene mass rate <_ 1200 lbs/hr X 10 ppmwd / 1,000,000
<_ 0.012 lbs/hr benzene

Minimum benzene removal = 180 - 0.012 = 179.988 lbs/hr benzene
= (180 - 0.012)/180 X 100 = 99.993%

Calculate feed carbon composition:

Feed is 40% by weight water
Dry feed = 1,200 lbs/hr carbon + 180 lbs/hr benzene + 180 lbs/hr "other" adsorbate"
= 1,560 lbs/hr
Wet feed = 1,560/.60 = 2,600 lbs/hr
Water in feed = 2,600 - 1,560 = 1,040 lbs/hr

Hearth 1: hearth area = 60 ft², gas temp. = 500°F

Heat transfer to bed required to heat carbon, benzene and water to 134°F

$$Qbed = U \cdot A \cdot \Delta T$$

$$= 500/100 \cdot 60 \cdot \frac{[(500-60) - (500-134)]}{}$$

$$= 5 \cdot 60 \cdot \frac{(440 - 366)}{\ln [(500-60)/(500-134)] / \ln (440/366)}$$

$= 5$ BTU/hr-ft²-°F $\cdot$ 60 ft² $\cdot$ 401.9°F

$= 120{,}560$ BTU/hr

Heat carbon, benzene, "other" adsorbate and water to 134°F:

$Qc = W \cdot Cp \cdot \Delta T$
$= 1200$ lbs/hr $\cdot$ 0.33 BTU/lb-°F $\cdot$ (134-60)°F
$= 29{,}304$ BTU/hr for carbon

$Qb = W \cdot Cp \cdot \Delta T$
$= 180$ lbs/hr $\cdot$ 0.50 BTU/lb-°F $\cdot$ (134-60)°F
$= 6{,}660$ BTU/hr for benzene

$Qo = W \cdot Cp \cdot \Delta T$
$= 180$ lbs/hr $\cdot$ 0.50 BTU/lb-°F $\cdot$ (134-60)°F
$= 6{,}660$ BTU/hr for "other" adsorbate

$Qw = W \cdot Cp \cdot \Delta T$
$= 1{,}040$ lbs/hr $\cdot$ 1 BTU/lb-°F $\cdot$ (134-60)°F
$= 76{,}960$ BTU/hr for water

$Qt = Qc + Qb + Qo + Qw = 29{,}304 + 6{,}660 + 6{,}660 + 76{,}960 = 119{,}584$ BTU/hr

Hearth 2: hearth area = 77 ft², gas temp. = 700°F

Heat transfer to bed:

$Qbed = U \cdot A \cdot \Delta T$

$$= 700/100 \cdot 77 \cdot \frac{[(800-134) - (800-212)]}{\ln [(800-134)/(800-212)]}$$

$= 7 \cdot 77 \cdot [(566 - 488) / \ln (566/488)]$

$= 7$ BTU/hr-ft²-°F $\cdot$ 77 ft² $\cdot$ 526.0°F

$= 283{,}534$ BTU/hr

Heat carbon, benzene, "other" adsorbate and water from 134°F to 212°F:

$Qc = W \cdot Cp \cdot \Delta T$
$= 1200 \text{ lbs/hr} \cdot 0.33 \text{ BTU/lb-°F} \cdot (212 - 134)°F$
$= 30{,}888 \text{ BTU/hr for carbon}$

$Qb = W \cdot Cp \cdot \Delta T$
$= 180 \text{ lbs/hr} \cdot 0.50 \text{ BTU/lb-°F} \cdot (212 - 134)°F$
$= 7{,}020 \text{ BTU/hr for benzene}$

$Qo = W \cdot Cp \cdot \Delta T$
$= 180 \text{ lbs/hr} \cdot 0.50 \text{ BTU/lb-°F} \cdot (212 - 134)°F$
$= 7{,}020 \text{ BTU/hr for "other" adsorbate}$

$Qw = W \cdot Cp \cdot \Delta T$
$= 1{,}040 \text{ lbs/hr} \cdot 1 \text{ BTU/lb-°F} \cdot (212 - 134)°F$
$= 81{,}120 \text{ BTU/hr for water}$

$Qt = Qc + Qb + Qo + Qw = 30{,}888 + 7{,}020 + 7{,}020 + 81{,}120 = 126{,}048 \text{ BTU/hr}$

Remaining energy to evaporate water:

$Qe = Qbed - Qt = 283{,}534 - 126{,}048 = 157{,}486 \text{ BTU/hr}$

@ 212°F one pound of water requires 970 BTU/lb for evaporation

157,486 BTU/hr / 970 BTU/lb = 162.4 lbs/hr water evaporated from hearth 2

water remaining = 920 - 162.4 = 877.6 lbs/hr water

Hearth 3: hearth area = 60 ft², gas temp. = 1000°F

Heat transfer to bed:

$Qbed = U \cdot A \cdot \Delta T$

$= 1000/100 \cdot 60 \cdot (1000 - 212)$

$= 10 \text{ BTU/hr-ft}^2\text{-°F} \cdot 60 \text{ ft}^2 \cdot 788°F$

$= 472{,}800 \text{ BTU/hr}$

Evaporate water:

472,800 BTU/hr / 970 BTU/lb = 487.4 lbs/hr water evaporated from hearth 3

water remaining = 877.6 - 487.4 = 390.2 lbs/hr water

Hearth 4: hearth area = 77 ft^2, gas temp. = 1400°F

Evaporate remaining water:

390.2 lbs/hr water · 970 BTU/lb = 378,514 BTU/hr

Hearth area required to evaporate remaining water:

$A = Q / (U \cdot \Delta T)$

$= 378,514 \text{ BTU/hr} / [14 \text{ BTU/hr-ft}^2\text{-°F} \cdot (1400 - 212)\text{°F}$

$= 22.8 \text{ ft}^2$

Hearth area remaining = 77 - 22.8 = 54.2 ft^2

Heat required to raise temperature of carbon, benzene, and "other" adsorbate from 212°F to 553°F:

$Qc = W \cdot Cp \cdot \Delta T$
$= 1200 \text{ lbs/hr} \cdot 0.33 \text{ BTU/lb-°F} \cdot (553 - 212)\text{°F}$
$= 135,036 \text{ BTU/hr}$ for carbon

$Qb = W \cdot Cp \cdot \Delta T$
$= 180 \text{ lbs/hr} \cdot 0.33 \text{ BTU/lb-°F} \cdot (553 - 212)\text{°F}$
$= 30,060 \text{ BTU/hr}$ for benzene

$Qb = W \cdot Cp \cdot \Delta T$
$= 180 \text{ lbs/hr} \cdot 0.33 \text{ BTU/lb-°F} \cdot (553 - 212)\text{°F}$
$= 30,060 \text{ BTU/hr}$ for "other" adsorbate

Qt = Qc + Qb = 135,036 + 30,060 + 30,060 = 196,416 BTU/hr

Hearth area required to temperature of carbon and benzene to 553°F:

$A = Q / (U \cdot \Delta T)$

$$= 196{,}416 \,/\, \left(14 \cdot \frac{[(1400-212) - (1400-553)]}{\ln [(1400-212)/(1400-553)]}\right)$$

$$= 196{,}416 \,/\, (14 \cdot [(118 - 847) \,/\, \ln (1108/847)])$$

$$= 196{,}416 \text{ BTU/hr} \,/\, (14 \text{ BTU/hr-ft}^2\text{-°F} \cdot 1007.9\text{°F})$$

$$= 13.9 \text{ ft}^2$$

Hearth area remaining = 54.2 - 13.9 ft^2 = 40.3 ft^2

Percentage of hearth 4 area remaining = 40.3 / 77 · 100 = 52 %

After 4½ minutes on hearth 4 of RF-2, temperature of the carbon, benzene and "other" adsorbate is above 553°F (the critical temperature for benzene). By definition, benzene cannot be liquefied (adsorbed) by pressure alone above this temperature and exerts a vapor pressure in excess of 60 atmospheres. The carbon remains above the critical temperature for an additional 12½ minutes until discharged from the furnace.

Due to the extreme volatility of benzene at elevated temperatures and the length of time at which the carbon is subjected to temperatures above the critical temperature for benzene, all benzene is removed (vaporized) from the carbon prior to discharge from RF-2. Since gas flow is counter-current to solids flow in a multiple hearth furnace and the lower half of the furnace is maintained above the critical temperature of benzene, there is no possibility of desorbed benzene being re-adsorbed onto the reactivated product.

Siemens Water Technologies Corp.
Parker, AZ

RF-2 Solids Residence Time Calculation

Reference: Hankin Environmental Systems, Inc. Drawing No. F-014 Rabble Teeth Assembly

Given: Centershaft speed = 54 seconds per revolution (50% on VFD)

Hearth No.	Type	Centershaft Revolutions Required To Move Carbon Across Hearth
1	out	6
2	in	9
3	out	10
4	in	9
5	out	8
Total Revolutions =		42

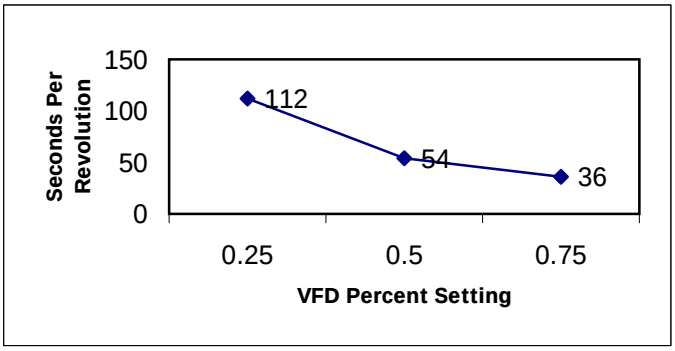
Solids Residence Time = 42 revolutions X 54 seconds per revolution / 60 seconds per minute

= 37.8 minutes

Siemens Water Technologies Corp.
Parker, AZ

RF-2 Centershaft Rotational Speed Versus VFD Setting

VFD Setting	Seconds per Revolution	RPM
25%	112	0.54
50%	54	1.11
75%	36	1.67



Siemens Water Technologies Corp.
Parker, Arizona
Performance Demonstration Test One-Minute Average Monitoring Data

Run 1
March 28, 2006
12:10 - 16:44

Date	Time	Furnace Shaft VFD Setpoint (%)
28-Mar-06	12:10	50
28-Mar-06	12:11	50
28-Mar-06	12:12	50
28-Mar-06	12:13	50
28-Mar-06	12:14	50
28-Mar-06	12:15	50
28-Mar-06	12:16	50
28-Mar-06	12:17	50
28-Mar-06	12:18	50
28-Mar-06	12:19	50
28-Mar-06	12:20	50
28-Mar-06	12:21	50
28-Mar-06	12:22	50
28-Mar-06	12:23	50
28-Mar-06	12:24	50
28-Mar-06	12:25	50
28-Mar-06	12:26	50
28-Mar-06	12:27	50
28-Mar-06	12:28	50
28-Mar-06	12:29	50
28-Mar-06	12:30	50
28-Mar-06	12:31	50
28-Mar-06	12:32	50
28-Mar-06	12:33	50
28-Mar-06	12:34	50
28-Mar-06	12:35	50
28-Mar-06	12:36	50
28-Mar-06	12:37	50
28-Mar-06	12:38	50
28-Mar-06	12:39	50
28-Mar-06	12:40	50
28-Mar-06	12:41	50

Run 2
March 29, 2006
11:15 - 17:00

Date	Time	Furnace Shaft VFD Setpoint (%)
29-Mar-06	11:15	50
29-Mar-06	11:16	50
29-Mar-06	11:17	50
29-Mar-06	11:18	50
29-Mar-06	11:19	50
29-Mar-06	11:20	50
29-Mar-06	11:21	50
29-Mar-06	11:22	50
29-Mar-06	11:23	50
29-Mar-06	11:24	50
29-Mar-06	11:25	50
29-Mar-06	11:26	50
29-Mar-06	11:27	50
29-Mar-06	11:28	50
29-Mar-06	11:29	50
29-Mar-06	11:30	50
29-Mar-06	11:31	50
29-Mar-06	11:32	50
29-Mar-06	11:33	50
29-Mar-06	11:34	50
29-Mar-06	11:35	50
29-Mar-06	11:36	50
29-Mar-06	11:37	50
29-Mar-06	11:38	50
29-Mar-06	11:39	50
29-Mar-06	11:40	50
29-Mar-06	11:41	50
29-Mar-06	11:42	50
29-Mar-06	11:43	50
29-Mar-06	11:44	50
29-Mar-06	11:45	50
29-Mar-06	11:46	50

Run 3
March 30, 2006
11:50 - 12:39, 15:30 - 19:16

Date	Time	Furnace Shaft VFD Setpoint (%)
30-Mar-06	11:50	50
30-Mar-06	11:51	50
30-Mar-06	11:52	50
30-Mar-06	11:53	50
30-Mar-06	11:54	50
30-Mar-06	11:55	50
30-Mar-06	11:56	50
30-Mar-06	11:57	50
30-Mar-06	11:58	50
30-Mar-06	11:59	50
30-Mar-06	12:00	50
30-Mar-06	12:01	50
30-Mar-06	12:02	50
30-Mar-06	12:03	50
30-Mar-06	12:04	50
30-Mar-06	12:05	50
30-Mar-06	12:06	50
30-Mar-06	12:07	50
30-Mar-06	12:08	50
30-Mar-06	12:09	50
30-Mar-06	12:10	50
30-Mar-06	12:11	50
30-Mar-06	12:12	50
30-Mar-06	12:13	50
30-Mar-06	12:14	50
30-Mar-06	12:15	50
30-Mar-06	12:16	50
30-Mar-06	12:17	50
30-Mar-06	12:18	50
30-Mar-06	12:19	50
30-Mar-06	12:20	50
30-Mar-06	12:21	50

Run 1
March 28, 2006
12:10 - 16:44

Date	Time	Furnace Shaft VFD Setpoint (%)
28-Mar-06	12:42	50
28-Mar-06	12:43	50
28-Mar-06	12:44	50
28-Mar-06	12:45	50
28-Mar-06	12:46	50
28-Mar-06	12:47	50
28-Mar-06	12:48	50
28-Mar-06	12:49	50
28-Mar-06	12:50	50
28-Mar-06	12:51	50
28-Mar-06	12:52	50
28-Mar-06	12:53	50
28-Mar-06	12:54	50
28-Mar-06	12:55	50
28-Mar-06	12:56	50
28-Mar-06	12:57	50
28-Mar-06	12:58	50
28-Mar-06	12:59	50
28-Mar-06	13:00	50
28-Mar-06	13:01	50
28-Mar-06	13:02	50
28-Mar-06	13:03	50
28-Mar-06	13:04	50
28-Mar-06	13:05	50
28-Mar-06	13:06	50
28-Mar-06	13:07	50
28-Mar-06	13:08	50
28-Mar-06	13:09	50
28-Mar-06	13:10	50
28-Mar-06	13:11	50
28-Mar-06	13:12	50
28-Mar-06	13:13	50
28-Mar-06	13:14	50
28-Mar-06	13:15	50
28-Mar-06	13:16	50
28-Mar-06	13:17	50

Run 2
March 29, 2006
11:15 - 17:00

Date	Time	Furnace Shaft VFD Setpoint (%)
29-Mar-06	11:47	50
29-Mar-06	11:48	50
29-Mar-06	11:49	50
29-Mar-06	11:50	50
29-Mar-06	11:51	50
29-Mar-06	11:52	50
29-Mar-06	11:53	50
29-Mar-06	11:54	50
29-Mar-06	11:55	50
29-Mar-06	11:56	50
29-Mar-06	11:57	50
29-Mar-06	11:58	50
29-Mar-06	11:59	50
29-Mar-06	12:00	50
29-Mar-06	12:01	50
29-Mar-06	12:02	50
29-Mar-06	12:03	50
29-Mar-06	12:04	50
29-Mar-06	12:05	50
29-Mar-06	12:06	50
29-Mar-06	12:07	50
29-Mar-06	12:08	50
29-Mar-06	12:09	50
29-Mar-06	12:10	50
29-Mar-06	12:11	50
29-Mar-06	12:12	50
29-Mar-06	12:13	50
29-Mar-06	12:14	50
29-Mar-06	12:15	50
29-Mar-06	12:16	50
29-Mar-06	12:17	50
29-Mar-06	12:18	50
29-Mar-06	12:19	50
29-Mar-06	12:20	50
29-Mar-06	12:21	50
29-Mar-06	12:22	50

Run 3
March 30, 2006
11:50 - 12:39, 15:30 - 19:16

Date	Time	Furnace Shaft VFD Setpoint (%)
30-Mar-06	12:22	50
30-Mar-06	12:23	50
30-Mar-06	12:24	50
30-Mar-06	12:25	50
30-Mar-06	12:26	50
30-Mar-06	12:27	50
30-Mar-06	12:28	50
30-Mar-06	12:29	50
30-Mar-06	12:30	50
30-Mar-06	12:31	50
30-Mar-06	12:32	50
30-Mar-06	12:33	50
30-Mar-06	12:34	50
30-Mar-06	12:35	50
30-Mar-06	12:36	50
30-Mar-06	12:37	50
30-Mar-06	12:38	50
30-Mar-06	15:30	50
30-Mar-06	15:31	50
30-Mar-06	15:32	50
30-Mar-06	15:33	50
30-Mar-06	15:34	50
30-Mar-06	15:35	50
30-Mar-06	15:36	50
30-Mar-06	15:37	50
30-Mar-06	15:38	50
30-Mar-06	15:39	50
30-Mar-06	15:40	50
30-Mar-06	15:41	50
30-Mar-06	15:42	50
30-Mar-06	15:43	50
30-Mar-06	15:44	50
30-Mar-06	15:45	50
30-Mar-06	15:46	50
30-Mar-06	15:47	50
30-Mar-06	15:48	50

Run 1
March 28, 2006
12:10 - 16:44

Date	Time	Furnace Shaft VFD Setpoint (%)
28-Mar-06	13:18	50
28-Mar-06	13:19	50
28-Mar-06	13:20	50
28-Mar-06	13:21	50
28-Mar-06	13:22	50
28-Mar-06	13:23	50
28-Mar-06	13:24	50
28-Mar-06	13:25	50
28-Mar-06	13:26	50
28-Mar-06	13:27	50
28-Mar-06	13:28	50
28-Mar-06	13:29	50
28-Mar-06	13:30	50
28-Mar-06	13:31	50
28-Mar-06	13:32	50
28-Mar-06	13:33	50
28-Mar-06	13:34	50
28-Mar-06	13:35	50
28-Mar-06	13:36	50
28-Mar-06	13:37	50
28-Mar-06	13:38	50
28-Mar-06	13:39	50
28-Mar-06	13:40	50
28-Mar-06	13:41	50
28-Mar-06	13:42	50
28-Mar-06	13:43	50
28-Mar-06	13:44	50
28-Mar-06	13:45	50
28-Mar-06	13:46	50
28-Mar-06	13:47	50
28-Mar-06	13:48	50
28-Mar-06	13:49	50
28-Mar-06	13:50	50
28-Mar-06	13:51	50
28-Mar-06	13:52	50
28-Mar-06	13:53	50

Run 2
March 29, 2006
11:15 - 17:00

Date	Time	Furnace Shaft VFD Setpoint (%)
29-Mar-06	12:23	50
29-Mar-06	12:24	50
29-Mar-06	12:25	50
29-Mar-06	12:26	50
29-Mar-06	12:27	50
29-Mar-06	12:28	50
29-Mar-06	12:29	50
29-Mar-06	12:30	50
29-Mar-06	12:31	50
29-Mar-06	12:32	50
29-Mar-06	12:33	50
29-Mar-06	12:34	50
29-Mar-06	12:35	50
29-Mar-06	12:36	50
29-Mar-06	12:37	50
29-Mar-06	12:38	50
29-Mar-06	12:39	50
29-Mar-06	12:40	50
29-Mar-06	12:41	50
29-Mar-06	12:42	50
29-Mar-06	12:43	50
29-Mar-06	12:44	50
29-Mar-06	12:45	50
29-Mar-06	12:46	50
29-Mar-06	12:47	50
29-Mar-06	12:48	50
29-Mar-06	12:49	50
29-Mar-06	12:50	50
29-Mar-06	12:51	50
29-Mar-06	12:52	50
29-Mar-06	12:53	50
29-Mar-06	12:54	50
29-Mar-06	12:55	50
29-Mar-06	12:56	50
29-Mar-06	12:57	50
29-Mar-06	12:58	50

Run 3
March 30, 2006
11:50 - 12:39, 15:30 - 19:16

Date	Time	Furnace Shaft VFD Setpoint (%)
30-Mar-06	15:49	50
30-Mar-06	15:50	50
30-Mar-06	15:51	50
30-Mar-06	15:52	50
30-Mar-06	15:53	50
30-Mar-06	15:54	50
30-Mar-06	15:55	50
30-Mar-06	15:56	50
30-Mar-06	15:57	50
30-Mar-06	15:58	50
30-Mar-06	15:59	50
30-Mar-06	16:00	50
30-Mar-06	16:01	50
30-Mar-06	16:02	50
30-Mar-06	16:03	50
30-Mar-06	16:04	50
30-Mar-06	16:05	50
30-Mar-06	16:06	50
30-Mar-06	16:07	50
30-Mar-06	16:08	50
30-Mar-06	16:09	50
30-Mar-06	16:10	50
30-Mar-06	16:11	50
30-Mar-06	16:12	50
30-Mar-06	16:13	50
30-Mar-06	16:14	50
30-Mar-06	16:15	50
30-Mar-06	16:16	50
30-Mar-06	16:17	50
30-Mar-06	16:18	50
30-Mar-06	16:19	50
30-Mar-06	16:20	50
30-Mar-06	16:21	50
30-Mar-06	16:22	50
30-Mar-06	16:23	50
30-Mar-06	16:24	50

Run 1
March 28, 2006
12:10 - 16:44

Date	Time	Furnace Shaft VFD Setpoint (%)
28-Mar-06	13:54	50
28-Mar-06	13:55	50
28-Mar-06	13:56	50
28-Mar-06	13:57	50
28-Mar-06	13:58	50
28-Mar-06	13:59	50
28-Mar-06	14:00	50
28-Mar-06	14:01	50
28-Mar-06	14:02	50
28-Mar-06	14:03	50
28-Mar-06	14:04	50
28-Mar-06	14:05	50
28-Mar-06	14:06	50
28-Mar-06	14:07	50
28-Mar-06	14:08	50
28-Mar-06	14:09	50
28-Mar-06	14:10	50
28-Mar-06	14:11	50
28-Mar-06	14:12	50
28-Mar-06	14:13	50
28-Mar-06	14:14	50
28-Mar-06	14:15	50
28-Mar-06	14:16	50
28-Mar-06	14:17	50
28-Mar-06	14:18	50
28-Mar-06	14:19	50
28-Mar-06	14:20	50
28-Mar-06	14:21	50
28-Mar-06	14:22	50
28-Mar-06	14:23	50
28-Mar-06	14:24	50
28-Mar-06	14:25	50
28-Mar-06	14:26	50
28-Mar-06	14:27	50
28-Mar-06	14:28	50
28-Mar-06	14:29	50

Run 2
March 29, 2006
11:15 - 17:00

Date	Time	Furnace Shaft VFD Setpoint (%)
29-Mar-06	12:59	50
29-Mar-06	13:00	50
29-Mar-06	13:01	50
29-Mar-06	13:02	50
29-Mar-06	13:03	50
29-Mar-06	13:04	50
29-Mar-06	13:05	50
29-Mar-06	13:06	50
29-Mar-06	13:07	50
29-Mar-06	13:08	50
29-Mar-06	13:09	50
29-Mar-06	13:10	50
29-Mar-06	13:11	50
29-Mar-06	13:12	50
29-Mar-06	13:13	50
29-Mar-06	13:14	50
29-Mar-06	13:15	50
29-Mar-06	13:16	50
29-Mar-06	13:17	50
29-Mar-06	13:18	50
29-Mar-06	13:19	50
29-Mar-06	13:20	50
29-Mar-06	13:21	50
29-Mar-06	13:22	50
29-Mar-06	13:23	50
29-Mar-06	13:24	50
29-Mar-06	13:25	50
29-Mar-06	13:26	50
29-Mar-06	13:27	50
29-Mar-06	13:28	50
29-Mar-06	13:29	50
29-Mar-06	13:30	50
29-Mar-06	13:31	50
29-Mar-06	13:32	50
29-Mar-06	13:33	50
29-Mar-06	13:34	50

Run 3
March 30, 2006
11:50 - 12:39, 15:30 - 19:16

Date	Time	Furnace Shaft VFD Setpoint (%)
30-Mar-06	16:25	50
30-Mar-06	16:26	50
30-Mar-06	16:27	50
30-Mar-06	16:28	50
30-Mar-06	16:29	50
30-Mar-06	16:30	50
30-Mar-06	16:31	50
30-Mar-06	16:32	50
30-Mar-06	16:33	50
30-Mar-06	16:34	50
30-Mar-06	16:35	50
30-Mar-06	16:36	50
30-Mar-06	16:37	50
30-Mar-06	16:38	50
30-Mar-06	16:39	50
30-Mar-06	16:40	50
30-Mar-06	16:41	50
30-Mar-06	16:42	50
30-Mar-06	16:43	50
30-Mar-06	16:44	50
30-Mar-06	16:45	50
30-Mar-06	16:46	50
30-Mar-06	16:47	50
30-Mar-06	16:48	50
30-Mar-06	16:49	50
30-Mar-06	16:50	50
30-Mar-06	16:51	50
30-Mar-06	16:52	50
30-Mar-06	16:53	50
30-Mar-06	16:54	50
30-Mar-06	16:55	50
30-Mar-06	16:56	50
30-Mar-06	16:57	50
30-Mar-06	16:58	50
30-Mar-06	16:59	50
30-Mar-06	17:00	50

Run 1
March 28, 2006
12:10 - 16:44

Date	Time	Furnace Shaft VFD Setpoint (%)
28-Mar-06	14:30	50
28-Mar-06	14:31	50
28-Mar-06	14:32	50
28-Mar-06	14:33	50
28-Mar-06	14:34	50
28-Mar-06	14:35	50
28-Mar-06	14:36	50
28-Mar-06	14:37	50
28-Mar-06	14:38	50
28-Mar-06	14:39	50
28-Mar-06	14:40	50
28-Mar-06	14:41	50
28-Mar-06	14:42	50
28-Mar-06	14:43	50
28-Mar-06	14:44	50
28-Mar-06	14:45	50
28-Mar-06	14:46	50
28-Mar-06	14:47	50
28-Mar-06	14:48	50
28-Mar-06	14:49	50
28-Mar-06	14:50	50
28-Mar-06	14:51	50
28-Mar-06	14:52	50
28-Mar-06	14:53	50
28-Mar-06	14:54	50
28-Mar-06	14:55	50
28-Mar-06	14:56	50
28-Mar-06	14:57	50
28-Mar-06	14:58	50
28-Mar-06	14:59	50
28-Mar-06	15:00	50
28-Mar-06	15:01	50
28-Mar-06	15:02	50
28-Mar-06	15:03	50
28-Mar-06	15:04	50
28-Mar-06	15:05	50

Run 2
March 29, 2006
11:15 - 17:00

Date	Time	Furnace Shaft VFD Setpoint (%)
29-Mar-06	13:35	50
29-Mar-06	13:36	50
29-Mar-06	13:37	50
29-Mar-06	13:38	50
29-Mar-06	13:39	50
29-Mar-06	13:40	50
29-Mar-06	13:41	50
29-Mar-06	13:42	50
29-Mar-06	13:43	50
29-Mar-06	13:44	50
29-Mar-06	13:45	50
29-Mar-06	13:46	50
29-Mar-06	13:47	50
29-Mar-06	13:48	50
29-Mar-06	13:49	50
29-Mar-06	13:50	50
29-Mar-06	13:51	50
29-Mar-06	13:52	50
29-Mar-06	13:53	50
29-Mar-06	13:54	50
29-Mar-06	13:55	50
29-Mar-06	13:56	50
29-Mar-06	13:57	50
29-Mar-06	13:58	50
29-Mar-06	13:59	50
29-Mar-06	14:00	50
29-Mar-06	14:01	50
29-Mar-06	14:02	50
29-Mar-06	14:03	50
29-Mar-06	14:04	50
29-Mar-06	14:05	50
29-Mar-06	14:06	50
29-Mar-06	14:07	50
29-Mar-06	14:08	50
29-Mar-06	14:09	50
29-Mar-06	14:10	50

Run 3
March 30, 2006
11:50 - 12:39, 15:30 - 19:16

Date	Time	Furnace Shaft VFD Setpoint (%)
30-Mar-06	17:01	50
30-Mar-06	17:02	50
30-Mar-06	17:03	50
30-Mar-06	17:04	50
30-Mar-06	17:05	50
30-Mar-06	17:06	50
30-Mar-06	17:07	50
30-Mar-06	17:08	50
30-Mar-06	17:09	50
30-Mar-06	17:10	50
30-Mar-06	17:11	50
30-Mar-06	17:12	50
30-Mar-06	17:13	50
30-Mar-06	17:14	50
30-Mar-06	17:15	50
30-Mar-06	17:16	50
30-Mar-06	17:17	50
30-Mar-06	17:18	50
30-Mar-06	17:19	50
30-Mar-06	17:20	50
30-Mar-06	17:21	50
30-Mar-06	17:22	50
30-Mar-06	17:23	50
30-Mar-06	17:24	50
30-Mar-06	17:25	50
30-Mar-06	17:26	50
30-Mar-06	17:27	50
30-Mar-06	17:28	50
30-Mar-06	17:29	50
30-Mar-06	17:30	50
30-Mar-06	17:31	50
30-Mar-06	17:32	50
30-Mar-06	17:33	50
30-Mar-06	17:34	50
30-Mar-06	17:35	50
30-Mar-06	17:36	50

Run 1
March 28, 2006
12:10 - 16:44

Date	Time	Furnace Shaft VFD Setpoint (%)
28-Mar-06	15:06	50
28-Mar-06	15:07	50
28-Mar-06	15:08	50
28-Mar-06	15:09	50
28-Mar-06	15:10	50
28-Mar-06	15:11	50
28-Mar-06	15:12	50
28-Mar-06	15:13	50
28-Mar-06	15:14	50
28-Mar-06	15:15	50
28-Mar-06	15:16	50
28-Mar-06	15:17	50
28-Mar-06	15:18	50
28-Mar-06	15:19	50
28-Mar-06	15:20	50
28-Mar-06	15:21	50
28-Mar-06	15:22	50
28-Mar-06	15:23	50
28-Mar-06	15:24	50
28-Mar-06	15:25	50
28-Mar-06	15:26	50
28-Mar-06	15:27	50
28-Mar-06	15:28	50
28-Mar-06	15:29	50
28-Mar-06	15:30	50
28-Mar-06	15:31	50
28-Mar-06	15:32	50
28-Mar-06	15:33	50
28-Mar-06	15:34	50
28-Mar-06	15:35	50
28-Mar-06	15:36	50
28-Mar-06	15:37	50
28-Mar-06	15:38	50
28-Mar-06	15:39	50
28-Mar-06	15:40	50
28-Mar-06	15:41	50

Run 2
March 29, 2006
11:15 - 17:00

Date	Time	Furnace Shaft VFD Setpoint (%)
29-Mar-06	14:11	50
29-Mar-06	14:12	50
29-Mar-06	14:13	50
29-Mar-06	14:14	50
29-Mar-06	14:15	50
29-Mar-06	14:16	50
29-Mar-06	14:17	50
29-Mar-06	14:18	50
29-Mar-06	14:19	50
29-Mar-06	14:20	50
29-Mar-06	14:21	50
29-Mar-06	14:22	50
29-Mar-06	14:23	50
29-Mar-06	14:24	50
29-Mar-06	14:25	50
29-Mar-06	14:26	50
29-Mar-06	14:27	50
29-Mar-06	14:28	50
29-Mar-06	14:29	50
29-Mar-06	14:30	50
29-Mar-06	14:31	50
29-Mar-06	14:32	50
29-Mar-06	14:33	50
29-Mar-06	14:34	50
29-Mar-06	14:35	50
29-Mar-06	14:36	50
29-Mar-06	14:37	50
29-Mar-06	14:38	50
29-Mar-06	14:39	50
29-Mar-06	14:40	50
29-Mar-06	14:41	50
29-Mar-06	14:42	50
29-Mar-06	14:43	50
29-Mar-06	14:44	50
29-Mar-06	14:45	50
29-Mar-06	14:46	50

Run 3
March 30, 2006
11:50 - 12:39, 15:30 - 19:16

Date	Time	Furnace Shaft VFD Setpoint (%)
30-Mar-06	17:37	50
30-Mar-06	17:38	50
30-Mar-06	17:39	50
30-Mar-06	17:40	50
30-Mar-06	17:41	50
30-Mar-06	17:42	50
30-Mar-06	17:43	50
30-Mar-06	17:44	50
30-Mar-06	17:45	50
30-Mar-06	17:46	50
30-Mar-06	17:47	50
30-Mar-06	17:48	50
30-Mar-06	17:49	50
30-Mar-06	17:50	50
30-Mar-06	17:51	50
30-Mar-06	17:52	50
30-Mar-06	17:53	50
30-Mar-06	17:54	50
30-Mar-06	17:55	50
30-Mar-06	17:56	50
30-Mar-06	17:57	50
30-Mar-06	17:58	50
30-Mar-06	17:59	50
30-Mar-06	18:00	50
30-Mar-06	18:01	50
30-Mar-06	18:02	50
30-Mar-06	18:03	50
30-Mar-06	18:04	50
30-Mar-06	18:05	50
30-Mar-06	18:06	50
30-Mar-06	18:07	50
30-Mar-06	18:08	50
30-Mar-06	18:09	50
30-Mar-06	18:10	50
30-Mar-06	18:11	50
30-Mar-06	18:12	50

Run 1
March 28, 2006
12:10 - 16:44

Date	Time	Furnace Shaft VFD Setpoint (%)
28-Mar-06	15:42	50
28-Mar-06	15:43	50
28-Mar-06	15:44	50
28-Mar-06	15:45	50
28-Mar-06	15:46	50
28-Mar-06	15:47	50
28-Mar-06	15:48	50
28-Mar-06	15:49	50
28-Mar-06	15:50	50
28-Mar-06	15:51	50
28-Mar-06	15:52	50
28-Mar-06	15:53	50
28-Mar-06	15:54	50
28-Mar-06	15:55	50
28-Mar-06	15:56	50
28-Mar-06	15:57	50
28-Mar-06	15:58	50
28-Mar-06	15:59	50
28-Mar-06	16:00	50
28-Mar-06	16:01	50
28-Mar-06	16:02	50
28-Mar-06	16:03	50
28-Mar-06	16:04	50
28-Mar-06	16:05	50
28-Mar-06	16:06	50
28-Mar-06	16:07	50
28-Mar-06	16:08	50
28-Mar-06	16:09	50
28-Mar-06	16:10	50
28-Mar-06	16:11	50
28-Mar-06	16:12	50
28-Mar-06	16:13	50
28-Mar-06	16:14	50
28-Mar-06	16:15	50
28-Mar-06	16:16	50
28-Mar-06	16:17	50

Run 2
March 29, 2006
11:15 - 17:00

Date	Time	Furnace Shaft VFD Setpoint (%)
29-Mar-06	14:47	50
29-Mar-06	14:48	50
29-Mar-06	14:49	50
29-Mar-06	14:50	50
29-Mar-06	14:51	50
29-Mar-06	14:52	50
29-Mar-06	14:53	50
29-Mar-06	14:54	50
29-Mar-06	14:55	50
29-Mar-06	14:56	50
29-Mar-06	14:57	50
29-Mar-06	14:58	50
29-Mar-06	14:59	50
29-Mar-06	15:00	50
29-Mar-06	15:01	50
29-Mar-06	15:02	50
29-Mar-06	15:03	50
29-Mar-06	15:04	50
29-Mar-06	15:05	50
29-Mar-06	15:06	50
29-Mar-06	15:07	50
29-Mar-06	15:08	50
29-Mar-06	15:09	50
29-Mar-06	15:10	50
29-Mar-06	15:11	50
29-Mar-06	15:12	50
29-Mar-06	15:13	50
29-Mar-06	15:14	50
29-Mar-06	15:15	50
29-Mar-06	15:16	50
29-Mar-06	15:17	50
29-Mar-06	15:18	50
29-Mar-06	15:19	50
29-Mar-06	15:20	50
29-Mar-06	15:21	50
29-Mar-06	15:22	50

Run 3
March 30, 2006
11:50 - 12:39, 15:30 - 19:16

Date	Time	Furnace Shaft VFD Setpoint (%)
30-Mar-06	18:13	50
30-Mar-06	18:14	50
30-Mar-06	18:15	50
30-Mar-06	18:16	50
30-Mar-06	18:17	50
30-Mar-06	18:18	50
30-Mar-06	18:19	50
30-Mar-06	18:20	50
30-Mar-06	18:21	50
30-Mar-06	18:22	50
30-Mar-06	18:23	50
30-Mar-06	18:24	50
30-Mar-06	18:25	50
30-Mar-06	18:26	50
30-Mar-06	18:27	50
30-Mar-06	18:28	50
30-Mar-06	18:29	50
30-Mar-06	18:30	50
30-Mar-06	18:31	50
30-Mar-06	18:32	50
30-Mar-06	18:33	50
30-Mar-06	18:34	50
30-Mar-06	18:35	50
30-Mar-06	18:36	50
30-Mar-06	18:37	50
30-Mar-06	18:38	50
30-Mar-06	18:39	50
30-Mar-06	18:40	50
30-Mar-06	18:41	50
30-Mar-06	18:42	50
30-Mar-06	18:43	50
30-Mar-06	18:44	50
30-Mar-06	18:45	50
30-Mar-06	18:46	50
30-Mar-06	18:47	50
30-Mar-06	18:48	50

Run 1
March 28, 2006
12:10 - 16:44

Date	Time	Furnace Shaft VFD Setpoint (%)
28-Mar-06	16:18	50
28-Mar-06	16:19	50
28-Mar-06	16:20	50
28-Mar-06	16:21	50
28-Mar-06	16:22	50
28-Mar-06	16:23	50
28-Mar-06	16:24	50
28-Mar-06	16:25	50
28-Mar-06	16:26	50
28-Mar-06	16:27	50
28-Mar-06	16:28	50
28-Mar-06	16:29	50
28-Mar-06	16:30	50
28-Mar-06	16:31	50
28-Mar-06	16:32	50
28-Mar-06	16:33	50
28-Mar-06	16:34	50
28-Mar-06	16:35	50
28-Mar-06	16:36	50
28-Mar-06	16:37	50
28-Mar-06	16:38	50
28-Mar-06	16:39	50
28-Mar-06	16:40	50
28-Mar-06	16:41	50
28-Mar-06	16:42	50
28-Mar-06	16:43	50
Average		50
Minimum		50
Maximum		50

Run 2
March 29, 2006
11:15 - 17:00

Date	Time	Furnace Shaft VFD Setpoint (%)
29-Mar-06	15:23	50
29-Mar-06	15:24	50
29-Mar-06	15:25	50
29-Mar-06	15:26	50
29-Mar-06	15:27	50
29-Mar-06	15:28	50
29-Mar-06	15:29	50
29-Mar-06	15:30	50
29-Mar-06	15:31	50
29-Mar-06	15:32	50
29-Mar-06	15:33	50
29-Mar-06	15:34	50
29-Mar-06	15:35	50
29-Mar-06	15:36	50
29-Mar-06	15:37	50
29-Mar-06	15:38	50
29-Mar-06	15:39	50
29-Mar-06	15:40	50
29-Mar-06	15:41	50
29-Mar-06	15:42	50
29-Mar-06	15:43	50
29-Mar-06	15:44	50
29-Mar-06	15:45	50
29-Mar-06	15:46	50
29-Mar-06	15:47	50
29-Mar-06	15:48	50
29-Mar-06	15:49	50
29-Mar-06	15:50	50
29-Mar-06	15:51	50
29-Mar-06	15:52	50
29-Mar-06	15:53	50
29-Mar-06	15:54	50
29-Mar-06	15:55	50
29-Mar-06	15:56	50
29-Mar-06	15:57	50
29-Mar-06	15:58	50

Run 3
March 30, 2006
11:50 - 12:39, 15:30 - 19:16

Date	Time	Furnace Shaft VFD Setpoint (%)
30-Mar-06	18:49	50
30-Mar-06	18:50	50
30-Mar-06	18:51	50
30-Mar-06	18:52	50
30-Mar-06	18:53	50
30-Mar-06	18:54	50
30-Mar-06	18:55	50
30-Mar-06	18:56	50
30-Mar-06	18:57	50
30-Mar-06	18:58	50
30-Mar-06	18:59	50
30-Mar-06	19:00	50
30-Mar-06	19:01	50
30-Mar-06	19:02	50
30-Mar-06	19:03	50
30-Mar-06	19:04	50
30-Mar-06	19:05	50
30-Mar-06	19:06	50
30-Mar-06	19:07	50
30-Mar-06	19:08	50
30-Mar-06	19:09	50
30-Mar-06	19:10	50
30-Mar-06	19:11	50
30-Mar-06	19:12	50
30-Mar-06	19:13	50
30-Mar-06	19:14	50
30-Mar-06	19:15	50
Average		50
Minimum		50
Maximum		50

Run 1
March 28, 2006
12:10 - 16:44

Date	Time	Furnace Shaft VFD Setpoint (%)

Run 2
March 29, 2006
11:15 - 17:00

Date	Time	Furnace Shaft VFD Setpoint (%)
29-Mar-06	15:59	50
29-Mar-06	16:00	50
29-Mar-06	16:01	50
29-Mar-06	16:02	50
29-Mar-06	16:03	50
29-Mar-06	16:04	50
29-Mar-06	16:05	50
29-Mar-06	16:06	50
29-Mar-06	16:07	50
29-Mar-06	16:08	50
29-Mar-06	16:09	50
29-Mar-06	16:10	50
29-Mar-06	16:11	50
29-Mar-06	16:12	50
29-Mar-06	16:13	50
29-Mar-06	16:14	50
29-Mar-06	16:15	50
29-Mar-06	16:16	50
29-Mar-06	16:17	50
29-Mar-06	16:18	50
29-Mar-06	16:19	50
29-Mar-06	16:20	50
29-Mar-06	16:21	50
29-Mar-06	16:22	50
29-Mar-06	16:23	50
29-Mar-06	16:24	50
29-Mar-06	16:25	50
29-Mar-06	16:26	50
29-Mar-06	16:27	50
29-Mar-06	16:28	50
29-Mar-06	16:29	50
29-Mar-06	16:30	50
29-Mar-06	16:31	50
29-Mar-06	16:32	50
29-Mar-06	16:33	50
29-Mar-06	16:34	50

Run 3
March 30, 2006
11:50 - 12:39, 15:30 - 19:16

Date	Time	Furnace Shaft VFD Setpoint (%)

Run 1
March 28, 2006
12:10 - 16:44

Date	Time	Furnace Shaft VFD Setpoint (%)

Run 2
March 29, 2006
11:15 - 17:00

Date	Time	Furnace Shaft VFD Setpoint (%)
29-Mar-06	16:35	50
29-Mar-06	16:36	50
29-Mar-06	16:37	50
29-Mar-06	16:38	50
29-Mar-06	16:39	50
29-Mar-06	16:40	50
29-Mar-06	16:41	50
29-Mar-06	16:42	50
29-Mar-06	16:43	50
29-Mar-06	16:44	50
29-Mar-06	16:45	50
29-Mar-06	16:46	50
29-Mar-06	16:47	50
29-Mar-06	16:48	50
29-Mar-06	16:49	50
29-Mar-06	16:50	50
29-Mar-06	16:51	50
29-Mar-06	16:52	50
29-Mar-06	16:53	50
29-Mar-06	16:54	50
29-Mar-06	16:55	50
29-Mar-06	16:56	50
29-Mar-06	16:57	50
29-Mar-06	16:58	50
29-Mar-06	16:59	50
Average		50
Minimum		50
Maximum		50

Run 3
March 30, 2006
11:50 - 12:39, 15:30 - 19:16

Date	Time	Furnace Shaft VFD Setpoint (%)

APPENDIX D
SUBPART FF ANNUAL REPORTS

APPENDIX E
QUARTERLY VISUAL INSPECTION RECORDS

Map Form No. 11

SIEMENS INDUSTRY, INC.
Benzene Neshap Quarterly Inspection
Process Equipment Assessment For Potential Air Emissions

40 CFR 61.343, 345, 348

Quarter: 2ND Year: 2014

Equipment Description	Mechanical Integrity	Corrective Action Or Maintenance	Reviewed By	Review Date
Carbon Adsorber WS-1	Breach in container, visible leakage, or corrosion? Yes ☐ No ☑ Carbon replacement within specified time period? Yes ☑ No ☐ Carbon replacement dates recorded? Yes ☑ No ☐ (As verified against " Carbon Canister Replacement Log")	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :	[signature]	5/13/14
Carbon Adsorber WS-2	Breach in container, visible leakage, or corrosion? Yes ☐ No ☑ Carbon replacement within specified time period? Yes ☑ No ☐ Carbon replacement dates recorded? Yes ☑ No ☐ (As verified against " Carbon Canister Replacement Log")	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
Carbon Adsorber WS-3	Breach in container, visible leakage, or corrosion? Yes ☐ No ☑ Carbon replacement within specified time period? Yes ☑ No ☐ Carbon replacement dates recorded? Yes ☑ No ☐ (As verified against " Carbon Canister Replacement Log")	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
Drums, Vessels or Bags In Storage	All drums/vessels sealed? Yes ☐ No ☑ Breach in drums/vessels, visible leakage or corrosion? Yes ☑ No ☐ Any bags torn or leaking? Yes ☑ No ☐	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
Recycle and Spent Carbon Tanks	T-1 Manways sealed, flanges blinded, no leakage? Yes ☑ No ☐ T-2 Manways sealed, flanges blinded, no leakage? Yes ☑ No ☐ T-5 Manways sealed, flanges blinded, no leakage? Yes ☑ No ☐ T-6 Manways sealed, flanges blinded, no leakage? Yes ☑ No ☐ T-9 Manways sealed, flanges blinded, no leakage? Yes ☑ No ☐ T-18 Manways sealed, flanges blinded, no leakage? Yes ☑ No ☐	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
Dewater Screw	Any visible fugitive emissions or leakage? Yes ☐ No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
Afterburner	Temperature at or above 1800 F at all times? Yes ☑ No ☐ (As verified against the afterburner temperature on the process monitoring logs)	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
Slurry Piping	Any corrosion? Yes ☐ No ☑ Any leakage? Yes ☐ No ☑ Any cracking or metal fatigue? Yes ☐ No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		

Map Form No. 11

SIEMENS INDUSTRY, INC.

Benzene Neshap Quarterly Inspection
Process Equipment Assessment For Potential Air Emissions

40 CFR 61.343, 345, 348

Quarter: 1ST Year: 2014

Equipment Description	Mechanical Integrity		Corrective Action Or Maintenance	Reviewed By	Review Date
Carbon Adsorber WS-1	Breach in container, visible leakage, or corrosion?	Yes ☐ No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :	MM	3/19/14
	Carbon replacement within specified time period?	Yes ☑ No ☐			
	Carbon replacement dates recorded? (As verified against " Carbon Canister Replacement Log")	Yes ☑ No ☐			
Carbon Adsorber WS-2	Breach in container, visible leakage, or corrosion?	Yes ☐ No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Carbon replacement within specified time period?	Yes ☑ No ☐			
	Carbon replacement dates recorded? (As verified against " Carbon Canister Replacement Log")	Yes ☑ No ☐			
Carbon Adsorber WS-3	Breach in container, visible leakage, or corrosion?	Yes ☐ No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Carbon replacement within specified time period?	Yes ☑ No ☐			
	Carbon replacement dates recorded? (As verified against " Carbon Canister Replacement Log")	Yes ☑ No ☐			
Drums, Vessels or Bags In Storage	All drums/vessels sealed?	Yes ☑ No ☐	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Breach in drums/vessels, visible leakage or corrosion?	Yes ☐ No ☑			
	Any bags torn or leaking?	Yes ☐ No ☑			
Recycle and Spent Carbon Tanks	T-1 Manways sealed, flanges blinded, no leakage?	Yes ☑ No ☐	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	T-2 Manways sealed, flanges blinded, no leakage?	Yes ☑ No ☐			
	T-5 Manways sealed, flanges blinded, no leakage?	Yes ☑ No ☐			
	T-6 Manways sealed, flanges blinded, no leakage?	Yes ☑ No ☐			
	T-9 Manways sealed, flanges blinded, no leakage?	Yes ☑ No ☐			
	T-18 Manways sealed, flanges blinded, no leakage?	Yes ☑ No ☐			
Dewater Screw	Any visible fugitive emissions or leakage?	Yes ☐ No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
Afterburner	Temperature at or above 1800 F at all times? (As verified against the afterburner temperature on the process monitoring logs)	Yes ☑ No ☐	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
Slurry Piping	Any corrosion?	Yes ☐ No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Any leakage?	Yes ☐ No ☑			
	Any cracking or metal fatigue?	Yes ☐ No ☑			

Map Form No. 11

SIEMENS INDUSTRY, INC.

Benzene Neshap Quarterly Inspection
Process Equipment Assessment For Potential Air Emissions

0242 EX

Quarter: 4TH **40 CFR 61.343, 345, 348** **Year:** 2013

Equipment Description	Mechanical Integrity			Corrective Action Or Maintenance	Reviewed By	Review Date
Carbon Adsorber WS-1	Breach in container, visible leakage, or corrosion?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		12/18/13
	Carbon replacement within specified time period? 12/18/13	Yes ☑	No ☐			
	Carbon replacement dates recorded?	Yes ☑	No ☐			
	(As verified against " Carbon Canister Replacement Log")					
Carbon Adsorber WS-2	Breach in container, visible leakage, or corrosion?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Carbon replacement within specified time period? 12/14/13	Yes ☑	No ☐			
	Carbon replacement dates recorded?	Yes ☑	No ☐			
	(As verified against " Carbon Canister Replacement Log")					
Carbon Adsorber WS-3	Breach in container, visible leakage, or corrosion?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Carbon replacement within specified time period?	Yes ☑	No ☐			
	Carbon replacement dates recorded?	Yes ☑	No ☐			
	(As verified against " Carbon Canister Replacement Log")					
Drums, Vessels or Bags In Storage	All drums/vessels sealed?	Yes ☑	No ☐	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Breach in drums/vessels, visible leakage or corrosion?	Yes ☐	No ☑			
	Any bags torn or leaking?	Yes ☐	No ☑			
Recycle and Spent Carbon Tanks	T-1 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	T-2 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
	T-5 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
	T-6 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
	T-9 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
	T-18 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
Dewater Screw	Any visible fugitive emissions or leakage?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
Afterburner	Temperature at or above 1800 F at all times? (As verified against the afterburner temperature on the process monitoring logs)	Yes ☑	No ☐	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
Slurry Piping	Any corrosion?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Any leakage?	Yes ☐	No ☑			
	Any cracking or metal fatigue?	Yes ☐	No ☑			

Map Form No. 11

SIEMENS INDUSTRY, INC.

Benzene Neshap Quarterly Inspection
Process Equipment Assessment For Potential Air Emissions

40 CFR 61.343, 345, 348

Quarter: 3RD **Year:** 2013

Equipment Description	Mechanical Integrity			Corrective Action Or Maintenance	Reviewed By	Review Date
Carbon Adsorber WS-1	Breach in container, visible leakage, or corrosion?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		9/19/13
	Carbon replacement within specified time period?	Yes ☑	No ☐			
	Carbon replacement dates recorded?	Yes ☑	No ☐			
	(As verified against " Carbon Canister Replacement Log")					
Carbon Adsorber WS-2	Breach in container, visible leakage, or corrosion?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Carbon replacement within specified time period?	Yes ☑	No ☐			
	Carbon replacement dates recorded?	Yes ☑	No ☐			
	(As verified against " Carbon Canister Replacement Log")					
Carbon Adsorber WS-3	Breach in container, visible leakage, or corrosion?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Carbon replacement within specified time period?	Yes ☑	No ☐			
	Carbon replacement dates recorded?	Yes ☐	No ☑			
	(As verified against " Carbon Canister Replacement Log")					
Drums, Vessels or Bags In Storage	All drums/vessels sealed?	Yes ☑	No ☐	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Breach in drums/vessels, visible leakage or corrosion?	Yes ☐	No ☑			
	Any bags torn or leaking?	Yes ☐	No ☑			
Recycle and Spent Carbon Tanks	T-1 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	T-2 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
	T-5 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
	T-6 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
	T-9 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
	T-18 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
Dewater Screw	Any visible fugitive emissions or leakage?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
Afterburner	Temperature at or above 1800 F at all times? (As verified against the afterburner temperature on the process monitoring logs)	Yes ☑	No ☐	☐ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
Slurry Piping	Any corrosion?	Yes ☐	No ☑	☐ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :	✓	✓
	Any leakage?	Yes ☐	No ☑			
	Any cracking or metal fatigue?	Yes ☐	No ☑			

Map Form No. 11

SIEMENS INDUSTRY, INC.

Benzene Neshap Quarterly Inspection
Process Equipment Assessment For Potential Air Emissions

40 CFR 61.343, 345, 348

Quarter: 2ND **Year:** 2013

Equipment Description	Mechanical Integrity			Corrective Action Or Maintenance	Reviewed By	Review Date
Carbon Adsorber WS-1	Breach in container, visible leakage, or corrosion?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe : 6/5/13	MK	6/6/13
	Carbon replacement within specified time period?	Yes ☑	No ☐			
	Carbon replacement dates recorded? (As verified against " Carbon Canister Replacement Log")	Yes ☑	No ☐			
Carbon Adsorber WS-2	Breach in container, visible leakage, or corrosion?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe : 6/6/13		
	Carbon replacement within specified time period?	Yes ☑	No ☐			
	Carbon replacement dates recorded? (As verified against " Carbon Canister Replacement Log")	Yes ☑	No ☐			
Carbon Adsorber WS-3	Breach in container, visible leakage, or corrosion?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe : 5/31/13		
	Carbon replacement within specified time period?	Yes ☑	No ☐			
	Carbon replacement dates recorded? (As verified against " Carbon Canister Replacement Log")	Yes ☑	No ☐			
Drums, Vessels or Bags In Storage	All drums/vessels sealed?	Yes ☑	No ☐	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Breach in drums/vessels, visible leakage or corrosion?	Yes ☐	No ☑			
	Any bags torn or leaking?	Yes ☐	No ☑			
Recycle and Spent Carbon Tanks	T-1 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	T-2 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
	T-5 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
	T-6 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
	T-9 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
	T-18 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
Dewater Screw	Any visible fugitive emissions or leakage?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
Afterburner	Temperature at or above 1800 F at all times? (As verified against the afterburner temperature on the process monitoring logs)	Yes ☑	No ☐	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
Slurry Piping	Any corrosion?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Any leakage?	Yes ☐	No ☑			
	Any cracking or metal fatigue?	Yes ☐	No ☑			

Map Form No. 11

SIEMENS INDUSTRY, INC.

Benzene Neshap Quarterly Inspection
Process Equipment Assessment For Potential Air Emissions

40 CFR 61.343, 345, 348

Quarter: 1ST **Year:** 2013

Equipment Description	Mechanical Integrity			Corrective Action Or Maintenance	Reviewed By	Review Date
Carbon Adsorber WS-1	Breach in container, visible leakage, or corrosion?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		3/13
	Carbon replacement within specified time period?	Yes ☑	No ☐			
	Carbon replacement dates recorded?	Yes ☑	No ☐			
	(As verified against " Carbon Canister Replacement Log")					
Carbon Adsorber WS-2	Breach in container, visible leakage, or corrosion?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Carbon replacement within specified time period?	Yes ☑	No ☐			
	Carbon replacement dates recorded?	Yes ☑	No ☐			
	(As verified against " Carbon Canister Replacement Log")					
Carbon Adsorber WS-3	Breach in container, visible leakage, or corrosion?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Carbon replacement within specified time period?	Yes ☑	No ☐			
	Carbon replacement dates recorded?	Yes ☑	No ☐			
	(As verified against " Carbon Canister Replacement Log")					
Drums, Vessels or Bags In Storage	All drums/vessels sealed?	Yes ☑	No ☐	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Breach in drums/vessels, visible leakage or corrosion?	Yes ☐	No ☑			
	Any bags torn or leaking?	Yes ☐	No ☑			
Recycle and Spent Carbon Tanks	T-1 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	T-2 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
	T-5 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
	T-6 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
	T-9 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
	T-18 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
Dewater Screw	Any visible fugitive emissions or leakage?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
Afterburner	Temperature at or above 1800 F at all times? (As verified against the afterburner temperature on the process monitoring logs)	Yes ☑	No ☐	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
Slurry Piping	Any corrosion?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Any leakage?	Yes ☐	No ☑			
	Any cracking or metal fatigue?	Yes ☐	No ☑			

Map Form No. 11

SIEMENS INDUSTRY, INC.

Benzene Neshap Quarterly Inspection
Process Equipment Assessment For Potential Air Emissions

40 CFR 61.343, 345, 348

Quarter: 4TH Year: 2012

Equipment Description	Mechanical Integrity			Corrective Action Or Maintenance	Reviewed By	Review Date
Carbon Adsorber WS-1	Breach in container, visible leakage, or corrosion?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe : CHANGED 12/10 SK	MC	12/10/12
	Carbon replacement within specified time period?	Yes ☑	No ☐			
	Carbon replacement dates recorded?	Yes ☑	No ☐			
	(As verified against " Carbon Canister Replacement Log")					
Carbon Adsorber WS-2	Breach in container, visible leakage, or corrosion?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe : CHANGED 12/10 SK		
	Carbon replacement within specified time period?	Yes ☑	No ☐			
	Carbon replacement dates recorded?	Yes ☑	No ☐			
	(As verified against " Carbon Canister Replacement Log")					
Carbon Adsorber WS-3	Breach in container, visible leakage, or corrosion?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Carbon replacement within specified time period?	Yes ☑	No ☐			
	Carbon replacement dates recorded?	Yes ☑	No ☐			
	(As verified against " Carbon Canister Replacement Log")					
Drums, Vessels or Bags In Storage	All drums/vessels sealed?	Yes ☐	No ☐	☐ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Breach in drums/vessels, visible leakage or corrosion?	Yes ☐	No ☐			
	Any bags torn or leaking?	Yes ☐	No ☐			
Recycle and Spent Carbon Tanks	T-1 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	T-2 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
	T-5 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
	T-6 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
	T-9 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
	T-18 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
Dewater Screw	Any visible fugitive emissions or leakage?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
Afterburner	Temperature at or above 1800 F at all times? (As verified against the afterburner temperature on the process monitoring logs)	Yes ☑	No ☐	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
Slurry Piping	Any corrosion?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Any leakage?	Yes ☐	No ☑			
	Any cracking or metal fatigue?	Yes ☐	No ☑			

Map Form No. 11

SIEMENS WATER TECHNOLOGIES CORP.

Benzene Neshap Quarterly Inspection

Process Equipment Assessment For Potential Air Emissions

40 CFR 61.343, 345, 348

Quarter: 3RD **Year:** 2012

Equipment Description	Mechanical Integrity			Corrective Action Or Maintenance	Reviewed By	Review Date
Carbon Adsorber WS-1	Breach in container, visible leakage, or corrosion?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :	Abril	9/28/12
	Carbon replacement within specified time period?	Yes ☑	No ☐			
	Carbon replacement dates recorded?	Yes ☑	No ☐			
	(As verified against " Carbon Canister Replacement Log")					
Carbon Adsorber WS-2	Breach in container, visible leakage, or corrosion?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Carbon replacement within specified time period?	Yes ☑	No ☐			
	Carbon replacement dates recorded?	Yes ☑	No ☐			
	(As verified against " Carbon Canister Replacement Log")					
Carbon Adsorber WS-3	Breach in container, visible leakage, or corrosion?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Carbon replacement within specified time period?	Yes ☑	No ☐			
	Carbon replacement dates recorded?	Yes ☑	No ☐			
	(As verified against " Carbon Canister Replacement Log")					
Drums, Vessels or Bags In Storage	All drums/vessels sealed?	Yes ☑	No ☐	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Breach in drums/vessels, visible leakage or corrosion?	Yes ☐	No ☑			
	Any bags torn or leaking?	Yes ☐	No ☑			
Recycle and Spent Carbon Tanks	T-1 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	T-2 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
	T-5 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
	T-6 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
	T-9 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
	H-18 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
Dewater Screw	Any visible fugitive emissions or leakage?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
Afterburner	Temperature at or above 1800 F at all times? (As verified against the afterburner temperature on the process monitoring logs)	Yes ☑	No ☐	☐ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
Slurry Piping	Any corrosion?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Any leakage?	Yes ☐	No ☑			
	Any cracking or metal fatigue?	Yes ☐	No ☑			

Map Form No. 11

SIEMENS WATER TECHNOLOGIES CORP.

Benzene Neshap Quarterly Inspection

Process Equipment Assessment For Potential Air Emissions

40 CFR 61.343, 345, 348

Quarter: 2ND Year: 2012

Equipment Description	Mechanical Integrity			Corrective Action Or Maintenance	Reviewed By	Review Date
Carbon Adsorber WS-1	Breach in container, visible leakage, or corrosion?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :	MM	6/4/12
	Carbon replacement within specified time period?	Yes ☑	No ☐			
	Carbon replacement dates recorded?	Yes ☑	No ☐			
	(As verified against " Carbon Canister Replacement Log")					
Carbon Adsorber WS-2	Breach in container, visible leakage, or corrosion?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Carbon replacement within specified time period?	Yes ☑	No ☐			
	Carbon replacement dates recorded?	Yes ☑	No ☐			
	(As verified against " Carbon Canister Replacement Log")					
Carbon Adsorber WS-3	Breach in container, visible leakage, or corrosion?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Carbon replacement within specified time period?	Yes ☑	No ☐			
	Carbon replacement dates recorded?	Yes ☑	No ☐			
	(As verified against " Carbon Canister Replacement Log")					
Drums, Vessels or Bags In Storage	All drums/vessels sealed?	Yes ☑	No ☐	☐ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Breach in drums/vessels, visible leakage or corrosion?	Yes ☐	No ☑			
	Any bags torn or leaking?	Yes ☐	No ☑			
Recycle and Spent Carbon Tanks	T-1 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	T-2 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
	T-5 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
	T-6 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
	T-9 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
	H-18 Manways sealed, flanges blinded, no leakage?	Yes ☑	No ☐			
Dewater Screw	Any visible fugitive emissions or leakage?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
Afterburner	Temperature at or above 1800 F at all times? (As verified against the afterburner temperature on the process monitoring logs)	Yes ☑	No ☐	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
Slurry Piping	Any corrosion?	Yes ☐	No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Any leakage?	Yes ☐	No ☑			
	Any cracking or metal fatigue?	Yes ☐	No ☑			

Map Form No. 11

SIEMENS WATER TECHNOLOGIES CORP.

Benzene Neshap Quarterly Inspection

Process Equipment Assessment For Potential Air Emissions

40 CFR 61.343, 345, 348

Quarter: 1ST **Year:** 2012

Equipment Description	Mechanical Integrity		Corrective Action Or Maintenance	Reviewed By	Review Date
Carbon Adsorber WS-1	Breach in container, visible leakage, or corrosion?	Yes ☐ No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :	MM	1/18/12
	Carbon replacement within specified time period?	Yes ☑ No ☐			
	Carbon replacement dates recorded? (As verified against " Carbon Canister Replacement Log")	Yes ☑ No ☐			
Carbon Adsorber WS-2	Breach in container, visible leakage, or corrosion?	Yes ☐ No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Carbon replacement within specified time period?	Yes ☑ No ☐			
	Carbon replacement dates recorded? (As verified against " Carbon Canister Replacement Log")	Yes ☑ No ☐			
Carbon Adsorber WS-3	Breach in container, visible leakage, or corrosion?	Yes ☐ No ☑	☐ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Carbon replacement within specified time period?	Yes ☑ No ☐			
	Carbon replacement dates recorded? (As verified against " Carbon Canister Replacement Log")	Yes ☑ No ☐			
Drums, Vessels or Bags In Storage	All drums/vessels sealed?	Yes ☑ No ☐	☐ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Breach in drums/vessels, visible leakage or corrosion?	Yes ☐ No ☑			
	Any bags torn or leaking?	Yes ☐ No ☑			
Recycle and Spent Carbon Tanks	T-1 Manways sealed, flanges blinded, no leakage?	Yes ☑ No ☐	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	T-2 Manways sealed, flanges blinded, no leakage?	Yes ☑ No ☐			
	T-5 Manways sealed, flanges blinded, no leakage?	Yes ☑ No ☐			
	T-6 Manways sealed, flanges blinded, no leakage?	Yes ☑ No ☐			
	T-9 Manways sealed, flanges blinded, no leakage?	Yes ☑ No ☐			
	H-18 Manways sealed, flanges blinded, no leakage?	Yes ☑ No ☐			
Dewater Screw	Any visible fugitive emissions or leakage?	Yes ☐ No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
Afterburner	Temperature at or above 1800 F at all times? (As verified against the afterburner temperature on the process monitoring logs)	Yes ☑ No ☐	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
Slurry Piping	Any corrosion?	Yes ☐ No ☑	☑ No corrective action/maintenance required at present. ☐ Corrective action or maintenance is required; describe :		
	Any leakage?	Yes ☐ No ☑			
	Any cracking or metal fatigue?	Yes ☐ No ☑			

APPENDIX F
ANNUAL METHOD 21 INSPECTION RECORDS

See Attached Cal Sheet For FID

Siemens Industry, Inc.

Annual Method 21 Testing

40 CFR 61.343, 345, 349

Tested By: Monte McCue mlm 5/6/13

Instrument Used: Foxboro TVA 1000 FID

No.	Location ID	Date Inspected	Measured Concentration (PPMV)	Background Concentration (PPMV)	Leak Detected? (Y/N) *	Description Of Problem	Corrective Action Taken	Date Of Successful Repair **
1	B-1 Baghouse Doors	5/6/13	<5	<5	N			NA
2	B-1 Dust Collector Blower Outlet Flanges	5/6/13	<5	<5	N			NA
3	H-1 Hopper Lid	5/6/13	<5	<5	N			NA
4	H-1 Hopper Eductor, Piping and Victaulics	5/6/13	<5	<5	N			NA
5	H-1 Hopper Flanges, Piping and Victaulics	5/6/13	<5	<5	N			NA
6	H-1 Hopper Vault Door	5/6/13	<5	<5	N			NA
7	H-2 Hopper Lid	5/6/13	<5	<5	N	Not in Use	Not in Use	NA
8	H-2 Hopper Eductor Flanges and Victaulics	5/6/13	<5	<5	N	Not in Use	Not in Use	NA
9	H-2 Hopper Piping and Victaulics	5/6/13	<5	<5	N	Not in Use	Not in Use	NA
10	H-2 Hopper Vent Piping	5/6/13	<5	<5	N	Not in Use	Not in Use	NA
11	RF-2 Hearth 1 Door West	5/6/13	<5	<5	N			NA
12	RF-2 Seal Welded Flat - between 1 and 2	5/6/13	<5	<5	N			NA
13	RF-2 Hearth 2 Door East	5/6/13	<5	<5	N			NA
14	RF-2 Seal Welded Flat - between 2 and 3	5/6/13	<5	<5	N			NA
15	RF-2 Hearth 3 Door East	5/6/13	<5	<5	N			NA

*A leak is detected if the container is not sealed closed, or if the instrument reading exceeds 500 ppmv over the background concentration. **Repair must be completed within 15 days.

Siemens Industry, Inc.

Annual Method 21 Testing

40 CFR 61.343, 345, 349

Instrument Used: Foxboro TVA 1000 FID

Tested By: Monte McCue

No.	Location ID	Date Inspected	Measured Concentration (PPMV)	Background Concentration (PPMV)	Leak Detected? (Y/N) *	Description Of Problem	Corrective Action Taken	Date Of Successful Repair **
16	RF-2 Seal Welded Flat - between 3 and 4	5/6/13	<5	<5	N			NA
17	RF-2 Hearth 4 Door East	5/6/13	<5	<5	N			NA
18	RF-2 Seal Welded Flat - between 4 and 5	5/6/13	<5	<5	N			NA
19	RF-2 Hearth 5 Door East	5/6/13	<5	<5	N			NA
20	RF-2 Welded Seam on Furnace Bottom	5/6/13	<5	<5	N			NA
21	RF-2 Top Sand Seal	5/6/13	<5	<5	N			NA
22	RF-2 Bottom Sand Seal	5/6/13	<5	<5	N			NA
23	RF-2 Carbon Outlet Piping and Flanges	5/6/13	<5	<5	N			NA
24	T-1 Ball Valves	5/6/13	<5	<5	N			NA
25	T-1 Couplings	5/6/13	<5	<5	N			NA
26	T-1 Eductor & Fittings	5/6/13	<5	<5	N			NA
27	T-1 Fill Slurry Lines & Vics From H-1, H-2	5/6/13	<5	<5	N			NA
28	T-1 Fittings & Valves	5/6/13	<5	<5	N			NA
29	T-1 (SEE ATTACHMENT No. 1)	5/6/13			N			NA
30	T-1 Pressure Relief Valve	5/6/13	<5	<5	N			NA

*A leak is detected if the container is not sealed closed, or if the instrument reading exceeds 500 ppmv over the background concentration. **Repair must be completed within 15 days.

Siemens Industry, Inc.

Annual Method 21 Testing

40 CFR 61.343, 345, 349

Instrument Used: Foxboro TVA 1000 FID

Tested By: Monte McCue

No.	Location ID	Date Inspected	Measured Concentration (PPMV)	Background Concentration (PPMV)	Leak Detected? (Y/N) *	Description Of Problem	Corrective Action Taken	Date Of Successful Repair **
31	T-1 Slurry Line	5/6/13	<5	<5	N			NA
32	T-1 Tank Flanges	5/6/13	<5	<5	N			NA
33	T-1 Vent Pipe To WS-1	5/6/13	<5	<5	N			NA
34	T-2 Ball Valves	5/6/13	<5	<5	N			NA
35	T-2 Couplings	5/6/13	<5	<5	N			NA
36	T-2 Eductor & Fittings	5/6/13	<5	<5	N			NA
37	T-2 Fill Slurry Lines & Vics From H-1, H-2	5/6/13	<5	<5	N			NA
38	T-2 Fittings & Valves	5/6/13	<5	<5	N			NA
39	T-2 Tank (SEE ATTACHMENT No. 1)	5/6/13			N			NA
40	T-2 Pressure Relief Valve	5/6/13	<5	<5	N			NA
41	T-2 Slurry Line	5/6/13	<5	<5	N			NA
42	T-2 Tank Flanges	5/6/13	<5	<5	N			NA
43	T-2 Vent Pipe To WS-1	5/6/13	<5	<5	N			NA
44	T-5 Ball Valves	5/6/13	<5	<5	N			NA
45	T-5 Couplings	5/6/13	<5	<5	N			NA

*A leak is detected if the container is not sealed closed, or if the instrument reading exceeds 500 ppmv over the background concentration. **Repair must be completed within 15 days.

Siemens Industry, Inc.

Annual Method 21 Testing

40 CFR 61.343, 345, 349

Instrument Used: Foxboro TVA 1000 FID

Tested By: Monte McCue

No.	Location ID	Date Inspected	Measured Concentration (PPMV)	Background Concentration (PPMV)	Leak Detected? (Y/N) *	Description Of Problem	Corrective Action Taken	Date Of Successful Repair **
46	T-5 Eductor & Fittings	5/6/13	<5	<5	N			NA
47	T-5 Fill Slurry Lines & Vics From H-1, H-2	5/6/13	<5	<5	N			NA
48	T-5 Fittings & Valves	5/6/13	<5	<5	N			NA
49	T-5 (SEE ATTACHMENT No. 2)	5/6/13			N			NA
50	T-5 Pressure Relief Valve	5/6/13	<5	<5	N			NA
51	T-5 Slurry Line	5/6/13	<5	<5	N			NA
52	T-5 Tank Flanges	5/6/13	<5	<5	N			NA
53	T-5 Vent Pipe To WS-1	5/6/13	<5	<5	N			NA
54	T-6 Ball Valves	5/6/13	<5	<5	N			NA
55	T-6 Couplings	5/6/13	<5	<5	N			NA
56	T-6 Eductor & Fittings	5/6/13	<5	<5	N			NA
57	T-6 Fill Slurry Lines & Vics From H-1, H-2	5/6/13	<5	<5	N			NA
58	T-6 Fittings & Valves	5/6/13	<5	<5	N			NA
59	T-6 (SEE ATTACHMENT No. 2)	5/6/13			N			NA
60	T-6 Pressure Relief Valve	5/6/13	<5	<5	N			NA

*A leak is detected if the container is not sealed closed, or if the instrument reading exceeds 500 ppmv over the background concentration. **Repair must be completed within 15 days.

Siemens Industry, Inc.

Annual Method 21 Testing

40 CFR 61.343, 345, 349

Instrument Used: Foxboro TVA 1000 FID

Tested By: Monte McCue

No.	Location ID	Date Inspected	Measured Concentration (PPMV)	Background Concentration (PPMV)	Leak Detected? (Y/N) *	Description Of Problem	Corrective Action Taken	Date Of Successful Repair **
61	T-6 Slurry Line	5/6/13	<5	<5	N			NA
62	T-6 Tank Flanges	5/6/13	<5	<5	N			NA
63	T-6 Vent Pipe To WS-1	5/6/13	<5	<5	N			NA
64	T-9 (SEE ATTACHMENT No. 3)	5/6/13			N			NA
65	T-9 Level Transmitter	5/6/13	<5	<5	N			NA
66	T-9 Main Bottom Manway Door	5/6/13	<5	<5	N			NA
67	T-9 Return Line and Fittings From T Tanks	5/6/13	<5	<5	N			NA
68	T-9 Return Line and Fittings From T-18	5/6/13	<5	<5	N			NA
69	T-9 Sump Pump Fittings	5/6/13	<5	<5	N			NA
70	T-9 Vent Line and Fittings To WS-1	5/6/13	<5	<5	N			NA
71	T-9/P-4 Pump - Inlet Pipe and Fittings	5/6/13	<5	<5	N			NA
72	T-9/P-5 Pump - Inlet Pipe and Fittings	5/6/13	<5	<5	N			NA
73	T-9/P-4 Pump - Outlet Pipe and Fittings	5/6/13	<5	<5	N			NA
74	T-9/P-5 Pump - Outlet Pipe and Fittings	5/6/13	<5	<5	N			NA
75	H-18 Feed Hose & Couplings	5/6/13	<5	<5	N			NA

*A leak is detected if the container is not sealed closed, or if the instrument reading exceeds 500 ppmv over the background concentration. **Repair must be completed within 15 days.

Siemens Industry, Inc.

Annual Method 21 Testing

40 CFR 61.343, 345, 349

Instrument Used: Foxboro TVA 1000 FID

Tested By: Monte McCue

No.	Location ID	Date Inspected	Measured Concentration (PPMV)	Background Concentration (PPMV)	Leak Detected? (Y/N) *	Description Of Problem	Corrective Action Taken	Date Of Successful Repair **
76	H-18 Feed Valve & Piping	5/6/13	<5	<5	N			NA
77	H-18 Level Indicators	5/6/13	<5	<5	N			NA
78	H-18 Lids (SEE ATTACHMENT No. 4)	5/6/13			N			NA
79	H-18 Return Line, Couplings and Vics	5/6/13	<5	<5	N			NA
80	H-18 Piping and Couplings From T-Tanks	5/6/13	<5	<5	N			NA
81	WS-1 Hatches & Sample Port	5/6/13	<5	<5	N			NA
82	WS-1 Inlet	5/6/13	<5	<5	N			NA
83	WS-1 Outlet	5/6/13	25	<5	N			NA
84	WS-2 Hatches & Sample Port	5/6/13	<5	<5	N			NA
85	WS-2 Inlet	5/6/13	<5	<5	N			NA
86	WS-2 Outlet	5/6/13	<5	<5	N			NA
87	WS-3 Hatches & Sample Port	5/6/13	<5	<5	N			NA
88	WS-3 Inlet	5/6/13	<5	<5	N			NA
89	WS-3 Outlet	5/6/13	<5	<5	N			NA
90	Dewater Screw (SEE ATTACHMENT No. 4)	5/6/13			N			NA

*A leak is detected if the container is not sealed closed, or if the instrument reading exceeds 500 ppmv over the background concentration. **Repair must be completed within 15 days.

Siemens Industry, Inc.

Annual Method 21 Testing

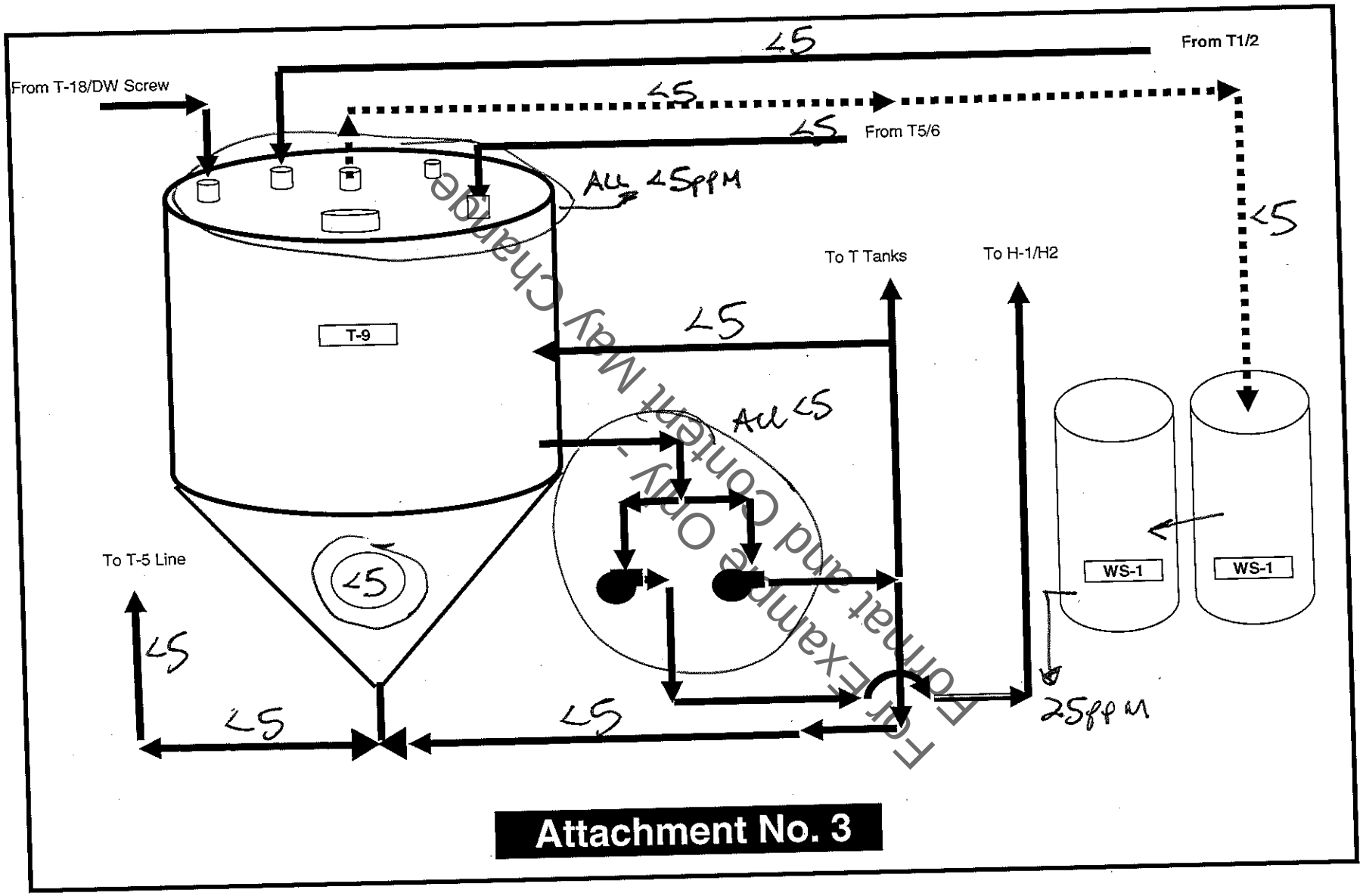
40 CFR 61.343, 345, 349

Instrument Used: Foxboro TVA 1000 FID

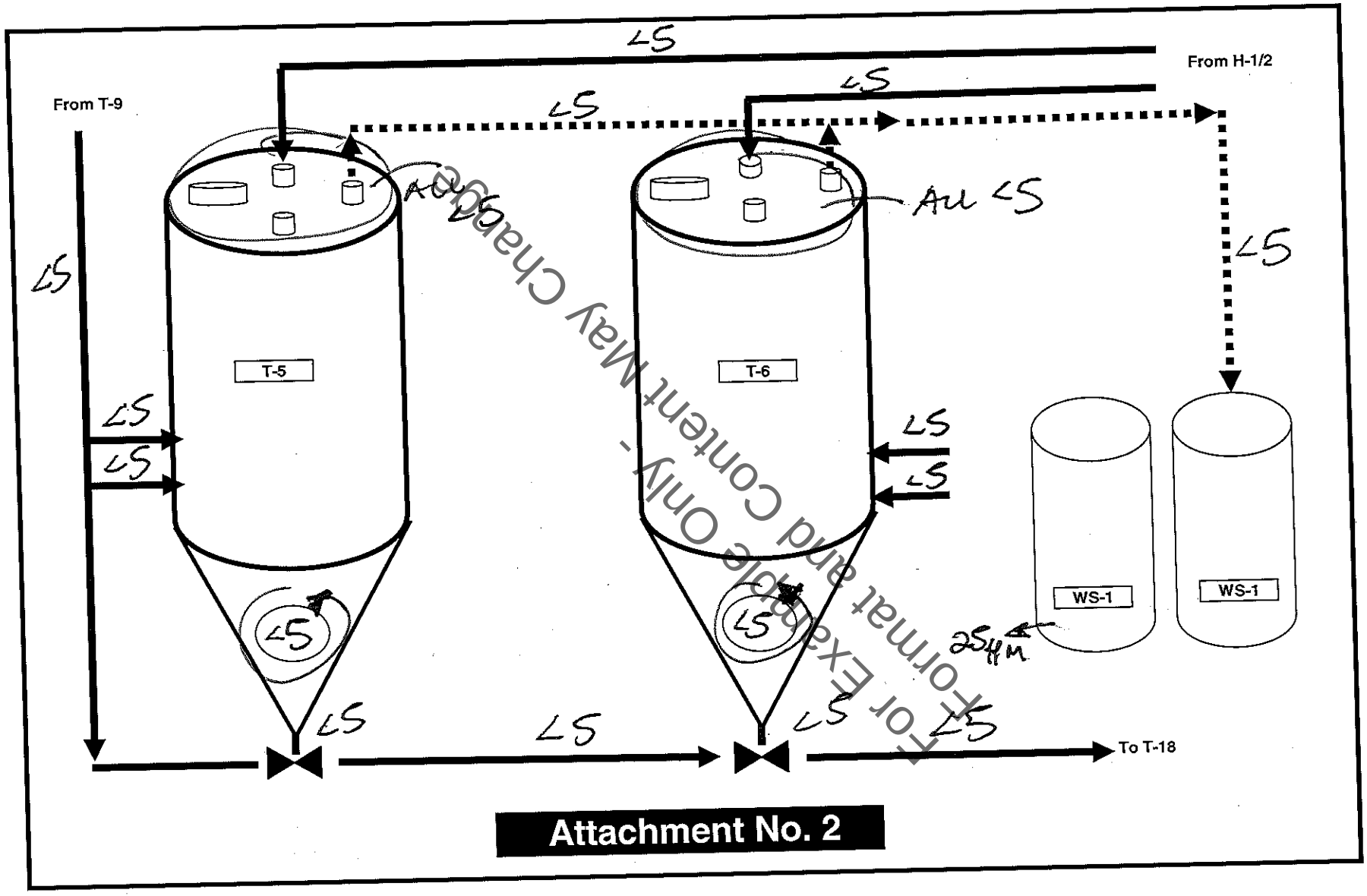
Tested By: Monte McCue

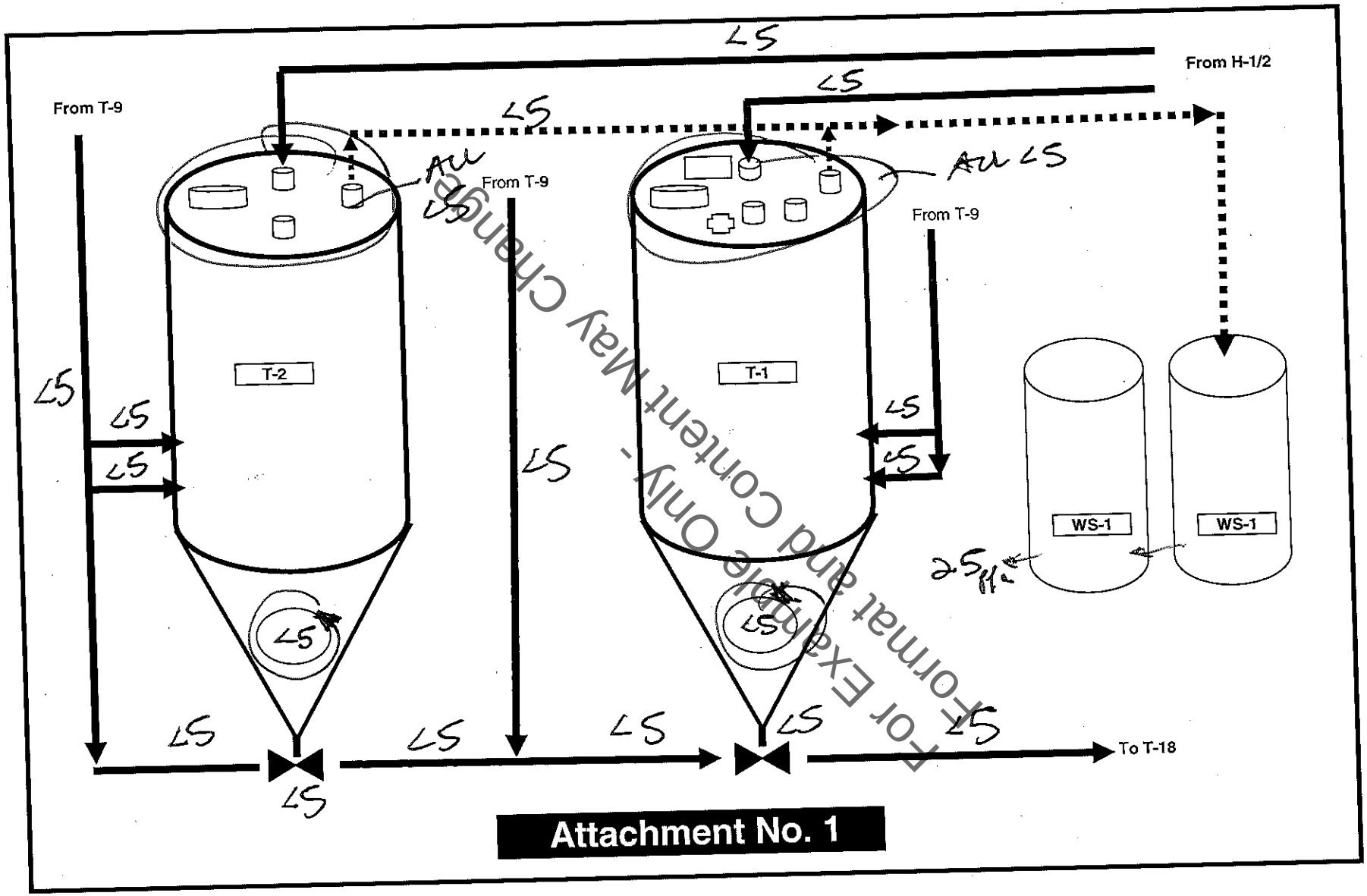
No.	Location ID	Date Inspected	Measured Concentration (PPMV)	Background Concentration (PPMV)	Leak Detected? (Y/N) *	Description Of Problem	Corrective Action Taken	Date Of Successful Repair **
91	Weigh Belt Feeder (SEE ATTACHMENT No. 4)	5/6/13			N			NA
92	Rotary Valve (SEE ATTACHMENT No. 4)	5/6/13			N			NA
93								
94								
95								
96								
97								
98								
99								
100								

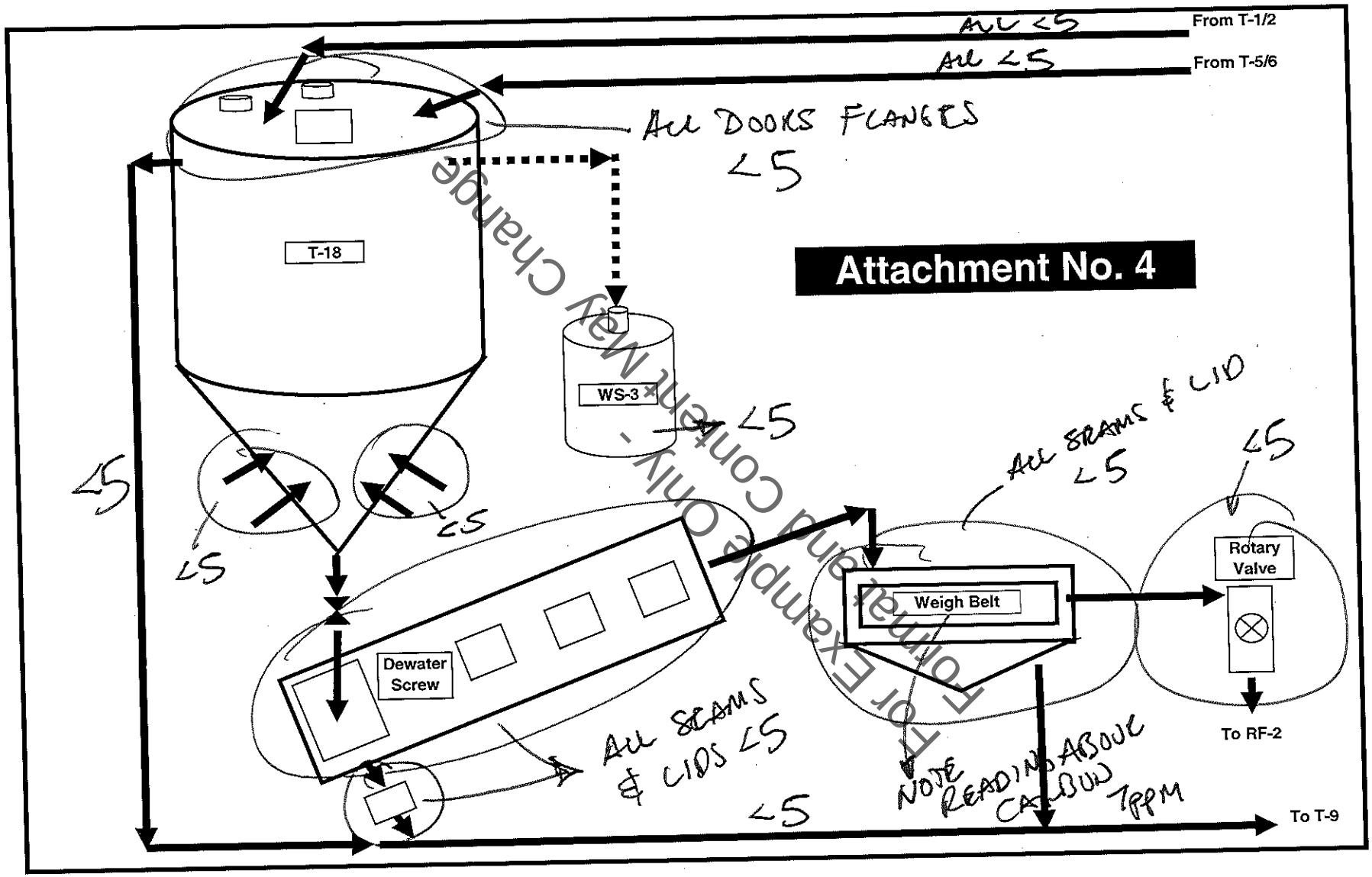
*A leak is detected if the container is not sealed closed, or if the instrument reading exceeds 500 ppmv over the background concentration. **Repair must be completed within 15 days.



Attachment No. 3






From T-1/2
From T-5/6
ALL DOORS FLANGES
<5
T-18
WS-3
Attachment No. 4
<5
<5
<5
<5
ALL SEAMS & CID
<5
<5
Rotary Valve
Weigh Belt
Dewater Screw
ALL SEAMS & CIDS <5
<5
NOTE READING ABOVE CALIBRATION
10PPM
To RF-2
To T-9
For Example Only - Format and Content May Change

Foxboro TVA1000A Calibration Record
Calibration Documentation
Serial Number: 11575766

Calibrated By: Monte McCue Date: 6-May-2013

Test No.	Time * Sec.	H/L	Response ppm	Gas Value ppm	Difference ppm
	X	X	0.90	0.5	X
1	4.07	H	9,900	10,000	-100
2	5.11	H	10,100	10,000	100
3	4.67	H	9,800	10,000	-200

* Denotes seconds to reach 90% of the gas value

Methane Values: HIGH 10,000

LOW 0.1

CALCULATIONS: H AVG. = 4.62 seconds ←

	High
ABSOLUTE MEAN DIFFERENCE	66.67
CALIBRATION ERROR (CE)	0.67% ←

Calibration Precision Requirements (8.1.2)

1. Calibration must be less than or equal 10% of the gas value
2. Response time must be less than or equal to 30 seconds to reach 90% of gas value
3. The calibration test must be completed prior to placing the analyzer into service and at subsequent 3-month intervals or at next use, whichever is later.

Siemens Water Technologies Corp.

Annual Method 21 Testing

40 CFR 61.343, 345, 349

Instrument Used: Foxboro TVA 1000 FID

Tested By: Monte McCue 5/31/12

No.	Location ID	Date Inspected	Measured Concentration (PPMV)	Background Concentration (PPMV)	Leak Detected? (Y/N) *	Description Of Problem	Corrective Action Taken	Date Of Successful Repair **
1	B-1 Baghouse Doors	5/31/12	<2	<2	N	NA	NA	NA
2	B-1 Dust Collector Blower Outlet Flanges	5/31/12	<2	<2	N	NA	NA	NA
3	H-1 Hopper Lid	5/31/12	<2	<2	N	NA	NA	NA
4	H-1 Hopper Eductor, Piping and Victaulics	5/31/12	<2	<2	N	NA	NA	NA
5	H-1 Hopper Flanges, Piping and Victaulics	5/31/12	<2	<2	N	NA	NA	NA
6	H-1 Hopper Vault Door	5/31/12	<2	<2	N	NA	NA	NA
7	H-2 Hopper Lid	5/31/12	<2	<2	N	NA	NA	NA
8	H-2 Hopper Eductor Flanges and Victaulics	5/31/12	<2	<2	N	NA	NA	NA
9	H-2 Hopper Piping and Victaulics	5/31/12	<2	<2	N	NA	NA	NA
10	H-2 Hopper Vent Piping	5/31/12	<2	<2	N	NA	NA	NA
11	RF-2 Hearth 1 Door West	5/31/12	<2	<2	N	NA	NA	NA
12	RF-2 Seal Welded Flat - between 1 and 2	5/31/12	<2	<2	N	NA	NA	NA
13	RF-2 Hearth 2 Door East	5/31/12	4	<2	N	NA	NA	NA
14	RF-2 Seal Welded Flat - between 2 and 3	5/31/12	<2	<2	N	NA	NA	NA
15	RF-2 Hearth 3 Door East	5/31/12	3	<2	N	NA	NA	NA

*A leak is detected if the container is not sealed closed, or if the instrument reading exceeds 500 ppmv over the background concentration. **Repair must be completed within 15 days.

Siemens Water Technologies Corp.

Annual Method 21 Testing

40 CFR 61.343, 345, 349

Instrument Used: Foxboro TVA 1000 FID

Tested By: Monte McCue

No.	Location ID	Date Inspected	Measured Concentration (PPMV)	Background Concentration (PPMV)	Leak Detected? (Y/N) *	Description Of Problem	Corrective Action Taken	Date Of Successful Repair **
16	RF-2 Seal Welded Flat - between 3 and 4	5/31/12	4	<2	N	NA	NA	NA
17	RF-2 Hearth 4 Door East	5/31/12	<2	<2	N	NA	NA	NA
18	RF-2 Seal Welded Flat - between 4 and 5	5/31/12	<2	<2	N	NA	NA	NA
19	RF-2 Hearth 5 Door East	5/31/12	<2	<2	N	NA	NA	NA
20	RF-2 Welded Seam on Furnace Bottom	5/31/12	<2	<2	N	NA	NA	NA
21	RF-2 Top Sand Seal	5/31/12	<2	<2	N	NA	NA	NA
22	RF-2 Bottom Sand Seal	5/31/12	<2	<2	N	NA	NA	NA
23	RF-2 Carbon Outlet Piping and Flanges	5/31/12	<2	<2	N	NA	NA	NA
24	T-1 Ball Valves	5/31/12	<2	<2	N	NA	NA	NA
25	T-1 Couplings	5/31/12	<2	<2	N	NA	NA	NA
26	T-1 Eductor & Fittings	5/31/12	<2	<2	N	NA	NA	NA
27	T-1 Fill Slurry Lines & Vics From H-1, H-2	5/31/12	<2	<2	N	NA	NA	NA
28	T-1 Fittings & Valves	5/31/12	<2	<2	N	NA	NA	NA
29	T-1 (SEE ATTACHMENT No. 1)	5/31/12			N	NA	NA	NA
30	T-1 Pressure Relief Valve	5/31/12	<2	<2	N	NA	NA	NA

*A leak is detected if the container is not sealed closed, or if the instrument reading exceeds 500 ppmv over the background concentration. **Repair must be completed within 15 days.

Siemens Water Technologies Corp.

Annual Method 21 Testing

40 CFR 61.343, 345, 349

Instrument Used: Foxboro TVA 1000 FID

Tested By: Monte McCue

No.	Location ID	Date Inspected	Measured Concentration (PPMV)	Background Concentration (PPMV)	Leak Detected? (Y/N) *	Description Of Problem	Corrective Action Taken	Date Of Successful Repair **
31	T-1 Slurry Line	5/31/12	<2	<2	N	NA	NA	NA
32	T-1 Tank Flanges	5/31/12	<2	<2	N	NA	NA	NA
33	T-1 Vent Pipe To WS-1	5/31/12	<2	<2	N	NA	NA	NA
34	T-2 Ball Valves	5/31/12	<2	<2	N	NA	NA	NA
35	T-2 Couplings	5/31/12	<2	<2	N	NA	NA	NA
36	T-2 Eductor & Fittings	5/31/12	<2	<2	N	NA	NA	NA
37	T-2 Fill Slurry Lines & Vlcs From H-1, H-2	5/31/12	<2	<2	N	NA	NA	NA
38	T-2 Fittings & Valves	5/31/12	<2	<2	N	NA	NA	NA
39	T-2 Tank (SEE ATTACHMENT No. 1)	5/31/12			N	NA	NA	NA
40	T-2 Pressure Relief Valve	5/31/12	<2	<2	N	NA	NA	NA
41	T-2 Slurry Line	5/31/12	<2	<2	N	NA	NA	NA
42	T-2 Tank Flanges	5/31/12	<2	<2	N	NA	NA	NA
43	T-2 Vent Pipe To WS-1	5/31/12	<2	<2	N	NA	NA	NA
44	T-5 Ball Valves	5/31/12	<2	<2	N	NA	NA	NA
45	T-5 Couplings	5/31/12	<2	<2	N	NA	NA	NA

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Siemens Water Technologies Corp.

Annual Method 21 Testing

40 CFR 61.343, 345, 349

Tested By: Monte McCue

Instrument Used: Foxboro TVA 1000 FID

No.	Location ID	Date Inspected	Measured Concentration (PPMV)	Background Concentration (PPMV)	Leak Detected? (Y/N) *	Description Of Problem	Corrective Action Taken	Date Of Successful Repair **
46	T-5 Eductor & Fittings	5/31/12	<2	<2	N	NA	NA	NA
47	T-5 Fill Slurry Lines & Vics From H-1, H-2	5/31/12	<2	<2	N	NA	NA	NA
48	T-5 Fittings & Valves	5/31/12	<2	<2	N	NA	NA	NA
49	T-5 (SEE ATTACHMENT No. 2)	5/31/12			N	NA	NA	NA
50	T-5 Pressure Relief Valve	5/31/12	<2	<2	N	NA	NA	NA
51	T-5 Slurry Line	5/31/12	<2	<2	N	NA	NA	NA
52	T-5 Tank Flanges	5/31/12	<2	<2	N	NA	NA	NA
53	T-5 Vent Pipe To WS-1	5/31/12	<2	<2	N	NA	NA	NA
54	T-6 Ball Valves	5/31/12	<2	<2	N	NA	NA	NA
55	T-6 Couplings	5/31/12	<2	<2	N	NA	NA	NA
56	T-6 Eductor & Fittings	5/31/12	<2	<2	N	NA	NA	NA
57	T-6 Fill Slurry Lines & Vics From H-1, H-2	5/31/12	<2	<2	N	NA	NA	NA
58	T-6 Fittings & Valves	5/31/12	<2	<2	N	NA	NA	NA
59	T-6 (SEE ATTACHMENT No. 2)	5/31/12			N	NA	NA	NA
60	T-6 Pressure Relief Valve	5/31/12	<2	<2	N	NA	NA	NA

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Siemens Water Technologies Corp.

Annual Method 21 Testing

40 CFR 61.343, 345, 349

Instrument Used: Foxboro TVA 1000 FID

Tested By: Monte McCue

No.	Location ID	Date Inspected	Measured Concentration (PPMV)	Background Concentration (PPMV)	Leak Detected? (Y/N) *	Description Of Problem	Corrective Action Taken	Date Of Successful Repair **
61	T-6 Slurry Line	5/31/12	<2	<2	N	NA	NA	NA
62	T-6 Tank Flanges	5/31/12	<2	<2	N	NA	NA	NA
63	T-6 Vent Pipe To WS-1	5/31/12	<2	<2	N	NA	NA	NA
64	T-9 (SEE ATTACHMENT No. 3)	5/31/12			N	NA	NA	NA
65	T-9 Level Transmitter	5/31/12	<2	<2	N	NA	NA	NA
66	T-9 Main Bottom Manway Door	5/31/12	<2	<2	N	NA	NA	NA
67	T-9 Return Line and Fittings From T Tanks	5/31/12	<2	<2	N	NA	NA	NA
68	T-9 Return Line and Fittings From T-18	5/31/12	<2	<2	N	NA	NA	NA
69	T-9 Sump Pump Fittings	5/31/12	<2	<2	N	NA	NA	NA
70	T-9 Vent Line and Fittings To WS-1	5/31/12	<2	<2	N	NA	NA	NA
71	T-9/P-4 Pump - Inlet Pipe and Fittings	5/31/12	<2	<2	N	NA	NA	NA
72	T-9/P-5 Pump - Inlet Pipe and Fittings	5/31/12	<2	<2	N	NA	NA	NA
73	T-9/P-4 Pump - Outlet Pipe and Fittings	5/31/12	<2	<2	N	NA	NA	NA
74	T-9/P-5 Pump - Outlet Pipe and Fittings	5/31/12	<2	<2	N	NA	NA	NA
75	H-18 Feed Hose & Couplings	5/31/12	<2	<2	N	NA	NA	NA

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Siemens Water Technologies Corp.

Annual Method 21 Testing

40 CFR 61.343, 345, 349

Instrument Used: Foxboro TVA 1000 FID

Tested By: Monte McCue

No.	Location ID	Date Inspected	Measured Concentration (PPMV)	Background Concentration (PPMV)	Leak Detected? (Y/N) *	Description Of Problem	Corrective Action Taken	Date Of Successful Repair **
76	H-18 Feed Valve & Piping	5/31/12	<2	<2	N	NA	NA	NA
77	H-18 Level Indicators	5/31/12	<2	<2	N	NA	NA	NA
78	H-18 Lids (SEE ATTACHMENT No. 4)	5/31/12			N	NA	NA	NA
79	H-18 Return Line, Couplings and Vics	5/31/12	<2	<2	N	NA	NA	NA
80	H-18 Piping and Couplings From T-Tanks	5/31/12	<2	<2	N	NA	NA	NA
81	WS-1 Hatches & Sample Port	5/31/12	<2	<2	N	NA	NA	NA
82	WS-1 Inlet	5/31/12	150	<2	N	NA	NA	NA
83	WS-1 Outlet	5/31/12	<2	<2	N	NA	NA	NA
84	WS-2 Hatches & Sample Port	5/31/12	<2	<2	N	NA	NA	NA
85	WS-2 Inlet	5/31/12	4	<2	N	NA	NA	NA
86	WS-2 Outlet	5/31/12	<2	<2	N	NA	NA	NA
87	WS-3 Hatches & Sample Port	5/31/12	<2	<2	N	NA	NA	NA
88	WS-3 Inlet	5/31/12	<2	<2	N	NA	NA	NA
89	WS-3 Outlet	5/31/12	<2	<2	N	NA	NA	NA
90	Dewater Screw (SEE ATTACHMENT No. 4)	5/31/12			N	NA	NA	NA

*A leak is detected if the container is not sealed closed, or if the instrument reading exceeds 500 ppmv over the background concentration. **Repair must be completed within 15 days.

Siemens Water Technologies Corp.

Annual Method 21 Testing

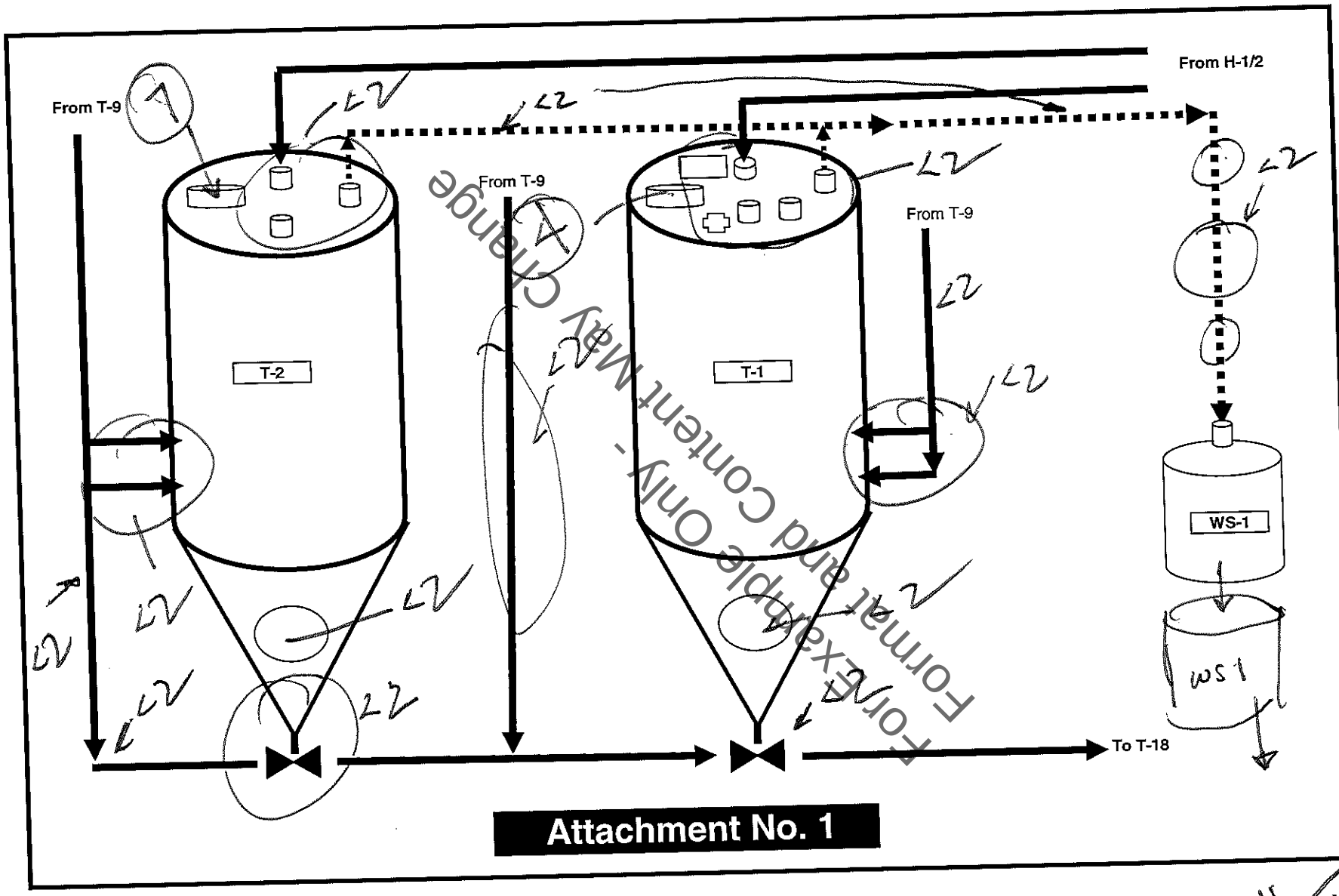
40 CFR 61.343, 345, 349

Instrument Used: Foxboro TVA 1000 FID

Tested By: Monte McCue

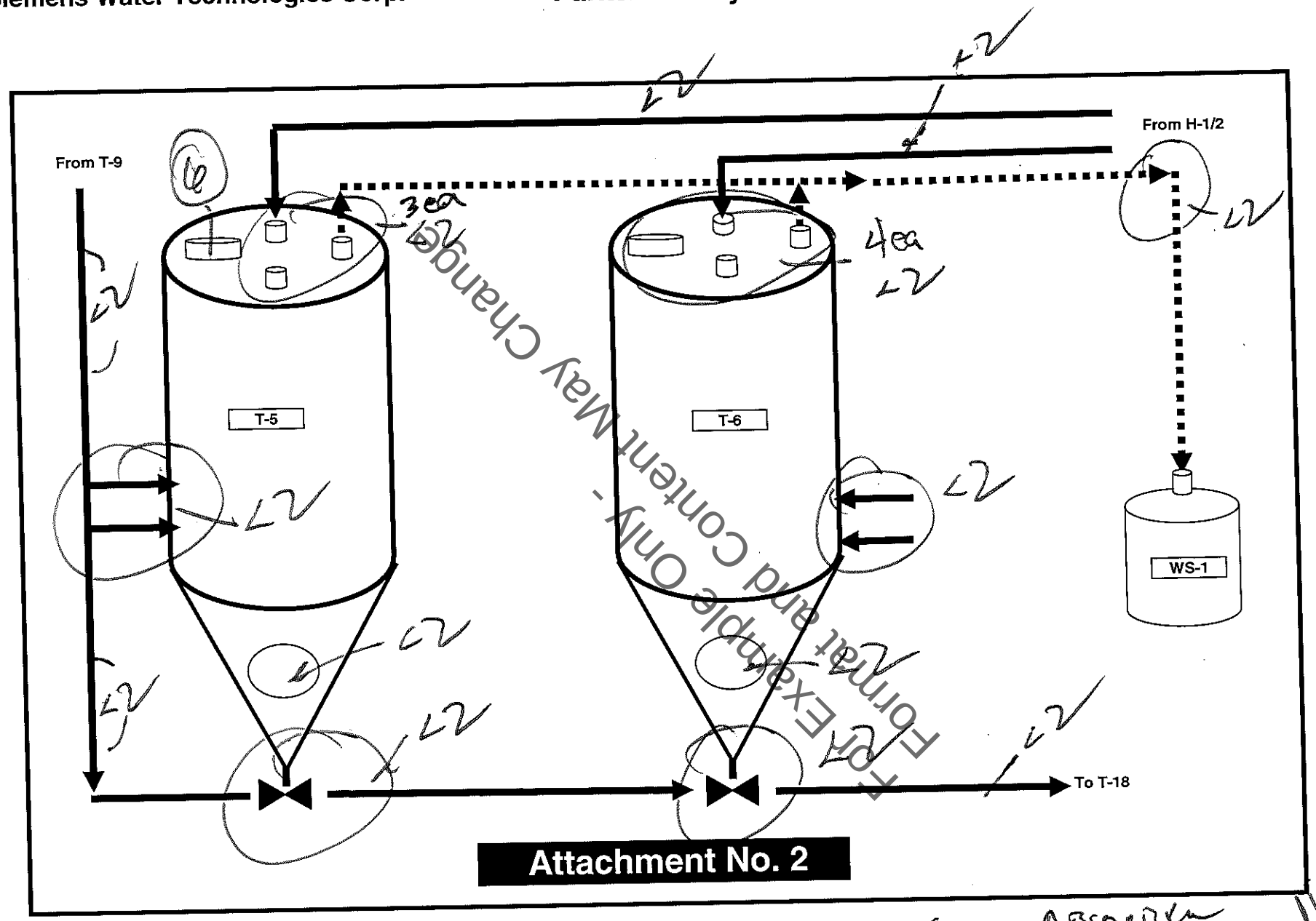
No.	Location ID	Date Inspected	Measured Concentration (PPMV)	Background Concentration (PPMV)	Leak Detected? (Y/N) *	Description Of Problem	Corrective Action Taken	Date Of Successful Repair **
91	Weigh Belt Feeder (SEE ATTACHMENT No. 4)	5/31/12			N	NA	NA	NA
92	Rotary Valve (SEE ATTACHMENT No. 4)	5/31/12			N	NA	NA	NA
93								
94								
95								
96								
97								
98								
99								
100								

*A leak is detected if the container is not sealed closed, or if the instrument reading exceeds 500 ppmv over the background concentration. **Repair must be completed within 15 days.



Attachment No. 1

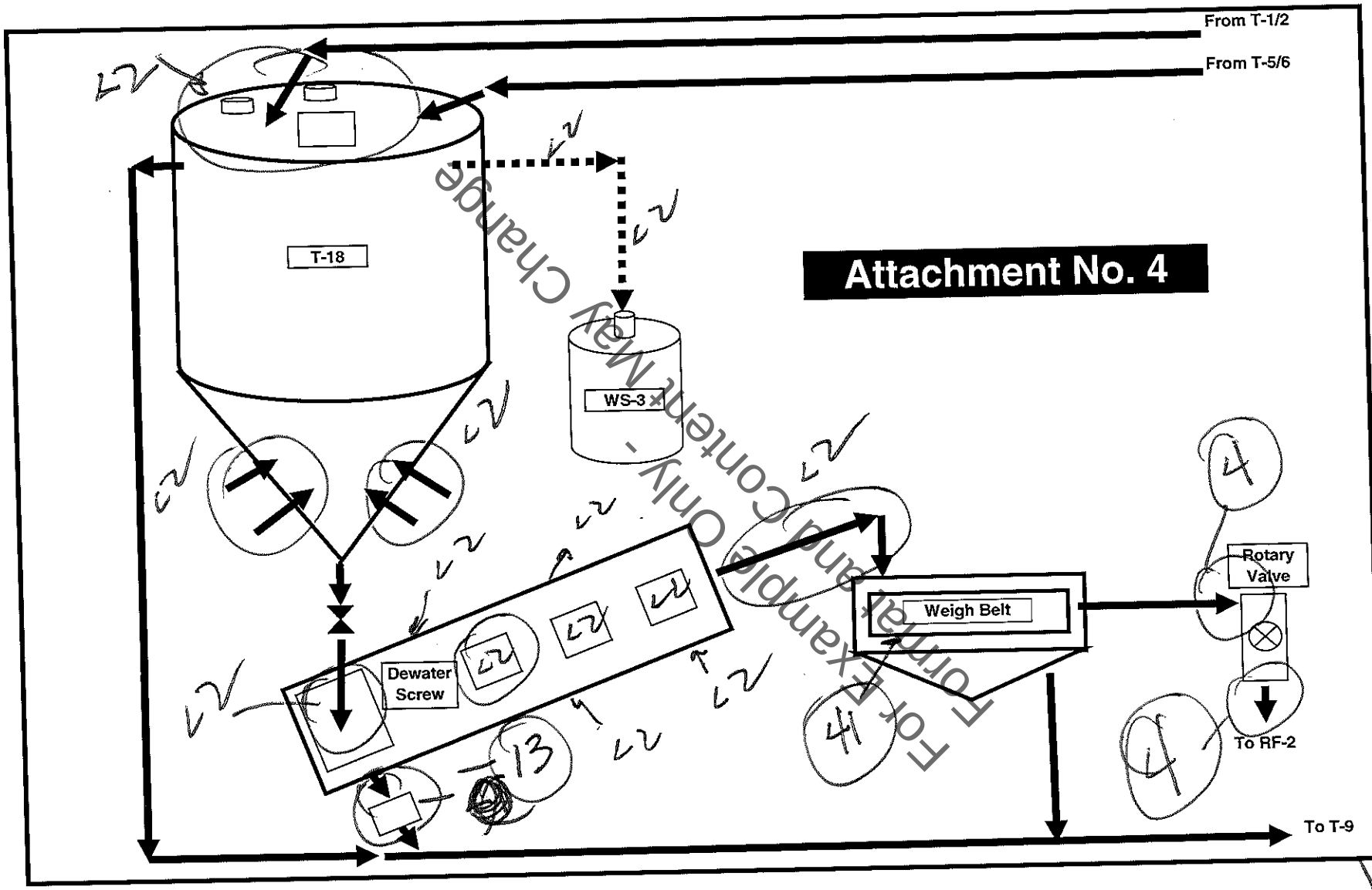
5/31/12



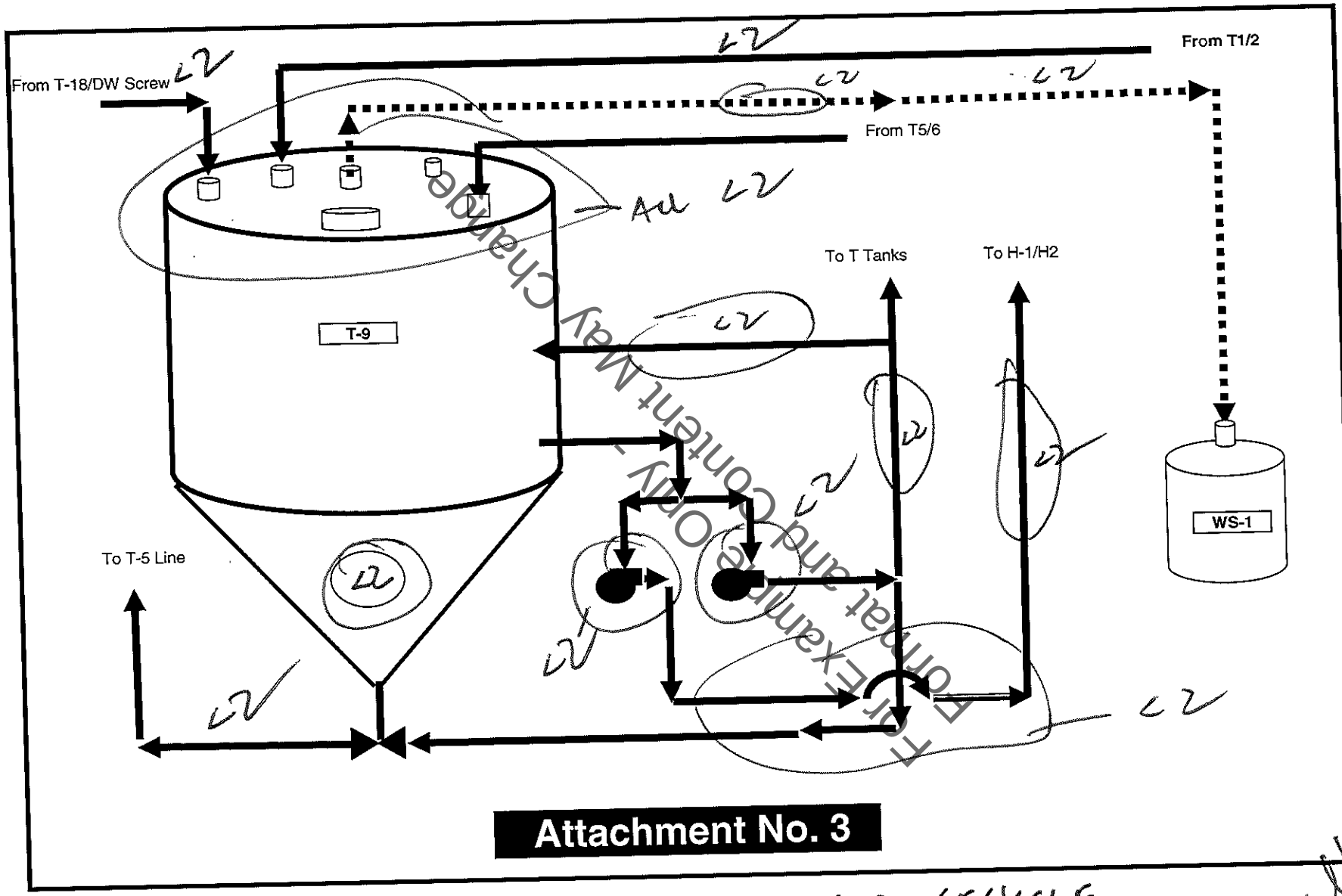
Attachment No. 2

T-1, 2 5, 6 ALL LINES W/ THE EXCEPTION OF TO ABSORBER AND SUMP LINES – NO CLASS

5/31/12



5/31/12



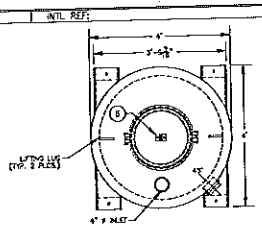
Attachment No. 3

ALL LINES ARE RECYCLE WATER AND LEAKS DISCOVERED

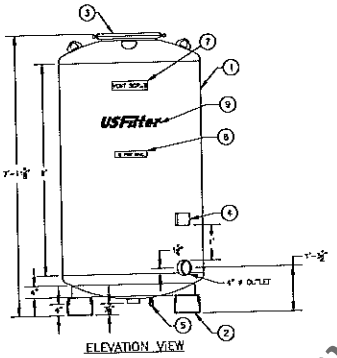
5/31/12

STD: 2-0600-8X11A | INTL REF:

LIST OF COMPONENTS		
ITEM	QTY	DESCRIPTION
1	1	TANK ASSEMBLY
2	1	SKID ASSEMBLY
3	1	MANWAY ASSEMBLY, 18" DIA.
4	1	PLATE, I.D. & SERIAL NUMBER
5	1	BRONZE BALL VALVE, 3/4"
6	1	DECAL, "FOR VAPOR USE ONLY", 2 1/2" x 4 1/4"
7	2	DECAL, "VENT - SCR-8", WHITE MYLAR
8	2	DECAL, "15 PSIG MAX", WHITE MYLAR
9	2	DECAL, "USFILTER/WESTATES" WHITE MYLAR W/BLUE LETTERS



PLAN VIEW



ELEVATION VIEW

NOTES:

1. DESIGN DATA:
   48" DIAMETER PRESSURE VESSEL-15 PSIG(MAX)
   VACUUM RATING - 15" HG
   @ 120°F-NOT ASME CODE STAMPED FOR VAPOR USE ONLY
   600 CFM
   1000 LBS. ACTIVATED CARBON
2. MATERIAL:
   HEADS - SA 36-HR
   SHELL - SA 36-HR
   SKID - SA 36-HR
3. SURFACE PREPARATION:
   INTERIOR:
   SANDBLAST: SSPC-SP-5 WHITE METAL
   ABRASIVE: GARNET OR GRIT - PROFILE: 1.5-2 MILS
   COATING: 3M BRAND SCOTCHKOTE 134
   THICKNESS: 10-15 DFMT - COLOR: GREEN
   EXTERIOR:
   SANDBLAST: SSPC-SP-10 NEAR WHITE METAL
   ABRASIVE: GARNET OR GRIT - PROFILE: 1.5-2 MILS
   PRIMER COAT: RUST PREVENTATIVE EPOXY PRIMER (CARBOLINE 893)
   THICKNESS: 4-6 DFMT - COLOR: RED
   FINISH COAT: HIGH BUILD POLYURETHANE (CARBOLINE 134HG)
   THICKNESS: 3-4 DFMT - COLOR: WHITE (FED. I.D.#17925)
4. LIFTING REQUIREMENTS:
   5200 LBS. MINIMUM RATING
   EST. WEIGHTS:
   1190 LBS. - EMPTY VESSEL
   3190 LBS. - WITH CARBON

DESIGNER	AA	DATE	10-8-01
CHECKER		DATE	
ENGINEER		DATE	
MANAGER		DATE	
FILE:			
SCALE:	NONE		

TITLE: VSC2000 GENERAL ASSEMBLY

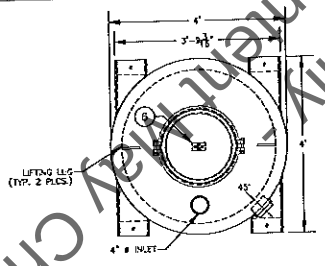
CLIENT:

USFilter/WESTATES
RED BLUFF, CA
1-800-795-2654

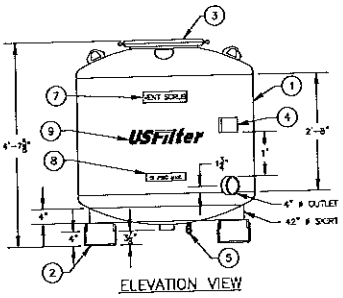
PROJECT | DRAWING: VSC2000SHEET1.DAG | SHEET: 1 OF 5 | REV:

STD: 2-0600-8X11A | INTL REF:

LIST OF COMPONENTS		
ITEM	QTY	DESCRIPTION
1	1	TANK ASSEMBLY
2	1	SKID ASSEMBLY
3	1	MANWAY ASSEMBLY, 18" DIA.
4	1	PLATE, I.D. & SERIAL NUMBER
5	1	BRONZE BALL VALVE, 3/4"
6	1	DECAL, "FOR VAPOR USE ONLY", 2 1/2" x 4 1/4"
7	2	DECAL, "VENT - SCR-8", WHITE MYLAR
8	2	DECAL, "15 PSIG MAX", WHITE MYLAR
9	2	DECAL, "USFILTER/WESTATES" WHITE MYLAR W/BLUE LETTERS



PLAN VIEW



ELEVATION VIEW

NOTES:

1. DESIGN DATA:
   48" DIAMETER PRESSURE VESSEL-15 PSIG(MAX)
   VACUUM RATING - 15" HG
   @ 120°F-NOT ASME CODE STAMPED FOR VAPOR USE ONLY
   600 CFM
   1000 LBS. ACTIVATED CARBON
2. MATERIAL:
   HEADS - SA 36-HR
   SHELL - SA 36-HR
   SKID - SA 36-HR
3. SURFACE PREPARATION:
   INTERIOR:
   SANDBLAST: SSPC-SP-5 WHITE METAL
   ABRASIVE: GARNET OR GRIT - PROFILE: 1.5-2 MILS
   COATING: 3M BRAND SCOTCHKOTE 134
   THICKNESS: 10-15 DFMT - COLOR: GREEN
   EXTERIOR:
   SANDBLAST: SSPC-SP-10 NEAR WHITE METAL
   ABRASIVE: GARNET OR GRIT - PROFILE: 1.5-2 MILS
   PRIMER COAT: RUST PREVENTATIVE EPOXY PRIMER (CARBOLINE 893)
   THICKNESS: 4-6 DFMT - COLOR: RED
   FINISH COAT: HIGH BUILD POLYURETHANE (CARBOLINE 134HG)
   THICKNESS: 3-4 DFMT - COLOR: WHITE (FED. I.D.#17925)
4. LIFTING REQUIREMENTS:
   5200 LBS. MINIMUM RATING
   EST. WEIGHTS:
   890 LBS. - EMPTY VESSEL
   1890 LBS. - WITH CARBON

DESIGNER	AA	DATE	10-8-01
CHECKER		DATE	
ENGINEER		DATE	
MANAGER		DATE	
FILE:			
SCALE:	NONE		

TITLE: VSC1000 GENERAL ASSEMBLY

CLIENT:

USFilter/WESTATES
RED BLUFF, CA
1-800-795-2654

PROJECT | DRAWING: VSC1000SHEET1.DAG | SHEET: 1 OF 2 | REV:

Foxboro TVA1000A Calibration Record
Calibration Documentation
Serial Number: 11575766

Calibrated By: ___Mccue_____ **Date:** ___5/31/12____

Test No.	Time * Sec.	H/L	Response ppm	Gas Value ppm	Difference ppm
	X	X	0.90	0.5	X
1	4.64	H	9,900	10,000	-100
2	4.5	H	10,100	10,000	100
3	4.12	H	10,100	10,000	100

* Denotes seconds to reach 90% of the gas value

Methane Values:

HIGH 10,000

LOW 0.1

CALCULATIONS: H AVG. = 4.42 seconds ←

	High
ABSOLUTE MEAN DIFFERENCE	33.33
CALIBRATION ERROR (CE)	0.33% ←

Calibration Precision Requirements (8.1.2)

1. Calibration must be less than or equal 10% of the gas value
2. Response time must be less than or equal to 30 seconds to reach 90% of gas value
3. The calibration test must be completed prior to placing the analyzer into service and at subsequent 3-month intervals or at next use, whichever is later.

Siemens Water Technologies Corp.

Annual Method 21 Testing

40 CFR 61.343, 345, 349

Instrument Used: Foxboro TVA 1000 FID

Tested By: Monte McCue 5/11/11

No.	Location ID	Date Inspected	Measured Concentration (PPMV)	Background Concentration (PPMV)	Leak Detected? (Y/N) *	Description Of Problem	Corrective Action Taken	Date Of Successful Repair **
1	B-1 Baghouse Doors	5/11/11	<2	<2	N			
2	B-1 Dust Collector Blower Outlet Flanges	5/11/11	<2	<2	N			
3	H-1 Hopper Lid	5/11/11	12	<2	N			
4	H-1 Hopper Eductor, Piping and Victaulics	5/11/11	5	<2	N			
5	H-1 Hopper Flanges, Piping and Victaulics	5/11/11	4	<2	N			
6	H-1 Hopper Vault Door	5/11/11	5	<2	N			
7	H-2 Hopper Lid	5/11/11	<2	<2	N			
8	H-2 Hopper Eductor Flanges and Victaulics	5/11/11	<2	<2	N			
9	H-2 Hopper Piping and Victaulics	5/11/11	<2	<2	N			
10	H-2 Hopper Vent Piping	5/11/11	<2	<2	N			
11	RF-2 Hearth 1 Door West	5/11/11	<2	<2	N			
12	RF-2 Seal Welded Flat - between 1 and 2	5/11/11	<2	<2	N			
13	RF-2 Hearth 2 Door East	5/11/11	<2	<2	N			
14	RF-2 Seal Welded Flat - between 2 and 3	5/11/11	<2	<2	N			
15	RF-2 Hearth 3 Door East	5/11/11	<2	<2	N			

*A leak is detected if the container is not sealed closed, or if the instrument reading exceeds 500 ppmv over the background concentration. **Repair must be completed within 15 days.

Siemens Water Technologies Corp.

Annual Method 21 Testing

40 CFR 61.343, 345, 349

Instrument Used: Foxboro TVA 1000 FID

Tested By: Monte McCue

No.	Location ID	Date Inspected	Measured Concentration (PPMV)	Background Concentration (PPMV)	Leak Detected? (Y/N) *	Description Of Problem	Corrective Action Taken	Date Of Successful Repair **
16	RF-2 Seal Welded Flat - between 3 and 4	5/11/11	<2	<2	N			
17	RF-2 Hearth 4 Door East	5/11/11	<2	<2	N			
18	RF-2 Seal Welded Flat - between 4 and 5	5/11/11	<2	<2	N			
19	RF-2 Hearth 5 Door East	5/11/11	<2	<2	N			
20	RF-2 Welded Seam on Furnace Bottom	5/11/11	<2	<2	N			
21	RF-2 Top Sand Seal	5/11/11	<2	<2	N			
22	RF-2 Bottom Sand Seal	5/11/11	<2	<2	N			
23	RF-2 Carbon Outlet Piping and Flanges	5/11/11	<2	<2	N			
24	T-1 Ball Valves	5/11/11	<2	<2	N			
25	T-1 Couplings	5/11/11	<2	<2	N			
26	T-1 Eductor & Fittings	5/11/11	<2	<2	N			
27	T-1 Fill Slurry Lines & Vics From H-1, H-2	5/11/11	<2	<2	N			
28	T-1 Fittings & Valves	5/11/11	<2	<2	N			
29	T-1 (SEE ATTACHMENT No. 1)	5/11/11		<2	N			
30	T-1 Pressure Relief Valve	5/11/11	<5	<2	N			

*A leak is detected if the container is not sealed closed, or if the instrument reading exceeds 500 ppmv over the background concentration. **Repair must be completed within 15 days.

Siemens Water Technologies Corp.

Annual Method 21 Testing

40 CFR 61.343, 345, 349

Instrument Used: Foxboro TVA 1000 FID

Tested By: Monte McCue

No.	Location ID	Date Inspected	Measured Concentration (PPMV)	Background Concentration (PPMV)	Leak Detected? (Y/N) *	Description Of Problem	Corrective Action Taken	Date Of Successful Repair **
31	T-1 Slurry Line	5/11/11	<2	<2	N			
32	T-1 Tank Flanges	5/11/11	<2	<2	N			
33	T-1 Vent Pipe To WS-1	5/11/11	<2	<2	N			
34	T-2 Ball Valves	5/11/11	<2	<2	N			
35	T-2 Couplings	5/11/11	<2	<2	N			
36	T-2 Eductor & Fittings	5/11/11	<2	<2	N			
37	T-2 Fill Slurry Lines & Vlcs From H-1, H-2	5/11/11	<2	<2	N			
38	T-2 Fittings & Valves	5/11/11	<2	<2	N			
39	T-2 Tank (SEE ATTACHMENT No. 1)	5/11/11		<2	N			
40	T-2 Pressure Relief Valve	5/11/11	<5	<2	N			
41	T-2 Slurry Line	5/11/11	<2	<2	N			
42	T-2 Tank Flanges	5/11/11	<2	<2	N			
43	T-2 Vent Pipe To WS-1	5/11/11	<2	<2	N			
44	T-5 Ball Valves	5/11/11	<2	<2	N			
45	T-5 Couplings	5/11/11	<2	<2	N			

*A leak is detected if the container is not sealed closed, or if the instrument reading exceeds 500 ppmv over the background concentration. **Repair must be completed within 15 days.

Siemens Water Technologies Corp.

Annual Method 21 Testing

40 CFR 61.343, 345, 349

Instrument Used: Foxboro TVA 1000 FID

Tested By: Monte McCue

No.	Location ID	Date Inspected	Measured Concentration (PPMV)	Background Concentration (PPMV)	Leak Detected? (Y/N) *	Description Of Problem	Corrective Action Taken	Date Of Successful Repair **
46	T-5 Eductor & Fittings	5/11/11	<2	<2	N			
47	T-5 Fill Slurry Lines & Vics From H-1, H-2	5/11/11	<2	<2	N			
48	T-5 Fittings & Valves	5/11/11	<2	<2	N			
49	T-5 (SEE ATTACHMENT No. 2)	5/11/11		<2	N			
50	T-5 Pressure Relief Valve	5/11/11	<5	<2	N			
51	T-5 Slurry Line	5/11/11	<2	<2	N			
52	T-5 Tank Flanges	5/11/11	<2	<2	N			
53	T-5 Vent Pipe To WS-1	5/11/11	<2	<2	N			
54	T-6 Ball Valves	5/11/11	<2	<2	N			
55	T-6 Couplings	5/11/11	<2	<2	N			
56	T-6 Eductor & Fittings	5/11/11	<2	<2	N			
57	T-6 Fill Slurry Lines & Vics From H-1, H-2	5/11/11	<2	<2	N			
58	T-6 Fittings & Valves	5/11/11	<2	<2	N			
59	T-6 (SEE ATTACHMENT No. 2)	5/11/11		<2	N			
60	T-6 Pressure Relief Valve	5/11/11	<5	<2	N			

*A leak is detected if the container is not sealed closed, or if the instrument reading exceeds 500 ppmv over the background concentration. **Repair must be completed within 15 days.

Siemens Water Technologies Corp.

Annual Method 21 Testing

40 CFR 61.343, 345, 349

Instrument Used: Foxboro TVA 1000 FID

Tested By: Monte McCue

No.	Location ID	Date Inspected	Measured Concentration (PPMV)	Background Concentration (PPMV)	Leak Detected? (Y/N) *	Description Of Problem	Corrective Action Taken	Date Of Successful Repair **
61	T-6 Slurry Line	5/11/11	<2	<2	N			
62	T-6 Tank Flanges	5/11/11	<2	<2	N			
63	T-6 Vent Pipe To WS-1	5/11/11	<2	<2	N			
64	T-9 (SEE ATTACHMENT No. 3)	5/11/11		<2	N			
65	T-9 Level Transmitter	5/11/11	<3	<2	N			
66	T-9 Main Bottom Manway Door	5/11/11	<2	<2	N			
67	T-9 Return Line and Fittings From T Tanks	5/11/11	<2	<2	N			
68	T-9 Return Line and Fittings From T-18	5/11/11	<2	<2	N			
69	T-9 Sump Pump Fittings	5/11/11	<2	<2	N			
70	T-9 Vent Line and Fittings To WS-1	5/11/11	<4	<2	N			
71	T-9/P-4 Pump - Inlet Pipe and Fittings	5/11/11	<4	<2	N			
72	T-9/P-5 Pump - Inlet Pipe and Fittings	5/11/11	<4	<2	N			
73	T-9/P-4 Pump - Outlet Pipe and Fittings	5/11/11	<3	<2	N			
74	T-9/P-5 Pump - Outlet Pipe and Fittings	5/11/11	<4	<2	N			
75	H-18 Feed Hose & Couplings	5/11/11	<5	<2	N			

*A leak is detected if the container is not sealed closed, or if the instrument reading exceeds 500 ppmv over the background concentration. **Repair must be completed within 15 days.

Siemens Water Technologies Corp.

Annual Method 21 Testing

40 CFR 61.343, 345, 349

Instrument Used: Foxboro TVA 1000 FID

Tested By: Monte McCue

No.	Location ID	Date Inspected	Measured Concentration (PPMV)	Background Concentration (PPMV)	Leak Detected? (Y/N) *	Description Of Problem	Corrective Action Taken	Date Of Successful Repair **
76	H-18 Feed Valve & Piping	5/11/11	<5	<2	N			
77	H-18 Level Indicators	5/11/11	<5	<2	N			
78	H-18 Lids (SEE ATTACHMENT No. 4)	5/11/11		<2	N			
79	H-18 Return Line, Couplings and Vics	5/11/11	<5	<2	N			
80	H-18 Piping and Couplings From T-Tanks	5/11/11	<5	<2	N			
81	WS-1 Hatches & Sample Port	5/11/11	<2	<2	N			
82	WS-1 Inlet	5/11/11	4200	<2	N			
83	WS-1 Outlet	5/11/11	124	<2	N			
84	WS-2 Hatches & Sample Port	5/11/11	<2	<2	N			
85	WS-2 Inlet	5/11/11	<4	<2	N			
86	WS-2 Outlet	5/11/11	<2	<2	N			
87	WS-3 Hatches & Sample Port	5/11/11	<2	<2	N			
88	WS-3 Inlet	5/11/11	<14	<2	N			
89	WS-3 Outlet	5/11/11	<2	<2	N			
90	Dewater Screw (SEE ATTACHMENT No. 4)	5/11/11		<2	N			

*A leak is detected if the container is not sealed closed, or if the instrument reading exceeds 500 ppmv over the background concentration. **Repair must be completed within 15 days.

Siemens Water Technologies Corp.

Annual Method 21 Testing

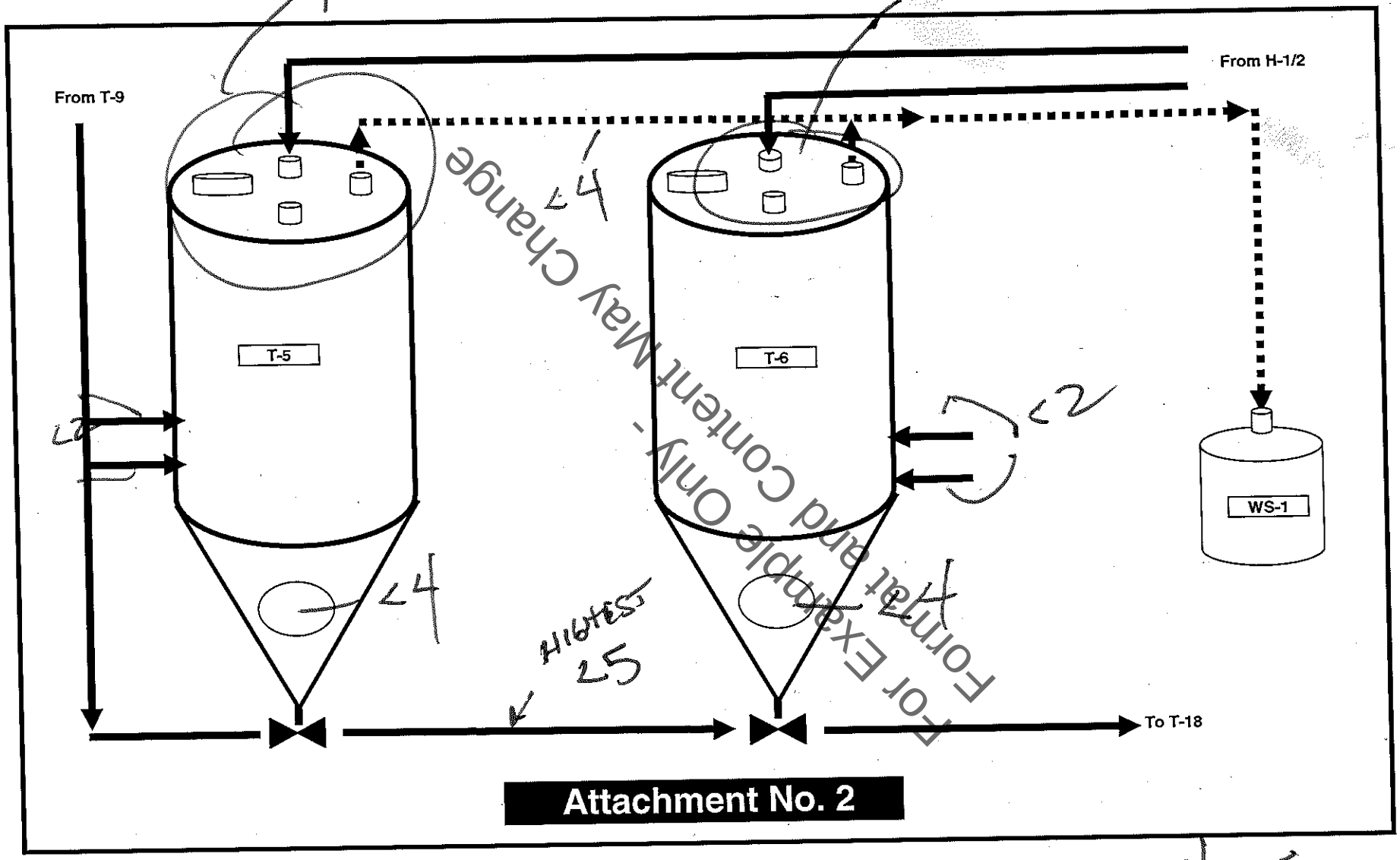
40 CFR 61.343, 345, 349

Instrument Used: Foxboro TVA 1000 FID

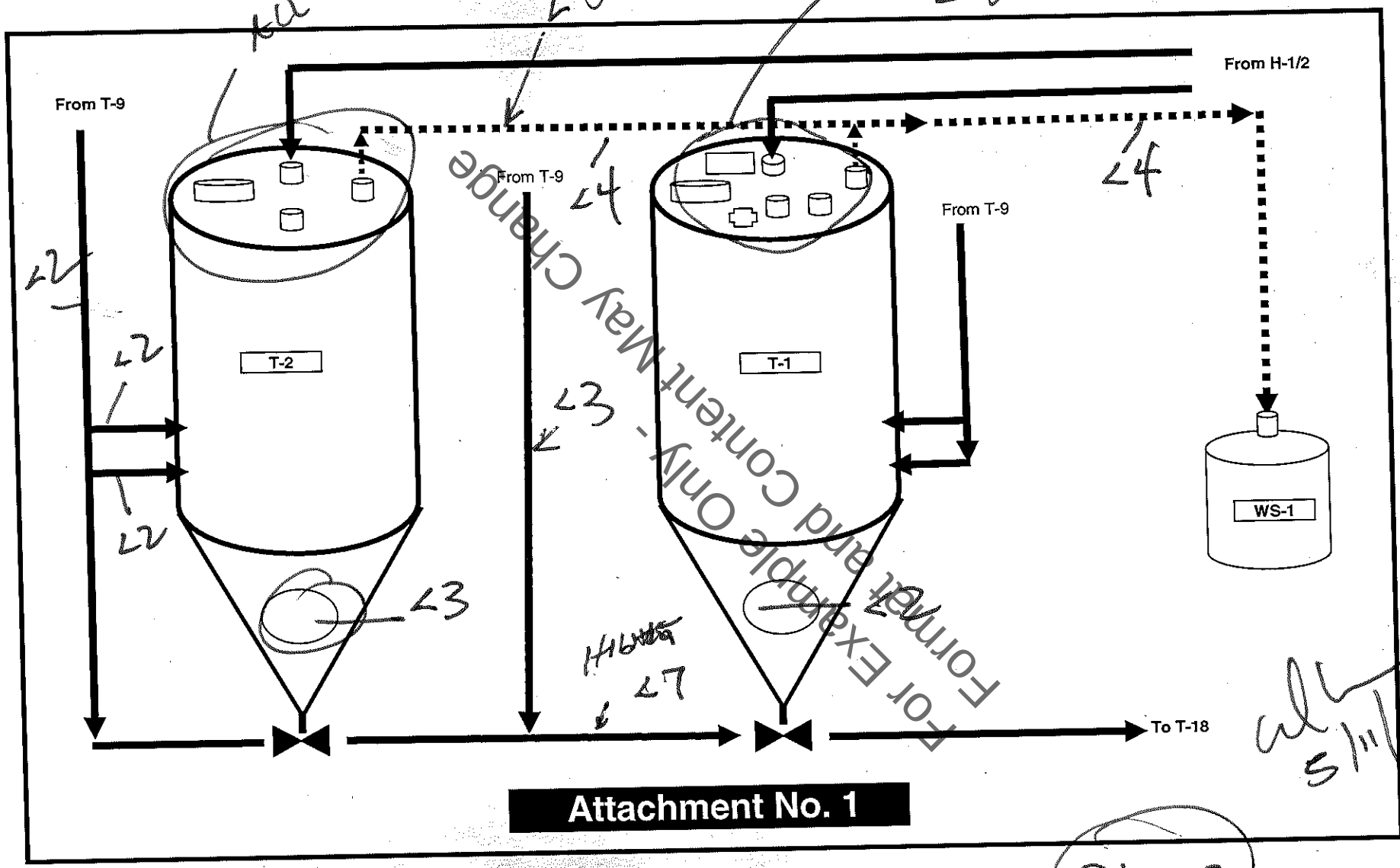
Tested By: Monte McCue

No.	Location ID	Date Inspected	Measured Concentration (PPMV)	Background Concentration (PPMV)	Leak Detected? (Y/N) *	Description Of Problem	Corrective Action Taken	Date Of Successful Repair **
91	Weigh Belt Feeder (SEE ATTACHMENT No. 4)	5/11/11		<2	N			
92	Rotary Valve (SEE ATTACHMENT No. 4)	5/11/11		<2	N			
93								
94								
95								
96								
97								
98								
99								
100								

*A leak is detected if the container is not sealed closed, or if the instrument reading exceeds 500 ppmv over the background concentration. **Repair must be completed within 15 days.



Attachment No. 2



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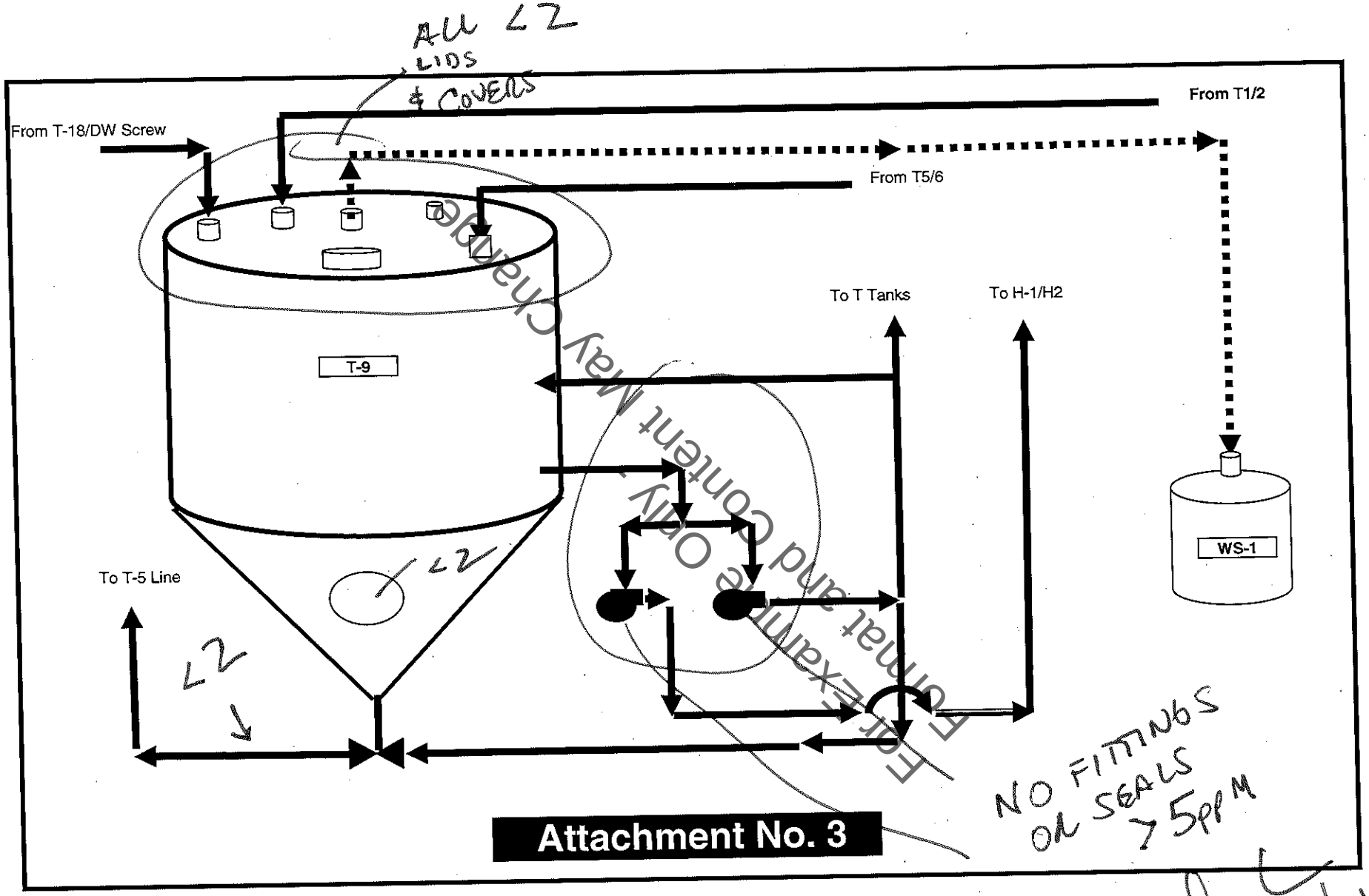
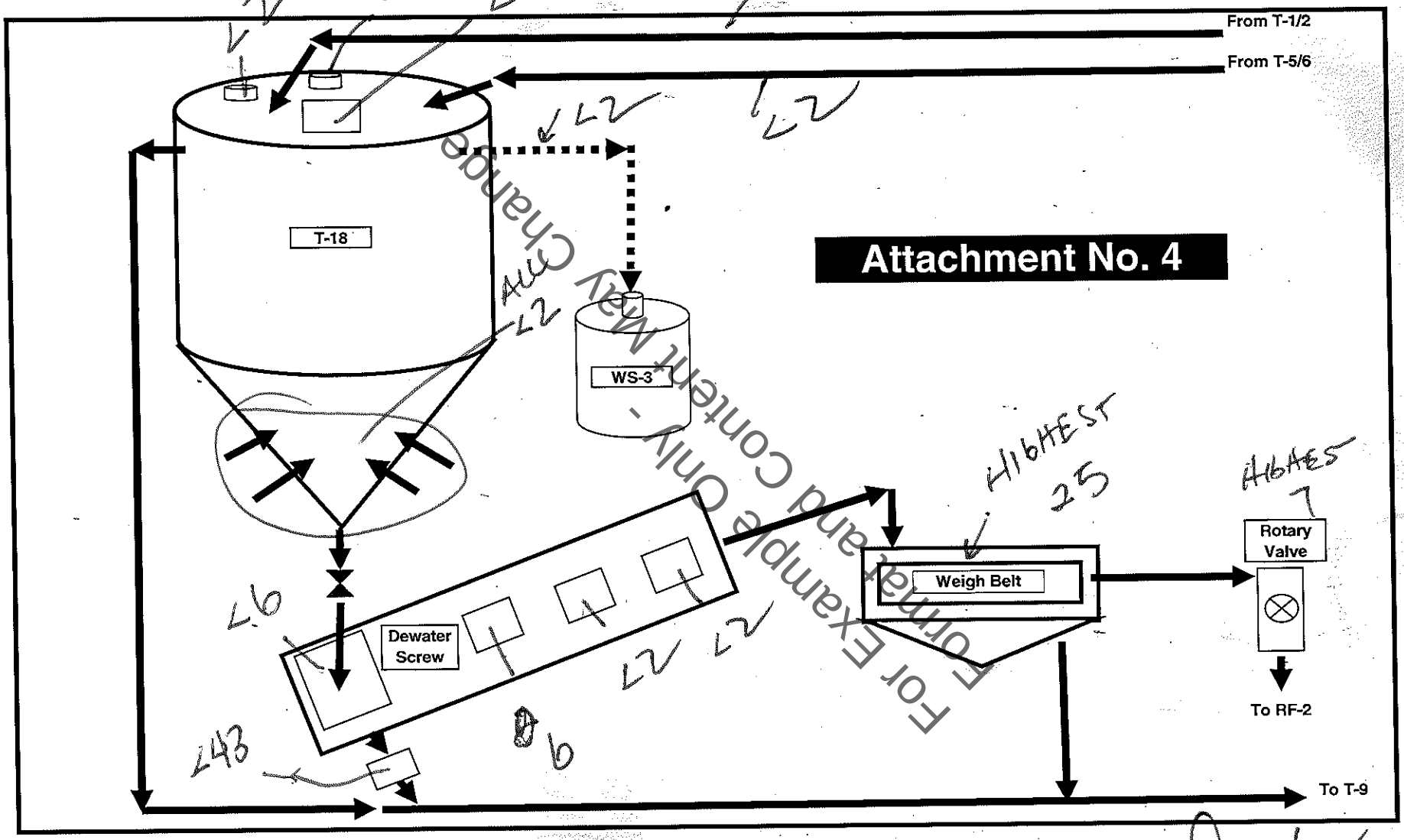


5/11/11



Foxboro TVA1000A Calibration Record
Calibration Documentation
Serial Number: 11575766

Calibrated By: ___Mccue/Hargis_____ **Date:** ___5/11/11____

Test No.	Time * Sec.	H/L	Response ppm	Gas Value ppm	Difference ppm
	X	X	0.90	0.5	X
1	4.89	H	10,700	10,000	700
2	4.3	H	10,400	10,000	400
3	4.02	H	10,300	10,000	300

* Denotes seconds to reach 90% of the gas value

Methane Values:

HIGH 10,000

LOW 0.1

CALCULATIONS: H AVG. = 4.40 seconds ←

	High
ABSOLUTE MEAN DIFFERENCE	466.67
CALIBRATION ERROR (CE)	4.67% ←

Calibration Precision Requirements (8.1.2)

1. Calibration must be less than or equal 10% of the gas value
2. Response time must be less than or equal to 30 seconds to reach 90% of gas value
3. The calibration test must be completed prior to placing the analyzer into service and at subsequent 3-month intervals or at next use, whichever is later.

APPENDIX G
DEBRIS BIN AND ASSOCIATED DRUMS INSPECTION RECORDS

Debris Bin Testing Summary

Date Shipped	Manifest Number	Bin Number	Accumulation Days	First Addition	Background Reading	Highest Reading Around Lid	Last Load Sealed	Background Reading	Highest Reading Around Lid
1/7/2011	004433832 FLE	**CHHT40039**	**85**	**10/14/2010**	**<5**	**<5**	**1/6/2011**	**<5**	**<15**
3/24/2011	004440076 FLE	**WCPU7021**	**77**	**1/6/2011**	**<5**	**<5**	**3/24/2011**	**<5**	**<5**
5/17/2011	004778198 FLE	**WCPU7020**	**50**	**3/28/2011**	**<5**	**<5**	**5/17/2011**	**<5**	**<5**
8/11/2011	004737673 FLE	**WCPU7020**	**86**	**5/17/2011**	**<5**	**<5**	**8/11/2011**	**<5**	**<5**
10/5/2011	004746409 FLE	**CHHT40028**	**55**	**8/11/2011**	**<5**	**<5**	**10/5/2011**	**<5**	**<5**
11/29/2011	004880992 FLE	**WCPU7020**	**54**	**10/6/2011**	**<5**	**<5**	**11/29/2011**	**<5**	**<5**
12/21/2011	004881344 FLE	**CHHT40014**	**21**	**11/30/2011**	**<5**	**<5**	**12/21/2011**	**<5**	**<13**
3/6/2012	005275460 FLE	**WCPU7020**	**76**	**12/21/2011**	**<5**	**<5**	**3/5/2012**	**<5**	**<5**
5/10/2012	003458248 FLE	**CHIU258131**	**65**	**3/6/2012**	**<5**	**<5**	**4/18/2012**	**<5**	**<5**
6/12/2012	005273077 FLE	**WCPU7020**	**32**	**5/11/2012**	**<5**	**<5**	**6/12/2012**	**<5**	**<5**
9/10/2012	005628064 FLE	**CHHT40028**	**89**	**6/13/2012**	**<5**	**<5**	**9/10/2012**	**<5**	**<5**
10/2/2012	000088280 JJK	**WCPU7021**	**21**	**9/11/2012**	**<5**	**<5**	**10/1/2012**	**<5**	**<10**
10/23/2012	005627241 FLE	**CHHT40039**	**20**	**10/3/2012**	**<5**	**<5**	**10/23/2012**	**<5**	**<5**
11/28/2012	006089784 FLE	**CLHA258174**	**35**	**10/24/2012**	**<5**	**<5**	**11/7/2012**	**<5**	**<5**
1/15/2013	006117584 FLE	**CHHT40028**	**13**	**1/2/2013**	**<5**	**<5**	**1/15/2013**	**<5**	**<5**
3/19/2013	006114999 FLE	**CHHY40002**	**18**	**3/1/2013**	**<5**	**<5**	**3/19/2013**	**<5**	**<5**
5/14/2013	006565465 FLE	**CHHY40001**	**55**	**3/20/2013**	**<5**	**<5**	**5/14/2013**	**<5**	**<5**
6/18/2013	006566529 FLE	**CHHT40082**	**34**	**5/15/2013**	**<5**	**<5**	**6/18/2013**	**<5**	**<5**
8/27/2013	006787221 FLE	**CHHT40067**	**72**	**6/16/2013**	**<5**	**<5**	**8/23/2013**	**<5**	**<5**
9/10/2013	006787272 FLE	**CHHY40001**	**44**	**7/28/2013**	**<5**	**<5**	**8/28/2013**	**<5**	**<5**
10/29/2013	004746586 FLE	**CHHT40235**	**60**	**8/30/2013**	**<5**	**<5**	**9/15/2013**	**<5**	**<5**
11/22/2013	006162808 FLE	**VB27642**	**2**	**11/20/2013**	**<5**	**<5**	**11/21/2013**	**<5**	**<5**
11/25/2013	006162811 FLE	**VB2804**	**5**	**11/20/2013**	**<5**	**<5**	**11/22/2013**	**<5**	**<5**
1/8/2014	006777464 FLE	**CHHT 40245**	**84**	**10/16/2013**	**<5**	**<5**	**1/7/2014**	**<5**	**<5**
1/8/2014	009686688 JJK	**276508**	**49**	**11/20/2013**	**<5**	**<5**	**11/22/2013**	**<5**	**<5**
1/29/2014	006162785 FLE	**V2872**	**70**	**11/20/2013**	**<5**	**<5**	**11/22/2013**	**<5**	**<5**
1/29/2014	006162786 FLE	**VB12084**	**70**	**11/20/2013**	**<5**	**<5**	**11/22/2013**	**<5**	**<5**
2/2/2014	006162790 FLE	**VB27598**	**74**	**11/20/2013**	**<5**	**<5**	**11/22/2013**	**<5**	**<5**
2/2/2014	006162791 FLE	**CHVB0145**	**74**	**11/20/2013**	**<5**	**<5**	**11/22/2013**	**<5**	**<5**
2/5/2014	006162839 FLE	**V2868**	**77**	**11/20/2013**	**<5**	**<5**	**11/22/2013**	**<5**	**<5**
2/5/2014	006162840 FLE	**V2686**	**77**	**11/20/2013**	**<5**	**<5**	**11/22/2013**	**<5**	**<5**
3/24/2014	007512188 FLE	**CHHT 40041**	**76**	**1/7/2014**	**<5**	**<5**	**3/21/2014**	**<5**	**<5**
		CHTT 40218							

Note: To test Bin, the FID is moved all around the seal of the lid. No readings exceed the "less than" valu

APPENDIX H
DESCRIPTIONS OF PROCESS PARAMETERS MONITORED

DESCRIPTION OF PROCESS PARAMETERS MONITORED
EVOQUA WATER TECHNOLOGIES, PARKER, ARIZONA FACILITY
Revised May 2014

PROCESS PARAMETER MONITORED	REASON FOR SELECTING PARAMETER
Temperature Indicators on Afterburner (AB-2)	Temperature is the best parameter for detecting proper afterburner combustion and performance, and assuring compliance with Subpart FF.
Temperature Indicators on hearths 3-5 on Reactivation Furnace (RF-2)	Temperature is the best parameter for detecting proper reactivation furnace combustion and performance, and assuring compliance with Subpart FF.

THE TREATMENT UNIT DESIGN SPECIFICATIONS ARE MAINTAINED IN THE ADMINISTRATION OFFICE

APPENDIX I
CARBON CANISTER REPLACEMENT LOGS

WS-2 (100 days)

Change Out	Last Change	Days	Carbon Used for Change Out
2/2/2012	12/6/2011	58	Batch 2012007 bags 81,82,83,84,85
5/3/2012	2/2/2012	91	Batch 2012037 bags 55,56,57,58,59
8/1/2012	5/3/2012	90	Batch 2012069 bags 95,96,97,98 Batch 2012073 bag 3
9/18/2012	8/1/2012	48	Batch 2012093 bags 14,15,16,17,20
12/10/2012	9/18/2012	83	Batch 2012127 bags, 87,89,90,91,92
3/7/2013	12/10/2012	87	Batch 2013029 bags 32,33,34,35
6/6/2013	3/7/2013	91	Batch 2013073 Bags 56,57,58,59,60
9/5/2013	6/6/2013	91	Batch 2013115 Bags 3,96,97,94,95
12/14/2013	9/5/2013	100	Batch 2013163 bags 34,35,36,37,38
3/18/2014	12/14/2013	94	Batch 2014031 bags 97,98,99,100 Batch 2014033 bag 5
6/25/2014	3/18/2014	99	

4000 lbs

WS-1 (7.8 Days)

Periodic Test Before Changeout	Change Out	Last Change	Days	Day	Carbon Used for Change Out	
	5/14/2012	5/11/2012	3	Mon	Batch 2012041 bags 64,65,66,67	4000
	5/16/2012	5/14/2012	2	Wed	Batch 2012043 bags 14,15,16,17	4000
	5/18/2012	5/16/2012	2	Fri	Batch 2012043 bags 66,67,68,69	4000
	5/21/2012	5/18/2012	3	Mon	Batch 2012043 bags 87,88,89,90	4000
	5/23/2012	5/21/2012	2	Wed	Batch 2012045 bags 69,70,71,72	4000
	5/25/2012	5/23/2012	2	Fri	Batch 2012047 bags 3,4,5,6	4000
	5/28/2012	5/25/2012	3	Mon	Batch 2012047 bags 26,27,28,29	4000
	5/30/2012	5/28/2012	2	Wed	Batch 2012049 bags 1,2,3,4	4000
15 ppm	6/1/2012	5/30/2012	2	Fri	Batch 2012049 bags 22,23,24,25	4000
	6/4/2012	6/1/2012	3	Mon	Batch 2012049 bags 42,43,44,45	4000
10 ppm	6/6/2012	6/4/2012	2	Wed	Batch 2012049 bags 48,49,50,51	4000
	6/8/2012	6/6/2012	2	Fri	Batch 2012049 bags 75,76,77,78	4000
	6/11/2012	6/8/2012	3	Mon	Batch 2012051 bags 33,34,35,36	4000
	6/13/2012	6/11/2012	2	Wed	Batch 2012051 bags 41,42,43,44	4000
	6/15/2012	6/13/2012	2	Fri	Batch 2012051 bags 50,51,52,53	4000
	6/18/2012	6/15/2012	3	Mon	Batch 2012051 bags 60,61,62,63	4000
	6/20/2012	6/18/2012	2	Wed	Batch 2012053 bag 100, Batch 2012055 bags 1,4,5	4000
	6/22/2012	6/20/2012	2	Fri	Batch 2012053 bags 32,33,46,47	4000
	6/25/2012	6/22/2012	3	Mon	Batch 2012055 bags 50,51,56,57	4000
	6/27/2012	6/25/2012	2	Wed	Batch 2012055 bags 96,97,98,99	4000
2 ppm	6/29/2012	6/27/2012	2	Fri	Batch 2012057 bags 82,83,92,93	4000
	7/2/2012	6/29/2012	3	Mon	Batch 2012059 bags 57,58,,61,62	4000
	7/4/2012	7/2/2012	2	Wed	Batch 2012061 bags 16,17,18,19	4000
	7/6/2012	7/4/2012	2	Fri	Batch 2012061 bags 43,44,47,48	4000
14 ppm	7/9/2012	7/6/2012	3	Mon	Batch 2012063 bags 12,13,14,15	4000
	7/11/2012	7/9/2012	2	Wed	Batch 2012061 bags 65,66 Batch 2012063 bags 44,45	4000
	7/13/2012	7/11/2012	2	Fri	Batch 2012065 bgs 4,5,6,7	4000
	7/16/2012	7/13/2012	3	Mon	Batch 2012065 bags 78,79,80,81	4000
	7/18/2012	7/16/2012	2	Wed	Batch 2012065 bags 84,85,100 Batch 2012067 bag 1	4000
	7/20/2012	7/18/2012	2	Fri	Batch 2012067 bags 42,43,44,45	4000
	7/23/2012	7/20/2012	3	Mon	Batch 2012067 bags 62,63,64,65	4000
	7/25/2012	7/23/2012	2	Wed	Batch 2012069 bags 28,29,30,31	4000
	7/27/2012	7/25/2012	2	Fri	Batch 2012069 bags 93,94,95,96	4000
	7/30/2012	7/27/2012	3	Mon	Batch 2012069 bags 97,98,99,100	4000
5 ppm	8/1/2012	7/30/2012	2	Wed	Batch 2012073 bags 2,4,5,6	4000
	8/3/2012	8/1/2012	2	Fri	Batch 2012073 bags 38,39,40,41	4000
	8/6/2012	8/3/2012	3	Mon	Batch 2012073 bags 49,50,51,52	4000
	8/8/2012	8/6/2012	2	Wed	Batch 2012075 bags 63,64,65,66	4000
	8/10/2012	8/8/2012	2	Fri	Batch 2012077 bags 11,12,13,14	4000
	8/13/2012	8/10/2012	3	Mon	Batch 2012077 bags 61,62,63,64	4000
	8/15/2012	8/13/2012	2	Wed	Batch 2012079 bags 3,4,5,6	4000
	8/17/2012	8/15/2012	2	Fri	Batch 2012079 bags 53,54,55,56	4000
115 ppm	8/20/2012	8/17/2012	3	Mon	Batch 2012079 bags 83,84 Batch 2012081 bags 15,16	4000
	8/22/2012	8/20/2012	2	Wed	Batch 2012081 bags 57,58,59,60	4000
	8/24/2012	8/22/2012	2	Fri	Batch 2012083 bags 1,2,3,4	4000
	8/27/2012	8/24/2012	3	Mon	Batch 2012083 bags 37,38,43,44	4000
	8/29/2012	8/27/2012	2	Wed	Batch 2012083 bags 89,90,91,92	4000
	8/31/2012	8/29/2012	2	Fri	Batch 2012085 bags 45,46,47,48	4000
	9/3/2012	8/31/2012	3	Mon	Batch 2012085 bags 45,46,47,48	4000
	9/5/2012	9/3/2012	2	Wed	Batch 2012085 bags 52,53,54,55	4000
	9/7/2012	9/5/2012	2	Fri	Batch 2012087 bags 96,97,98,99	4000
25 ppm	9/10/2012	9/7/2012	3	Mon	Batch 2012089 bags 51,52,53,54	4000
	9/12/2012	9/10/2012	2	Wed	Batch 2012089 bags 76,77,74,75	4000
	9/14/2012	9/12/2012	2	Fri	Batch 2012089 bags 90,91,92,93	4000
	9/17/2012	9/14/2012	3	Mon	Batch 2012091 bags 16,17,18,19	4000
	9/19/2012	9/17/2012	2	Wed	Batch 2012091 bags 90,91 Batch 2012093 bags 10,11	4000
10 ppm	9/21/2012	9/19/2012	2	Fri	Batch 2012093 bags 93,94,95,96	4000
	9/24/2012	9/21/2012	3	Mon	Batch 2012095 bags 15,16,17,18	4000
	9/26/2012	9/24/2012	2	Wed	Batch 2012093 bags 91,92,97,98	4000
	9/28/2012	9/26/2012	2	Fri	Batch 2012095 bags 5,6,7,8	4000
	10/1/2012	9/28/2012	3	Mon	Batch 2012095 bags 61,62,63,64	4000
	10/3/2012	10/1/2012	2	Wed	Batch 2012097 bags 49,50,81,82	4000
	10/5/2012	10/3/2012	2	Fri	Batch 2012097 bags 60,61,62,63	4000
	10/8/2012	10/5/2012	3	Mon	Batch 2012099 bags 28,29,30,31	4000
12 ppm	10/10/2012	10/8/2012	2	Wed	Batch 2012099 bags 44,45,46,47	4000
	10/12/2012	10/10/2012	2	Fri	Batch 2012101 bags 88,89,90,91	4000
	10/15/2012	10/12/2012	3	Mon	Batch 2012101 bag 100 Batch 2012103 bags 1,2,3	4000
	10/17/2012	10/15/2012	2	Wed	Batch 2012013 bags 46,47,48,49	4000
	10/19/2012	10/17/2012	2	Fri	Batch 2012103 bags 81,82,83,84	4000
	10/22/2012	10/19/2012	3	Mon	Batch 2012105 bags 50,51,52,53	4000
	10/24/2012	10/22/2012	2	Wed	Batch 2012105 bags 26,27,28,29	4000
	10/26/2012	10/24/2012	2	Fri	Batch 2012107, bags 46,47,50,51	4000
	10/29/2012	10/26/2012	3	Mon	Batch 2012107 bag 100 Batch 2012109 bags 1,4,5	4000
	10/31/2012	10/29/2012	2	Wed	Batch 2012109 bags 70,71,72,73	4000
	11/2/2012	10/31/2012	2	Fri	Batch 2012111 bags 8,9,10,11	4000
45 ppm	11/5/2012	11/2/2012	3	Mon	Batch 2012111 bags 25,26,27,28	4000
	11/7/2012	11/5/2012	2	Wed	Batch 2012113 bags 55,56,57,58	4000
	11/9/2012	11/7/2012	2	Fri	Batch 2012113 bags 97,98,99,100	4000
	11/12/2012	11/9/2012	3	Mon	Batch 2012115 bags 39,40,41,42	4000
	11/14/2012	11/12/2012	2	Wed	Batch 2012117 bags 38,39,40,41	4000
	11/16/2012	11/14/2012	2	Fri	Batch 2012115 bags 91,92,93,94	4000
	11/19/2012	11/16/2012	3	Mon	Batch 2012119 bags 1,2,23,24	4000
	11/21/2012	11/19/2012	2	Wed	Batch 2012121 bags 11,12,13,14	4000
	11/23/2012	11/21/2012	2	Fri	Batch 2012121 bags 15,16,17,18	4000
	11/26/2012	11/23/2012	3	Mon	Batch 2012121 bags 53,54,55,56,	4000

4000 lbs

WS-1 (7.8 Days)

Periodic Test Before Changeout	Change Out	Last Change	Days	Day	Carbon Used for Change Out	
223 ppm	11/28/2012	11/26/2012	2	Wed	Batch 2012123 bags 1,2,3,4	4000
	11/30/2012	11/28/2012	2	Fri	Batch 2012123 bags 47,48,49,50	4000
	12/3/2012	11/30/2012	3	Mon	Batch 2012123 bags 87,88,89,90	4000
	12/5/2012	12/3/2012	2	Wed	Batch 2012125 bags 52,53,68,69	4000
	12/7/2012	12/5/2012	2	Fri	Batch 2012127 bags 16,17,18,19	4000
	12/10/2012	12/7/2012	3	Mon	Batch 2012127 bags 93,94,95,96	4000
<2 ppm	12/12/2012	12/10/2012	2	Wed	Batch 2012129 bags 27,28,29,30	4000
	12/14/2012	12/12/2012	2	Fri	Batch 2012129 bags 9,96,97,98	4000
	12/17/2012	12/14/2012	3	Mon	Batch 2012131 bags 3,36,37,38	4000
	12/19/2012	12/17/2012	2	Wed	Batch 2012131 bags 96,97,98 Batch 2012129 bag 60	4000
	12/21/2012	12/19/2012	2	Fri	Batch 2012133 bags 51,52,53,54	4000
	12/24/2012	12/21/2012	3	Mon	Batch 2012133 bags 75,76,77,78	4000
	12/26/2012	12/24/2012	2	Wed	Batch 2012135 bags 21,22,23,24	4000
	12/28/2012	12/26/2012	2	Fri	Batch 2012135 bags 25,26,27,28	4000
	12/31/2012	12/28/2012	3	Mon	Batch 2012135 bags 17,18,19,20	4000
19 ppm	1/2/2013	12/31/2012	2	Wed	Batch 2012135 bags 67,68,69,70	4000
	1/4/2013	1/2/2013	2	Fri	Batch 2012135 bags 97,97,73,74	4000
	1/7/2013	1/4/2013	3	Mon	Batch 2013001 bags 93,94,95,96	4000
	1/9/2013	1/7/2013	2	Wed	Batch 2013001 bags 71,72,73,74	4000
	1/11/2013	1/9/2013	2	Fri	Batch 2013003 bags 41,42,43,44	4000
	1/14/2013	1/11/2013	3	Mon	Batch 2013005 bags 17,18,19,20	4000
	1/16/2013	1/14/2013	2	Wed	Batch 2013005 bags 68,69,70,71	4000
	1/18/2013	1/16/2013	2	Fri	Batch 2013005 bags 64,65,66,67	4000
	1/21/2013	1/18/2013	3	Mon	Batch 2013009 bags 9,10,11,12	4000
	1/23/2013	1/21/2013	2	Wed	Batch 2013009 bags 69,70,71,72	4000
	1/25/2013	1/23/2013	2	Fri	Batch 2013011 bags 35,35 Batch 2013007 bags 47,48	4000
	1/28/2013	1/25/2013	3	Mon	Batch 2013011 bags 97,98,99,100	4000
	1/30/2013	1/28/2013	2	Wed	Batch 2013013 bags 21,22,23,24	4000
5 ppm	2/1/2013	1/30/2013	2	Fri	Batch 2013013 bags 71,72.73.74	4000
	2/4/2013	2/1/2013	3	Mon	Batch 2013015 bags 38.39.40.41	4000
	2/6/2013	2/4/2013	2	Wed	Batch 2013015 bags 69,70,71,72	4000
	2/8/2013	2/6/2013	2	Fri	Batch 2013017 bags 16,17,18,19	4000
	2/11/2013	2/8/2013	3	Mon	Batch 2013017 bags 38,39,40,41	4000
	2/13/2013	2/11/2013	2	Wed	Batch 2013019 bags 30,31,38,33	4000
	2/15/2013	2/13/2013	2	Fri	Batch 2013019 bags 36,37,69,70	4000
	2/18/2013	2/15/2013	3	Mon	Batch 2013019 bags 58,59,60,61	4000
	2/20/2013	2/18/2013	2	Wed	Batch 2013021 bags 8,9,10,11	4000
	2/22/2013	2/20/2013	2	Fri	Batch 2013023 bags 50,51,52,53	4000
	2/25/2013	2/22/2013	3	Mon	Batch 2013025 bags 12,13,14,15	4000
	2/27/2013	2/25/2013	2	Wed	Batch 2013025 bags 16,17,18,19	4000
2 ppm	3/1/2013	2/27/2013	2	Fri	Batch 2013023 bags 68,69 Batch 2013025 bags 99,100	4000
	3/4/2013	3/1/2013	3	Mon	Batch 2013027 bags 82,83,84,85	4000
	3/6/2013	3/4/2013	2	Wed	Batch 2013027 bags 100 Batch 2013029 bags 1,2,3	4000
	3/8/2013	3/6/2013	2	Fri	Batch 2013029 bags 60,61,62,63	4000
	3/11/2013	3/8/2013	3	Mon	Batch 2013031 bags 40,41,42,43	4000
	3/13/2013	3/11/2013	2	Wed	Batch 2013031 bags 12,13,14,15	4000
	3/15/2013	3/13/2013	2	Fri	Batch 2013031 bags 8,9,10,11	4000
	3/18/2013	3/15/2013	3	Mon	Batch 2013033 bags 27,28,29,30	4000
	3/20/2013	3/18/2013	2	Wed	Batch 2013033 bags 67,68,97,98	4000
	3/22/2013	3/20/2013	2	Fri	Batch 2013035 bags 51,2,53,54	4000
	3/25/2013	3/22/2013	3	Mon	Batch 2013037 bags 19,20,21,22	4000
	3/27/2013	3/25/2013	2	Wed	Batch 2013037 bags 87,88,89,90	4000
	3/29/2013	3/27/2013	2	Fri	Barch 2013037 bags 82,83,84,85	4000
	4/1/2013	3/29/2013	3	Mon	Batch 2013039 bags 52,53,54,55	4000
	4/3/2013	4/1/2013	2	Wed	Batch 2013039 bags 88,89,90,91	4000
	4/5/2013	4/3/2013	2	Fri	Batch2013039 bags 84,85,100 Batch 2013041 bag 1	4000
	4/8/2013	4/5/2013	3	Mon	Batch 2013043 bags 1,2,3,4	4000
	4/10/2013	4/8/2013	2	Wed	Batch 2013043 bags 22,23,24,25	4000
	4/12/2013	4/10/2013	2	Fri	Batch 2013045 bags 40,41,42,43	4000
	4/15/2013	4/12/2013	3	Mon	Batch 2013045 bags 62,63,64,65	4000
	4/17/2013	4/15/2013	2	Wed	Batch 2013045 bags 90,91,92,93	4000
	4/19/2013	4/17/2013	2	Fri	Batch 2013047 bags 32,33,34,35	4000
9 ppm	4/22/2013	4/19/2013	3	Mon	Batch 2013047 bags 97,98,99,100	4000
	4/24/2013	4/22/2013	2	Wed	Batch 2013047 bags 87,88,89,90	4000
	4/26/2013	4/24/2013	2	Fri	Batch 2013051 bags 19,20,21,22	4000
	4/29/2013	4/26/2013	3	Mon	Batch 2013053 bags 8,9,10,11	4000
	5/1/2013	4/29/2013	2	Wed	Batch 2013053 bags 34,35,40,41	4000
	5/3/2013	5/1/2013	2	Fri	Batch 2013051 bags 66,67,68,69	4000
25 ppm	5/6/2013	5/3/2013	3	Mon	Batch 2013055 bags 33,34,35,36	4000
	5/8/2013	5/6/2013	2	Wed	Batch 2013055 bags 19,20,21,22	4000
	5/10/2013	5/8/2013	2	Fri	Batch 2013059 bags 20,21,22,23	4000
	5/13/2013	5/10/2013	3	Mon	Batch 2013059 bags 90,91,92,93	4000
	5/15/2013	5/13/2013	2	Wed	Batch 2013061 bags 76,77,78,79	4000
	5/17/2013	5/15/2013	2	Fri	Batch 2013063 bags 36,37,38,39	4000
	5/20/2013	5/17/2013	3	Mon	Batch 2013063 bags 86,87,88,89	4000
	5/22/2013	5/20/2013	2	Wed	Batch 2013067 bags 6,7,8,9	4000
	5/24/2013	5/22/2013	2	Fri	Batch 2013067 bags 34,35,36,37	4000
	5/27/2013	5/24/2013	3	Mon	Batch 2013067 bags 44,45,46,47	4000
	5/29/2013	5/27/2013	2	Wed	Batch 2013069 bags 72,73,74,75	4000
	5/31/2013	5/29/2013	2	Fri	Batch 2013069 bags 66,67,94,95	4000
12 ppm	6/3/2013	5/31/2013	3	Mon	Batch 2013071 bags 81,82,83,84	4000
	6/5/2013	6/3/2013	2	Wed	Batch 2013073 bags 29,30,31,32	4000
	6/7/2013	6/5/2013	2	Fri	Batch 2013073 bags 63,64,91,92	4000
	6/10/2013	6/7/2013	3	Mon	Batch 2013075 bags 45,46,47,48	4000
	6/12/2013	6/10/2013	2	Wed	Batch 2013075 bags 88,89,90,91	4000

4000 lbs

WS-1 (7.8 Days)

Periodic Test Before Changeout	Change Out	Last Change	Days	Day	Carbon Used for Change Out	
	6/14/2013	6/12/2013	2	Fri	Batch 2013077 bags 30,31,32,33	4000
	6/17/2013	6/14/2013	3	Mon	Batch 2013077 bags 68,69,70,71	4000
	6/19/2013	6/17/2013	2	Wed	Batch 2013079 bags 44,45,46,47	4000
	6/21/2013	6/19/2013	2	Fri	Batch 2013079 bags 94,95,96,97	4000
	6/24/2013	6/21/2013	3	Mon	Batch 2013081 bags 62.63.64.65	4000
	6/26/2013	6/24/2013	2	Wed	Batch 2013083 bags 10,11,12,13	4000
	6/28/2013	6/26/2013	2	Fri	Batch 2013083 bags 44,45,66,67	4000
	7/1/2013	6/28/2013	3	Mon	Batch 2013085 bags 40,41,42,43	4000
	7/3/2013	7/1/2013	2	Wed	Batch 2013085 bags 71,72,73,74	4000
	7/5/2013	7/3/2013	2	Fri	Batch 2013087 bags 36.37.38,39	4000
95 ppm	7/8/2013	7/5/2013	3	Mon	Batch 2013085 bags 96 Batch 2013087 bags 15,50,51	4000
	7/10/2013	7/8/2013	2	Wed	Batch 2013089 bags 70,71,72,73	4000
	7/12/2013	7/10/2013	2	Fri	Batch 2013091 bags 20,21,22,23	4000
	7/15/2013	7/12/2013	3	Mon	Batch 2013093 bags 4,5,6,7	4000
	7/17/2013	7/15/2013	2	Wed	Batch 2013093 bags 56,57,58,59	4000
	7/19/2013	7/17/2013	2	Fri	Batch 2013095 bags 2,3,4,5	4000
	7/22/2013	7/19/2013	3	Mon	Batch 2013095 bags 25,26,27,28	4000
	7/24/2013	7/22/2013	2	Wed	Batch 2013097 bags 1,2 Batch 2013095 bags 99,100	4000
	7/26/2013	7/24/2013	2	Fri	Batch 2013097 bags 50,51,52,53	4000
	7/29/2013	7/26/2013	3	Mon	Batch 2013099 bags 14,15,16,17	4000
	7/31/2013	7/29/2013	2	Wed	Batch 2013099 bags 70,71 Batch 2013097 bags 62,63	4000
	8/2/2013	7/31/2013	2	Fri	Batch 2013101 bags 22,23,24,25	4000
52 ppm	8/5/2013	8/2/2013	3	Mon	Batch 2013101 bags 62,63,64,65	4000
	8/7/2013	8/5/2013	2	Wed	Batch 2013103 bags 45,46,47,48	4000
	8/9/2013	8/7/2013	2	Fri	Batch 2013103 bags 98,99,100 Batch 2013105 bag 1	4000
	8/12/2013	8/9/2013	3	Mon	Batch 2013105 bags 24,25,26,27	4000
	8/14/2013	8/12/2013	2	Wed	Batch 2013105 bags 88,89,90,91	4000
	8/16/2013	8/14/2013	2	Fri	Batch 2013107 bags 24,25,26,27	4000
	8/19/2013	8/16/2013	3	Mon	Batch 2013107 bags 78,79,80,81	4000
	8/21/2013	8/19/2013	2	Wed	Batch 2013109 bags 36,37,38,39	4000
	8/23/2013	8/21/2013	2	Fri	Bath 2013109 bags 75,76,77,78	4000
	8/26/2013	8/23/2013	3	Mon	Batch 2013111 bags 44,45,46,47	4000
	8/28/2013	8/26/2013	2	Wed	Batch 2013111 bags 93,94,95,96	4000
	8/30/2013	8/28/2013	2	Fri	Batch 2013113 bags 43,44,45,46	4000
	9/2/2013	8/30/2013	3	Mon	Batch 2012113 bags 54,65,66,67	4000
	9/4/2013	9/2/2013	2	Wed	Batch 2013115 bags 68,69,70,71	4000
	9/6/2013	9/4/2013	2	Fri	Batch 2013117 bags 19,20,21	4000
10 ppm	9/9/2013	9/6/2013	3	Mon	Batch 2013117 bags 70,71,72,73	4000
	9/11/2013	9/9/2013	2	Wed	Batch 2013119 bags 25,26,27,28	4000
	9/13/2013	9/11/2013	2	Fri	Batch 2013119 bags 74,75,76,77	4000
	9/16/2013	9/13/2013	3	Mon	Batch 2013121 bags 47,48,49,50	4000
	9/18/2013	9/16/2013	2	Wed	Batch 2013121 bags 97,98,99,100	4000
	9/20/2013	9/18/2013	2	Fri	Batch 2013123 bags 31,32,33,34	4000
	9/23/2013	9/20/2013	3	Mon	Batch 2013125 bags 30,31,32,33	4000
	9/25/2013	9/23/2013	2	Wed	Batch 2013125 bags 84,85,86,87	4000
	9/27/2013	9/25/2013	2	Fri	Batch 2013127 bags 56,57,58,59	4000
	9/30/2013	9/27/2013	3	Mon	Batch 2013129 bags 44,45,46,47	4000
	10/2/2013	9/30/2013	2	Wed	Batch 2013131 bags 1,2,3,4	4000
	10/4/2013	10/2/2013	2	Fri	Batch 2013131 bags 46,47,48,49	4000
	10/7/2013	10/4/2013	3	Mon	Plant Down - No spent carbon feeding in tanks or furnace	Shutdown
15 ppm	10/9/2013	10/7/2013	2	Wed	Plant Down - No spent carbon feeding in tanks or furnace	Shutdown
	10/11/2013	10/9/2013	2	Fri	Batch 2013131 bags 50,51,52,53	4000
	10/14/2013	10/11/2013	3	Mon	Batch 2013131 bags 70,71,72,73	4000
	10/16/2013	10/14/2013	2	Wed	Batch 2013131 bags 96,97 Batch 2013133 bags 28,29	4000
	10/18/2013	10/16/2013	2	Fri	Batch 2013133 bags 80,81,82,83	4000
	10/21/2013	10/18/2013	3	Mon	Batch 2013135 bags 78,79,80,81	4000
	10/23/2013	10/21/2013	2	Wed	Batch 2013137 bags 26,27,28,29	4000
	10/25/2013	10/23/2013	2	Fri	Batch 2013137 bags 62,63,64,65	4000
	10/28/2013	10/25/2013	3	Mon	Batch 2013139 bags 66,67,68,69	4000
	10/30/2013	10/28/2013	2	Wed	Batch 2013139 bags 74,75,76,77	4000
	11/1/2013	10/30/2013	2	Fri	Batch 2013141 bags 76,77,78,79	4000
55 ppm	11/4/2013	11/1/2013	3	Mon	Batch 2013143 bags 70,71,72,73	4000
	11/6/2013	11/4/2013	2	Wed	Batch 2013145 bags 23,24,25,26	4000
	11/8/2013	11/6/2013	2	Fri	Batch 2013145 bags 69,70,71,72	4000
	11/11/2013	11/8/2013	3	Mon	Batch 2013147 bags 48,49,50,51	4000
	11/13/2013	11/11/2013	2	Wed	Batch 2013149 bags 11,12,13,14,	4000
	11/15/2013	11/13/2013	2	Fri	Batch 2013149 bags 62,63,64,65	4000
	11/18/2013	11/15/2013	3	Mon	Batch 2013151 bags 3,4,5,6	4000
	11/20/2013	11/18/2013	2	Wed	Batch 2013149 bags 87,88 Batch 2013151 bags 77,78	4000
	11/22/2013	11/20/2013	2	Fri	Batch 2013153 bags 31,32,33,34	4000
	11/25/2013	11/22/2013	3	Mon	Batch 2013153 bags 85,86,87,88	4000
	11/27/2013	11/25/2013	2	Wed	Batch 2013155 bags 38,39,40,41	4000
	11/29/2013	11/27/2013	2	Fri	Batch 2013155 bags 32,33,34,35	4000
	12/2/2013	11/29/2013	3	Mon	Batch 2013157 bags 67,68,69,70	4000
	12/4/2013	12/2/2013	2	Wed	Batch 2013159 bags 25,26,27,28	4000
	12/6/2013	12/4/2013	2	Fri	Batch 2013159 bags 47,48,49,50	4000
	12/9/2013	12/6/2013	3	Mon	Batch 2013161 bags 9,10,11,12	4000
15 ppm	12/11/2013	12/9/2013	2	Wed	Batch 2013161 bags 74,75,76,77	4000
	12/13/2013	12/11/2013	2	Fri	Batch 2013163 bags 8,9,10,11	4000
	12/16/2013	12/13/2013	3	Mon	Batch 2013165 bags 25,26,27,28	4000
	12/18/2013	12/16/2013	2	Wed	Batch 2013165 bags 63,64,65,66	4000
	12/20/2013	12/18/2013	2	Fri	Batch 2013167 bags 11,12,13,14	4000
	12/23/2013	12/20/2013	3	Mon	Batch 2013167, bags 95, 96, 97, 98	4000
	12/25/2013	12/23/2013	2	Wed	Batch 2013167 bag 100, Batch 2013169, 1,2,3	4000
	12/27/2013	12/25/2013	2	Fri	Batch 2013169, bags 64,65,66,67	4000

4000 lbs

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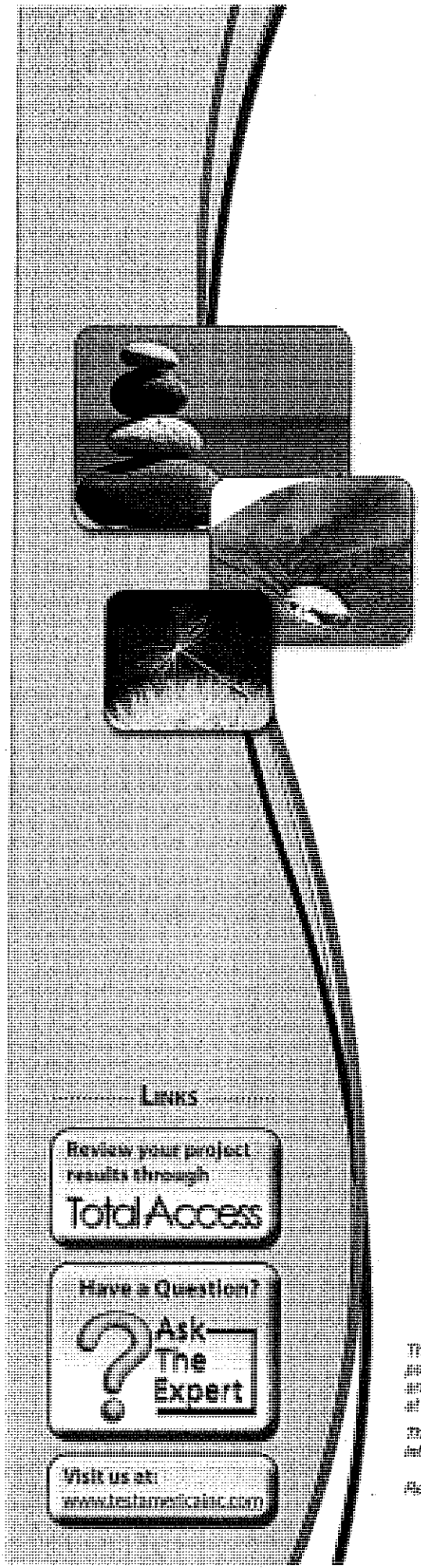
Periodic Test Before Changeout	Change Out	Last Change	Days	Day	Carbon Used for Change Out	
	12/30/2013	12/27/2013	3	Mon	Batch 2013171, bags 34, 35, 36, 37	4000
	1/1/2014	12/30/2013	2	Wed	Batch 2013171 bags 6,7,8,9	4000
	1/3/2014	1/1/2014	2	Fri	Batch 2013171 bags 18,19,20,21	4000
22 ppm	1/6/2014	1/3/2014	3	Mon	Batch 2014001 bags 62,63,64,65	4000
	1/8/2014	1/6/2014	2	Wed	Batch 2014001 bags 5,6,22,23	4000
	1/10/2014	1/8/2014	2	Fri	Batch 2014003 bags 32,33,34,35	4000
	1/13/2014	1/10/2014	3	Mon	Batch 2014003 bags 32,33,34,35	4000
	1/15/2014	1/13/2014	2	Wed	Batch 2014005 bags 48,49,50,51	4000
	1/17/2014	1/15/2014	2	Fri	Batch 2014007 bags 6,7,10,11	4000
	1/20/2014	1/17/2014	3	Mon	Batch 2014007 bags 96,97,98,99	4000
	1/22/2014	1/20/2014	2	Wed	Batch 2014009 bags 30,31,32,33	4000
	1/24/2014	1/22/2014	2	Fri	Batch 2014009 bags 76,77,78,79	4000
13 ppm	1/27/2014	1/24/2014	3	Mon	Batch 2014011 bags 54,5,56,57	4000
	1/29/2014	1/27/2014	2	Wed	Batch 2014011 bags 98,99,100 Batch 2014013 bag 1	4000
	1/31/2014	1/29/2014	2	Fri	NA	Shutdown
	2/3/2014	1/31/2014	3	Mon	NA	Shutdown
10 ppm	2/5/2014	2/3/2014	2	Wed	NA	Shutdown
	2/7/2014	2/5/2014	2	Fri	Batch 2014013 bags 13,18,19,20	4000
	2/10/2014	2/7/2014	3	Mon	Batch 2014013 bags 81,82,83,84	4000
	2/12/2014	2/10/2014	2	Wed	Batch 2014015 bags 31,32,33,34	4000
	2/14/2014	2/12/2014	2	Fri	Batch 2014015 bags 83,84,85,86	4000
	2/17/2014	2/14/2014	3	Mon	Batch 2014017 bags 69,70,71,72	4000
	2/19/2014	2/17/2014	2	Wed	Batch 2014019 bags 21,22,23,24	4000
	2/21/2014	2/19/2014	2	Fri	Batch 2014019 bags 67,68,69,70	4000
	2/24/2014	2/21/2014	3	Mon	Batch 2014021 bags 77,78,79,80	4000
	2/26/2014	2/24/2014	2	Wed	Batch 2014023 bags 1,2,3,4	4000
	2/28/2014	2/26/2014	2	Fri	Batch 2014023 bags 43,44,45,46	4000
15 ppm	3/3/2014	2/28/2014	3	Mon	Batch 2014025 bags 8,9,10,11	4000
	3/5/2014	3/3/2014	2	Wed	Batch 2014025 bags 84,85,86,87	4000
	3/7/2014	3/5/2014	2	Fri	Batch 2014027 bags 31,32,33,34	4000
	3/10/2014	3/7/2014	3	Mon	Batch 2014029 bags 2,3,4,5	4000
	3/12/2014	3/10/2014	2	Wed	Batch 2014029 bags 46,47,48,49	4000
	3/14/2014	3/12/2014	2	Fri	Batch 2014029 bags 56,57,76,77	4000
	3/17/2014	3/14/2014	3	Mon	Batch 2014031 bags 71,72,73,74	4000
	3/19/2014	3/17/2014	2	Wed	Batch 2014033 bags 20,21,22,23	4000
	3/21/2014	3/19/2014	2	Fri	Batch 2014033 bags 70,71,72,73	4000
	3/24/2014	3/21/2014	3	Mon	Batch 2014035 bags 50,51,52,53	4000
	3/26/2014	3/24/2014	2	Wed	Batch 2014035 bag 100 Batch 2014037 bags 1,2,3	4000
	3/28/2014	3/26/2014	2	Fri	Batch 2014037 bags 41,42,43,44	4000
	3/31/2014	3/28/2014	3	Mon	Batch 2014039 bags 20,21,22,23	4000
	4/2/2014	3/31/2014	2	Wed	Batch 2014039 bags 85,86,87,88	4000
	4/4/2014	4/2/2014	2	Fri	Batch 2014041 bags 41,42,43,44	4000
	4/7/2014	4/4/2014	3	Mon	Batch 2014043 bags 11,12,16,14	4000
	4/9/2014	4/7/2014	2	Wed	Batch 2014043 bags 61,62,63,64	4000
	4/11/2014	4/9/2014	2	Fri	Batch 2014043 bags 97,98,99,100	4000
	4/14/2014	4/11/2014	3	Mon	Batch 2014045 bags 81,82,83,84	4000
	4/16/2014	4/14/2014	2	Wed	Batch 2014047 bags 23,24,25,26	4000
	4/18/2014	4/16/2014	2	Fri	Batch 2014047 bags 77,78,79,80	4000
26 ppm	4/21/2014	4/18/2014	3	Mon	Batch 2014049 bags 43,44,45,46	4000
	4/23/2014	4/21/2014	2	Wed	Batch 2014049 bags 73,74,75,76	4000
	4/25/2014	4/23/2014	2	Fri	Batch 2014051 bags 19,20,21,22	4000
	4/28/2014	4/25/2014	3	Mon	Batch 2014053 bags 1,2,3,4	4000
	4/30/2014	4/28/2014	2	Wed	Batch 2014053 bags 43,44,45,46	4000
	5/2/2014	4/30/2014	2	Fri	Batch 2014055 bags 17,18,19,20	4000
	5/5/2014	5/2/2014	3	Mon	Batch 2014055 bags 38,39,40,41	4000
	5/7/2014	5/5/2014	2	Wed	Batch 2014057 bags 57,58,59,60	4000
	5/9/2014	5/7/2014	2	Fri	Batch 2014059 bags 15,16,17,18	4000
	5/12/2014	5/9/2014	3	Mon	Batch 2014059 bags 93,94,95,96	4000
	5/14/2014	5/12/2014	2	Wed	Batch 2014061 bags 23,24,25,26	4000
	5/16/2014	5/14/2014	2	Fri	Batch 2014061 bags 67,68,69,70	4000

1000 lbs

WS-3 (38 days)

Periodic Test Before Changeout	Change Out	Last Change	Days	Carbon Used for Change Out	
<2 ppm	6/1/2012	5/1/2012	31	2012047 Bag 98	1000
<2 ppm	7/1/2012	6/1/2012	30	2012059 Bag 33	1000
<2 ppm	8/1/2012	7/1/2012	31	2012073 Bag 1	1000
<2 ppm	8/31/2012	8/1/2012	30	Batch 2012 Bag 44	1000
<2 ppm	10/2/2012	8/31/2012	32	Batch 2012097 Bag 53	1000
<2 ppm	11/2/2012	10/2/2012	31	Batch 2012111 Bag 14	1000
<2 ppm	12/2/2012	11/2/2012	30	Batch 2012123 Bag 86	1000
<2 ppm	1/2/2013	12/2/2012	31	Batch 2012135 Bag 15	1000
<2 ppm	1/30/2013	1/2/2013	28	Batch 2013013 Bag 63	1000
<2 ppm	3/1/2013	1/30/2013	30	Batch 2013027 Bag 1	1000
<2 ppm	4/1/2013	3/1/2013	31	Batch 2013039 Bag 30	1000
<2 ppm	5/2/2013	4/1/2013	31	Batch 20130053 Bag 96	1000
<2 ppm	5/31/2013	5/2/2013	29	Batch 2013069 Bag 96	1000
<2 ppm	7/1/2013	5/31/2013	31	Batch 2013083 Bag 44	1000
<2 ppm	8/5/2013	7/1/2013	35	Batch 2013103 Bag 6	1000
<2 ppm	8/30/2013	8/5/2013	25	Batch 2013113 Bag 55	1000
<2 ppm	9/30/2013	8/30/2013	31	Batch 2013129 Bag 48	1000
<2 ppm	11/4/2013	9/30/2013	35	Batch 2013143 bag 76	1000
<2 ppm	12/1/2013	11/4/2013	27	Batch 2013155 bag 86	1000
<2 ppm	1/2/2014	12/1/2013	32	Batch 2013171 bag 23	1000
<2 ppm	1/29/2014	1/2/2014	27	Batch 2014011 bag 96	1000
<2 ppm	3/3/2014	1/29/2014	33	Batch 2014025 bag 34	1000
<2 ppm	3/31/2014	3/3/2014	28	Batch 2014039 bag 42	1000
<2 ppm	5/2/2014	3/31/2014	32	Batch 2014055 bag 21	1000

APPENDIX J
BENZENE ANALYTICAL



TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Irvine
17461 Derian Ave
Suite 100
Irvine, CA 92614-5817
Tel: (949)261-1022

TestAmerica Job ID: 440-60604-1
Client Project/Site: Subpart FF Annual Recycle Water

For:
Siemens Industry Inc
PO BOX 3308 (2523 Mutahar St.)
IMA065
Parker, Arizona 85344

Attn: Roy Provins

Authorized for release by:
11/6/2013 9:16:22 PM

Sushmitha Reddy, Project Manager I
(949)261-1022
sushmitha.reddy@testamericainc.com

Table of Contents

Sample Summary

Client: Siemens Industry Inc
Project/Site: Subpart FF Annual Recycle Water

TestAmerica Job ID: 440-60604-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-60604-1	Subpart FF VOA 40ml (1A)	Water	10/23/13 08:00	10/23/13 11:00
440-60604-2	Subpart FF VOA 40ml (2A)	Water	10/23/13 08:00	10/23/13 11:00
440-60604-3	Subpart FF VOA 40ml (3A)	Water	10/23/13 08:00	10/23/13 11:00
440-60604-4	Subpart FF VOA 40ml (1B)	Water	10/23/13 08:00	10/23/13 11:00
440-60604-5	Subpart FF VOA 40ml (2B)	Water	10/23/13 08:00	10/23/13 11:00
440-60604-6	Subpart FF VOA 40ml (3B)	Water	10/23/13 08:00	10/23/13 11:00
440-60604-7	Subpart FF VOA 40ml (1C)	Water	10/23/13 08:00	10/23/13 11:00
440-60604-8	Subpart FF VOA 40ml (2C)	Water	10/23/13 08:00	10/23/13 11:00
440-60604-9	Subpart FF VOA 40ml (3C)	Water	10/23/13 08:00	10/23/13 11:00
440-60604-10	Subpart FF VOA 40ml (1D)	Water	10/23/13 08:00	10/23/13 11:00
440-60604-11	Subpart FF VOA 40ml (2D)	Water	10/23/13 08:00	10/23/13 11:00
440-60604-12	Subpart FF VOA 40ml (3D)	Water	10/23/13 08:00	10/23/13 11:00
440-60604-13	Extra	Water	10/23/13 08:00	10/23/13 11:00

Job ID: 440-60604-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-60604-1

Comments
No additional comments.

Receipt
The samples were received on 10/23/2013 11:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.8° C.

GC VOA
No analytical or quality issues were noted.

VOA Prep
No analytical or quality issues were noted.

Client: Siemens Industry Inc
Project/Site: Subpart FF Annual Recycle Water

TestAmerica Job ID: 440-60604-1

Client Sample ID: Subpart FF VOA 40ml (1A) — **Lab Sample ID: 440-60604-1**
Date Collected: 10/23/13 08:00 — Matrix: Water
Date Received: 10/23/13 11:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	26		8.0		ug/L			10/28/13 21:55	20

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	77		65 - 135		10/28/13 21:55	20

Client Sample ID: Subpart FF VOA 40ml (2A) — **Lab Sample ID: 440-60604-2**
Date Collected: 10/23/13 08:00 — Matrix: Water
Date Received: 10/23/13 11:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	49		8.0		ug/L			11/05/13 12:19	20

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	67		65 - 135		11/05/13 12:19	20

Client Sample ID: Subpart FF VOA 40ml (3A) — **Lab Sample ID: 440-60604-3**
Date Collected: 10/23/13 08:00 — Matrix: Water
Date Received: 10/23/13 11:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	28		8.0		ug/L			11/05/13 13:57	20

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	88		65 - 135		11/05/13 13:57	20

Client Sample ID: Subpart FF VOA 40ml (1B) — **Lab Sample ID: 440-60604-4**
Date Collected: 10/23/13 08:00 — Matrix: Water
Date Received: 10/23/13 11:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	7.7		4.0		ug/L			11/05/13 19:13	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	87		65 - 135		11/05/13 19:13	10

Client Sample ID: Subpart FF VOA 40ml (2B) — **Lab Sample ID: 440-60604-5**
Date Collected: 10/23/13 08:00 — Matrix: Water
Date Received: 10/23/13 11:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	8.1		4.0		ug/L			11/05/13 19:42	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	87		65 - 135		11/05/13 19:42	10

Client: Siemens Industry Inc
Project/Site: Subpart FF Annual Recycle Water

TestAmerica Job ID: 440-60604-1

Client Sample ID: Subpart FF VOA 40ml (3B) — **Lab Sample ID: 440-60604-6**
Date Collected: 10/23/13 08:00 — Matrix: Water
Date Received: 10/23/13 11:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	22		8.0		ug/L			11/05/13 15:23	20

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	87		65 - 135		11/05/13 15:23	20

Client Sample ID: Subpart FF VOA 40ml (1C) — **Lab Sample ID: 440-60604-7**
Date Collected: 10/23/13 08:00 — Matrix: Water
Date Received: 10/23/13 11:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	64		8.0		ug/L			11/05/13 15:52	20

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	85		65 - 135		11/05/13 15:52	20

Client Sample ID: Subpart FF VOA 40ml (2C) — **Lab Sample ID: 440-60604-8**
Date Collected: 10/23/13 08:00 — Matrix: Water
Date Received: 10/23/13 11:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	63		8.0		ug/L			11/05/13 20:11	20

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	85		65 - 135		11/05/13 20:11	20

Client Sample ID: Subpart FF VOA 40ml (3C) — **Lab Sample ID: 440-60604-9**
Date Collected: 10/23/13 08:00 — Matrix: Water
Date Received: 10/23/13 11:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	64		8.0		ug/L			11/05/13 16:49	20

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	85		65 - 135		11/05/13 16:49	20

Client Sample ID: Subpart FF VOA 40ml (1D) — **Lab Sample ID: 440-60604-10**
Date Collected: 10/23/13 08:00 — Matrix: Water
Date Received: 10/23/13 11:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	66		4.0		ug/L			11/05/13 17:18	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	87		65 - 135		11/05/13 17:18	10

Client: Siemens Industry Inc
Project/Site: Subpart FF Annual Recycle Water

TestAmerica Job ID: 440-60604-1

Client Sample ID: Subpart FF VOA 40ml (2D) — **Lab Sample ID: 440-60604-11**
Date Collected: 10/23/13 08:00 — Matrix: Water
Date Received: 10/23/13 11:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	100		40		ug/L			11/05/13 20:39	100

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	77		65 - 135		11/05/13 20:39	100

Client Sample ID: Subpart FF VOA 40ml (3D) — **Lab Sample ID: 440-60604-12**
Date Collected: 10/23/13 08:00 — Matrix: Water
Date Received: 10/23/13 11:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	73		4.0		ug/L			11/05/13 18:15	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	87		65 - 135		11/05/13 18:15	10

Client Sample ID: Extra — **Lab Sample ID: 440-60604-13**
Date Collected: 10/23/13 08:00 — Matrix: Water
Date Received: 10/23/13 11:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	85		40		ug/L			11/05/13 21:47	100

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	89		65 - 135		11/05/13 21:47	100

Method Summary

Client: Siemens Industry Inc
Project/Site: Subpart FF Annual Recycle Water

TestAmerica Job ID: 440-60604-1

Method	Method Description	Protocol	Laboratory
8021B	Volatile Organic Compounds (GC)	SW846	TAL IRV

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Lab Chronicle

Client: Siemens Industry Inc
Project/Site: Subpart FF Annual Recycle Water

TestAmerica Job ID: 440-60604-1

Client Sample ID: Subpart FF VOA 40ml (1A)

Lab Sample ID: 440-60604-1
Matrix: Water

Date Collected: 10/23/13 08:00
Date Received: 10/23/13 11:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		20	10 mL	10 mL	140765	10/28/13 21:55	TL	TAL IRV

Client Sample ID: Subpart FF VOA 40ml (2A)

Lab Sample ID: 440-60604-2
Matrix: Water

Date Collected: 10/23/13 08:00
Date Received: 10/23/13 11:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		20	10 mL	10 mL	142205	11/05/13 12:19	TL	TAL IRV

Client Sample ID: Subpart FF VOA 40ml (3A)

Lab Sample ID: 440-60604-3
Matrix: Water

Date Collected: 10/23/13 08:00
Date Received: 10/23/13 11:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		20	10 mL	10 mL	142205	11/05/13 13:57	TL	TAL IRV

Client Sample ID: Subpart FF VOA 40ml (1B)

Lab Sample ID: 440-60604-4
Matrix: Water

Date Collected: 10/23/13 08:00
Date Received: 10/23/13 11:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		10	10 mL	10 mL	142205	11/05/13 19:13	TL	TAL IRV

Client Sample ID: Subpart FF VOA 40ml (2B)

Lab Sample ID: 440-60604-5
Matrix: Water

Date Collected: 10/23/13 08:00
Date Received: 10/23/13 11:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		10	10 mL	10 mL	142205	11/05/13 19:42	TL	TAL IRV

Client Sample ID: Subpart FF VOA 40ml (3B)

Lab Sample ID: 440-60604-6
Matrix: Water

Date Collected: 10/23/13 08:00
Date Received: 10/23/13 11:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		20	10 mL	10 mL	142205	11/05/13 15:23	TL	TAL IRV

Client Sample ID: Subpart FF VOA 40ml (1C) — **Lab Sample ID: 440-60604-7**
Date Collected: 10/23/13 08:00 — Matrix: Water
Date Received: 10/23/13 11:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		20	10 mL	10 mL	142205	11/05/13 15:52	TL	TAL IRV

Client Sample ID: Subpart FF VOA 40ml (2C) — **Lab Sample ID: 440-60604-8**
Date Collected: 10/23/13 08:00 — Matrix: Water
Date Received: 10/23/13 11:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		20	10 mL	10 mL	142205	11/05/13 20:11	TL	TAL IRV

Client Sample ID: Subpart FF VOA 40ml (3C) — **Lab Sample ID: 440-60604-9**
Date Collected: 10/23/13 08:00 — Matrix: Water
Date Received: 10/23/13 11:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		20	10 mL	10 mL	142205	11/05/13 16:49	TL	TAL IRV

Client Sample ID: Subpart FF VOA 40ml (1D) — **Lab Sample ID: 440-60604-10**
Date Collected: 10/23/13 08:00 — Matrix: Water
Date Received: 10/23/13 11:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		10	10 mL	10 mL	142205	11/05/13 17:18	TL	TAL IRV

Client Sample ID: Subpart FF VOA 40ml (2D) — **Lab Sample ID: 440-60604-11**
Date Collected: 10/23/13 08:00 — Matrix: Water
Date Received: 10/23/13 11:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		100	10 mL	10 mL	142205	11/05/13 20:39	TL	TAL IRV

Client Sample ID: Subpart FF VOA 40ml (3D) — **Lab Sample ID: 440-60604-12**
Date Collected: 10/23/13 08:00 — Matrix: Water
Date Received: 10/23/13 11:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		10	10 mL	10 mL	142205	11/05/13 18:15	TL	TAL IRV

Lab Chronicle

Client: Siemens Industry Inc
Project/Site: Subpart FF Annual Recycle Water

TestAmerica Job ID: 440-60604-1

Client Sample ID: Extra
Date Collected: 10/23/13 08:00
Date Received: 10/23/13 11:00

Lab Sample ID: 440-60604-13
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		100	10 mL	10 mL	142205	11/05/13 21:47	TL	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 440-140765/6
Matrix: Water
Analysis Batch: 140765

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40		ug/L			10/28/13 21:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*65 - 135*		*10/28/13 21:26*	*1*

Lab Sample ID: LCS 440-140765/4
Matrix: Water
Analysis Batch: 140765

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	20.0	19.0		ug/L		95	65 - 115

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*108*		*65 - 135*

Lab Sample ID: LCSD 440-140765/5
Matrix: Water
Analysis Batch: 140765

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	20.0	18.9		ug/L		94	85 - 115	1	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*107*		*65 - 135*

Lab Sample ID: 440-60604-1 MS
Matrix: Water
Analysis Batch: 140765

Client Sample ID: Subpart FF VOA 40ml (1A)
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	26		400	369		ug/L		86	60 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*85*		*65 - 135*

Lab Sample ID: 440-60604-1 MSD
Matrix: Water
Analysis Batch: 140765

Client Sample ID: Subpart FF VOA 40ml (1A)
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	26		400	366		ug/L		85	60 - 130	1	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*85*		*65 - 135*

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: MB 440-142205/5
Matrix: Water
Analysis Batch: 142205

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.40		ug/L			11/05/13 11:50	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*65 - 135*		*11/05/13 11:50*	*1*

Lab Sample ID: LCS 440-142205/3
Matrix: Water
Analysis Batch: 142205

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	20.0	18.8		ug/L		94	85 - 115

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*104*		*65 - 135*

Lab Sample ID: LCSD 440-142205/4
Matrix: Water
Analysis Batch: 142205

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	20.0	18.9		ug/L		95	85 - 115	1	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*105*		*65 - 135*

Lab Sample ID: 440-60604-2 MS
Matrix: Water
Analysis Batch: 142205

Client Sample ID: Subpart FF VOA 40ml (2A)
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	49		400	392		ug/L		86	60 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*82*		*65 - 135*

Lab Sample ID: 440-60604-2 MSD
Matrix: Water
Analysis Batch: 142205

Client Sample ID: Subpart FF VOA 40ml (2A)
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	49		400	478		ug/L		107	60 - 130	20	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*72*		*65 - 135*

GC VOA

Analysis Batch: 140765

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-60604-1	Subpart FF VOA 40ml (1A)	Total/NA	Water	8021B	
440-60604-1 MS	Subpart FF VOA 40ml (1A)	Total/NA	Water	8021B	
440-60604-1 MSD	Subpart FF VOA 40ml (1A)	Total/NA	Water	8021B	
LCS 440-140765/4	Lab Control Sample	Total/NA	Water	8021B	
LCSD 440-140765/5	Lab Control Sample Dup	Total/NA	Water	8021B	
MB 440-140765/6	Method Blank	Total/NA	Water	8021B	

Analysis Batch: 142205

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-60604-2	Subpart FF VOA 40ml (2A)	Total/NA	Water	8021B	
440-60604-2 MS	Subpart FF VOA 40ml (2A)	Total/NA	Water	8021B	
440-60604-2 MSD	Subpart FF VOA 40ml (2A)	Total/NA	Water	8021B	
440-60604-3	Subpart FF VOA 40ml (3A)	Total/NA	Water	8021B	
440-60604-4	Subpart FF VOA 40ml (1B)	Total/NA	Water	8021B	
440-60604-5	Subpart FF VOA 40ml (2B)	Total/NA	Water	8021B	
440-60604-6	Subpart FF VOA 40ml (3B)	Total/NA	Water	8021B	
440-60604-7	Subpart FF VOA 40ml (1C)	Total/NA	Water	8021B	
440-60604-8	Subpart FF VOA 40ml (2C)	Total/NA	Water	8021B	
440-60604-9	Subpart FF VOA 40ml (3C)	Total/NA	Water	8021B	
440-60604-10	Subpart FF VOA 40ml (1D)	Total/NA	Water	8021B	
440-60604-11	Subpart FF VOA 40ml (2D)	Total/NA	Water	8021B	
440-60604-12	Subpart FF VOA 40ml (3D)	Total/NA	Water	8021B	
440-60604-13	Extra	Total/NA	Water	8021B	
LCS 440-142205/3	Lab Control Sample	Total/NA	Water	8021B	
LCSD 440-142205/4	Lab Control Sample Dup	Total/NA	Water	8021B	
MB 440-142205/5	Method Blank	Total/NA	Water	8021B	

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Siemens Industry Inc
Project/Site: Subpart FF Annual Recycle Water

TestAmerica Job ID: 440-60604-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-14
Arizona	State Program	9	AZ0671	10-13-14
California	LA Cty Sanitation Districts	9	10256	01-31-14
California	NELAP	9	1108CA	01-31-14
California	State Program	9	2706	06-30-14
Guam	State Program	9	Cert. No. 12.002r	01-28-14 *
Hawaii	State Program	9	N/A	01-31-14
Nevada	State Program	9	CA015312007A	07-31-14
New Mexico	State Program	6	N/A	01-31-14
Northern Mariana Islands	State Program	9	MP0002	01-31-14
Oregon	NELAP	10	4005	09-12-14
USDA	Federal		P330-09-00080	06-06-14
USEPA UCMR	Federal	1	CA01531	01-31-15

* Expired certification is currently pending renewal and is considered valid.

S.S. 10-24-13 1:15

CHAIN OF CUSTODY RECORD

TestAmerica ANALYTICAL TESTING CORPORATION

☐ Nashville, TN ☐ Dayton, OH ■ Indianapolis, IN
☐ Orlando, FL ☐ Watertown, WI ■ Irvine,CA
☐ Cedar Falls, IA ☐ Pontiac, MI

To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?

Compliance Monitoring? Yes No
Enforcement Action? Yes No

Client Name/Account #: Siemens Water Technologies req 471922
Address: POB 3308 / 2523 Mutahar St
City/State/Zip: Parker, AZ 85344
Project Manager: S. Reddy
Telephone Number: (928) 669-5758 **Fax No.:** (928) 669-5775
Sampler Name: (Print) Roy Provins
Sampler Signature:

Report To: monte.mccue@siemens.com
Invoice To:
TA Quote #:
Project ID: Subpart FF Annual Recycle Water
Project #:

Sample ID / Description	Date Sampled (2013)	Time Sampled	No. of Containers Shipped	Grab	Composite	Field Filtered	Preservative: Ice	Preservative: HNO_3 (Red Label)	Preservative: NaOH (Orange Label)	Preservative: H_2SO_4 Plastic (Yellow Label)	Preservative: H_2SO_4 Glass(Yellow Label)	Preservative: None (Black Label)	Preservative: Other (Specify)	Matrix: Groundwater	Matrix: Motive Water	Matrix: Drinking Water	Matrix: Sludge	Matrix: Soil	Matrix: Other (specify):	Analyze For: 8021B - Benzene	Analyze For: 440-60604 Chain of Custody	RUSH TAT (Pre-Schedule)	Standard TAT	Fax Results	Send QC with report
Subpart FF VOA 40ml (1A)	10/23	8:00am	1	■			■		■						■					■			■		
Subpart FF VOA 40ml (2A)	10/23	8:00am	1	■			■		■						■					■			■		
Subpart FF VOA 40ml (3A)	10/23	8:00am	1	■			■		■						■					■			■		
				■			■		■						■					■			■		
Subpart FF VOA 40ml (1B)	10/23	8:00am	1	■			■		■						■					■			■		
Subpart FF VOA 40ml (2B)	10/23	8:00am	1	■			■		■						■					■			■		
Subpart FF VOA 40ml (3B)	10/23	8:00am	1	■			■		■						■					■			■		
				■			■		■						■					■			■		
				■			■		■						■					■			■		
				■			■		■						■					■			■		

Special Instructions:

Method of Shipment: FEDEX

Relinquished by:	Date	Time	Received by:	Date	Time
Provins	10/23/2013				
Relinquished by:	**Date**	**Time**	**Received by TestAmerica:**	**Date**	**Time**
			Rubarth	10/24/13	11:00

Laboratory Comments:
Temperature Upon Receipt: 4.6/3.8°C IR-6A
VOCs Free of Headspace? Y N

10/24/13 15:00

11/6/2013

TestAmerica
ANALYTICAL TESTING CORPORATION

CHAIN OF CUSTODY RECORD

2 8. 10-24-13 1515

- [ ] Nashville, TN
- [ ] Orlando, FL
- [ ] Cedar Falls, IA
- [ ] Dayton, OH
- [ ] Watertown, WI
- [ ] Pontiac, MI
- [ ] Indianapolis, IN
- [x] Irvine, CA

To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?

Compliance Monitoring? Yes No

Enforcement Action? Yes No

Client Name/Account #: Siemens Water Technologies req 471922

Address: POB 3308 / 2523 Mutahar St

City/State/Zip: Parker, AZ 85344

Report To: monte.mccue@siemens.com

Project Manager: S. Reddy

Invoice To:

Telephone Number: (928) 669-5758 **Fax No.:** (928) 669-5775

TA Quote #:

Sampler Name: (Print) Roy Provins

Project ID: Subpart FF Annual Recycle Water

Sampler Signature:

Project #:

Sample ID / Description	Date Sampled (2013)	Time Sampled	No. of Containers Shipped	Grab	Composite	Field Filtered	Preservative: Ice	Preservative: HNO_3 (Red Label)	Preservative: NaOH (Orange Label)	Preservative: H_2SO_4 Plastic (Yellow Label)	Preservative: H_2SO_4 Glass (Yellow Label)	Preservative: None (Black Label)	Preservative: Other (Specify)	Matrix: Groundwater	Matrix: Motive Water	Matrix: Drinking Water	Matrix: Sludge	Matrix: Soil	Matrix: Other (specify):	Analyze For: 8021B - Benzene	RUSH TAT (Pre-Schedule)	Standard TAT	Fax Results	Send QC with report
Subpart FF VOA 40ml (1C)	10/23	8:00am	1																					
Subpart FF VOA 40ml (2C)	10/23	8:00am	1																					
Subpart FF VOA 40ml (3C)	10/23	8:00am	1																					
Subpart FF VOA 40ml (1D)	10/23	8:00am	1																					
Subpart FF VOA 40ml (2D)	10/23	8:00am	1																					
Subpart FF VOA 40ml (3D)	10/23	8:00am	1																					
Extra	10/23	8:00am	1	X			X	X							X					X		X		

Special Instructions:

Method of Shipment: FEDEX

Relinquished by:	Date	Time	Received by:	Date	Time
Roy Provins	10/23/2013	1430			
Relinquished by:	Date	Time	Received by TestAmerica:	Date	Time
			VuBanh	10/24/13	1100

Laboratory Comments:
Temperature Upon Receipt: 4.6/3.8 IR64
VOCs Free of Headspace? Y N

Login Sample Receipt Checklist

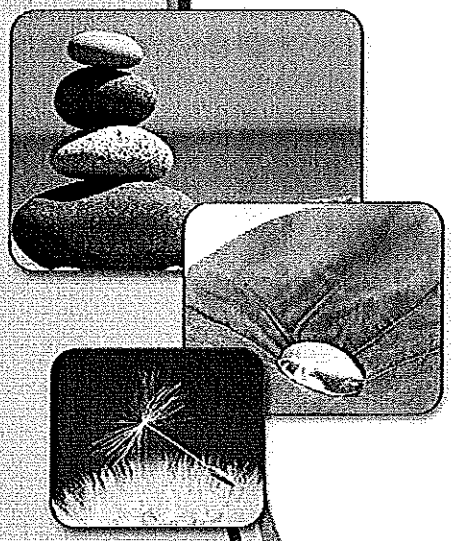
Client: Siemens Industry Inc

Job Number: 440-60604-1

Login Number: 60604
List Number: 1
Creator: Freitag, Kevin R

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Irvine
17461 Derian Ave
Suite 100
Irvine, CA 92614-5817
Tel: (949)261-1022

TestAmerica Job ID: 440-26975-1
Client Project/Site: Subpart FF Annual Recycle Water

For:
Siemens Industry Inc
PO BOX 3308 (2523 Mutahar St.)
IMA065
Parker, Arizona 85344

Attn: Monte Mccue

Philip Sanelle

Authorized for release by:
10/31/2012 4:45:00 PM
Philip Sanelle
Project Manager I
philip.sanelle@testamericainc.com

Designee for

Sushmitha Reddy
Project Manager I
sushmitha.reddy@testamericainc.com

LINKS

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Table of Contents

Sample Summary

Client: Siemens Industry Inc
Project/Site: Subpart FF Annual Recycle Water

TestAmerica Job ID: 440-26975-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-26975-1	Subpart FF VOA 40ml (1A)	Water	10/15/12 09:00	10/17/12 10:00
440-26975-2	Subpart FF VOA 40ml (2A)	Water	10/15/12 09:00	10/17/12 10:00
440-26975-3	Subpart FF VOA 40ml (3A)	Water	10/15/12 09:00	10/17/12 10:00
440-26975-4	Subpart FF VOA 40ml (1B)	Water	10/15/12 09:00	10/17/12 10:00
440-26975-5	Subpart FF VOA 40ml (2B)	Water	10/15/12 09:00	10/17/12 10:00
440-26975-6	Subpart FF VOA 40ml (3B)	Water	10/15/12 09:00	10/17/12 10:00
440-26975-7	Subpart FF VOA 40ml (1C)	Water	10/15/12 09:00	10/17/12 10:00
440-26975-8	Subpart FF VOA 40ml (2C)	Water	10/15/12 09:00	10/17/12 10:00
440-26975-9	Subpart FF VOA 40ml (3C)	Water	10/15/12 09:00	10/17/12 10:00
440-26975-10	Subpart FF VOA 40ml (4A)	Water	10/15/12 09:00	10/17/12 10:00
440-26975-11	Subpart FF VOA 40ml (4B)	Water	10/15/12 09:00	10/17/12 10:00
440-26975-12	Subpart FF VOA 40ml (4C)	Water	10/15/12 09:00	10/17/12 10:00

Case Narrative

Client: Siemens Industry Inc
Project/Site: Subpart FF Annual Recycle Water

TestAmerica Job ID: 440-26975-1

Job ID: 440-26975-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-26975-1

Comments
No additional comments.

Receipt
The samples were received on 10/17/2012 10:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.6° C.

GC VOA
Method(s) 8021B: The following sample(s) was received with headspace in the sample vial: All samples arrived with headspace. Subpart FF VOA 40ml (1A) (440-26975-1), Subpart FF VOA 40ml (2B) (440-26975-5), Subpart FF VOA 40ml (3A) (440-26975-3), Subpart FF VOA 40ml (3C) (440-26975-9), Subpart FF VOA 40ml (4A) (440-26975-10), Subpart FF VOA 40ml (4C) (440-26975-12).

Method(s) 6021B: The following sample(s) submitted for volatiles analysis was received with insufficient preservation pH is 7. :Subpart FF VOA 40ml (1A) (440-26975-1), Subpart FF VOA 40ml (2B) (440-26975-5), Subpart FF VOA 40ml (3A) (440-26975-3), Subpart FF VOA 40ml (3C) (440-26975-9), Subpart FF VOA 40ml (4A) (440-26975-10), Subpart FF VOA 40ml (4C) (440-26975-12).

Method(s) 8021B: Arizona samples ran with LCS and LCSD. Sample 3/4 top layer was water and the 1/4 bottem was a black tar like substance. For analysis only water was tested.Subpart FF VOA 40ml (1A) (440-26975-1), Subpart FF VOA 40ml (2B) (440-26975-5), Subpart FF VOA 40ml (3A) (440-26975-3), Subpart FF VOA 40ml (3C) (440-26975-9), Subpart FF VOA 40ml (4A) (440-26975-10), Subpart FF VOA 40ml (4C) (440-26975-12)

Method(s) 8021B: The following sample(s) submitted for volatiles analysis was received with insufficient preservation (pH >2): Subpart FF VOA 40ml (1B) (440-26975-4), Subpart FF VOA 40ml (1C) (440-26975-7), Subpart FF VOA 40ml (2A) (440-26975-2), Subpart FF VOA 40ml (2C) (440-26975-8), Subpart FF VOA 40ml (3B) (440-26975-6). pH=7.

Method(s) 8021B: The following sample(s) was received with headspace in the sample vial: Subpart FF VOA 40ml (1B) (440-26975-4), Subpart FF VOA 40ml (1C) (440-26975-7), Subpart FF VOA 40ml (2A) (440-26975-2), Subpart FF VOA 40ml (2C) (440-26975-8), Subpart FF VOA 40ml (3B) (440-26975-6).

Method(s) 8021B: Arizona samples ran with LCS and LCSD. Sample 3/4 top layer was water and the 1/4 bottem was a black tar like substance. For analysis only water was tested.Subpart FF VOA 40ml (4B) (440-26975-11), Subpart FF VOA 40ml (4C) (440-26975-12)

Method(s) 8021B: The following sample(s) was received with headspace in the sample vial: Subpart FF VOA 40ml (4B) (440-26975-11), Subpart FF VOA 40ml (4C) (440-26975-12).

Method(s) 8021B: The following sample(s) submitted for volatiles analysis was received with insufficient preservation (pH >2): Subpart FF VOA 40ml (4B) (440-26975-11), Subpart FF VOA 40ml (4C) (440-26975-12). pH=7.

No other analytical or quality issues were noted.

VOA Prep
No analytical or quality issues were noted.

Client: Siemens Industry Inc
Project/Site: Subpart FF Annual Recycle Water

TestAmerica Job ID: 440-26975-1

Client Sample ID: Subpart FF VOA 40ml (1A) — **Lab Sample ID: 440-26975-1**
Date Collected: 10/15/12 09:00 — Matrix: Water
Date Received: 10/17/12 10:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	370		15		ug/L			10/24/12 18:49	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*68*		*65 - 135*		*10/24/12 18:49*	*50*

Client Sample ID: Subpart FF VOA 40ml (2A) — **Lab Sample ID: 440-26975-2**
Date Collected: 10/15/12 09:00 — Matrix: Water
Date Received: 10/17/12 10:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	570		30		ug/L			10/20/12 01:26	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*77*		*65 - 135*		*10/20/12 01:26*	*100*

Client Sample ID: Subpart FF VOA 40ml (3A) — **Lab Sample ID: 440-26975-3**
Date Collected: 10/15/12 09:00 — Matrix: Water
Date Received: 10/17/12 10:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	300		6.0		ug/L			10/24/12 19:15	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*68*		*65 - 135*		*10/24/12 19:15*	*20*

Client Sample ID: Subpart FF VOA 40ml (1B) — **Lab Sample ID: 440-26975-4**
Date Collected: 10/15/12 09:00 — Matrix: Water
Date Received: 10/17/12 10:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	500		30		ug/L			10/20/12 02:19	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*73*		*65 - 135*		*10/20/12 02:19*	*100*

Client Sample ID: Subpart FF VOA 40ml (2B) — **Lab Sample ID: 440-26975-5**
Date Collected: 10/15/12 09:00 — Matrix: Water
Date Received: 10/17/12 10:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	410		30		ug/L			10/24/12 16:36	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*73*		*65 - 135*		*10/24/12 16:36*	*100*

Client Sample ID: Subpart FF VOA 40ml (3B) — **Lab Sample ID: 440-26975-6**
Date Collected: 10/15/12 09:00 — Matrix: Water
Date Received: 10/17/12 10:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	670		60		ug/L			10/19/12 22:20	200

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*89*		*65 - 135*		*10/19/12 22:20*	*200*

Client Sample ID: Subpart FF VOA 40ml (1C) — **Lab Sample ID: 440-26975-7**
Date Collected: 10/15/12 09:00 — Matrix: Water
Date Received: 10/17/12 10:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	610		30		ug/L			10/19/12 22:46	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*79*		*65 - 135*		*10/19/12 22:46*	*100*

Client Sample ID: Subpart FF VOA 40ml (2C) — **Lab Sample ID: 440-26975-8**
Date Collected: 10/15/12 09:00 — Matrix: Water
Date Received: 10/17/12 10:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1000		30		ug/L			10/19/12 23:13	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*68*		*65 - 135*		*10/19/12 23:13*	*100*

Client Sample ID: Subpart FF VOA 40ml (3C) — **Lab Sample ID: 440-26975-9**
Date Collected: 10/15/12 09:00 — Matrix: Water
Date Received: 10/17/12 10:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	580		30		ug/L			10/24/12 17:02	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*75*		*65 - 135*		*10/24/12 17:02*	*100*

Client Sample ID: Subpart FF VOA 40ml (4A) — **Lab Sample ID: 440-26975-10**
Date Collected: 10/15/12 09:00 — Matrix: Water
Date Received: 10/17/12 10:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	240		6.0		ug/L			10/24/12 19:42	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*65*		*65 - 135*		*10/24/12 19:42*	*20*

Client Sample ID: Subpart FF VOA 40ml (4B) — **Lab Sample ID: 440-26975-11**

Date Collected: 10/15/12 09:00 — Matrix: Water

Date Received: 10/17/12 10:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	300		30		ug/L			10/24/12 17:56	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*65 - 135*		*10/24/12 17:56*	*100*

Client Sample ID: Subpart FF VOA 40ml (4C) — **Lab Sample ID: 440-26975-12**

Date Collected: 10/15/12 09:00 — Matrix: Water

Date Received: 10/17/12 10:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	320		30		ug/L			10/24/12 18:22	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*84*		*65 - 135*		*10/24/12 18:22*	*100*

Client Sample ID: Subpart FF VOA 40ml (1A) — **Lab Sample ID: 440-26975-1**
Date Collected: 10/15/12 09:00 — Matrix: Water
Date Received: 10/17/12 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		50	10 mL	10 mL	61419	10/24/12 18:49	TL	TAL IRV

Client Sample ID: Subpart FF VOA 40ml (2A) — **Lab Sample ID: 440-26975-2**
Date Collected: 10/15/12 09:00 — Matrix: Water
Date Received: 10/17/12 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		100	10 mL	10 mL	60450	10/20/12 01:26	TL	TAL IRV

Client Sample ID: Subpart FF VOA 40ml (3A) — **Lab Sample ID: 440-26975-3**
Date Collected: 10/15/12 09:00 — Matrix: Water
Date Received: 10/17/12 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		20	10 mL	10 mL	61419	10/24/12 19:15	TL	TAL IRV

Client Sample ID: Subpart FF VOA 40ml (1B) — **Lab Sample ID: 440-26975-4**
Date Collected: 10/15/12 09:00 — Matrix: Water
Date Received: 10/17/12 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		100	10 mL	10 mL	60450	10/20/12 02:19	TL	TAL IRV

Client Sample ID: Subpart FF VOA 40ml (2B) — **Lab Sample ID: 440-26975-5**
Date Collected: 10/15/12 09:00 — Matrix: Water
Date Received: 10/17/12 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		100	10 mL	10 mL	61419	10/24/12 18:38	TL	TAL IRV

Client Sample ID: Subpart FF VOA 40ml (3B) — **Lab Sample ID: 440-26975-6**
Date Collected: 10/15/12 09:00 — Matrix: Water
Date Received: 10/17/12 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		200	10 mL	10 mL	60450	10/19/12 22:20	TL	TAL IRV

Client Sample ID: Subpart FF VOA 40ml (1C) — **Lab Sample ID: 440-26975-7**
Date Collected: 10/15/12 09:00 — Matrix: Water
Date Received: 10/17/12 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		100	10 mL	10 mL	60450	10/19/12 22:46	TL	TAL IRV

Lab Chronicle

Client: Siemens Industry Inc
Project/Site: Subpart FF Annual Recycle Water

TestAmerica Job ID: 440-26975-1

Client Sample ID: Subpart FF VOA 40ml (2C)

Lab Sample ID: 440-26975-8
Matrix: Water

Date Collected: 10/15/12 09:00
Date Received: 10/17/12 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		100	10 mL	10 mL	60450	10/19/12 23:13	TL	TAL IRV

Client Sample ID: Subpart FF VOA 40ml (3C)

Lab Sample ID: 440-26975-9
Matrix: Water

Date Collected: 10/15/12 09:00
Date Received: 10/17/12 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		100	10 mL	10 mL	61419	10/24/12 17:02	TL	TAL IRV

Client Sample ID: Subpart FF VOA 40ml (4A)

Lab Sample ID: 440-26975-10
Matrix: Water

Date Collected: 10/15/12 09:00
Date Received: 10/17/12 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		20	10 mL	10 mL	61419	10/24/12 19:42	TL	TAL IRV

Client Sample ID: Subpart FF VOA 40ml (4B)

Lab Sample ID: 440-26975-11
Matrix: Water

Date Collected: 10/15/12 09:00
Date Received: 10/17/12 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		100	10 mL	10 mL	61419	10/24/12 17:56	TL	TAL IRV

Client Sample ID: Subpart FF VOA 40ml (4C)

Lab Sample ID: 440-26975-12
Matrix: Water

Date Collected: 10/15/12 09:00
Date Received: 10/17/12 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		100	10 mL	10 mL	61419	10/24/12 18:22	TL	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 440-60450/4
Matrix: Water
Analysis Batch: 60450

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.30		ug/L			10/19/12 17:50	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*65 - 135*		*10/19/12 17:50*	*1*

Lab Sample ID: LCS 440-60450/3
Matrix: Water
Analysis Batch: 60450

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	20.0	18.6		ug/L		93	85 - 115

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*90*		*65 - 135*

Lab Sample ID: LCSD 440-60450/10
Matrix: Water
Analysis Batch: 60450

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	20.0	17.3		ug/L		87	85 - 115	7	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*96*		*65 - 135*

Lab Sample ID: 440-26975-A-1 MS
Matrix: Water
Analysis Batch: 60450

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	440		20000	18800		ug/L		92	60 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*65 - 135*

Lab Sample ID: 440-26975-A-1 MSD
Matrix: Water
Analysis Batch: 60450

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	440		20000	19100		ug/L		93	60 - 130	1	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*94*		*65 - 135*

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: MB 440-61419/5
Matrix: Water
Analysis Batch: 61419

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.30		ug/L			10/24/12 13:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*65 - 135*		*10/24/12 13:42*	*1*

Lab Sample ID: LCS 440-61419/3
Matrix: Water
Analysis Batch: 61419

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	20.0	17.9		ug/L		89	85 - 115

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*101*		*65 - 135*

Lab Sample ID: LCSD 440-61419/4
Matrix: Water
Analysis Batch: 61419

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	20.0	17.3		ug/L		87	85 - 115	3	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*98*		*65 - 135*

Lab Sample ID: 440-26975-A-3 MS
Matrix: Water
Analysis Batch: 61419

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	380		2000	2070		ug/L		85	60 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*96*		*65 - 135*

Lab Sample ID: 440-26975-A-3 MSD
Matrix: Water
Analysis Batch: 61419

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	380		2000	2060		ug/L		84	60 - 130	1	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*94*		*65 - 135*

QC Association Summary

Client: Siemens Industry Inc
Project/Site: Subpart FF Annual Recycle Water

TestAmerica Job ID: 440-26975-1

GC VOA

Analysis Batch: 60450

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-26975-2	Subpart FF VOA 40ml (2A)	Total/NA	Water	8021B	
440-26975-4	Subpart FF VOA 40ml (1B)	Total/NA	Water	8021B	
440-26975-6	Subpart FF VOA 40ml (3B)	Total/NA	Water	8021B	
440-26975-7	Subpart FF VOA 40ml (1C)	Total/NA	Water	8021B	
440-26975-8	Subpart FF VOA 40ml (2C)	Total/NA	Water	8021B	
440-26975-A-1 MS	Matrix Spike	Total/NA	Water	8021B	
440-26975-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8021B	
LCS 440-60450/3	Lab Control Sample	Total/NA	Water	8021B	
LCSD 440-60450/10	Lab Control Sample Dup	Total/NA	Water	8021B	
MB 440-60450/4	Method Blank	Total/NA	Water	8021B	

Analysis Batch: 61419

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-26975-1	Subpart FF VOA 40ml (1A)	Total/NA	Water	8021B	
440-26975-3	Subpart FF VOA 40ml (3A)	Total/NA	Water	8021B	
440-26975-5	Subpart FF VOA 40ml (2B)	Total/NA	Water	8021B	
440-26975-9	Subpart FF VOA 40ml (3C)	Total/NA	Water	8021B	
440-26975-10	Subpart FF VOA 40ml (4A)	Total/NA	Water	8021B	
440-26975-11	Subpart FF VOA 40ml (4B)	Total/NA	Water	8021B	
440-26975-12	Subpart FF VOA 40ml (4C)	Total/NA	Water	8021B	
440-26975-A-3 MS	Matrix Spike	Total/NA	Water	8021B	
440-26975-A-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8021B	
LCS 440-61419/3	Lab Control Sample	Total/NA	Water	8021B	
LCSD 440-61419/4	Lab Control Sample Dup	Total/NA	Water	8021B	
MB 440-61419/5	Method Blank	Total/NA	Water	8021B	

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Siemens Industry Inc
Project/Site: Subpart FF Annual Recycle Water

TestAmerica Job ID: 440-26975-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Arizona	State Program	9	AZ0671	10-13-13
California	LA Cty Sanitation Districts	9	10256	01-31-13
California	NELAC	9	1108CA	01-31-13
California	State Program	9	2706	08-30-14
Guam	State Program	9	Cert. No. 12.002r	01-23-13
Hawaii	State Program	9	N/A	01-31-13
Nevada	State Program	9	CA015312007A	07-31-13
New Mexico	State Program	6	N/A	01-31-13
Northern Mariana Islands	State Program	9	MP0002	01-31-13
Oregon	NELAC	10	4005	09-12-13
USDA	Federal		P330-09-00080	06-06-14
USEPA UCMR	Federal	1	CA01531	01-31-13

440-26975

TestAmerica
ANALYTICAL TESTING CORPORATION

CHAIN OF CUSTODY RECORD

☐ Nashville, TN ☐ Dayton, OH ☐ Indianapolis, IN
☐ Orlando, FL ☐ Watertown, WI ■ Irvine,CA
☐ Cedar Falls, IA ☐ Pontiac, MI

To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?
Compliance Monitoring? Yes No
Enforcement Action? Yes No

Client Name/Account #: Siemens Water Technologies req 471922
Address: POB 3308 / 2523 Mutahar St
City/State/Zip: Parker, AZ 85344
Project Manager: S. Reddy
Telephone Number: (928) 669-5758 **Fax No.:** (928) 669-5775
Sampler Name: (Print) Monte McCue
Sampler Signature:

Report To: monte.mccue@siemens.com
Invoice To:
TA Quote #:
Project ID: Subpart FF Annual Recycle Water
Project #:

Sample ID / Description	Date Sampled	Time Sampled	No. of Containers Shipped	Grab	Composite	Field Filtered	Preservative: Ice	Preservative: HNO_3 (Red Label)	Preservative: NaOH (Orange Label)	Preservative: H_2SO_4 Plastic (Yellow Label)	Preservative: H_2SO_4 Glass(Yellow Label)	Preservative: None (Black Label)	Preservative: Other (Specify)	Matrix: Groundwater	Matrix: Motive Water	Matrix: Drinking Water	Matrix: Sludge	Matrix: Soil	Matrix: Other (specify):	Analyze For: 8021B - Benzene	RUSH TAT (Pre-Schedule)	Standard TAT	Fax Results	Send QC with report
Subpart FF VOA 40ml (1A)	10/15	9000	1	■			■								■					■		■		
Subpart FF VOA 40ml (2A)	10/15	9000	1	■			■								■					■		■		
Subpart FF VOA 40ml (3A)	10/15	9000	1	■			■								■					■		■		
Subpart FF VOA 40ml (1B)	10/15	9000	1	■			■								■					■		■		
Subpart FF VOA 40ml (2B)	10/15	9000	1	■			■								■					■		■		
Subpart FF VOA 40ml (3B)	10/15	9000	1	■			■								■					■		■		
Subpart FF VOA 40ml (1C)	10/15	9000	1	■			■								■					■		■		
Subpart FF VOA 40ml (2C)	10/15	9000	1	■			■								■					■		■		
Subpart FF VOA 40ml (3C)	10/15	9000	1	■			■								■					■		■		

Special Instructions:

Method of Shipment: FEDEX

Laboratory Comments:
Temperature Upon Receipt: 6.0 °C
VOCs Free of Headspace? Y N

Relinquished by:	Date	Time	Received by:	Date	Time
Roy Provins	10/15/2012	1430			
Relinquished by:	**Date**	**Time**	**Received by TestAmerica:**	**Date**	**Time**
			V. Banda	10/17/12	10:00

440-26975

TestAmerica
ANALYTICAL TESTING CORPORATION

CHAIN OF CUSTODY RECORD

☐ Nashville, TN ☐ Dayton, OH ☐ Indianapolis, IN
☐ Orlando, FL ☐ Watertown, WI ■ Irvine, CA
☐ Cedar Falls, IA ☐ Pontiac, MI

To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?

Compliance Monitoring? Yes No
Enforcement Action? Yes No

Client Name/Account #: Siemens Water Technologies req 471922
Address: POB 3308 / 2523 Mutahar St
City/State/Zip: Parker, AZ 85344
Project Manager: S. Reddy
Telephone Number: (928) 669-5758 **Fax No.:** (928) 669-5775
Sampler Name: (Print) Monte McCue
Sampler Signature:

Report To: monte.mccue@siemens.com
Invoice To:
TA Quote #:
Project ID: Subpart FF Annual Recycle Water
Project #:

Sample ID / Description	Date Sampled	Time Sampled	No. of Containers Shipped	Grab	Composite	Field Filtered	Preservative: Ice	Preservative: HNO_3 (Red Label)	Preservative: HCl (Blue Label)	Preservative: NaOH (Orange Label)	Preservative: H_2SO_4 Plastic (Yellow Label)	Preservative: H_2SO_4 Glass (Yellow Label)	Preservative: None (Black Label)	Preservative: Other (Specify)	Matrix: Groundwater	Matrix: Motive Water	Matrix: Drinking Water	Matrix: Sludge	Matrix: Soil	Matrix: Other (specify):	Analyze For: 8021B - Benzene	RUSH TAT (Pre-Schedule)	Standard TAT	Fax Results	Send QC with report
Subpart FF VOA 40ml (4A)	10/15	9:00	1	■			■									■					■		■		
Subpart FF VOA 40ml (4B)	10/15	9:00	1	■			■									■					■		■		
Subpart FF VOA 40ml (4C)	10/15	9:00	1	■			■									■					■		■		
XTRA	11/17	0:00	0	■			■									■					■		■		

Special Instructions:

Method of Shipment: FEDEX

Laboratory Comments:
Temperature Upon Receipt: 6.0 °C
VOCs Free of Headspace? Y N

Relinquished by:	Date	Time	Received by:	Date	Time
Roy Provins	10/15/2012	1000			
Relinquished by:	**Date**	**Time**	**Received by TestAmerica:**	**Date**	**Time**
			Vn Bandy	10/17/12	10:00

Login Sample Receipt Checklist

Client: Siemens Industry Inc

Job Number: 440-26975-1

Login Number: 26975
List Number: 1
Creator: Freitag, Kevin R

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	Monte McCue
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

SIEMENS

Parker Facility

January 2012 - December 2012

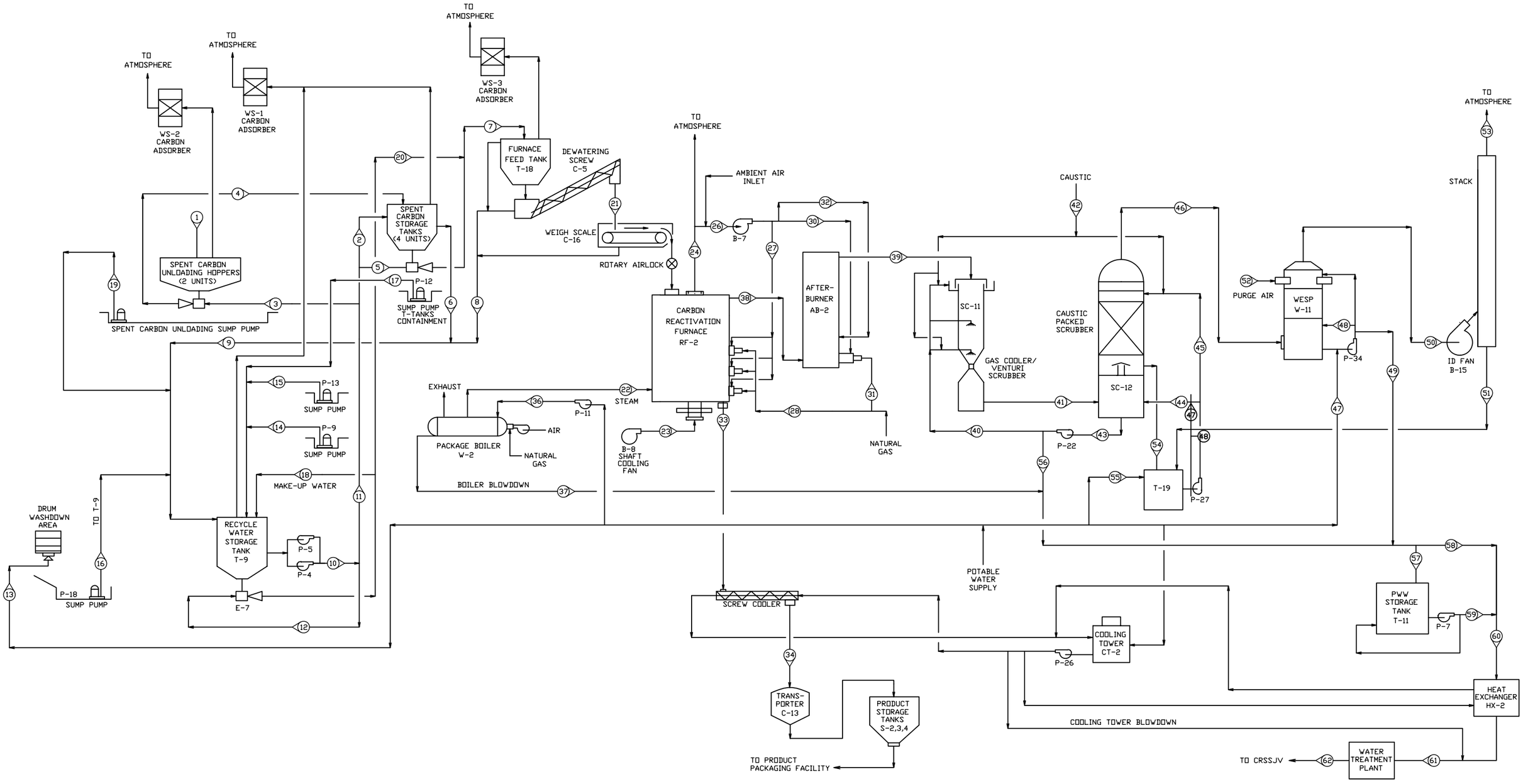
Benzene NESHAP Report

Gen Name:	Profile	Gen EPA ID	FF	Arrival Date	Manifest Do	Qty	Container	PPM	Pounds
BASF Corporation	W10080RH-5	LAD040776809	☑	3/9/2012	008185374JJ	1	Slurry 2	274	10.96
BASF Corporation	W10080RH-5	LAD040776809	☑	6/25/2012	008185492JJ	1	Slurry 2	274	10.96
BASF Corporation	W10080RH-5	LAD040776809	☑	8/16/2012	008185902 J	1	Slurry 2	274	10.96
BASF Corporation	W10080RH-5	LAD040776809	☑	12/28/2012	008184853JJ	1	Slurry 1	274	5.48
						Profile Total Pounds			**38.36**
BASF Corporation - Freeport	W120051RH	TXD008081697	☑	4/5/2012	004405231FL	6	VSC 1200	120000	720.0
						Profile Total Pounds			**720.0**
ConocoPhillips - Wilmington Plant	W110250RH	CAD008237679	☑	2/28/2012	008182609JJ	4	Drum	2300	1.656
						Profile Total Pounds			**1.656**
ExxonMobil Chemicals	W30610RH-3	LAD000812818	☑	8/8/2012	010206083JJ	3	Drum	0.013	0.00000702
						Profile Total Pounds			**0.00000702**
Paramount Petroleum Corp.	990674RH-6	CAD008371098	☑	11/27/2012	007357243 J	2	Drum	307	0.11052
						Profile Total Pounds			**0.11052**
Paramount Petroleum Corp.	W110225RH	CAD008371098	☑	5/15/2012	007357227 J	1	Drum	10.2	0.001836
						Profile Total Pounds			**0.001836**
Paramount Petroleum Corp.	W80036RH-1	CAD008371098	☑	1/17/2012	007357216 J	24	Drum	0.4	0.001728
						Profile Total Pounds			**0.001728**
Paramount Petroleum Corporation	W80036RH-2	CAD008371098	☑	5/8/2012	007357225 J	24	Drum	0.01	0.0000432
Paramount Petroleum Corporation	W80036RH-2	CAD008371098	☑	5/8/2012	007357226 J	48	Drum	0.01	0.0000864
Paramount Petroleum Corporation	W80036RH-2	CAD008371098	☑	5/15/2012	007357227 J	37	Drum	0.01	0.0000666
Paramount Petroleum Corporation	W80036RH-2	CAD008371098	☑	7/3/2012	007357230 J	40	Drum	0.01	0.000072
Paramount Petroleum Corporation	W80036RH-2	CAD008371098	☑	10/9/2012	007357241JJ	50	Drum	0.01	0.00009
Paramount Petroleum Corporation	W80036RH-2	CAD008371098	☑	10/16/2012	007357239JJ	48	Drum	0.01	0.0000864
Paramount Petroleum Corporation	W80036RH-2	CAD008371098	☑	11/27/2012	007357242 J	44	Drum	0.01	0.0000792
Paramount Petroleum Corporation	W80036RH-2	CAD008371098	☑	11/27/2012	007357243 J	28	Drum	0.01	0.0000504
						Profile Total Pounds			**0.0005742**
Rubicon	W110277RH	LAD008213191	☑	1/27/2012	00050839	1	PV500	0.19	0.00019
						Profile Total Pounds			**0.00019**

INCLUDES WET WEIGHTS FOR AQUA PHASE CARBON

Gen Name:	Profile	Gen EPA ID	FF	Arrival Date	Manifest Do	Qty	Container	PPM	Pounds
Tesoro Refining	W110148RH	CAD041520644	☑	3/6/2012	008186006 J	14	Drum	15.2	0.038304
Tesoro Refining	W110148RH	CAD041520644	☑	5/22/2012	008186031 J	7	Drum	15.2	0.019152
Tesoro Refining	W110148RH	CAD041520644	☑	9/25/2012	008186080JJ	7	Drum	15.2	0.019152
						Profile Total Pounds			0.076608
Tesoro Refining	W20362RH-5	CAD041520644	☑	10/16/2012	008186089JJ	11	Drum	87.5	0.17325
Tesoro Refining	W20362RH-5	CAD041520644	☑	11/27/2012	008186123 J	10	Drum	87.5	0.1575
						Profile Total Pounds			0.33075
Tesoro Refining and Marketing	W20362RH-4	CAD041520644	☑	1/31/2012	003215995 J	11	Drum	0.1	0.000198
Tesoro Refining and Marketing	W20362RH-4	CAD041520644	☑	4/24/2012	008186024JJ	11	Drum	0.1	0.000198
Tesoro Refining and Marketing	W20362RH-4	CAD041520644	☑	6/12/2012	008186033	10	Drum	0.1	0.00018
Tesoro Refining and Marketing	W20362RH-4	CAD041520644	☑	8/7/2012	008186057JJ	10	Drum	0.1	0.00018
						Profile Total Pounds			0.000756
Total Petrochemicals	940012RH-8	LAD020877361	☑	2/24/2012	000717563FL	1	Bag	21900	21.9
Total Petrochemicals	940012RH-8	LAD020877361	☑	4/17/2012	000717564FL	2	Drum	21900	7.884
Total Petrochemicals	940012RH-8	LAD020877361	☑	7/31/2012	000717567 F	2	Bag	21900	43.8
Total Petrochemicals	940012RH-8	LAD020877361	☑	10/2/2012	000717569FL	2	Drum	21900	7.884
Total Petrochemicals	940012RH-8	LAD020877361	☑	10/2/2012	000717569FL	1	Bag	21900	21.9
						Profile Total Pounds			103.368
Westlake Styrene Terminal	W120195RH	LAD985221951	☑	9/11/2012	001274382 J	12	Bag	67900	814.8
						Profile Total Pounds			814.8
						Report Total Pounds			1,678.70696922

APPENDIX K
PROCESS FLOW DIAGRAM



NOTES:

1. THIS DRAWING INCLUDES COMPONENTS OF THE FACILITY THAT ARE EXEMPT FROM PERMITTING UNDER VARIOUS PROVISIONS OF RCRA. DATA RELATED TO THESE COMPONENTS IS PROVIDED FOR INFORMATIONAL PURPOSES AND EASE OF REVIEW ONLY, AND THEY ARE NOT INTENDED TO BECOME REGULATED COMPONENTS OF THE HAZARDOUS WASTE FACILITY.

NO	DWN	CK'D	APP	REVISIONS	DATE
1	JBE	KEM		UPDATED FOR PERMIT SUBMITTAL	2-8-07

CBE CHAVOND-BARRY ENGINEERING CORP.
400 Route 518 • P.O. Box 205 • Blawenburg, New Jersey 08504

EWT - Parker, Arizona

FACILITY PROCESS FLOW DIAGRAM
Figure 1

DRAWN	DATE	CHECKED	DATE	APPROVED	DATE
AJW	11/27/96	KEM	11/27/96		

SCALE	DWG. NO.	REV.
NONE	1525-PR-001	1

PRINT DATE: 2/15/07