2014-LTR-1014

Attachment 10

[Permit Attachment HH]

Closure Plan

ATTACHMENT HH

(SECTION I)

CLOSURE AND FINANCIAL ASSURANCE

MIXED WASTE FACILITY

RCRA/TSCA PERMIT (APPLICATION)

~~ATG~~PFNW-R, INC.
RICHLAND, WASHINGTON

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Section I – Closure and Financial Assurance
Acronyms

~~ATG~~	~~Allied Technology Group~~
DWMU	Dangerous Waste Management Unit
~~GVB~~	~~GASVITTM Building~~
MWF	Mixed Waste Facility
MWTH	Mixed Waste Thermal Building
PCB	Polycholorinated biphenyl
PFNW-R	Perma-Fix Northwest-Richland, Inc.
SAP	Sampling and Analysis Plan
STB	Stabilization Building
WSB	Waste Storage Building
~~WSB~~	~~Waste Storage Building~~

I CLOSURE PLAN AND FINANCIAL ASSURANCE

[WAC 173-303-806(4)(a)(xiii), 610, 620]

I-1 CLOSURE PLAN/FINANCIAL ASSURANCE FOR CLOSURE

The Closure Plan for ~~ATG's~~ PFNW-R's ~~proposed~~ mixed waste facility (MWF) is provided in Attachment 17 (Closure Plan for MWF). The Closure Plan identifies the steps necessary to close the facility at any point during its active life, and describes the procedures to achieve clean closure of the MWF.

I-1a Closure Performance Standard

Closure performance standards for decontaminating dangerous waste management units and any impacted soils, groundwater, surface water, and air, are described in Section 2 of the Closure Plan.

I-1b Closure Activities

Closure plan activities for the dangerous waste management units (DWMUs) i.e., the stabilization building (STB), the waste storage building (WSB), and the ~~GASVIT™~~MWTH building (~~GVB~~MWTH), at the facility are described in Section 3 and 4 of the Closure Plan. Section 3 describes the procedures for removal of waste inventory at the time of closure. Section 4 details the chronological procedures for closure of the MWF. Sections 4.2.1-4.2.3 describes the process for decontaminating the components of the dangerous waste management units (DWMUs). Section 4.2.6 provides procedures for dismantling components. Section 4.2.4- 4.2.5 describes collection and analysis of verification samples to ensure that clean closure objectives for the structures are attained, and Section 4.3 describes verification sampling for soils. Analysis of verification samples and comparison of the measured constituent concentrations with applicable standards (Section 2 of the Closure Plan) will ensure that the facility is closed in accordance with clean closure requirements.

I-1b(1) Maximum Extent of Operation

Plate 1A is a site map indicating the extent of operations during the active life of the facility and the location and dimensions of all dangerous waste management units. Specifically, the extent of operations will be the WSB, STB, and ~~GVB~~ MWTH DWMUs.

I-1b(2) Removing Dangerous Wastes

As a waste treatment facility, the routine operations of the MWF involve receiving, treating, (to meet Land Disposal Restrictions as required) and shipping waste from the facility to either the generator, or a pre-designated disposal facility. ~~(~~The final disposition of the waste will be determined prior to acceptance of the waste for treatment~~)~~. Therefore, procedures for removing dangerous wastes from the facility at closure will be identical to those for routine facility operations. At closure, wastes will be treated at the MWF and then shipped to the predetermined storage or disposal location.

Procedures for removing, recycling, treating, storing, and transporting all dangerous wastes present in the dangerous waste management units are included in Sections 3 of the Closure Plan. Section 3.3.3 describes the type and locations of off-site dangerous waste management units where the waste from the MWF may be sent at closure. Estimated distances from the MWF to the potential disposal sites are provided in Section 3.3.3.

I-1b(3) Decontaminating Structures, Equipment, and Soil

Methods, equipment, and supplies (such as cleansing agents) used to decontaminate structures, treatment equipment, and ancillary components are provided in Section 4.2 of the Closure Plan. In general, gross contamination is removed using scrapers and wire brushes, surfaces are decontaminated by steam cleaning augmented with brushes and abrasive blasting, or debris washing with water and a surfactant where necessary, and where applicable, size reduction and compaction of equipment and structural debris requiring disposal. Areas where PCB contaminated waste are handled are decontaminated in accordance with the procedures outlined in Section 4.2.2. Because the routine operation of the MWF involves waste treatment and decontamination of debris, personnel requirements for decontamination of the facility are the same as for routine operation of the facility.

Methods for verification sampling and disposal for these materials and equipment are provided in Sections 4.2.4, 4.2.5 and 4.2.6 of the Closure Plan. An estimate of the volume of material that will be removed and recycled, treated, or disposed of for the existing permitted units is found in Table 3-3 of the Closure Plan. Closure costs for the Evaporation system is included in Appendix A for the closure of two evaporators, and in Appendix B for the closure of five storage tanks. Plans for disposal of materials are found in Section 3.3 of the Closure Plan (Containerization and Transport).

I-1b(4) Sampling and Analysis to Identify Extent of Decontamination/Removal and to Verify Achievement of Closure Standard

Health and safety procedures to be followed during closure sampling activities are provided in Section 4.1.2 of the Closure Plan.

I-1b(4)(a) Sampling to Determine the Extent of Contamination

Procedures for sampling and testing to ensure that the extent of contamination is defined and cleanup standards for clean closure have been met are provided in Section 4.2 and 4.3 of the Closure Plan and in Appendix A the Sampling and Analysis Plan (SAP). As outlined in the Closure Plan, all wastes ~~will be~~is stored and managed within enclosed structures ~~and~~ the floors of these structures will be coated and maintained to preclude releases to the environment in the event of a spill. Any spills will be addressed immediately to further reduce the potential for a release to the environment. Therefore, there was a conservative assumtion of 1000 ft^3 of soil removal to achieve a clean closure and no groundwater impact. If the results of verification sampling indicate that the groundwater has been impacted, an amended Closure Plan will be prepared to investigate this impact.

I-1b(4)(b) Sampling to Confirm Decontamination of Structures and Soils

Procedures for sampling and testing to ensure that decontamination and/or removal activities have attained the closure standards are provided in Sections 4.2 and 4.3 of the Closure Plan and the SAP.

I-1b(5) Other Activities

The MWF does not include any landfills, waste piles, or surface impoundments (i.e., no land-based units), so groundwater monitoring will not be necessary. Air emissions control during closure activities will be the same as those utilized during MWF operations as described in Section 4 of the Closure Plan. Run-on and run-off control will be maintained through the building structures and

berms in place at the facility. The clean closure of the facility and the removal of equipment will enable the facility to be used for applications for which it is zoned after closure.

I-1c Maximum Waste Inventory

An estimate of the maximum inventory of dangerous wastes in on-site storage and treatment at any time during the active life of the facility is provided in Section 3.1 of the Closure Plan. Maximum inventory is shown by location and type on Table 3-1. The types of waste onsite are listed in Table 3.2 of the Closure Plan.

I-1d Closure of Waste Piles, Surface Impoundments, Incinerators, Land Treatment, and Miscellaneous Units

Waste piles, surface impoundments, incinerators, and land treatment units are not being permitted at the MWF; therefore, this section does not apply.

I-1e Closure of Landfill Units

Landfill units are not being permitted at the MWF; therefore, this section does not apply.

I-1f Schedule for Closure

The schedule for closure is provided in Section 5.1 of the Closure Plan. The sequence for closure of the various components of the MWF are illustrated in preliminary schedule (Figure 5-1 of the Closure Plan).

I-1g Extension for Closure Time

~~Closure of GasVit is expected to take additional time beyond the initial 180 day period. PFNW-R has requested and received approval for an extension of the GasVit closure until July 7, 2012.~~

The planned closure for the ~~remaining~~ MWF is not expected to exceed either the 90 day time period for treatment, removal or disposal of wastes, or 180 days for completion of closure activities.

I-1h Closure Cost Estimate

The closure cost estimate is provided in Section 5.2 of the Closure Plan.

I-1I Financial Assurance Mechanism for Closure

~~Documentation demonstrating financial assurance for closure of the facility will be submitted at least 60 days prior to acceptance of any waste at the MWF, in accordance with WAC 173-303-806(4)(xv). It is currently planned that financial assurance will be established using a surety bond guaranteeing payment into a closure trust fund as outlined in WAC 173-303-620(4)(a) and 40 CFR 264.151 and 264.143.~~The MWF has established a closure insurance policy for the financial assurance for closure in accordance with WAC 173-303-620(4)(a)(v)

I-2 NOTICE IN DEED OF ALREADY CLOSED DISPOSAL UNITS

The MWF will be closed in compliance with WAC 173-303-630(10) and WAC 173-303-650(6)(a)(i). Because dangerous waste will not be left in place following operations, the requirement for a notice in deed is not applicable.

I-3 POST-CLOSURE PLAN

~~ATG~~ PFNW-R plans to clean close the dangerous waste container storage waste management unit in accordance with WAC 173-303-610 and 630, and therefore post-closure activities are not applicable to this facility. However, should verification sampling conducted during closure indicate that clean closure is not possible or is ~~im~~ not practical, the closure plan will be modified to address required post-closure activities in accordance with WAC 173-303-610.

I-4 LIABILITY REQUIREMENTS

I-4a Coverage for Sudden Accidental Occurrences

Coverage for sudden accidental occurrences ~~will be~~ is currently established ~~prior to receipt of any waste at the MWF. It is currently planned to use a surety bond to provide~~in accordance with 40 CFR 264.147(a)(1) and WAC 173-303-620(8)(a). The coverage is~~n~~ the amount of at least $1 million per occurrence with an annual aggregate of at least $2 million~~,~~. ~~as specified in WAC 173-303-620(8)(a) and 40 CFR 264.147(a)(See Figure 5-2, Sample Surtey Bond and Standby Trust Lanquage.~~

I-4b Coverage for Non-sudden Accidental Occurrences

No surface impoundments, landfills, land treatment facilities, or disposal units will be operated at the MWF; therefore, this section is not applicable.

I-4c Request for Variance

~~ATG~~ PFNW-R is not requesting a variance from the required liability coverage.

ATTACHMENT HH (17)

CLOSURE PLAN

MIXED WASTE FACILITY
RCRA/TSCA PERMIT APPLICATION

~~ATG~~ PFNW-R~~INC.~~
RICHLAND, WASHINGTON

ATTACHMENT 17
CLOSURE PLAN

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ATTACHMENT 17
CLOSURE PLAN
Acronyms

~~ATG~~	~~Allied Technology Group~~
CFR	Code of Federal Regulations
CLARC II	Cleanup Levels and Risk Calculations
DoD	Department of Defense
DOE	Department of Energy
DOT	Department of Transportation
DWMU	Dangerous Waste Management Unit
EPA	Environmental Protection Agency
~~GASVIT™~~	~~Gasification/vitrification~~
~~GVB~~	~~GASVIT™ Building~~
HEPA	High Efficiency Particulate Air
HSP	Health and Safety Plan
HVAC	Heating, ventilation and air conditioning
LDR	Land Disposal Restriction
LLW	Low Level Waste
MTCA	Model Toxics Control Act
MWF	Mixed Waste Facility
MWTH	Mixed Waste Thermal Building
OSHA	Occupational Safety and Health Agency
PCB	Polychlorinated biphenyl
PFNW-R	Perma-Fix Northwest-Richland, Inc.
RCRA	Resource Conservation Recovery Act
SAP	Sampling and Analysis Plan
STB	Stabilization Building
TSCA	Toxic Subs~~s~~tances Control Act
TSD	Treatment, storage, and disposal
WAC	Washington Ad~~d~~ministrative Code
WDOH	Washington State Department of Health
WSB	Waste Storage Building

1. INTRODUCTION

This Closure Plan has been developed for the ~~Allied Technology Group (ATG)~~PFNW-R mixed waste facility (MWF) located in Richland, Washington (See Drawing 31001-C-002 Sheet No. C101 and Drawing 31001-C-003 Sheet No. C206). The closure of the MWF will be performed in accordance with the Washington State Department of Ecology's (Ecology) Dangerous Waste Regulations (WAC 173-303) and the U.S. Environmental Protection Agency's (EPA) Toxic Substances Control Act (TSCA) regulations (40 CFR Part 761).

The MWF, located at 2025 Battelle Boulevard, Richland, Washington, treats low-level mixed waste from customers such as the U.S. Department of Energy (DOE), the U.S. Department of Defense (DoD), and commercial generators. Mixed waste is treated to meet Land Disposal Restriction (LDR) and TSCA requirements and shipped from the facility for disposal. No disposal of mixed waste occurs at the facility.

1.1 REGULATORY BASIS

The MWF operates three dangerous waste management units (DWMU) requiring a written Closure Plan (WAC 173-303-610 and 40 CFR § 761.65(e), as applicable). The three units correspond to the Stabilization Building (STB), the Waste Storage Building (WSB), and the ~~GASVIT™~~ MWTH Building. The MWF Closure Plan covers the closure of each of these units. Closure activities ~~associated with the GASVIT™ unit~~ will address requirements under TSCA because the facility ~~will~~ managed and treated wastes containing polychlorinated biphenyls (PCBs). The Closure Plan will also serve as a component of the decommissioning funding plan required by the Washington State Department of Health (WDOH).

1.2 ENVIRONMENTAL PERMITS

The WDOH enforces state regulations adopted under the State Nuclear Energy and Radiation Act that set radiation exposure limits, concentration guidelines, and management procedures applicable to the radioactive component of mixed waste. WDOH has issued a radioactive materials license to ~~ATG~~ PFNW-R for the handling of low-level radioactive waste. ~~ATG will apply to WDOH for an amendment to its radioactive materials license.~~

~~ATG~~ PFNW-R has ~~applied for~~ approval from EPA under TSCA to treat and store wastes containing PCBs as well as dangerous wastes. ~~The MWF Resource Conservation and Recovery Act (RCRA) Permit Application has been submitted to EPA for evaluating ATG's request for TSCA approval.~~

~~ATG is filing a notice of construction for new source review (WAC 173-400-110) with Benton County Air Pollution Control Authority and will obtain a building permit authorizing the construction of the MWF from the city of Richland.~~PFNW-R also has appropriate air construction permits from the Benton Clean Air Agency.

1.3 GENERAL CLOSURE APPROACH

Dangerous waste closure activities covered under this plan are limited to ~~ATG's~~ PFNW-R's MWF and any soils determined to be contaminated solely from the operation of the MWF. This Closure Plan provides the details of the procedures to be employed to achieve clean closure of the MWF. Clean closure will require the removal or decontamination of all dangerous wastes, waste residues,

or containers, construction materials, soils, or other materials containing or contaminated with dangerous wastes or waste residues to those levels specified in WAC 173-303-610(2)(b)(i) and (ii) and PCBs to those levels specified at 40 CFR § 761.61. Specifically, the MWF closure will involve decontaminating or removing MWF components including equipment, piping, concrete, and steel structures, and conducting sampling of soil beneath the MWF to verify no contamination has occurred. Only components which cannot be decontaminated will be removed.

1.4 CLOSURE PLAN OVERVIEW/ORGANIZATION

This Closure Plan has been prepared in accordance with applicable Ecology, WDOH, and EPA regulations. The applicable regulations are cited in the plan for each section where they apply. The plan is organized into five sections as follows:

- Introduction (Section 1)
- Closure Performance Standard (Section 2)
- Closure Procedures for the MWF (Section 3)
- Closure Schedule and Certification (Section 4)
- References (Section 5)

2. CLOSURE PERFORMANCE STANDARD

The performance standard for closure of dangerous waste management units is specified in WAC 173-303-610(2). To comply with this standard, this closure plan will allow ~~ATG~~ PFNW-R to close the MWF in a manner that:

- Minimizes the need for further maintenance
- Controls, minimizes, or eliminates to the extent necessary to protect human health and the environment, post-closure escape of dangerous waste, dangerous waste constituents, leachate, contaminated runoff, or dangerous waste decomposition products to the ground, surface water, groundwater, or the atmosphere
- Returns the land to the appearance and use of surrounding land areas to the degree possible given the nature of previous dangerous waste activity

This Closure Plan will guide implementation of closure activities so that the closure can be certified as complete and consistent with regulatory requirements.

2.1 CLEAN CLOSURE LEVELS

Any impacts to the environment will be identified at the time of closure and clean closure levels for applicable environmental media will be determined using residential exposure assumptions according to the Washington Model Toxics Control Act (MTCA) standards (WAC 173-340) and, for PCBs, according to requirements for PCB spill cleanup specified in both WAC 173-340-700 and 40 CFR § 761.61 The MTCA regulations provide three options for establishing site-specific cleanup levels, MTCA methods A, B, and C. Numeric cleanup levels for the MWF will be determined according to residential exposure assumptions under MTCA method A or B, as found in WAC 173-340-700 through -760.

Both MTCA methods A and B use human health risk as the main factor in determining cleanup levels and data on environmental risk is considered when available. For cancer-causing substances, MTCA defines the acceptable risk level as the conservative estimate of a person's

chances of developing cancer during a lifetime of constant exposure. Because many different constituents will be handled at the MWF, the total health risk from all cancer-causing substances will be considered when determining cleanup levels. For non-carcinogenic substances, the MTCA cleanup level for each constituent at the MWF must be below that which could cause illness in humans. Because more than one constituent will be managed at the MWF, the effect of all these constituents combined will be considered in determining cleanup levels.

Soil and groundwater are the applicable environmental media for which cleanup standards will be determined. Surface water cleanup levels are not applicable, because there are no surface water bodies in the vicinity of the site. Air quality will be protected through clean closure of the facility and underlying soils.

The MWF has been designed to ~~be built and~~ operate~~d~~ in a manner that should prevent the contamination of soils beneath the facility. All wastes ~~will be~~are stored and managed within enclosed structures and the floors of these structures ~~will be~~are coated and maintained to preclude releases to the environment in the event of a spill. Any spills ~~will be~~are addressed immediately to further reduce the potential for a release to the environment.

Actual impacts to the soil quality resulting from operation of the MWF will be determined as part of the closure activities as outlined in Section 4.3. "Clean closure" determinations with respect to the soils beneath the MWF will be made through comparison of measured soil concentrations of constituents stored and managed at the MWF with numeric soil cleanup levels calculated according to applicable MTCA Method A or B standards and the levels for PCBs specified under the TSCA regulations, as discussed above. The actual numeric cleanup standards for dangerous wastes and dangerous waste constituents will be determined, as outlined in the MTCA, at the time of cleanup because they are based on risk to human health and are subject to potential revision (due to continual new data regarding human risk assessment).

Ecology maintains a publicly-available database entitled Model Toxics Control Act Cleanup Levels and Risk Calculations (CLARC ~~II~~) Update (Ecology Publication 94-145, which is periodically updated), ~~which~~and it lists cleanup levels, calculated in accordance with MTCA-specified methodology, for approximately ~~600~~ 650 constituents. Constituent concentrations will be compared to the numeric soil cleanup levels using statistical procedures outlined in Ecology's guidance document entitled Guidance on Sampling and Data Analysis Methods (Ecology Publication No. 94-49, January 1995).

In the event that additional investigations are required ~~(see Section 0)~~ and potential impacts to groundwater are evaluated, the numeric cleanup levels for groundwater identified in the most recent CLARC ~~II~~ tables will be used for comparison to measured concentrations. These activities would be pursued under an amended Closure Plan.

2.2 MTCA METHOD A

MTCA Method A may be used if closure is "routine", as defined in WAC 173-340-130(7)(b), with relatively few constituents of concern which have associated numeric cleanup levels. Routine cleanups may include one or more of the following activities: cleanup of aboveground structures; cleanup of below-ground structures; cleanup of contaminated soils where the cleanup will restore the site to cleanup levels; or cleanup of solid wastes, including containers.

2.3 MTCA METHOD B

MTCA Method B may be used to establish clean closure levels for any closure. When establishing clean closure levels under MTCA Method B, the excess cancer risk from individual carcinogens will not exceed one-in-one million (10^{-6}). For non-carcinogens, MTCA Method B clean closure levels will not exceed the concentration at which a constituent could cause acute or chronic toxic effects on human health and the hazard index of dangerous waste constituents with similar toxic effects will not exceed one (1).

2.4 CLEANUP STANDARDS FOR PCB WASTE

A small portion (less than one percent) of the waste handled by the facility will be PCB contaminated waste ~~and may be~~which is regulated under the TSCA regulations (40 CFR 761). All PCB contaminated wastes will be managed solely in the WSB and ~~GVB~~STB. ~~Within these buildings the PCB-contaminated waste will be stored and processed in the following areas:~~

- ~~Room 4, Covered Storage Pad (WSB)~~
- ~~Room 1, Unit A (GVB)~~
- ~~Room 3, PCBs Staging (GVB)~~
- ~~Room 4, HAZMAT Enclosure (GVB)~~

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40 CFR 761 requires different PCB-cleanup levels based on factors such as accessibility to contaminated area, PCB concentration within spills, and quantity of PCBs spilled. This Closure Plan assumes non-restricted, high-contact residential/commercial surfaces as defined at 40 CFR 761.123 in determining appropriate cleanup levels. Solid surfaces shall be cleaned to 10~~u~~µg/100 cm^2. Soil that is found to be contaminated with PCBs will be subject to both WAC 173-340-700 and 40 CFR 761.61. Soil will be decontaminated to 10 ppm PCBs by weight provided that soil is excavated to a minimum depth of 10 inches. The excavated soil will be replaced with clean soil, i.e., containing less that 1 ppm PCBs. Soil sampling and wipe sampling procedures are discussed in Appendix A, Sampling and Analysis Plan (SAP).

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3. PROCEDURES FOR REMOVAL OF WASTES

The following sections describe the maximum amount of waste inventory that could be present in the MWF and the procedures used for removing, recycling, treating, and transporting all dangerous wastes present in the DWMUs.

3.1 MAXIMUM WASTE INVENTORY (WAC 173-303-610(3)(a)(iii))

A range of mixed wastes originating from the various off-site sources ~~will be~~are treated in the MWF. Process solids and solutions will be containerized at the location they are generated and transferred to the MWF by vehicle. In addition to process wastes, the materials used to construct the MWF and soils beneath the MWF have the potential to be classified as a regulated waste at the time of closure. The following paragraphs provide a description of the volumes and characteristics of the process wastes to be managed in the MWF and potential wastes resulting from operation of the MWF.

The maximum volume of untreated waste and treated waste to be stored at MWF will be ~~equivalent to its design capacity of~~ approximately ~~38110~~ 40,099 ft^3. The maximum inventory capacity of the MWF divided by area and waste type are provided in Table 3-1.

The MWF will only accept dangerous wastes that it has the capability to treat or stabilize. Table 3-2 provides a summary of the types of mixed wastes (including waste codes) anticipated to be handled and stored at the MWF. The MWF will primarily manage liquid and solid matrix waste streams (primarily solid) generated by the United States government, commercial generators, and ~~ATG's~~ PFNW-R's waste treatment processes.

Containers which contain liquid waste will also be stored in the MWF, although the quantities are anticipated to be small relative to solid-matrix waste. The source of liquid wastes will primarily be process wastewater and decontamination wastewater generated by the MWF. Fifty percent of liquid waste is anticipated to originate from drum washing and other decontamination procedures, 45 percent from the treatment subsystems, and 5 percent from off-site generators. Liquid wastes are treated at the MWF and returned to the facility for reuse. The MWF will be a net water user facility and thus treated wastewater will not be discharged offsite (i.e., zero discharge).

The MWF will utilize prefilters and HEPA filters to treat air discharged from the treatment facility. In the event these filters are designated as dangerous waste, they will be ~~processed as waste at the GASVIT™ Building~~shipped off-site to a permitted RCRA facility.

Construction materials constituting the physical structure of the MWF, treatment equipment, and soils beneath the MWF could potentially be impacted by operation of the MWF. In that event, the construction materials, treatment equipment, and soils could be considered a regulated waste. Construction materials consist of concrete, epoxy and PVC coatings, structural steel, sheet metal, and insulation used to fabricate the building. The facility design and ongoing proper management of wastes at the MWF should prevent any impact to the construction materials and subsoils. If a release were to occur, the impact should be limited to a small fraction of the materials and/or subsoils.

3.2 INVENTORY HANDLING PROCEDURES (WAC 173-303-610(3)(a)(iv))

Prior to closure of the MWF, any in-process mixed waste inventories (i.e., wastes within pretreatment and treatment tanks) will be processed, containerized onsite, and then transported offsite for disposal in conformance with all applicable hazardous waste LDR and TSCA requirements. All mixed waste inventories which are not currently in treatment processes will be returned to the generator (this will be a contractual requirement). A sample of this contractual agreement is contained in Figure 3-1. Following the depletion of the waste inventories, closure activities including decontamination and dismantling of treatment equipment and building structures will commence.

Options for the disposal of processed wastes will be limited by the characteristics of the waste. Options being considered are discussed in Section 3.3.3.

3.3 CONTAINERIZATION AND TRANSPORT

To achieve clean closure, it is anticipated that impacted materials designated as regulated wastes can be containerized in either 55-gallon drums or steel burial boxes and disposed of in accordance with LDRs at an appropriately permitted landfill. The following sections discuss handling procedures for containerization, transport, and disposal of impacted materials.

3.3.1 Containerization

All impacted materials requiring disposal will be containerized in either SuperSacks, 55-gallon drums, or steel burial boxes lined with heavy-duty visqueen to prevent leakage. Prior to its decommissioning, the cutting and shearing (TP-02), and compaction systems (TP-07) in the STB will be used to reduce the volume of waste for disposal. Concrete will be broken down into pieces of convenient size for immobilization and encapsulation (if necessary) and containerization. Materials will be placed in the containers by hand or using the appropriate heavy equipment. When full, the exterior of each box will be cleaned, labeled and marked in accordance with applicable Department of Transportation (DOT) regulations on hazardous materials under 49 CFR § 172.

3.3.2 Off-Site Transport

The containerized materials removed from the MWF area will be loaded onto tractor trailers and transported to the appropriate processing or disposal facility. Transport of the wastes will be conducted in accordance with the applicable DOT regulations for hazardous materials transport under 49 CFR § 172, Subpart F. Approximate transport distances to potential disposal sites are provided in the following section.

3.3.3 Off-Site Processing/Disposal Methods

All wastes accepted for treatment at the MWF will be treated at the facility and shipped ~~from the facility~~ to the generator or to a disposal facility, ~~i.e., no long-term storage or disposal will occur at the facility~~. In the event that closure prior to processing of all onsite wastes becomes necessary, all mixed waste inventories which are not currently in treatment process will be returned to the generator (this will be a contractual requirement see figure 3-1). Wastes which are in the treatment process will continue through the treatment process at the MWF during facility closure, with subsequent shipment to the generator or to an approved disposal facility.

The disposition of materials shipped from the MWF at closure will be limited by the characteristics of the waste and based on the results of sample analyses following treatment and/or decontamination. Facilities/locations being considered as sites for disposal of processed wastes are as follows:

- Transport of materials that are neither dangerous nor low level waste (LLW) and cannot be recycled or reused to a local (e.g., within Benton County) municipal solid waste landfill. The Benton County municipal landfill is approximately 10 miles from the MWF.
- Transport of non-dangerous LLW to the US Ecology facility on the Hanford Reservation for disposal. The US Ecology facility is located approximately 20 miles from the MWF.
- Transport of non-radioactive dangerous wastes satisfying the LDR to the Arlington Regional Landfill (Subtitle C permitted) in Arlington, Oregon for disposal. The Arlington Regional Landfill is located approximately 85 miles from the MWF. This landfill also accepts PCB wastes that are >50 ppm.
- Transport of mixed wastes to the ~~EnviroCare~~ Energy Solutions, Inc. facility in Orem, Utah for further processing and/or disposal. The ~~EnviroCare~~ Energy Solutions facility is located approximately 675 miles from the MWF.
- Transport of materials that are not designated as dangerous waste but do exceed cleanup levels for one or more constituents will be evaluated to determine the radioactive

characteristics. If the waste is found to be radioactive it will be treated as mixed waste. If the waste is not radioactive, its hazardous components will determine the applicable class I, II, or III landfill for disposal.

- All PCB waste generated during closure will be ~~processed by the GVB and there will be no need to dispose of any PCB wastes off site~~shipped off-site to one of three locations:
  - PCB wastes generated at Hanford (Richland, WA) must be returned to Handford for disposal. The facility is located approx. miles from the MWF.
  - DOE-generated PCB waste (except Hanford) will be disposed of at the Nevada National Security Site (NNSS). This facility is located approx. 920 miles from the MWF.
  - Other PCB wastes can also be disposed of at Energy Solutions, Inc. in Orem, UT. This facility is located approx. 675 miles for the MWF.

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Additional options will be considered as they become available. An estimate of the volumes and types of materials that will be removed and disposed of are represented in Table 3-3 (except for the 45,070 gallons of wastewaters/sludges stored in tanks associated with the evaporation system.

4. CLOSURE PROCEDURES FOR THE MWF

This section provides a detailed description of the closure activities to be implemented by ~~ATG~~ PFNW-R in completing the final closure of the MWF. These activities are discussed in their anticipated sequence of implementation.

PFNW-R~~ATG~~ plans to clean close the MWF in accordance with WAC 173-303-630 and therefore post-closure activities are not applicable to this Closure Plan. However, should verification sampling indicate clean closure is not possible or is environmentally impractical, the Closure Plan will be modified to address required post-closure activities in accordance with WAC 173-303-610.

4.1 PRE-CLOSURE ACTIVITIES

At closure, the activities outlined in this Closure Plan will be incorporated into technical specifications suitable for competitive bidding of the work by qualified contractors. Bids will then be solicited, a contractor selected, and the final contract details negotiated. Ecology will be notified sixty days prior to the date on which closure activities are to begin. The EPA Regional Administrator will be notified at least sixty days prior to the date on which final closure of the PCB storage areas are anticipated. PFNW-R~~ATG~~ will authorize commencement of the on-site work upon execution of the final contract for closure work.

4.1.1 Permitting

Closure-related permits (such as required for site access, demolition, etc.) will be the responsibility of the closure contractor to secure prior to mobilization. However, PFNW-R~~ATG~~ is responsible for any special permitting required by WDOH.

4.1.2 Health and Safety Requirements

All field personnel involved with the closure will have attended a 40-hour health and safety training course for conducting work at hazardous waste sites and annual 8-hour training updates. This course satisfies the initial training requirements of 29 CFR § 1910.120 (OSHA regulation of hazardous waste site activities). In addition to the 40-hour training course and annual 8-hour

updates, the project manager will have attended an 8-hour project manager's health and safety training course.

A detailed health and safety plan (HSP) will be prepared by the contractor and reviewed by PFNW-R~~ATG~~ prior to initiating any closure activities at the facility. At a minimum, the plan will include the following:

- Names, addresses, and telephone numbers of key personnel and alternates responsible for site safety
- The risks associated with each phase of work to be performed
- Confirmation that personnel are adequately trained to perform their job responsibilities and to handle the specific hazardous situations they may encounter
- Any site-specific personnel medical surveillance program, including initial and periodic follow-up physicals
- The protective clothing to be worn by personnel during each phase of work to be performed
- Phone numbers and routes to the nearest medical facility
- Site access control measures
- Decontamination procedures for personnel and equipment
- A contingency plan for a safe and effective response to emergencies

The contractor shall designate a health and safety officer for the closure construction activities. The health and safety officer shall maintain a copy of the HSP at the facility and shall make all facility personnel aware of the health and safety requirements in this plan. The health and safety officer shall be responsible for implementing the health and safety plan, and will document any field deviation from the plan.

4.2 MWF CLOSURE TO MEET PERFORMANCE STANDARDS (WAC 173-303-610(3)(a)(v) and 40 CFR 761)

Following the processing and elimination of the mixed waste inventory, the three waste management buildings at the MWF, including structural materials, treatment equipment, and ancillary components, will be inspected, decontaminated, evaluated, and dismantled and disposed of as necessary to achieve the clean closure objectives. It is anticipated that all structures will be decontaminated and clean closed in place and that demolition will not be necessary. Areas within the WSB and ~~GVB~~MWTH, as well as all equipment which has been exposed to PCB contaminated waste will be decontaminated in accordance with 40 CFR 761.79. Equipment contaminated with dangerous waste will be treated in accordance with the alternative treatment standards for hazardous debris (40 CFR § 268.45), primarily through physical extraction (abrasive blasting and/or high pressure steam and water sprays) and macroencapsulation. ~~Equipment not essential to operation of the GASVIT™ system may be processed by GASVIT™.~~

In addition, soils beneath the concrete floor and in areas outside of the DWMU buildings where spills were likely to have occurred will be sampled. If sample results indicate the soils have been impacted by operations of the MWF (Section 2), the impacted soils will be excavated and treated or stabilized to the extent required for land disposal or, if possible, remediated onsite to meet the applicable MTCA cleanup levels and left onsite.

Clean closure of the MWF will require the removal and disposal of all dangerous waste present in the building, decontamination or removal of contaminated process equipment and contaminated structural components, decontamination of all impacted building surfaces, and removal of any contaminated soil within the facility boundary. Any materials, equipment, or structures removed from the MWF will be designated and disposed of accordingly. The MWF will be considered clean closed when the sampling of the structures (if required) and surrounding soil shows that the concentrations for all constituents analyzed are present at or below acceptable limits (Section 2).

4.2.1 Unit Inspection Prior to Decontamination

Before beginning decontamination, but after the wastes have been removed, a visual inspection of all buildings, load/unload areas, and surrounding soils will be conducted. The inspection will identify and record locations:

- That have been discolored or visually altered by waste handling activities
- Where cracks are apparent, epoxy coating appears to have been damaged or any other openings through which waste, debris, or decontamination media could be released to the environment.

A record of the location and dimensions of these areas from a specified fixed point will be mapped and kept in the facility operating records for reference during the sampling. Areas of soil with these characteristics will also be marked using stakes.

All areas of the buildings that have been identified as potentially compromised will be repaired with the same materials that were used for their original construction. If appropriate, an epoxy coating will be applied to the repaired areas. These measures should insure that the repairs are resistant to water and the cleaning solutions that will be used during decontamination.

4.2.2 Decontamination Procedures For PCB Contaminated Waste Structures And Equipment

All PCB contaminated wastes will be managed solely in the WSB and ~~GVB~~STB. ~~Within these buildings the PCB-contaminated waste will be stored and processed in the following areas and equipment:~~

~~• Room 4, Covered Storage Pad (WSB)~~
~~• Room 1, Unit A (GVB)~~
~~• Room 3, PCBs Staging (GVB)~~
~~• Room 4, HAZMAT Enclosure (GVB)~~
~~• Feed prep (GV-01)~~
~~• Waste feed (GV-02)~~
~~•Process chamber (GV-03)~~

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All areas and equipment within the WSB and ~~GVB~~ STB that have been exposed to PCB-contaminated waste will be decontaminated in accordance with 40 CFR 761.79.

All solid surfaces will be double washed/rinsed as defined by 40 CFR 761.123 with an appropriate solvent (e.g., diesel fuel, degreasing soap) or other material in which PCBs are at least 5 percent soluble (by weight). A volume of PCB-free fluid sufficient to cover the contaminated surface completely will be used in each wash/rinse. In accordance with 40 CFR 761.79 any PCB container will be decontaminated by flushing the internal surfaces of the container three times with a solvent such as the ones described above. Each rinse will use a volume of the normal diluent equal to approximately ten percent of the PCB container

capacity. The solvent may be reused for decontamination until it contains 50 ppm PCB. All solvents and rinse waters will be captured by the built-in area of the floors which are slanted to accommodate liquid collection. This liquid will then be pumped into a temporary containment (55 gallon drums) by a diaphram or sump pump. This rinsate and solvent liquid will be ~~transported to the GASVIT feed prep~~ properly designated and either treated on-site or shipped to an approved facilityfor treatment. All pumping and storage equipment will be designated for use in PCB contaminated areas only until it can be decontaminated with these same procedures so that it can be used for decontaminating remaining non-PCB contaminated areas. No equipment will be removed from these areas until this decontamination process and the verification sampling described is section 4.2.4 is completed. The MWF ~~will be~~is constructed almost exclusively of nonporous media and as a result decontamination of PCB-containing waste residues by the above described procedures should be achievable. All PCB waste generated during closure will be processed ~~by the GASVIT and there will be no need to~~on-site or disposed of ~~any PCB wastes~~ off-site.

4.2.3 Remaining MWF Decontamination

Decontamination of the MWF will include dismantling to decontaminate inaccessible portions of equipment and structures, removal of gross contamination using scrapers and wire brushes, decontamination of surfaces by steam cleaning augmented with brushes and abrasive blasting, where necessary, and where applicable, size reduction and compaction of equipment and structural debris requiring disposal.

The MWF will be constructed almost exclusively of nonporous media and as a result, decontamination using steam cleaning to remove dangerous wastes should be achievable. Any equipment and structures outside the PCB-processing areas that can be adequately size reduced will be decontaminated in the container rinse (TT-06) and physical extraction tanks (TT-05) at the ~~NTS~~TB. Equipment and structures that cannot readily be size-reduced will be decontaminated in place with the decontamination water being collected in the secondary containment area and pumped into temporary storage container (55 gal. drums or baker tanks) using sump or diaphram pumps. Water required for the steam cleaning process outside of the PCB processing areas shall be recycled through the liquid treatment system in the ~~NTS~~TB. Sacrificial polyethylene sheeting will be utilized to isolate locations being decontaminated and prevent overspray and airborne migration of waste residues during the decontamination process. Grinding (concrete) or abrasives blasting (structural steel) may additionally be used for components that are not readily decontaminated by steam cleaning. ~~GasVit equipment and structures may be decontaminated in evaporator tank (EVAP-1103) using water and surfactant and a minimum 15 minute soak in accordance with the alternative treatment standards for hazardous debris (40 CFR § 268.45).~~

Some equipment may continue to be contaminated with LLW following decontamination procedures to remove dangerous wastes (i.e., radioactivity levels preclude free release). These components shall be dismantled and taken to the stabilization building to be size reduced (TP-01 & TP-02) and compacted (TP-07) and transported offsite for disposal at a LLW disposal facility.

Decontamination of the MWF will commence with the dismantling of equipment that are not essential to ongoing closure activities. Equipment considered essential to closure activities will include:

- ~~The GasVit evaporator tank to be used for decontaminating dismantled equipment and structural parts, (EVAP-1103)~~
- The liquid treatment, liquid holding, and filter tanks to process water used for decontaminating the facility, (TP-04,TP-06)

- The cutting and shearing tank for breaking down equipment and structural components into manageable sized pieces for decontamination and/or disposal, (TP-02)
- The physical extraction tank for abrasive blasting of dismantled equipment, (TT-05)
- The compaction tank to reduce the volume of debris for disposal, (TP-07)
- The in-container mixing tank for immobilizing mixed waste equipment debris, (TT-03)
- The containerized waste staging tank for handling outgoing waste during closure activities, and
- The heating, ventilation and air conditioning (HVAC) system to control atmospheric conditions during closure activities

All other tanks, container storage areas, and systems shall be dismantled, decontaminated, and recycled, reused, or processed and disposed in an appropriately permitted solid waste landfill. Equipment and structures that can be verified to not be LLW and not exhibit the characteristic of a dangerous waste will be recycled, reused, or disposed in an appropriately permitted solid waste landfill. Sampling and analysis procedures to verify completion of the decontamination are presented in the SAP (Appendix A).

Closure activities are anticipated to commence with the concurrent decontaminating of the PCB-waste treatment areas as described in section 4.2.2, the container storage pad, and the non-essential systems in the MWF. First, all shelving, storage cabinets, modular flooring, and fire suppression systems in the WSB will be decontaminated and recycled, reused, or disposed in an appropriately permitted solid waste landfill. Next all structural and base surfaces will be decontaminated and sampled (if necessary) to verify clean closure. If the sampling analytical results indicate it is required, structural and base components will receive additional decontamination prior to dismantling and recycling or disposal.

Concurrent with decontamination of the container storage pad, process and treatment tank systems including ancillary components and their respective spaces within the MWF will be dismantled, decontaminated, sampled (as required), and recycled, reused, or disposed in an appropriately permitted solid waste landfill. Closure of tank systems that are not essential to the closure activities, as described above, will be performed first. The remaining tank systems and ancillary components are anticipated to be closed in the following order:

1. Cutting and shearing tank, (TP-02)
2. The physical extraction tank, (TT-05)
3. The compaction tank, (TP-07)
4. The container rinse tank, (TT-06)
5. The in-container mixing tank, (TT-03)
6. The containerized waste staging tank
7. Liquid treatment, liquid holding, and filter tanks~~, and lastly~~
8. The (HVAC) system

As each tank system is dismantled and decontaminated, it will be isolated from the remaining tank systems and necessary access paths using sacrificial polyethylene sheeting, at a minimum. The liquid and solid wastes resulting from the decontamination of these last eight systems will be transported off site for disposal.

Equipment in the ~~GASVIT™~~MWTH Building ~~that is not associated with PCB waste treatment~~ will be dismantled and decontaminated in the following order:

1. ~~Product gas treatment and solids handling~~Evaporation systems~~s~~
2. HVAC system

During closure activities, barriers will be constructed as needed to denote decontamination zones. All equipment and materials used during closure of the MWF will be decontaminated prior to removal from the facility.

4.2.4 Verification Sampling For PCB Contaminated Waste Structures and Equipment

Following decontamination of the PCB contaminated waste processing and storage areas, wipe samples will be collected from equipment and surfaces which has contacted PCB-containing wastes. If concentrations in a standard wipe sample exceed 10µg/100 cm^2, the surface will be decontaminated again using the same procedures but with a different cleaning solution. These areas will be scrubbed with other solutions, such as sodium triphosphate, until a wipe sample result below 10µg/100 cm^2 is obtained and the area is visibly clean. Further details on sampling procedures are outlined in the SAP (Appendix A).

4.2.5 Verification Sampling For Remaining MWF

Following decontamination, equipment and structures will be examined to determine if any visible contamination exists (i.e., to determine if the surface is clean in accordance with the definition of a clean debris surface [40 CFR § 268.45]). If the surfaces are not clean, samples will be collected from equipment, structures, and subsoils to verify the components do not contain constituents of concern in concentrations above the applicable closure cleanup levels. The samples will be collected and submitted for confirmation analysis as outlined in the SAP (Appendix A).

4.2.6 MWF Component Removal

In general, once laboratory analysis verifies MWF components have been decontaminated, the components that cannot be left onsite will be removed from the MWF, containerized (if necessary), and transported off-site for recycling, reuse, or disposal in an appropriately permitted solid waste landfill. Decontaminated equipment, piping, concrete, structural steel, and sheet metal designated as regulated (i.e., dangerous, and/or low level) wastes will be removed and containerized in steel burial boxes. Asphalt, concrete, and other construction materials will be removed by hand or using standard construction equipment. Equipment and construction materials will generally be treated in accordance with the alternate treatment methods for debris under RCRA and be subsequently managed as non-dangerous solid or Low-Level Waste (LLW). It is anticipated that most, if not all, building components will be decontaminated and clean-closed in place.

4.3 SUBSOIL VERIFICATION SAMPLING (WAC 173-303-610(3)(V) AND -630(10)

Once decontamination procedures have been completed and all structural and base components have been removed or verified to meet applicable closure cleanup levels, sampling of subsoils will commence. Both biased and unbiased samples will be collected as outlined in the SAP. Samples will be collected from beneath areas where wastes are managed and treated (e.g., samples will be collected from beneath staging areas and the process chamber and not from beneath the process control station). In locations where concrete has not yet been removed, holes will be cored to access subsoils.

As ~~ATG~~ PFNW-R has elected to pursue clean closure of the MWF, sampling and analysis of subsoils beneath the building is required to demonstrate that such clean closure is attainable. Prior

to decontamination the concrete floors will be inspected for cracks, discoloring, and damaged epoxy coatings. If cracks or flaws are observed, their locations will be recorded in the operating record during the inspection. In locations where the concrete has not yet been removed, the concrete will need to be removed prior to subsoil sampling. Concrete can be removed in a number of ways depending on the location and surrounding structures. Whenever possible a core driller will be used. In some locations a jack hammer or diamond blade concrete saw may be more practical. After the concrete is removed a hand auger will be used to collect samples. If no cracks, discoloring, or damaged epoxy coatings are noted during visual inspection, only unbiased sampling of the subsoils will be conducted. If such evidence of damage is noted, soils from beneath the MWF will be sampled in two phases, biased and unbiased.

The first sampling phase will involve collecting biased samples from the uppermost three inches of subsoil beneath the concrete and submitting them for confirmation analysis as outlined in the SAP. During the first phase, samples will be collected from the following areas: 1) locations where concrete sampling verified contamination, 2) beneath the location of the feed for each primary system component, 3) locations beneath the bottom of each system sump, 4) locations beneath apparent cracks in the concrete, and where the epoxy coating appears to have been damaged, and 5) areas where wastes were managed and treated. These soil samples will be submitted for analysis for the constituents listed in Table 2-2 of the SAP (Appendix A).

Should laboratory analysis of these samples indicate subsoils beneath the MWF have been impacted by its operation, the second phase of sampling that is described is Section 3.2.3 of the SAP (Hot Spot Analysis) will be performed to evaluate the extent of subsoil contamination and the potential for impacts to groundwater. If it is determined that there is a potential for impact to the ground water there will be an amended Closure Plan written to addressed this situation.

4.4 SOIL REMOVAL AND REMEDIATION

Based upon the evaluation, the impacted soils will be excavated by hand or using standard construction methods, treated (if necessary), containerized and disposed of at an appropriately permitted facility. A conservative assumption of 1000 ft^3 of contaminated soil was included in the final closure costs.

4.5 WASTE MANAGEMENT BUILDING RESTORATION

Once analytical results indicate that concentrations of the constituents of concern are not in excess of applicable cleanup levels for samples collected from the structures that remain in place and subsoils beneath the building, the building will be certified as clean closed and eligible to be utilized for applications for which the property is zoned.

4.6 ANCILLARY CLOSURE ACTIVITIES

4.6.1 Security Systems

It is anticipated that existing security features will be maintained throughout the closure activities for the MWF. The perimeter fences and locked access gates restrict unauthorized entry to the operating portions of the facility. Twenty-four hour guards and attendants regulate access to the facility through the front entrance. ~~ATG~~ PFNW-R employees and contractors are issued badges, and personnel and vehicles must pass through visual inspection at the security entrance. Any person entering the facility must present a badge for access. All personnel on-site are required to exhibit badges at all times for identification.

4.7 SURVEY PLATE

The topographic map of the area in the vicinity of the ~~proposed~~ MWF is presented in Plate 1A. Upon final closure, all closed units will be re-surveyed and a survey plat representing the configuration of the final closed units will be produced.

5. CLOSURE SCHEDULE AND CERTIFICATION

5.1 SCHEDULE FOR CLOSURE (WAC 173-303-610(3)(a)(vii))

Closure activities for the MWF will commence within 90 days after wastes stop being introduced to the facility. It is anticipated that all DWMUs at the MWF will be closed concurrently, i.e., at facility closure. Certain processes in the ~~NTTB~~ STB may be used to facilitate closure ~~of the GVB~~ (e.g., cutting and shearing tank (TP-02) to reduce size of materials to be decontaminated through abrasive blasting (TT-05)). ~~Therefore, certain portions of the NTTB will not be decontaminated until decontamination of the GASVIT™ Building equipment is complete.~~ Closure of DWMU areas used for storage of PCBs is expected to commence within 30 days after the storage area receives its final quantities of PCB-waste (40 CFR § 761.65). These areas include the STB and WSB:

- ~~Room 4, Covered Storage Pad (WSB)~~
- ~~Room 1, Unit A (GVB)~~

Treatment and removal of all dangerous waste is scheduled to be accomplished within the 90 day time-frame specified at WAC 173-303-610(4)(a) and 40 CFR § 761.65(e)(6)(iii). ~~Closure of the GASVIT™ Building is scheduled to be accomplished within the 180 day time-frame specified at WAC 173-303-610(4)(a) and 40 CFR § 761.65(e)(6)(iv).~~ The sequence for closure of the various components of the MWF are illustrated in the preliminary schedule (Figure 5-1).

5.2 CLOSURE COST ESTIMATE (WAC 173-303-620(3))

The estimated cost of employing a third party to implement closure of the MWF is presented in Table 5-1. It does not include the closure of proposed evaporation system. Evaporation system closure cost is provided in Appendices B and C. Evaporation storage tanks closure costs were calculated using CostPro (Version 6.0) software. Cost estimates are provided for engineering design, construction management, and construction activities. The cost estimates were developed based on previous project experience, information provided by construction contractors, and industry cost estimating manuals. The original estimated costs ~~a~~were in February 1996 dollars. The cost estimate ~~will be~~is updated on an annual basis within 60 days of the anniversary date of the establishment of the financial instruments used to demonstrate financial responsibility for closure.

Closure cost from Table 5-1 (excluding Evaporation System): $1,594,592

Implicit Price Deflation for GDP is 79.63 (for first quarter of 1999)

Implicit Price Deflation for GDP is 107.52 (for first quarter of 2014)

Table 5-1 closure cost = $1,594,592 X (107.52/79.63) (in 2014 dollars) = $2,153,090

Closure cost for two evaporators (Appendix B) = $2,692

Closure cost for five storage tanks (Appendix C) = $62,108

Total MWF Closure Cost = $2,153,090 + $2,692 + $62,108 = $2,217,890

5.3 FINANCIAL ASSURANCE MECHANISM FOR CLOSURE (WAC 173-303-620 (3))

Treatment, storage, and disposal (TSD) facilities must provide financial assurance for closure costs and for liability coverage for bodily injury and property damages to third parties caused by sudden accidental occurrences. ~~ATG will submit documentation demonstrating financial assurance for closure of the facility at least 60 days prior to acceptance of any waste at the MWF, in accordance with WAC 173-303-806(4)(xv). It is c~~Currently ~~planned that~~ financial assurance ~~will be~~is established using ~~a surety bond guaranteeing payment into a closure trust fund~~insurance as outlined in WAC 173-303-620(4)(a) and 40 CFR 264.151 and 264.143.

The wording of the ~~surety bond~~insurance will be identical to the wording specified in 264.151(b), with the exception of naming both the EPA and Ecology as beneficiary agencies. ~~The standby trust will meet the requirements specified in 264.143 (a) and the wording will be identical to the wording specified in 264.151 (a) (1)), with the exception of naming both the EPA and Ecology as beneficiary agencies. Sample wording for the bond and the trust are contained in Figure 2. Money in these accounts will not be released until clean closure as defined by both the EPA and Ecology are met.~~

Coverage for sudden accidental occurrences ~~will be established prior to receipt of any waste at the MWF. It~~ is currently ~~planned to use a surety bond~~ established through an insurance policy to provide coverage in the amount of at least $1 million per occurrence with an annual aggregate of at least $2 million, as specified in 40 CFR 264.147(a).

5.4 CLOSURE CERTIFICATION (WAC 173-303-610(6))

Within 60 days of the closure or contingent closure of the waste management unit, completion of closure certification by an qualified, independent, Washington registered professional engineer will be submitted to Ecology and to the EPA Regional Administrator verifying that the waste management unit has been closed in accordance with the specifications of this Closure Plan (WAC 173-303-610(6) and 40 CFR 761.65(e)(8)). The certification will be signed by an authorized representative of ~~ATG~~ PFNW-R and by the certifying engineer.

~~6. REFERENCES~~

~~U.S. Environmental Protection Agency (USEPA). 1985. Guide for Decontaminating Buildings, Structures, and Equipment at Superfund Sites, USEPA Cincinnati, 600/2-85/028, March 1985.~~

~~Washington, State of. 1991. Dangerous Waste Regulations, Chapter 173-303 Washington Administrative Code.~~

~~Washington State Department of Ecology. 1994. Guidance for Clean Closure of Dangerous Waste Facilities, August 1994.~~

~~Means 1994 Building Construction Cost Data, Western Edition. R.S. Means Company, Inc. Kingston, Mass. 1993.~~

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Table 2-1. Summary of Sample Quantity
Mixed Waste Treatment Facility
~~Allied Technology Group~~PFNW-R, Inc.

Sample Type	Sample Quantity					
	Walls	Ceiling	Floors	Equipment	Soil	Hot Spots
Decontamination Verification	50	50	50	50		25
Sub Soil Verification					75	15
Not Shown On Sampling Grid						
HVAC				25		
Electrical lighting				2		
Total	50	50	50	77	75	40

Note: Typical sampling locations are identified; actual locations will be based on criteria in the Closure Plan

TABLE 3-1
ON-SITE WASTE STORAGE CAPACITIES
MIXED WASTE FACILITY

Comment [BN2]: Viraf, this or the table in III.A?

Room No.	Building Name and RCRA Waste Storage Area	Canister/Bag		Small Drum		Drum		IBC		B-25 Box		B-25 Box Short		ISO Cont.		Total Vol. (ft3)	Vol. Solid	Vol. Liquid
		No.	Vol.	No.	Vol.	No.	Vol.	No.	Vol.	No.	Vol.	No.	Vol.	No.	Vol.			
	~~Waste Stabilization Bldg. (WSTB)~~																	
2	Containerized Waste Staging					100	735	6	280	6	576					1596	1163	433
3	Bulk Container Staging							4	187	2	192			1	1440	1819	1819	
4	Container Inspection					4	29			3	298					327	312	15
5	Cutting and Shearing					10	73			4	384					457	457	
6	Size Reduction & Screening					16	117	4	187	2	192					496	496	
7	Sorting and Stabilization					66	485	6	280	11	1056					1917	1643	274
8	Compaction and Liquid Handling			8	5	50	367	7	327	9	864					1621	1099	522
9	Container Rinsing					6	44	3	140							184		184
	~~GASVIT MWTH Bldg. (GVB)~~																	
1	~~GASVIT Unit 1~~Five Storage Tanks					43	316	4	187	8	768					~~1271~~600	~~952~~	~~31~~600
2	~~GASVIT Unit 2~~					~~43~~	~~316~~	~~4~~	~~187~~	~~8~~	~~768~~					9 ~~1271~~	~~952~~	9 ~~319~~
	~~Waste Storage Bldg.~~ (WSPB)																	
1	Raw Waste Storage (WSB-01)					24	176	54	2527	56	5376			6	8640	16718	16074	644
2	Treated Waste Storage (~~North~~WSB-02)					180	1323			8	768	14	896			2987	2987	
3	Treated Waste Storage (~~South~~WSB-03)					228	1676			4	384					2060	2060	
4	~~Covered Storage Pad~~Waste Storage (WSB-04)			12	7	352	2587	6	280							2872	1296	1576
	TOTALS (RCRA Wastes)	**0**	**0**	**20**	**12**	**1~~1~~220 36**	**~~8~~2447 612**	**~~9~~80**	**~~4~~5820 8**	**1052 ~~1~~**	**10,09 01626**	**14**	**896**	**7**	**10080**	**3559,063**	**~~31~~310 29046**	**~~4~~289,6 57**

	PCB Wastes																	
~~3~~	~~GVB, Surge Waste Storage~~	~~66~~	~~66~~			~~11~~	~~80~~									~~146~~	~~106~~	~~40~~
~~4~~	~~GVB, HAZMAT Enclosure~~					~~1~~	~~7~~	~~1~~	~~46~~							~~54~~		~~54~~
~~41~~	WSB~~-04, Covered Storage Pad~~					96	705	3	140	192						1036	518	518
~~2~~	STB																	
	TOTALS (PCB Wastes)	**66**	**66**	**0**	**0**	**108**	**792**	**4**	**186**	**192**	**0**	**0**	**0**	**0**	**0**	**1236**	**624**	**612**

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Table 3-2 **Acceptable RCRA Waste codes for Treatment**
Mixed Waste Treatment Facility
~~Allied Technology Group, Inc.~~PFNW-R

REFER TO PART A IN VOLUME I
FOR WASTE CODES

TABLE 3-3
DISPOSAL VOLUME ESTIMATE

Category *STB Equipment*	Quantity[1]	Units	Assumed Percent Mixed Waste	Assumed Percent Low-level Waste	Assumed Percent Dangerous Waste	Assumed Percent Municipal Waste	Mixed Waste Estimated (ft3)	Low-level Waste Estimated (ft3)	Hazardous Waste (lbs)	Municipal Waste (lbs)	
TS-1	800	lbs	0%	99%	1%	0%	0	8.91	8	0	assumes 100 lbs per cubic foot
TS-2	2000	lbs	0%	99%	1%	0%	0	19.8	20	0	assumes 100 lbs per cubic foot
TP-1	8500	lbs	0%	99%	1%	0%	0	84.15	85	0	assumes 100 lbs per cubic foot
TP-2	800	lbs	0%	99%	1%	0%	0	7.92	8	0	assumes 100 lbs per cubic foot
TP-3	6500	lbs	0%	99%	1%	0%	0	64.35	65	0	assumes 100 lbs per cubic foot
TP-4	3200	lbs	0%	99%	1%	0%	0	31.68	32	0	assumes 100 lbs per cubic foot
TP-5	1500	lbs	0%	99%	1%	0%	0	14.85	15	0	assumes 100 lbs per cubic foot
TP-6	2400	lbs	0%	99%	1%	0%	0	23.76	24	0	assumes 100 lbs per cubic foot
TP-7	15000	lbs	0%	99%	1%	0%	0	148.5	150	0	assumes 100 lbs per cubic foot
TP-8	1800	lbs	0%	99%	1%	0%	0	17.82	18	0	assumes 100 lbs per cubic foot
TP-9	800	lbs	0%	99%	1%	0%	0	7.92	8	0	assumes 100 lbs per cubic foot
TT-1	5000	lbs	0%	99%	1%	0%	0	49.5	50	0	assumes 100 lbs per cubic foot
TT-2	4000	lbs	0%	99%	1%	0%	0	39.6	40	0	assumes 100 lbs per cubic foot
TT-3	4000	lbs	0%	99%	1%	0%	0	39.6	40	0	assumes 100 lbs per cubic foot
TT-4	3500	lbs	0%	99%	1%	0%	0	34.65	35	0	assumes 100 lbs per cubic foot
TT-5	1800	lbs	0%	99%	1%	0%	0	17.82	18	0	assumes 100 lbs per cubic foot
TT-6	2000	lbs	0%	99%	1%	0%	0	19.8	20	0	assumes 100 lbs per cubic foot
HVAC Ducts	19000	lbs	0%	99%	1%	0%	0	99	190	0	assumes 100 lbs per cubic foot
Dust Collectors	2000	lbs	0%	99%	1%	0%	0	19.8	20	0	assumes 100 lbs per cubic foot
HEPA Filter	3000	lbs	0%	99%	1%	0%	0	29.7	30	0	assumes 100 lbs per cubic foot
Stack	3000	lbs	0%	99%	1%	0%	0	29.7	30	0	assumes 100 lbs per cubic foot
Waste Storage Pad	0	lbs	0%	0%	0%	0%	0	0	0	0	assumes 100 lbs per cubic foot
Gasifi Equipment											
Liquid feed system	760	lbs	0%	20%	0.5%	0.2%	0	1.52	3.8	1.52	assumes 100 lbs per cubic foot
Screw feeder	12000	lbs	0%	20%	0.5%	0.2%	0	24	60	24	assumes 100 lbs per cubic foot
Ram feeder	5000	lbs	0%	20%	0.5%	0.2%	0	10	25	10	assumes 100 lbs per cubic foot
Process chamber - metal components	20000	lbs	0%	20%	0.5%	0.2%	0	40	100	40	assumes 100 lbs per cubic foot
Process chamber - refractory	50000	lbs	50%	0%	0.5%	0.2%	250	0	250	100	assumes 100 lbs per cubic foot
Syngas treatment system	26300	lbs	0%	20%	0.5%	0.2%	0	52.6	131.5	52.6	assumes 100 lbs per cubic foot
HVAC Ducts	500	lbs	0%	20%	0.5%	0.2%	0	1	2.5	1	assumes 100 lbs per cubic foot
Dust Collectors	200	lbs	0%	20%	0.5%	0.2%	0	0.4	1	0.4	assumes 100 lbs per cubic foot
HEPA Filter	10000	lbs	0%	20%	0.5%	0.2%	0	20	50	20	assumes 100 lbs per cubic foot
Stack	200	lbs	0%	20%	0.5%	0.2%	0	0.4	1	0.4	assumes 100 lbs per cubic foot
SUBTOTAL							250	855.75	1444.8	249.92	

Category / STB Equipment	Quantity[1]	Units	Assumed Percent Mixed Waste	Assumed Percent Low-level Waste	Assumed Percent Dangerous Waste	Assumed Percent Municipal Waste	Mixed Waste Estimated (ft3)	Low-level Waste Estimated (ft3)	Hazardous Waste (lbs)	Municipal Waste (lbs)	
STB & WSB Decon Waste											
Steam Clean Liquid											
Northeast Section (5000 ft2)	500	gallons	100%	0%	0%	0%	100	0	0	0	50% volume increase during stabilization
Southeast Section (5000 ft2)	500	gallons	100%	0%	0%	0%	100	0	0	0	50% volume increase during stabilization
West Section (5000 ft2)	500	gallons	100%	0%	0%	0%	100	0	0	0	50% volume increase during stabilization
Cutting Section (2,000 ft2)	200	gallons	100%	0%	0%	0%	40	0	0	0	50% volume increase during stabilization
HEPA Filter Area (2000 ft2)	200	gallons	100%	0%	0%	0%	40	0	0	0	50% volume increase during stabilization
WSP Floor (15,700 ft2)	275	gallons	0%	100%	0%	0%	0	55	0	0	50% volume increase during stabilization
WSP Shelves (58,000 ft2)	275	gallons	0%	100%	0%	0%	0	55	0	0	50% volume increase during stabilization
Floor Scrabbing (10% each area)					0%	0%			0	0	
Northeast Section (5000 ft2)	20	cubic ft	100%	0%	0%	0%	20	0	0	0	1/2-inch removal; 10% volume increase during stabilization
Southeast Section (5000 ft2)	20	cubic ft	100%	0%	0%	0%	20	0	0	0	1/2-inch removal; 10% volume increase during stabilization
West Section (5000 ft2)	20	cubic ft	100%	0%	0%	0%	20	0	0	0	1/2-inch removal; 10% volume increase during stabilization
Cutting Section (2,000 ft2)	10	cubic ft	100%	0%	0%	0%	20	0	0	0	1/2-inch removal; 10% volume increase during stabilization
HEPA Filter Area (2000 ft2)	10	cubic ft	100%	0%	0%	0%	20	0	0	0	1/2-inch removal; 10% volume increase during stabilization
Gasvit Decon Waste											
Steam Clean Liquid					0%	0%					
GASVIT area (10,000 ft2)	1900	gallons	100%	0%	0%	0%	200	0	0	0	50% volume increase during stabilization
Floor Scrabbing (10% each area)					0%	0%					
GASVIT area (10,000)	40	cubic ft	100%	0%	0%	0%	60	0	0	0	1/2-inch removal; 10% volume increase during stabilization
SUBTOTAL							775	120	0	0	
PCB Decon Waste											
Double Hinge area (3,800 Ft2)	760	gallons	0%	0%	0%	0%	0%	0%	0	0	

Category / STB Equipment		Quantity[1]	Units	Assumed Percent Mixed Waste	Assumed Percent Low-level Waste	Assumed Percent Dangerous Waste	Assumed Percent Municipal Waste	Mixed Waste Estimated (ft3)	Low-level Waste Estimated (ft3)	Hazardous Waste (lbs)	Municipal Waste (lbs)
Surge Stored Waste to STB (80% Capacity)											
TS-1		275	220	cubic ft	100%	0%	0%	0%	280	0	0	0
TS-2		456	365	cubic ft	100%	0%	0%	0%	470	0	0	0
TP-1		100	80	cubic ft	100%	0%	0%	0%	100	0	0	0
TP-2		0	0	cubic ft	100%	0%	0%	0%	0	0	0	0
TP-3		100	80	cubic ft	100%	0%	0%	0%	100	0	0	0
TP-4		179	143	cubic ft	100%	0%	0%	0%	179	0	0	0
TP-5		0	0	cubic ft	100%	0%	0%	0%	0	0	0	0
TP-6		0	0	cubic ft	100%	0%	0%	0%	0	0	0	0
TP-7		0	0	cubic ft	100%	0%	0%	0%	0	0	0	0
TP-8		0	0	cubic ft	100%	0%	0%	0%	0	0	0	0
TP-9		0	0	cubic ft	100%	0%	0%	0%	0	0	0	0
TT-1		64	51	cubic ft	100%	0%	0%	0%	60	0	0	0
TT-2		64	51	cubic ft	100%	0%	0%	0%	60	0	0	0
TT-3		28	22	cubic ft	100%	0%	0%	0%	30	0	0	0
TT-4		30	24	cubic ft	100%	0%	0%	0%	30	0	0	0
TT-5		30	24	cubic ft	100%	0%	0%	0%	30	0	0	0
TT-6		0	0	cubic ft	100%	0%	0%	0%	0	0	0	0
Surge Stored Waste in GASVIT Building (80% Capacity)											
Liquid staging		74	59	cubic ft	100%	0%	0%	0%	70	0	0	0
Liquid feed tank		67	53	cubic ft	100%	0%	0%	0%	60	0	0	0
Solid staging		74	59	cubic ft	100%	0%	0%	0%	70	0	0	0
Removal of Impacted soils											
Impacted soils			1000	cubic ft	90%	0%	10%	0%	900	0	100	0
General Debris Requiring Disposal			5000	lbs	0%	0%	0%	100%	0	0	0	5000
SUBTOTAL									2410	0	100	5000
Totals									5840	1874.75	2933.6	5439.84

[1] Estimated equipment weight per F. Felzolehi, 3/15/96

FIGURE 3-1

Under normal circumstance ~~ATG Inc.~~PFNW-R's Mixed Waste Facility generally agrees to complete processing of materials within 90 days of receipt. All waste shipped to ~~ATG~~ PFNW-R shall have a Properly-executed shipment and disposal manifest. All wastes in PFNW-R~~ATG~~'s possession shall be promptly stored and/or prepared for lawful transportation, subject to any and all constraints placed on such storage, preparation or transportation through license or permit conditions, or any law regulation, ordinances or Governmental order, action or request.

In anticipation of or actual plant closure, PFNW-R~~ATG~~ will immediately notify its clients of this event and set forth a reasonable cut off date for receiving shipments. Further, the client will be notified that all shipments delivered for processing after the cut off date will be refused for processing and returned to the client at the client's expense. PFNW-R~~ATG~~ will give its best effort and diligence to process all material on hand before the actual closure date. Any remaining unprocessed material on hand prior to the cut-off date will be packaged and marked for shipment to conformance with all applicable laws and regulations and will be returned to the client at the client's expense or shipped to an alternate facility designated by the client.

Table 5-1 Preliminary Cost Estimate for Closure
Mixed Waste Treatment Facility
Allied Technology Group, Inc.

Activity	Unit Cost	Units	Total Units	Total Cost
1. Planning/Design/Bid				
1.1 Closure Activities Spec.	$75	hr.	120	$9,000
1.2 Bid Evaluation/Award	$75	hr.	40	$3,000
Total planing/design/bid				$12,000
2. Work Plan				
2.1 Field Sampling Plan	$75	hr.	120	$9,000
2.2 Quality Assurance Plan	$65	hr.	40	$2,600
2.3 Health and Safety Plan	$65	hr	40	$2,600
Total Work Plan				$14,200
3. Closure Subcontractor Cost				
3.1 **Mobilization**				
3.1.1 Install trailer, decon area and	$54	hr.	40	$2,160
3.1.2 Cosumables/Misc. Supplies	$8,540	each	1	$8,540
3.2 **Decon of PCB Waste Treatment Areas and Equipment**				
~~3.2.1 *Double Wash/Rinse of Equipment*~~				
~~3.2.1.1 GV01 - Feed Prep~~	~~$54~~	~~hr/crew~~	~~24~~	~~$1,296~~
~~3.2.1.2 GV02- Waste Feed~~	~~$54~~	~~hr/crew~~	~~32~~	~~$1,728~~
~~3.2.1.3 GV03 - Process Chamber~~	~~$54~~	~~hr/crew~~	~~40~~	~~$2,160~~
~~Total hr/crew~~			~~96~~	
~~3.2.2 *Dismantle/Size Reduce & Package for Disposal*~~				
~~3.2.2.1 GV01 - Feed Prep~~	~~$54~~	~~hr/crew~~	~~6~~	~~$324~~
~~3.2.2.2 GV02- Waste Feed~~	~~$54~~	~~hr/crew~~	~~22~~	~~$1,188~~
~~3.2.2.3 GV03 - Process Chamber~~	~~$54~~	~~hr/crew~~	~~24~~	~~$1,296~~
Total hr/crew			52	
~~3.2.2.3 *Double Wash/Rinse of Area*~~				
~~3.2.2.3.1 Covered Storage Pad (WSB, Rm 4) (1,800 ft2)~~	~~$54~~	~~hr/crew~~	~~16~~	~~$864~~
~~3.2.2.3.2 Unit A (GVB, RM 1)~~	~~$54~~	~~hr/crew~~	~~6~~	~~$324~~
~~3.2.2.3.3 PCB Staging (GVB, Rm 3)~~	~~$54~~	~~hr/crew~~	~~6~~	~~$324~~
~~3.2.2.3.4 HAZMAT Enclosure (GVB, RM4)(Total 1960 ft2)~~	~~$54~~	~~hr/crew~~	~~6~~	~~$324~~
~~Total hr/crew~~			~~18~~	
3.3 **WSB Decontamination**				
3.3.1 Steam Clean/Storage Area Floors	$54	hr/crew	24	$1,296
3.3.2 Steam Clean/Storage Area Shelves	$54	hr/crew	16	$864
Total hr/crew			40	

Table 5-1 Preliminary Cost Estimate for Closure
Mixed Waste Treatment Facility
Allied Technology Group, Inc.

	Activity	Unit Cost	Units	Total Units	Total Cost
3.4	Non Essential STB Decontaminations				
3.4.1	*Steam Clean/Triple Rinse Equipment*				
3.4.1.1	TS2 - Bulk Waste Receiving	$54	hr/crew	16	$864
3.4.1.2	TP1 - Size Reduction	$54	hr/crew	16	$864
3.4.1.3	TP3 - Sorting	$54	hr/crew	24	$1,296
3.4.1.4	TP8 - Dryer	$54	hr/crew	8	$432
3.4.1.5	TP9 - Liquid Consolidation	$54	hr/crew	16	$864
3.4.1.6	TT1 - Bulk Mixing	$54	hr/crew	16	$864
3.4.1.7	TT2 - Solids Mixing	$54	hr/crew	16	$864
3.4.1.8	TT4 - Polymer Mixing	$54	hr/crew	16	$864
	Total hr/crew			48	
3.4.2	*Dismantle/Size Reduce & Package Equipment for Disposal*				
3.4.2.1	TS2 - Bulk Waste Receiving	$54	hr/crew	6	$324
3.4.2.2	TP1 - Size Reduction	$54	hr/crew	16	$864
3.4.2.3	TP3 - Sorting	$54	hr/crew	24	$1,296
3.4.2.4	TP5 - Filter	$54	hr/crew	8	$432
3.4.2.5	TP8 - Dryer	$54	hr/crew	24	$1,296
3.4.2.6	TP9 - Liquid Consolidation	$54	hr/crew	24	$1,296
3.4.2.7	TT1 - Bulk Mixing	$54	hr/crew	40	$2,160
3.4.2.8	TT2 - Solids Mixing	$54	hr/crew	32	$1,728
3.4.2.9	TT4 - Polymer Mixing	$54	hr/crew	32	$1,728
	Total hr/crew			104	
3.5	Gasvit				
3.5.1	*Decon Equipment*				
3.5.1.1	GV04 - Residue Handling	$54	hr/crew	10	$540
3.5.1.2	GV05,06,07 - Syngas Processing Units	$54	hr/crew	24	$1,296
	GV08,09 - Gas Monitoring and Discharge	$54	hr/crew	10	$540
	GV11 - Secondary Waste Treatment	$54	hr/crew	10	$540
	GV12,....18 - Misc Equipment	$54	hr/crew	10	$540
3.5	*Dismantle/Size Reduce & Package Equipment for Disposal*				
3.5.1	GV04 - Residue Handling	$54	hr/crew	10	$540
3.5.1.2	GV05,06,07 - Syngas Processing Units	$54	hr/crew	24	$1,296
3.5.1.3	GV08,09 - Gas Monitoring and Discharge	$54	hr/crew	10	$540
3.5.1.4	GV11 - Secondary Waste Treatment	$54	hr/crew	10	$540
3.5.1.5	GV12,....18 - Misc Equipment	$54	hr/crew	10	$540
	Total hr/crew			30	
3.5.1.6	*Steam Clean/Decon Floors/Walls/Ceiling*				
3.5.1.7	Steam Clean Floor/Walls/Ceiling (10,000 ft2)	$54	hr/crew	32	$1,728
3.5.1.8	Floor Scabbling (10,000 ft2)	$54	hr/crew	16	$864
	Total hr/crew			48	

Table 5-1 Preliminary Cost Estimate for Closure
Mixed Waste Treatment Facility
Allied Technology Group, Inc.

	Activity	Unit Cost	Units	Total Units	Total Cost
3.6	Decontaminations of Essential STB Systems				
3.6.1	Steam Clean/Triple Rinse Equipment				
3.6.1.1	TP2 - Cutting & Shredding	$54	hr/crew	24	$1,296
3.6.1.2	TT5 - Physical Extraction	$54	hr/crew	16	$864
3.6.1.3	TP7 - Compaction	$54	hr/crew	24	$1,296
3.6.1.4	TT6 -Container Rinse	$54	hr/crew	16	$864
3.6.1.5	TT3 - In-container Mixing	$54	hr/crew	16	$864
3.6.1.6	TS1 - Containerized Waste Staging	$54	hr/crew	16	$864
3.6.1.7	TP4 - Liquid Treatment	$54	hr/crew	32	$1,728
3.6.1.8	TP6 - Liquid Holding	$54	hr/crew	32	$1,728
	Total hr/crew			80	
3.6.2	*Dismantle/Size Reduce & Package for Disposal*				
3.6.2.1	TP2 - Cutting & Shredding	$54	hr/crew	24	$1,296
3.6.2.2	TT5 - Physical Extraction	$54	hr/crew	16	$864
3.6.2.3	TP7 - Compaction	$54	hr/crew	40	$2,160
3.6.2.4	TT6 -Container Rinse	$54	hr/crew	16	$864
3.6.2.5	TT3 - In-container Mixing	$54	hr/crew	32	$1,728
3.6.2.6	TS1- Containerized Waste Staging	$54	hr/crew	6	$324
3.6.2.7	TP4 - Liquid Treatment	$54	hr/crew	40	$2,160
3.6.2.8	TP6 - Liquid Holding	$54	hr/crew	24	$1,296
	Total hr/crew			198 70	
3.6.3	*Steam Clean/Decon Floors/Walls/Ceiling*				
3.6.3.1	Steam Clean/Northeast Section (5,000 ft2)	$54	hr/crew	16	$864
3.6.3.2	Steam Clean/Southeast Section (5,000 ft2)	$54	hr/crew	16	$864
3.6.3.3	Steam Clean/West Section (5,000 ft2)	$54	hr/crew	16	$864
3.6.3.4	Steam Clean/Cutting Section (2,000 ft2)	$54	hr/crew	12	$648
3.6.3.5	Floor Scabbling/Northeast Section (5,000 ft2)	$54	hr/crew	8	$432
3.6.3.6	Floor Scabbling/Southeast Section (5,000 ft2)	$54	hr/crew	8	$432
3.6.3.7	Floor Scabbling/West Section (5,000 ft2)	$54	hr/crew	8	$432
3.6.3.8	Floor Scabbling/Cutting Section (2,000 ft2)	$54	hr/crew	6	$324
3.7	HVAC System				
3.7.1	*Steam Clean/Triple Rinse Equipment*				
3.7.1.1	HVAC Ducts	$54	hr/crew	120	$6,480
3.7.1.2	Dust Collectors	$54	hr/crew	32	$1,728
3.7.1.3	HEPA Filter	$54	hr/crew	64	$3,456
3.7.1.4	Stack	$54	hr/crew	16	$864
	Total hr/crew			232	
3.7.2	*Dismantle/Size Reduce & Package for Disposal*				
3.7.2.1	HVAC Ducts	$54	hr/crew	160	$8,640
3.7.2.2	Dust Collectors	$54	hr/crew	48	$2,592
3.7.2.3	HEPA Filter	$54	hr/crew	80	$4,320
3.7.2.4	Stack	$54	hr/crew	24	$1,296
	Total hr/crew			312	
3.7.3	*Steam Clean/Decon Floors/Walls/Ceiling*				
3.7.3.1	Steam Clean HEPA Filter (2,000 ft2)	$54	hr crew	12	$648
3.7.3.2	Floor Scabbling HEPA Filter (2,000 ft2)	$54	hr crew	6	$324
	Total hr/crew			18 330	

Table 5-1 Preliminary Cost Estimate for Closure
Mixed Waste Treatment Facility
Allied Technology Group, Inc.

	Activity	Unit Cost	Units	Total Units	Total Cost
3.8	Equipment Rentals				
3.8.1	Steam Cleaner	$125	days	100	$12,500
3.8.2	Misc. Equipment Rentals	$60	days	120	$7,200
3.8.3	Size Reduction Tools	$70	days	180	$12,600
3.8.4	Floor Scabbler	$150	days	5	$750
3.8.5	Steam Cleaner	$125	days	9	$1,125
3.8.6	Floor Scabbler	$150	days	2	$300
3.8.7	Steam Cleaner	$125	days	5	$625
3.8.7	Concrete Coring Drill	$356	week	2	$712
3.9	Decon Verification Sampling				
3.9.1	Analysis	$2,815	ea	25	$70,375
3.9.2	Analysis for indicator constituents	$500	ea	252	$126,000
3.9.3	Sampling	$55	hr/crew	80	$4,400
3.1	Sub Soil Sampling Verification				
3.10.1	Analysis	$2,815	ea	25	$70,375
3.10.2	Analysis for indicator constituents	$500	ea	65	$32,500
3.10.3	Sampling	$55	hr/crew	40	$2,200
3.11	General Costs				
3.11.1	Project Manager	$120	days	450	$54,000
3.11.2	Health and Safety officer	$120	days	370	$44,400
3.11.3	Secretary	$120		200	$24,000
3.11.4	Waste Mgmt./Environmental Engineer	$60		370	$22,200
3.11.5	Reproduction, Phone and Other Misc. Costs	$1	ea.	7000	$7,000
3.12.1	Demobilization				
3.12.1.1	Remove Trailer, Fence, Decon Area	$54	hr/crew	32	$1,728
3.13	Subtotal Contractor				
3.13.1	Subcontractor Direct Costs				~~$588,122~~ 583,154
3.13.2	Subcontractor OH/G&A and Profit (@35%)				~~$205,843~~ 204,104
	Total Closure Subcontractor Cost				~~$793,965~~ 787,258
4.	Mixed Waste Preparation, Transportation, Treatment & Disposal - Envirocare				
4.1	Waste Preparation for Shipment				
4.1.1	Load waste	$54	hr	120	$6,480
4.1.2	Manifest/Profiling	$35	hr	120	$4,200
4.1.3	Crane/Fork lift	$325	days	20	$6,500
4.1.4	Sampling/Analysis	$2,400	Container	28	$67,200
4.1.5	Containers	$550	Container	28	$15,400
4.1.6	Transportation	$2,000	40,000 lb	9	$17,200
4.2	Waste Treatment & Disposal				
4.2.1	Treated Waste Requiring Disposal	$100	ft3	0	$0
4.2.3	Untreated Waste Requiring Treat/Disposal	$150	ft3	3430 2,720	$514,500 408,000
	Total Envirocare				$631,480 524,980

Table 5-1 Preliminary Cost Estimate for Closure
Mixed Waste Treatment Facility
Allied Technology Group, Inc.

	Activity	Unit Cost	Units	Total Units	Total Cost
5. Low Level Waste Preparation, Transportation, Treatment & Disposal - US Ecology					
5.1	Waste Preparation for Shipment				
5.1.1	Load waste	$54	hr	240	$12,960
5.1.2	Manifest	$35	hr	240	$8,400
5.1.3	Crane/Fork lift	$325	days	30	$9,750
5.1.4	Sampling/Analysis	$120	Container	11	$1,320
5.1.5	Containers	$550	Container	~~11~~ 8	~~$6,050~~ 4,400
5.1.6	Transportation	$500	40,000 lb	2.70	$1,350
5.2	Waste Treatment & Disposal				
5.2.1	Treated Waste Requiring Disposal	$88	ft3	1079	$94,952
	Total US Ecology				~~$134,782~~ 133,132
5.3	Non-Radioactive Dangerous Waste				
	Untreated Waste Requiring Disposal	$147	Ton	1.15	$169
	Transportation per 22 ton load	$730	Load	1	$730
5.4	Municipal Solid Waste				
	Disposal of Municipal Waste	$25	ton	~~2.26~~ 2.5	~~$57~~ 63
	Transportation costs based on 22 ton loads/1Hr turn around	$60	Hr	1	$60
	Total Misc Waste Disposal				~~$1,016~~ 1,022
6 Final Survey and Free Release/Closure Certification					
6.1	Survey/Sampling Work Plan				
6.1.1	FSP/H&SP/QAPP	$75	hr	160	$12,000
6.2	Field Survey				
6.2.1	Survey	$50	hr	240	$12,000
6.2.2	Radiation sample, wipe test analysis	$100	each	200	$20,000
6.2.3	Chemical sample/analysis	$300	each	200	$60,000
6.3	Certification Report				
6.3.1	Write draft report	$75	hr	160	$12,000
6.3.2	Incorporate comments, issue final report	$75	hr	80	$6,000
	Total Final Release/Closure Certification				$122,000
	Grand Total Closure				~~$1,709,442~~ 1,594,592

Figure 5-1
Preliminary Closure Schedule

ID	Task Name	Duration
	Preclosure Activities	10d
	Permitting/Health & Safety Preparations	2w
3	Inventory Removal	2w
4	Closure Activities	81.5d
5	PCB Waste Storage and Treatment Areas	25.75d
6	Double Wash/Rinse Equipment	96h
7	Double Wash/Rinse Floors, Ceilings, and Walls	18h
8	Verification Sampling	1d
9	Re-Decon all Hot Spots	4h
10	RE Sampling	4h
11	Dismantle/ Size Reduce & Package Equipment fo	52h
12	Stabilize all PCB Decontamination PPE and Misc.	1d
13	Process PCB Decon Liquid Through Gasvit	1d
14	Proccess Clean solvent to Decon Gasvit	1d
15	WSB Building Decontamination	11d
16	High Pressure Steam and Water Sprays, Equipm	16h
17	High Pressure Steam and Water Sprays, Floors,	24h
18	Verification Sampling	2d
19	Re-Decon all Hot Spots	4h
	Re-Sampling	4h
21	Proccessing of Rinstate and PPE ect...	1d
22	Subsoil Verification Sampling	2d
23	Non Esential STB Decontamination	24d
26	High Pressure Steam and Water Sprays, Equipm	48h
27	Decon Verification Sampling	3d
28	Re-Decon all Hot Spots	1d
29	Re-Sampling	1d
30	Dismantle/Size Reduce & Containerization	104h
31	Proccessing of Rinstate and PPE ect...	1d
32	Gasvit DWMU Decontamination	25d
33	Dismantle all small parts for decon in essential uni	1d
34	High Pressure Steam and Water Spray, Equipme	2w
35	High Pressure Steam and Water Sprays, Floors,	48h
36	Decon Verification Sampling	1d
37	Re-Decon all Hot Spots	8h
38	Re-Sampling	8h

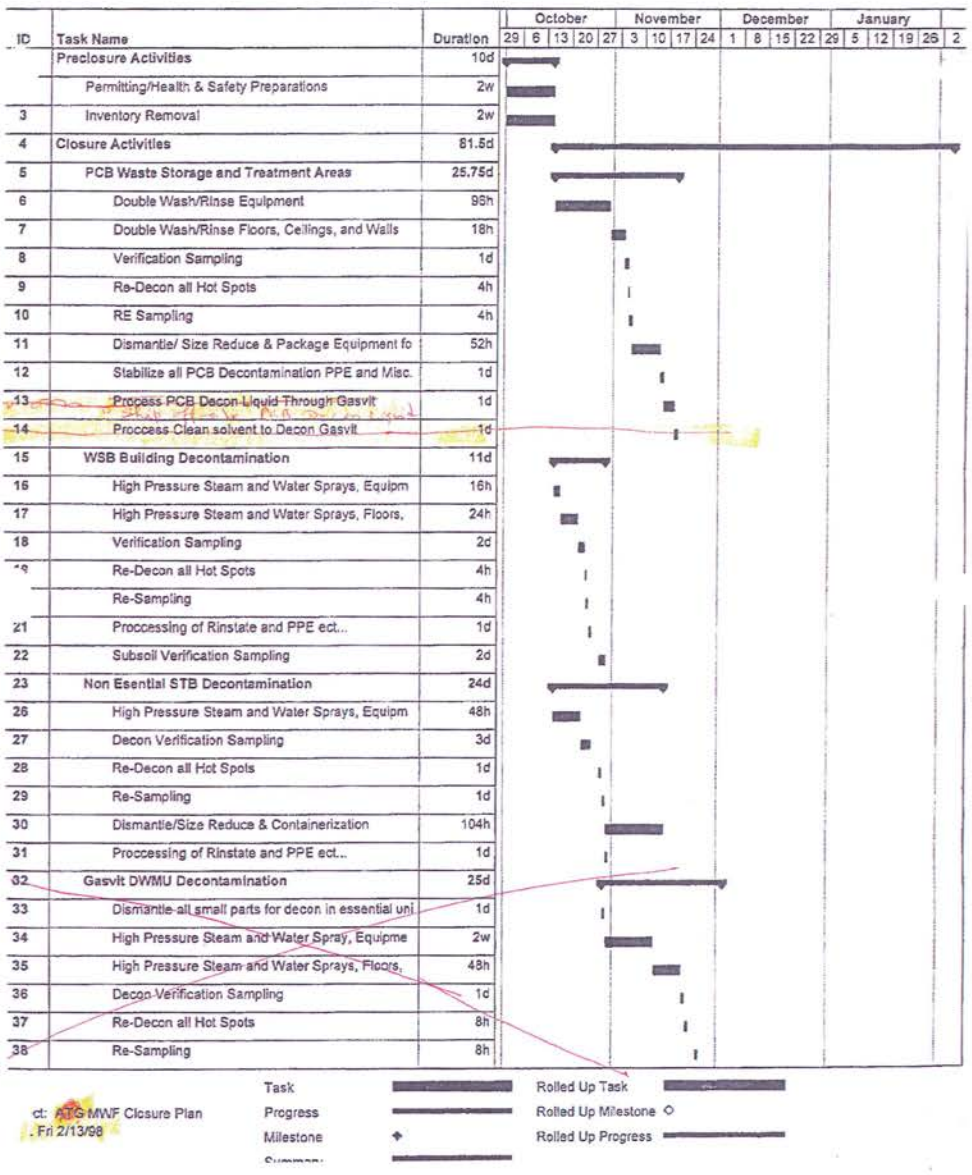
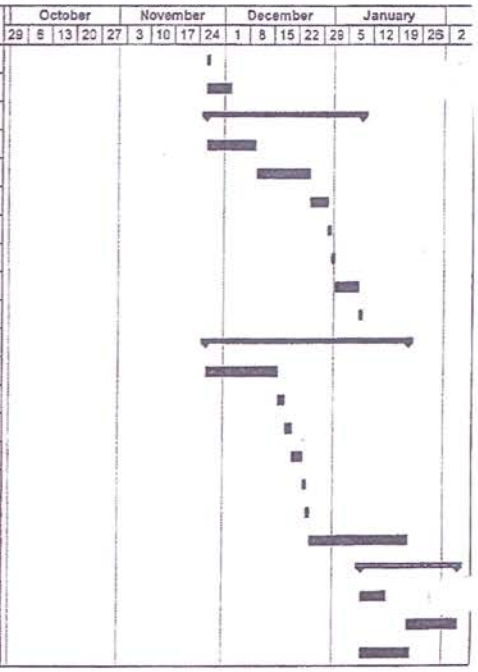


Figure 5-1
Preliminary Closure Schedule

ID	Task Name	Duration
39	Proccessing of Rinstate and PPE ect...	1d
	Dismantle/Size Reduce & Containerization	1w
41	**Essential STB Decontamination**	32.25d
42	High Pressure Steam and Water Spray, Equipme	80h
43	High Pressure Steam and Water Sprays, Floors,	90h
44	Decon Verification Sampling	3d
45	Re-Decon all Hot Spots	1d
46	Re-Sampling	1d
47	Dismantle/Size Reduce & Containerization	1w
48	Containerize & Transport all rinsate, PPE Ect..	1d
49	**HVAC System**	41.5d
50	High Pressure Steam and Water Spray, Equipme	115h
51	High Pressure Steam and Water Sprays, Floors,	18h
52	Decon Verification Sampling	2d
53	Re-Decon all Hot Spots	1d
54	Re-Sampling	1d
55	Containerize & Transport all rinsate, PPE Ect..	1d
56	Dismantle/Size Reduce & Containerization	156h
57	**Final Closure Activities**	19.25d
	Subsoil Verification Sampling STB Building	5d
59	Transport all remaining waste off-site	2w
60	MWF Site Restoration/Survey Plat Preparation	2w



ATG MWF Closure Plan
12/13/98

Task
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Rolled Up Progress

Page 2

Note: Timescale is in weeks.

Figure 5-2
Sample Surety Bond and Standby Trust Language

(a) (1) A trust agreement for a trust fund, as specified in § 264.143 (a) or § 264.145 (a)or §265.143 (a) or §265.145(a) of this chapter, must be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

Trust Agreement

Trust Agreement, the "Agreement," entered into as of [date] by between Allied Technology Group, a California corporation. The "Grantor," and [mane of corporate trustee], [insert "incorporated in the State of " or "national bank"], the "Trustee."

Whereas, the United States Environmental Protection Agency, "EPA," an agency of the United States Government and Washington State Department of Ecology, "Ecology", has established certain regulations applicable to the Grantor, requiring that an owner or operator of a hazardous waste management facility shall provide assurance that funds will be available when needed for closure and/or post-closure care of the facility,

Whereas, the Grantor has elected to establish a trust to provide all or part of such financial assurance for the facilities identified herein,

Whereas, the Grantor, acting through its duly authorized officers, has selected the Trustee to be the trustee under this agreement, and the Trustee is willing to act as trustee,
Now, Therefore, the Grantor and the Trustee agree as follows:
Section 1. Definitions. As used in this Agreement:

a) The term "Grantor" means the owner or operator who enters into this Agreement and any successors or assigns of the Grantor.
b) The term "Trustee" means the Trustee who enters into this Agreement and any successor Trustee.

Section 2. Identification of Facilities and Cost Estimates. This Agreement pertains to the facilities and cost estimates identified on attached Schedule A[on Schedule A, for each facility list the EPA Identification Number, name, address, and the current closure and/or post-closure cost estimates, or portions thereof, for which financial assurance is demonstrated by this Agreement].

Section 3. establishment of Fund. The Grantor and the Trustee hereby establish a trust fund, the "Fund," For the benefit of EPA. The Grantor and the Trustee intend that no third party have access to the Fund except as herein provided. The Fund is established initially as consisting of the property, which is acceptable to the Trustee, described in Schedule B attached hereto. Such property and any other property subsequently transferred to the Trustee is referred to as the Fund, together with all earnings and profits thereon, less any payments or distributions made by the Trustee pursuant to this Agreement. The Fund shall be held by the Trustee, IN TRUST, as hereinafter provided. The Trustee shall not be responsible nor shall it undertake any responsibility for the amount or adequacy of, nor any duty to collect from the Grantor, any payments necessary to discharge any liabilities of the Grantor established by EPA.

Section 4. Payment for Closure and Post-Closure Care. The Trustee shall make payments from the Fund as the EPA Regional Administrator shall direct, in writing , to provide for the payment of the costs of closure and/or post-closure care of the facilities covered by this Agreement. The Trustee shall reimburse

the Grantor or other persons as specified by the EPA Regional Administrator from the Fund for closure and post-closure expenditures in such amounts as the EPA Regional Administrator shall direct in writing. In addition, the Trustee shall refund the Grantor such amounts as the EPA Regional Administrator specifies in writing. Upon refund, such funds shall no longer constitute part of the Fund as defined herein.

Section 5. Payments Comprising the fund. Payments made to the Trustee for the Fund shall consist of cash or securities acceptable to the Trustee.

Section 6. trustee Management. The Trustee shall invest and reinvest the principal and income of the Fund and keep the Fund invested as a single fund, without distinction between principal and income, in accordance with general investment policies and guidelines which the Grantor many communicate in writing to the Trustee from time to time, subject however, to the provisions of this section. In investing, reinvesting, exchanging selling, and managing the Fund, the Trustee shall discharge his duties with respect to the trust fund solely in the interest of the beneficiary and with the care. Skill, prudence, and diligence under the circumstances then prevailing which persons of prudence, acting in a like capacity and familiar with such matters, would use in the conduct of an enterprise of a like character and with like aims; except that:

(i) Securities or other obligations of the Grantor, or any other owner or operator of the Facilities, or any of their affiliates as defined in the Investment Company Act of 1940, as amended, 15 U.S.C. 80a-2.(a) shall not be acquired or held, unless they are securities or other obligations of the Federal or a State government;

(ii) The Trustee is authorized to invest the Fund in time or demand deposits of the Trustee, to the extent insured by an agency of the Federal or State government; and

(iii) The Trustee is authorized to hold cash awaiting investment or distribution uninvested for a reasonable time and without liability for the payment of interest thereon.

Section 7. commingling and Investment. The Trustee is expressly authorized in its discretion;

(a)To transfer from time to time any or all of the assets of Fund to any common, commingled, or collective trust fund crated by the Trustee in which the Fund is eligible to participate, subject to all of the provisions thereof, to be commingled with the assets of other trusts participating therein; and

(b) To purchase shares in any investment company registered under the Investment Company Act of 1940, 15 U.S.C. 80a-1et seq,. Including one which may be created, managed, underwritten, or to which investment advice is rendered or the shares of which are sold by the Trustee. The trustee may vote such shares in its discretion.

Section 8, Express Powers of Trustee. Without in any way limiting the powers and discretion's conferred upon the Trustee by the other provisions of this Agreement or by law, the Trustee is expressly authorized and empowered:

(a) To sell, exchange convey, transfer, or otherwise dispose of any property held by it, by public or private sale. No person dealing with the Trustee shall be bound to see to the application of the purchase money or to inquire into the validity or expediency of any such sale or other disposition;

(b) To make, execute acknowledge, and deliver any and all documents of transfer and conveyance and any and all other instruments that may be necessary or appropriate to carry out the powers herein granted;

(c) To register any securities held in the Fund in its own name or in the name of a nominee and to hold any security in bearer form or in book entry, or to combine certificates representing such securities with certificates of the same issue held by the Trustee in other fiduciary capacities, or to deposit or arrange for the deposit of such securities in qualified central depository even though when so deposited, such securities may be merged and held in bulk in the name of the nominee of such depository with other securities deposited therein by another person, or to deposit or arrange for the deposit of any securities issued by the United States Government, ir any agency or instrumentality thereof, with a Federal Reserve bank, but the book and records of the Trustee shall at all times show that all such securities are part of the Fund;

(d) To deposit any cash in the fund in interest-bearing accounts maintained or savings certificates issued by the Trustee, in its separate corporate capacity, or in any other banking institution affiliated with the Trustee, to the extent insured by an agency of the Federal or State government; and;

(e) To compromise or otherwise adjust all claims in favor of or against the Fund. Section 9. Taxes and expenses. All taxes of any kind that may be assessed or levied against or in respect of the fund and all brokerage commissions incurred by the Fund shall be paid from the Fund. All other expenses incurred by the Trustee in connection with the administration of this Trust, including fees for legal services rendered to the Trustee, the compensation of the Trustee to the extent not paid directly by the Grantor, and all other proper charges and disbursements of the Trustee shall be paid from the Fund.

[Signature of Grantor]
[Title]
Attest:
[Title]
[Seal]

[Signature of Trustee]
Attest:
[Title]
[Seal]

(2) The following is an example of the certification of acknowledgment which must accompany the trust agreement for a trust fund as specified in § 264.143(a) and 264.145 (a) or § 265.143 (a) or 265.145 (a) of this chapter. State requirements may differ on the proper content of this acknowledgment.

State of County of
On this [date], before me personally came [owner or operator] to me known, who, being by me duly sworn, did depose and say that she/he resides at [address], that she/he is [title] of [corporation], the corporation described in and which executed the above instrument; that she/he knows the seal of said corporation; that the sell affixed to such instrument is such coporate seal; that it was so affixed by order of the board of Directors of said corporation, and that she/he signed her/name thereto by like order.

[signature of Notary Public]

(b) A surety bond guaranteeing payment into a trust fund, as specified in §264.143 (b) or §264.2145 (b) or § 265.143. or § 265.145 (b) of this chapter, must be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

~~Financial Guarantee Bond~~

~~Date bond executed:~~

~~Effective date;~~

~~Principal: ATG, Inc. 3400 Arden Road, Hayward CA 94545~~

~~Type of Organization; Corporation State of Incorporation; CA~~

~~Surety(ies): [name(s) and business address (es]~~

~~EPA Identification Number, name, address and closure and/or post-closure amount(s) for each facility guaranteed by this bond [indicate closure and post-closure amounts separately];~~

~~Total penal sum of bond: $ Surety's bond number;~~

~~Know all Person by these Present, That we, the Principal and Surety(ie) hereto are firmly bound to the U.S. Environmental Protection Agency (hereinafter called EPA)and The Washington State Department of Ecology (Hereinafter called Ecology) in the above pernal sum for the payment of which we bind ourselves, our heirs, executors, administrators, successors, and assigns jointly and severally; provided that, where the Surety(ies) are corporations acting as co-sureties,we, the Sureties, bind ourselves in such sum "jointly and severally" only for the purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of Surety, but if no limit of liability is indicated, the limit of liability shall be the full amount of the penal sum.~~

~~Whereas said Principal is required, under the Resource Conservation and Recovery Act as amended (RCRA), to have a permit or interim status in order to own or operate each hazardous waste management facility identified above, and~~

~~Whereas said Principal is required to provide financial assurance for closure, or closure and post-closure care, as a condition of the permit or interim status, and~~

~~Whereas said Principal shall establish a standby trust fund as is required when a surety bond is used to provide such financial assurance;~~

~~Now, Therefore, the conditions of the obligation are such that if the Principal shall faithfully, before the beginning of final closure of each facility identified above, fund the standby trust fund in the amount(s) identified above for the facility.~~

~~Or, if the Principal shall fund the standby trust fund in such amount(s) within 15 days after a final order to begin closure is issued by an EPA Regional Administrator or a U.S. district court or other court of competent jurisdiction,~~

~~Or, if the Principal shall provide alternate financial assurance, as specified in subpart H of 40 CFR part 264 or 265, as applicable, and obtain the EPA Regional Administrator's written approval of such assurance, within 90 days after the date notice of cancellation is received by both the Principal and the EPA Regional Administrator(s) from the Surety(ies), then this obligation shall be null and void; otherwise it is to remain in full force and effect.~~

~~The Surety(ies) shall become liable on this bond obligation only when the Principal has failed to fulfill the conditions described above. Upon notification by an EPA Regional Administrator that the Principal has failed to perform as guaranteed by this bond, the Surety(ies) shall place funds in the amount guaranteed for the facility(ies) into the standby trust fund as directed by the EPA Regional Administrator.~~

~~The liability of the Surety(ies) shall not be discharged by any payment or succession of payments hereunder, unless and until such payment or payments shall amount in the aggregate to the penal sum of the bond, but in no event shall the obligation of the Surety(ies) hereunder exceed the amount of said penal sum.~~

~~The Surety(ies) may cancel the bond by sending notice of cancellation by certified mail to the Principal and to the EPA Regional Administrator(s) for the Region(s) in which the facility(ies) is (are) located, provided, however, that cancellation shall not occur during the 120 days beginning on the date of receipt of the notice of cancellation by both the Principal and the EPA Regional Administrator(s), as evidenced by the return receipts.~~

~~The Principal may terminate this bond by sending written notice to the Surety(ies), provided, however, that no such notice shall become effective until the Surety(ies) receive(s) written authorization for termination of the bond by the EPA Regional Administrator(s) of the EPA Region(s) in which the bonded facility(ies) is (are) located.~~

~~[The following paragraph is an optional rider that may be included but is not required.]~~

~~Principal and Surety(ies) hereby agree to adjust the penal sum of the bond yearly so that it guarantees a new closure and/or post-closure amount, provided that the penal sum does not increase by more than 20 percent in any one year, and no decrease in the penal sum takes place without the written permission of the EPA Regional Administrator(s).~~

~~In Witness Whereof, the Principal and Surety(ies) have executed this Financial guarantee Bond and have affixed their seals on the date set forth above.~~

~~The persons whose signatures appear below hereby certify that they are authorized to execute this surety bond on behalf of the Principal and Surety(ies) and that the wording of this surety bond is identical to the wording specified in 40 CFR 264.151(b) as such regulations were constituted on the date this bond was executed.~~

~~Principal [Signature(s)]~~
~~[Name(s)]~~
~~[Title(s)]~~
~~[Corporate seal]~~
~~Corporate Surety(ies)~~
~~[Name and address] State of Incorporation:]~~
~~Liability limit: $~~
~~[Signature(s)]~~
~~[Name(s) and title(s)]~~
~~[Corporate seal]~~
~~[For every co-surety, provide signature(s), corporate seal, and other information in the same manner as for Surety above.] Bond premium: $~~

(c) A surety bond guaranteeing performance of closure and/or post-closure care, as specified in §264.143(c) or §264.145(c), must be worded as follows, except that the instructions in brackets are to be replaced with the relevant information and the brackets deleted:

Performance Bond Date bond executed:

Effective date:

Principal: [legal name and business address of owner or operator]

Type of organization: [insert "individual," "joint venture," "partnership," or "corporation"] State of Incorporation:

Surety(ies): [name(s) and business address(es)]

EPA Identification Number, name, address, and closure and/or post-closure amount(s) for each facility guaranteed by this bond [indicate closure and post-closure amounts separately]:

Total penal sum of bond: $ Surety's bond number:

Know All Persons By These Presents, That we, the Principal and Surety(ies), hereto are firmly bound to the U.S. Environmental Protection Agency (hereinafter called EPA), in the above penal sum for the payment of which we bind ourselves, our heirs, executors, administrators, successors, and assigns jointly and severally; provided that, where the Surety(ies) are corporations acting as co-sureties, we, the Sureties, bind ourselves in such sum "jointly and severally" only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety, but if no limit of liability is indicated, the limit of liability shall be the full amount of the penal sum.

Whereas said Principal is required, under the Resource conservation and Recovery Act as amended (RCRA), to have a permit in order to own or operate each hazardous waste management facility identified above, and

Whereas said Principal shall establish a standby trust fund as is required when a surety bond is used to provide such financial assurance;

Now, Therefore, the conditions of this obligation are such that if the Principal shall faithfully perform closure, whenever required to do so, of each facility for which this bond guarantees closure, in accordance with the closure plan and other requirements of the permit as such plan and permit may be amended, pursuant to all applicable laws, statutes, rules, and regulations, as such laws, statutes, rules, and regulations may be amended,

And, if the Principal shall faithfully perform post-closure care of each facility for which this bond guarantees post-closure care, in accordance with the post-closure plan and other requirements of the permit, as such plan and permit may be amended, pursuant to all applicable laws, statutes, rules, and regulations, as such laws, statures, rules, and regulations may be amended,

Or, if the Principal shall provide alternate financial assurance as specified in subpart H of 40 CFR part 264, and obtain the EPA Regional Administrator's written approval of such assurance, within 90 days after the date notice of cancellation is received by both the Principal and the EPA Regional

Administrator(s) from the Surety(ies), then this obligation shall be null and void, otherwise it is to remain in full force and effect.

The Surety(ies) shall become liable on this bond obligation only when the Principal has failed to fulfill the conditions described above.

Upon notification by an EPA Regional Administrator that the Principal has been found in violation of the closure requirements of 40 CFR part 264, for a facility for which this bond guarantees performance of closure, the Surety(ies) shall either perform closure in accordance with the closure plan and other permit requirements or place the closure amount guaranteed for the facility into the standby trust fund as directed by the EPA Regional Administrator.

Upon notification by an EPA Regional Administrator that the Principal has been found in violation of the post-closure requirements of 40 CFR part 264 for a facility for which this bond guarantees performance of post-closure care, the Surety(ies) shall either perform post-closure care in accordance with the post-closure plan and other permit requirements or place the post-closure amount guaranteed for the facility into the standby trust fund as directed by the EPA Regional Administrator.

Upon notification by an EPA Regional Administrator that the Principal has failed to provide alternate financial assurance as specified in subpart H of 40 CFR part 264, and obtain written approval of such assurance from the EPA Regional Administrator(s) during the 90 days following receipt by both the Principal and the EPA Regional Administrator(s) of a notice of cancellation of the bond, the Surety(ies) shall place funds in the amount guaranteed for the facility(ies) into the standby trust fund as directed by the EPA Regional Administrator.

The surety(ies) hereby waive(s) notification of amendments to closure plans, permits, applicable laws, statutes, rules, and regulations and agrees that no such amendment shall in any way alleviate its (their) obligation on this bond.

The liability of the Surety(ies) shall not be discharged by any payment or succession of payments hereunder, unless and until such payment or payments shall amount in the aggregate to the penal sum of the bond, but in no event shall the obligation of the Surety(ies) hereunder exceed the amount of said penal sum.

The Surety(ies) may cancel the bond by sending notice of cancellation by certified mail to the owner or operator and to the EPA Regional Administrator(s) for the Region(s) in which the facility(ies) is (are) located, provided, however, that cancellation shall not occur during the 120 days beginning on the date of receipt of the notice of cancellation by both the Principal and the EPA Regional Administrator(s), as evidenced by the return receipts.

The principal may terminate this bond by sending written notice to the Surety(ies), provided, however, that no such notice shall become effective until the Surety(ies) receive(s) written authorization for termination of the bond by the Epa Regional Administrator(s) of the EPA Region(s) in which the bonded facility(ies) is (are) located.

[The following paragraph is an optional rider that may be included but is not required.]

Principal and Surety(ies) hereby agree to adjust the penal sum of the bond yearly so that it guarantees a new closure and/or post-closure amount, provided that the penal sum does not increase by more than 20 percent in any one year, and no decrease in the penal sum takes place without the written permission of the EPA Regional Administrator(s).

In Witness Whereof, The Principal and Surety(ies) have executed this Performance Bond and have affixed their seals on the date set forth above.

The persons whose signatures appear below hereby certify that they are authorized to execute this surety bond on behalf of the Principal and Surety(ies) and that the wording of this surety bond is identical to the wording specified in 40 CFR 264.151(c) as such regulation was constituted on the date this bond was executed.

Principal
[Signature(s)]
[Name(s)]
]Title(s)]
[Corporate seal]
Corporate Surety(ies)
[Name and address]
State of incorporation:
Liability limit: $
[Signature(s)]
Name(s) and title(s)]
[Corporate seal]

[For every co-surety, provide signature(s), corporate seal, and other information in the same manner as for Surety above.]

Bond premium: $

(d) A letter of credit, as specified in §264.143(d) or §264.145(d) or §265.143(e) or §265.145(e) of this chapter, must be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

Irrevocable Standby Letter of Credit

Regional Administrator(s) Region(s)
U.S. Environmental Protection Agency

Dear Sir or Madam: We hereby establish our Irrevocable Standby Letter of Credit No. in your favor, at the request and for the account of [owner's or operator's name and address] up to the aggregate amount of [in words] U.S. dollars $, available upon presentation [insert, if more than one Regional Administrator is a beneficiary, "by any one of you"] of

(1) your sight draft, bearing reference to this letter of credit No. , and
(2) your signed statement reading as follows: "I certify that the amount of the draft is payable pursuant to regulations issued under authority of the Resource Conservation and Recovery Act of 1976 as amended."

This letter of credit is effective as of [date] and shall expire on [date at least 1 year later], but such expiration date shall be automatically extended for a period of [at least 1 year] on [date] and on each successive expiration date, unless, at least 120 days before the current expiration date, we notify both you and [owner's or operator's name] by certified mail that we have decided not to extend this letter of credit beyond the current expiration date. In the event you are so notified, any unused portion of the credit shall

be available upon presentation of your sight draft for 120 days after the date of receipt by both you and[owner's or operator's name], as shown on the signed return receipts.

Whenever this letter of credit is drawn on under and in compliance with the terms of this credit, we shall duly honor such draft upon presentation to us, and we shall deposit the amount of the draft directly into the standby trust fund of [owner's or operator's name] in accordance with your instructions.

We certify that the wording of this letter of credit is identical to the wording specified in 40 CFR 264.151(d) as such regulations were constituted on the date shown immediately below.

[Signature(s) and title(s) of official(s) of issuing institution] [Date]

This credit is subject to [insert "the most recent edition of the Uniform Customs and Practice for Documentary Credits, published and copyrighted by the International Chamber of Commerce," or "the Uniform Commercial code"].

(e) A certificate of insurance, as specified in §264.143(e) or §264.145(e) or §265.143(d) or §265.145(d) of this chapter, must be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

Certificate of Insurance for Closure or Post-Closure Care
Name and Address of Insurer (herein called the "Insurer"):
Name and Address of Insured (herein called the "Insured"):

Facilities Covered: [List for each facility: The EPA Identification Number, name, address, and the amount of insurance for closure and/or the amount for post-closure care (these amounts for all facilities covered must total the face amount shown below).] Face Amount: Policy Number: Effective Date:

The Insurer hereby certifies that it has issued to the Insured the policy of insurance identified above to provide financial assurance for [insert "closure" or "closure and post-closure care" or "post-closure care"] for the facilities identified above. The Insurer further warrants that such policy conforms in all respects with the requirements of 40 CFR 264.143(e), 264.145(e), 265.143(d), and 265.145(d), as applicable and as such regulations were constituted on the date shown immediately below. It is agreed that any provision of the policy inconsistent with such regulations is hereby amended to eliminate such inconsistency.

Whenever requested by the EPA Regional Administrator(s) of the U.S. Environmental Protection Agency, the Insurer agrees to furnish to the EPA Regional Administrator(s) a duplicate original of the policy listed above, including all endorsements thereon.

I hereby certify that the wording of this certificate is identical to the wording specified in 40 CFR 264.151(e) as such regulations were constituted on the date shown immediately below.

[Authorized signature for Insurer]
[Name of person signing]
[Title of person signing] Signature of witness or notary:
[Date]

APPENDIX A
Sampling and Analysis Plan for Closure of MWF

APPENDIX A

SAMPLING AND ANALYSIS PLAN FOR CLOSURE OF THE MIXED WASTE FACILITY

MIXED WASTE FACILITY
RCRA/TSCA PERMIT APPLICATION

PFNW-R
~~ATG INC.~~
RICHLAND, WASHINGTON

8/21/14
PMR 135
The only changes in this document (except Figs) are replacing "ATG" with "PFNW-R" BN

PF-NW

APPENDIX A
ATTACHMENT 17

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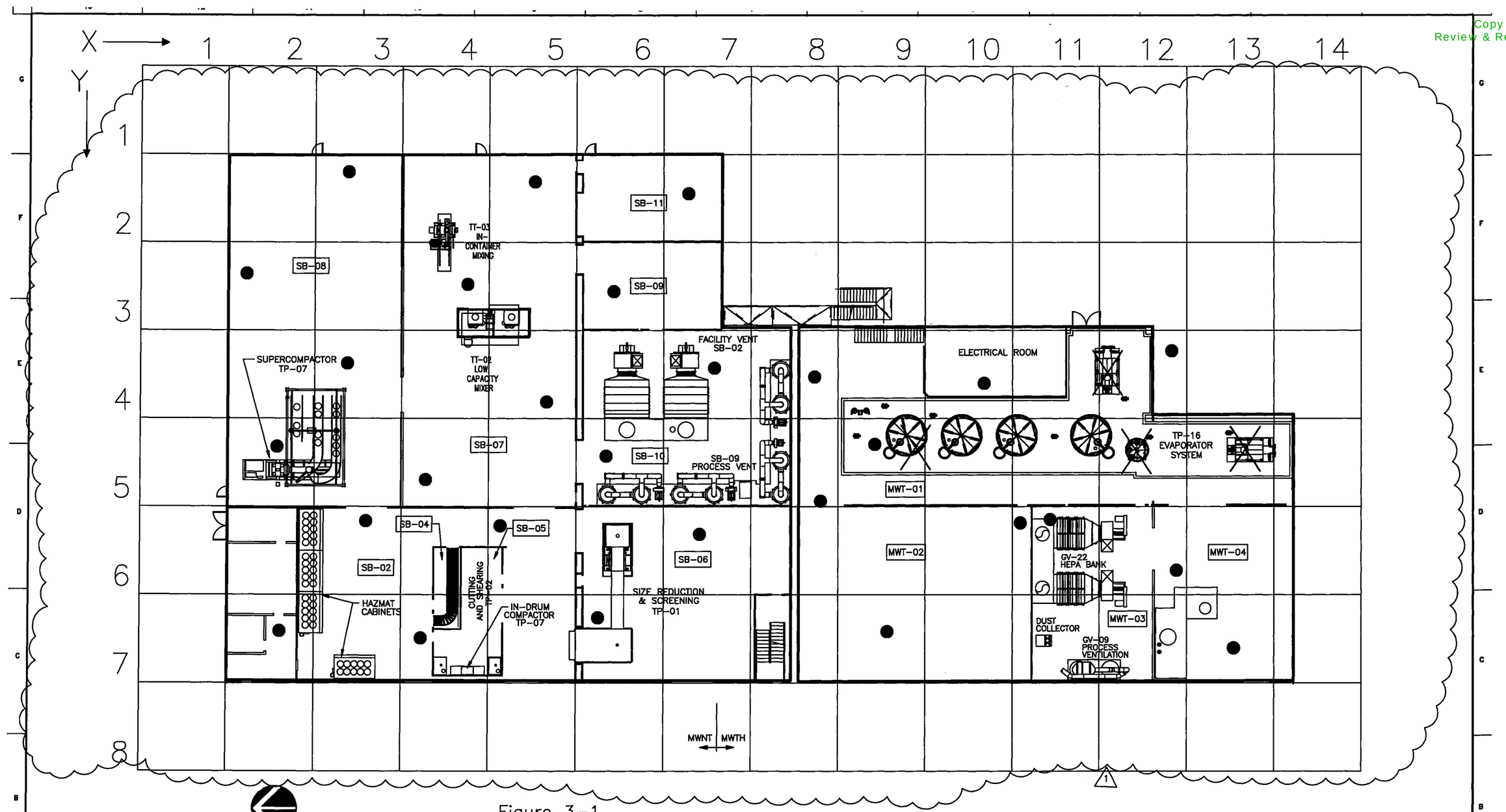

Figure 3-1
Decontamination Verification Sampling Locations

● = 1 Floor, 1 Ceiling, and 1 Wall Sample

X = Equipment Sample

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DRAWN	S. NORTON
CHECKED	
DFTG APVD	
ENGR	
APVD	
OTHER	
QA	
APPROVED FOR IMPLEMENTATION	

MIXED WASTE FACILITY
BUILDING 13
GENERAL LAYOUT

SCALE: NONE
DRWG NO: ATT. HH APP. A
REV: 1

PERMIT FIGURE NUMBER: NONE

REVISIONS

REV NO	DESCRIPTION	SDN
1	PERMIT MODIFICATION REQUEST 135	8/14

REFERENCE DRAWINGS
NEXT HIGHER ASSEMBLY:
CADCODE 2004
CADFILE

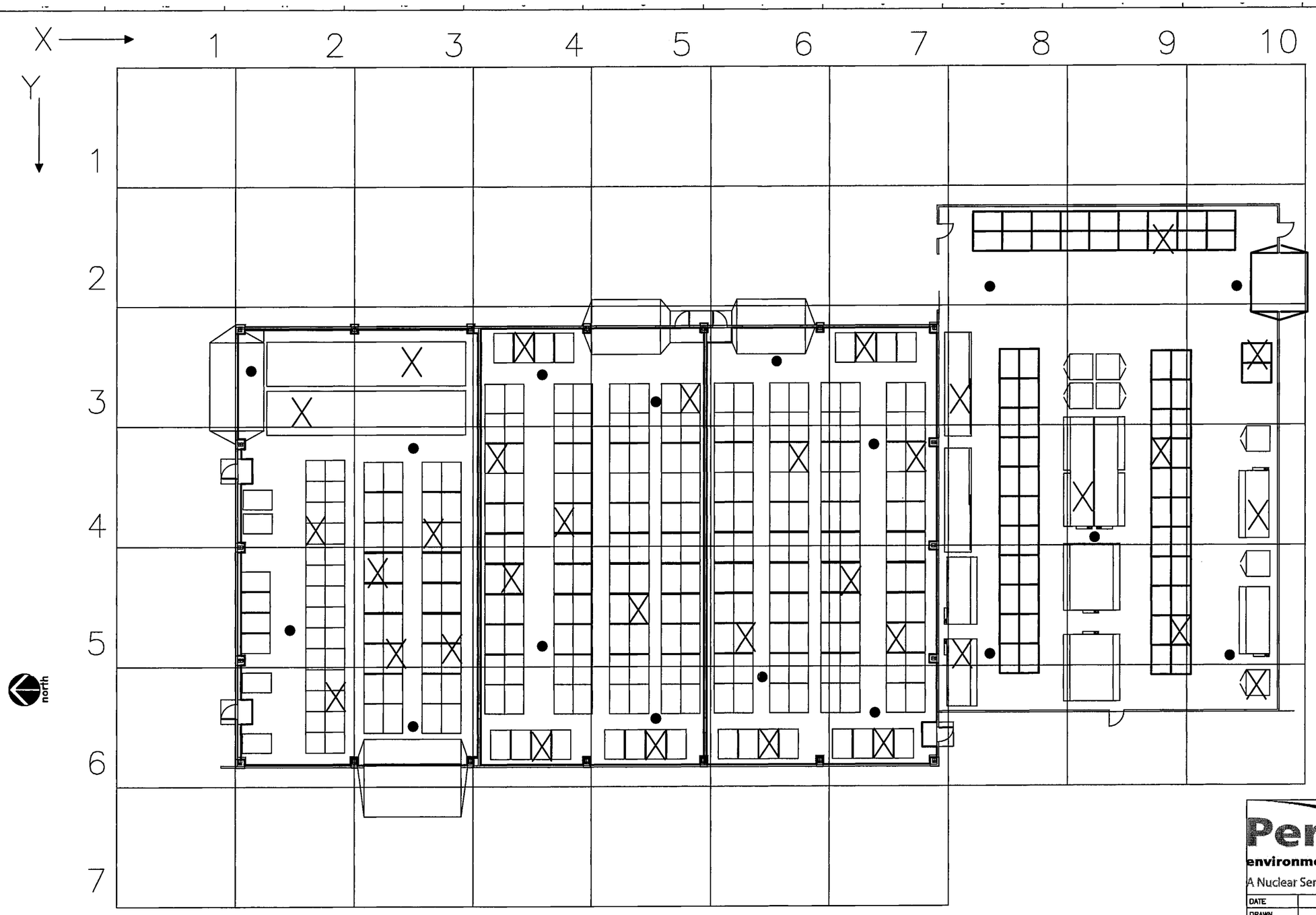

Figure 3–1 Decontamination Verification Sampling Locations

● =1 Floor, 1 Ceiling, 1 Wall Sample X = Equipment Sample

REV	DATE	BY	QA DATE	DESCRIPTION
1	08/25/14	SDN		PERMIT MODIFICATION REQUEST 135

REVISION

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DATE	
DRAWN	
CHECKED	
DFTG APVD	
ENGR	
APVD	
OTHER	
QA	
APPVD FOR IMPLEMENTATION BY	
FOR DATE	

MIXED WASTE FACILITY
BUILDING 13

GENERAL LAYOUT
OF
WASTE STORAGE BUILDING

SCALE: NONE | SHEET NO. 2

DWG. NO. ATT. HH APP A FIGURE 3–1 | REV 1

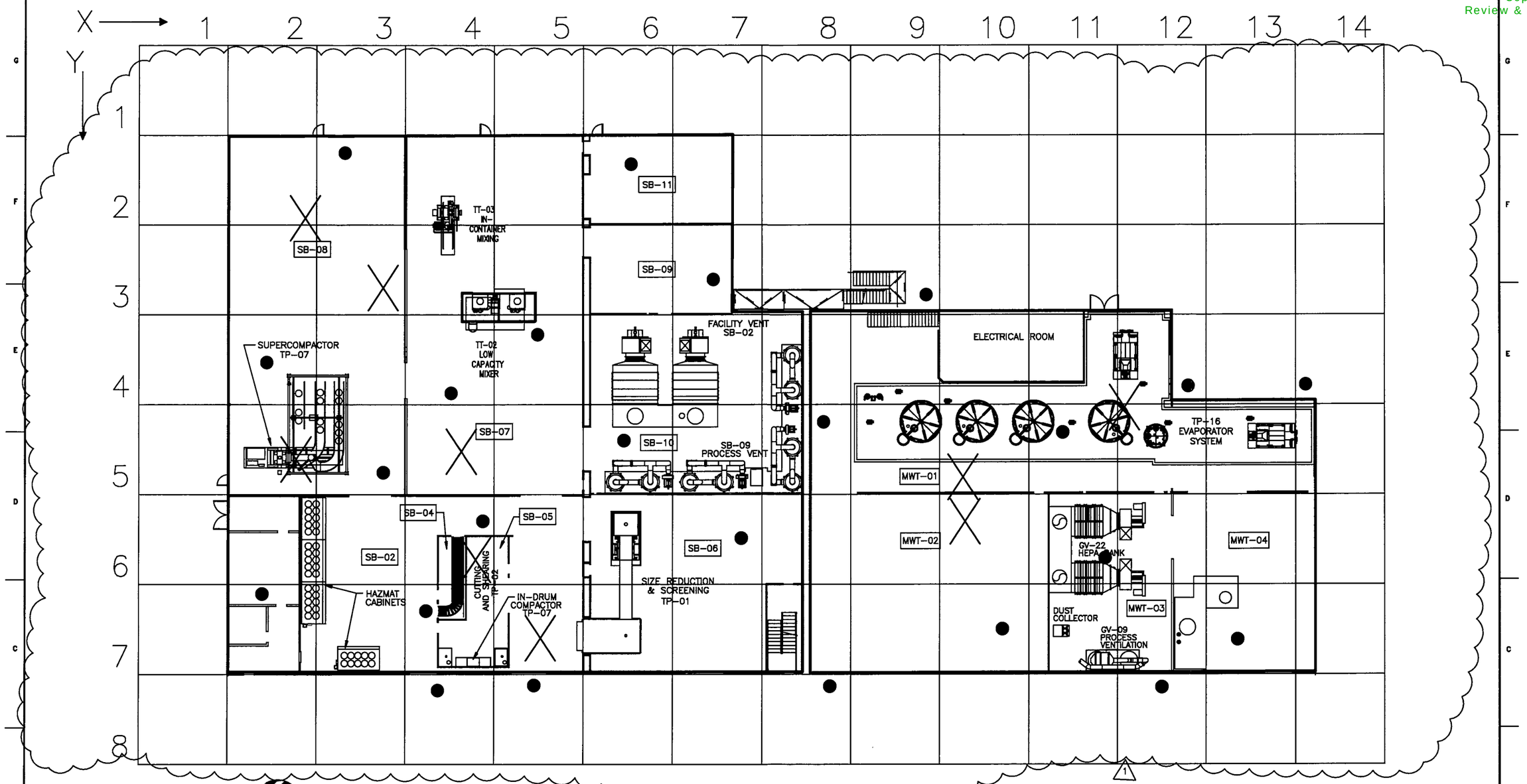

Figure 3-2
Sub-Soil Verification Sampling Locations

● = Unbiased Samples

X = Biased Samples

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DRAWN S. NORTON	DATE 4/5/11	MIXED WASTE FACILITY BUILDING 13	
CHECKED			
DPTG APVD			
ENGR		GENERAL LAYOUT	
APVD			
OTHER			
QA		SCALE NONE	SHEET NO 1
APPROVED FOR IMPLEMENTATION BY / FOR / DATE		DRG NO ATT. HH APP. A	REV 1

RR	MF	QA BY / DATE	ENGR BY / DATE	CHK BY / DATE	REV BY / DATE	REVISIONS DESCRIPTION	REV NO
					SDN 4/11	PERMIT MODIFICATION REQUEST 135	1

CADCODE 2004 CADFILE

DRAWING NO	DRAWING TITLE
REFERENCE DRAWINGS	
NEXT HIGHER ASSEMBLY:	

PERMIT FIGURE NUMBER: FIGURE 3-2

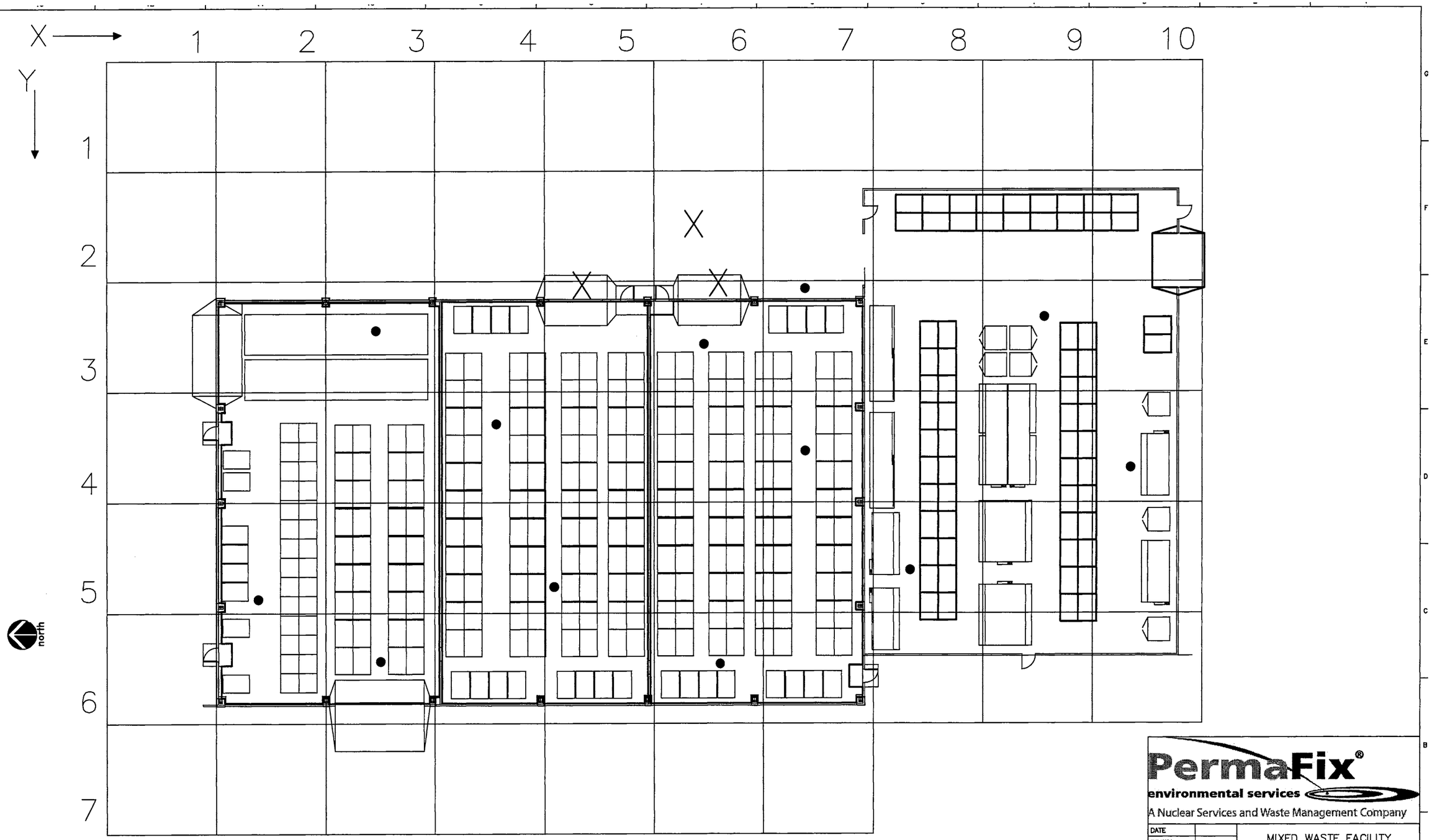

Figure 3–2 Sub–Soil Verification Sampling Locations

● =Unbiased Samples X = Biased Samples

REV	DATE	BY	QA	DESCRIPTION
1	08/25/14	SDN		PERMIT MODIFICATION REQUEST 135

REVISION

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DATE	
DRAWN	
CHECKED	
DFTG APVD	
ENGR	
APVD	
OTHER	
QA	
APPVD FOR IMPLEMENTATION BY:	
FOR	DATE

MIXED WASTE FACILITY
BUILDING 13

GENERAL LAYOUT
OF
WASTE STORAGE BUILDING

SCALE: NONE SHEET NO. 2

DWG. NO. ATT. HH APP A FIGURE 3–2 REV 1

APPENDIX B
Closure Cost Calculations for Two Evaporators (part of TP-16)

Evaporator Closure:

They will be closed by evaporating city water through each evaporator three times which will be equivalent to three rinses.

Amount of water needed for three rinses = 819 gallons x 3

=2,457 gallons

Evaporation Rate = 260 gallons/hour

Time for three rinses = 2,457 gallons / (260 gal/hour)

=9.5 hours

Operator Cost = $30/hour x 9.5 hours

=$285

Natural Gas Cost =2.95 Million Btu/hr x 9.5 hours x $4.37/Million Btu

=$122.50

Water Cost =2,457 gallons x $0.001/gal

=$2.5

Post-triple rinse water sampling =$1,036

Total cost per evaporator =$285 + $122.5 + $2.50 + $1,036

=$1,446

Total closure cost for both evaporators =$1,446 x 2

=$2,892

APPENDIX C

Closure Cost Calculations for 5 evaporator tanks (using CostPro software)

Comments: Closure cost for evaporator system storage tanks. It does not include cost to close the two evaporators.

Activity	Units	Closure Cost
Tank Systems	1	$59,215.55
		$59,215.55
Additional Costs		$0.00
Total Estimated Cost		**$59,215.55**

Tank Systems Inventory (TS_01-1)

UNIT DESCRIPTION AND MAXIMUM PERMITTED CAPACITY

Type of tank system	Aboveground	
Height or length of tank	0.0	ft
Diameter of tank	0.0	ft
Maximum permitted capacity of the tank	45,070.0	gal
Total length of ancillary piping	150.0	ft
Nominal diameter of ancillary piping	2.0	in
Maximum capacity of ancillary piping	24.5	gal
Maximum capacity of tank and ancillary piping	45,094.5	gal

SURFACE AREA OF TANK SYSTEM

Surface area of tank (interior and exterior)	0.0	ft2

VOLUME OF TANK SYSTEM TO BE REMOVED

Volume of Tank System to be Removed	6,028.3	ft3
Volume of Tank System to be Removed in yd3	223.3	yd3

SURFACE AREA OF SECONDARY CONTAINMENT SYSTEM PAD

Length	52.5	ft
Width	52.5	ft
Surface Area of Secondary Containment System Pad	2,756.2	ft2
Surface Area of Secondary Containment System Pad in yd2	306.2	yd2

VOLUME OF SECONDARY CONTAINMENT SYSTEM PAD

Thickness	0.0	ft
Volume of Secondary Containment Pad	0.0	yd3

SURFACE AREA OF SECONDARY CONTAINMENT SYSTEM BERM

Total Length	342.0	ft
Height	0.8	ft
Surface Area of Secondary Containment System Berm	273.6	ft2
Surface Area of Secondary Containment System Berm in yd2	30.4	yd2

VOLUME OF SECONDARY CONTAINMENT SYSTEM BERM

Thickness	0.0	ft
Volume of Secondary Containment System Berm	0.0	yd3

SURFACE AREA OF OTHER STRUCTURES IN SECONDARY CONTAINMENT SYSTEM

Facility: PFNW-R **Unit:** Unit1 07/24/2014

Surface Area of Other Structures	0.0	ft2
Surface Area of Other Structures in yd2	0.0	yd2

VOLUME OF OTHER STRUCTURES IN SECONDARY CONTAINMENT SYSTEM

Volume of Other Structures	0.0	yd3

VOLUME OF CONTAMINATED SOIL TO BE REMOVED

Length	0.0	ft
Width	0.0	ft
Depth	0.0	ft
Volume of Contaminated Soil to be Removed	0.0	ft3
Volume of Contaminated Soil to be Removed in yd3	0.0	yd3

Notes: Max. permitted tank capacity = 10950 gals x 4 + 1270 gal x 1 = 45070 gals.
Ancilliary piping length and diameter are estimated.
Approximate containment area berm length= 129 +21.75+64+19.75+25+26.42+40+16 = 342 feet

Tank Systems Summary (TS_02-1)

Removal of Waste (TS-03)	$2,358.72	
Tank System Purging (ignitable waste only) (TS-04)	$0.00	
Flushing the Tank and Piping (TS-05)	$4,734.91	
Excavation, Disassembly, and Loading (TS-06)	$0.00	
Demolition and Removal of Containment System (TS-07)	$0.00	
Removal of Soil (TS-08)	$0.00	
Backfill and Grading (BF-01)	$0.00	
Decontamination (DC-01)	$8,013.54	
Sampling and Analysis (SA-02)	$6,320.50	
Monitoring Well Installation (MW-01)	$0.00	
Transportation (TR-01)	$11,844.00	
Treatment and Disposal (TD-01)	$20,560.65	
User Defined Cost (UD-01)	$0.00	
Subtotal of Closure Costs	$53,832.32	
Percentage of Engineering Expenses	10.0	%
Engineering Expenses	$5,383.23	
Certification of Closure (TS-09)	$0.00	
Subtotal	$59,215.55	
Percentage of Contingency Allowance	0.0	%
Contingency Allowance	$0.00	
Landfill Closure (Cover Installation) (CI-02)	$0.00	
TOTAL COST OF CLOSURE	$59,215.55	

Facility: PFNW-R **Unit:** Unit1 07/24/2014

Tank Systems Removal of Waste (TS_03-1)

Maximum volume of waste to be removed from the tank and ancillary piping	45,094.5	gal
Choose the appropriate level of PPE	Protection Level D	
Labor and equipment cost per work hour	$174.72	per Work Hour
Work rate required to remove waste from tank and ancillary piping	0.0003	Work hr per gal
Number of hours required to remove waste from tank and ancillary piping	13.5	Work hrs
TOTAL COST OF REMOVAL OF WASTE FROM TANK AND ANCILLARY PIPING	$2,358.72	

Facility: PFNW-R **Unit:** Unit1 07/24/2014

Flushing the Tank and Piping (TS_05-1)

Maximum capacity of the tank and ancillary piping	45,094.5	gal
Number of times tank and ancillary piping are flushed	1	
Total volume of flushing solution	45,094.5	gal
Choose the appropriate level of PPE	Protection Level D	
Labor and equipment cost per work hour	$174.72	per Work Hour
Work rate required to flush tank and ancillary piping	0.0006	Work hr per gal
Number of hours required to flush tank and ancillary piping	27.1	Work hrs
Subtotal of labor and equipment cost to flush tank and ancillary piping	$4,734.91	
Flushing solution is contained in:	Bulk	
Number of drums required to contain flushing solution	0	Drums
Cost of one drum	$83.26	
Cost of drums needed to contain flushing solution	$0.00	
TOTAL COST TO FLUSH TANK AND ANCILLARY PIPING	$4,734.91	

Facility: PFNW-R **Unit:** Unit1 07/24/2014

Decontamination Summary (DC_01-1)

Decontamination of Unit by Steam Cleaning or Pressure Washing (DC-02)	$8,013.54
Decontamination of Unit by Sandblasting (DC-03)	$0.00
Decontamination of Heavy Equipment (DC-04)	$0.00
TOTAL COST OF DECONTAMINATION	$8,013.54

Facility: PFNW-R **Unit:** Unit1 07/24/2014

Decontamination by Steam Cleaning or Pressure Wash (DC_02-1)

Area of unit to be decontaminated	3,029.8	ft2
Choose the appropriate level of PPE	Protection Level D	
Labor and equipment cost per hour	$65.31	per Work Hour
Work rate to steam clean or pressure wash one ft2	0.0405	Work hr per ft2
Number of hours required to steam clean or pressure wash the unit	122.7	Work hrs
Subtotal of labor and equipment costs to decontaminate unit by steam cleaning or pressure washing	$8,013.54	
Ratio of decontamination fluid to area	1.0	gals per ft2
Volume of decontamination fluid generated	3,029.8	gal
Decontamination fluid container type:	Bulk	
Number of drums required to contain decontamination fluid for removal	0	Drums
Cost of one drum	$83.26	per Drum
Cost of drums needed to contain decontamination fluid	$0.00	
TOTAL COST OF DECONTAMINATION OF UNIT BY STEAM CLEANING OR PRESSURE WASHING	$8,013.54	

Facility: PFNW-R **Unit:** Unit1 07/24/2014

Sampling and Analysis Inventory (SA_01-1)

Number of Drilling and Subsurface Soil Samples (2.5-inch boring)	0	Samples
Number of Drilling and Subsurface Soil Samples (4-inch boring)	0	Samples
Number of Concrete Core Samples	0	Samples
Number of Wipe Sample Locations	0	Sample Location
Number of Surface Water and Liquid Sample Locations	5	Sample Location
Number of Soil, Sludge, and Sediment Soil Samples	0	Sample Location
Number of Groundwater Sample Locations	0	Sample Location
Number of Lysimeters to be Sampled	0	Lysimeters

Notes: One final rinsate sample will be collected from each of the five tanks after they are cleaned.

Facility: PFNW-R **Unit:** Unit1 07/24/2014

Sampling and Analysis Summary (SA_02-1)

Drilling and Subsurface Soil Sample - 2.5-Inch-Diameter-Holes (SA-03)	$0.00
Drilling and Subsurface Soil Sample - 4-Inch-Diameter-Holes (SA-04)	$0.00
Concrete Core Sample (SA-05)	$0.00
Wipe Sample (SA-06)	$0.00
Surface Water and Liquid Sample (SA-07)	$6,320.50
Soil, Sludge, and Sediment Sample (SA-08)	$0.00
Groundwater Sample (SA-09)	$0.00
Soil-Pore Liquid Sample (SA-10)	$0.00
Analysis of Subsurface Soil Sample (SA-11)	$0.00
TOTAL SAMPLING AND ANALYSIS COST	$6,320.50

Facility: PFNW-R **Unit:** Unit1 07/24/2014

Surface Water and Liquid Samples (SA_07-1)

COLLECTION OF SURFACE WATER AND LIQUID SAMPLES

Number of sampling locations	5	Sample Location
Choose the appropriate level of PPE	Protection Level D	
Labor and equipment cost per work hour	$91.24	per Work Hour
Work rate required to collect samples from one sampling location	0.5000	Work hrs per Sample
Number of hours required to collect all samples	2.5	Work hrs
Cost of Collection per Sampling Event	$228.10	per Event

ANALYSIS OF SURFACE WATER AND LIQUID SAMPLES

Cost of Analysis per Sampling Event	$1,036.00	per Event

SAMPLING EVENTS

Number of sampling events	5	Events
TOTAL COST OF SAMPLING AND ANALYSIS OF SURFACE WATER AND LIQUID SAMPLES	$6,320.50	

Notes: One final rinste sample will be collected from each of the four storage tanks and one sludge storage tank.

Facility: PFNW-R **Unit:** Unit1 07/24/2014

Surface Water and Liquid Samples (SA_07)
Cost of Analysis per Sampling Event

Method		Standard	Qty	Quick	Qty	Total
Base neutral & acid extractable organics (SW 3510/SW 8270)	Liquid	$359.21	1	$718.42	0	$359.21
Metals, furnace, per each (SW 7000s)	Both	$41.20	8	$82.40	0	$329.60
Pesticides/PCBs (SW 3550/SW 8080)	Solid	$158.36	1	$316.72	0	$158.36
Volatile organic analysis (SW 5030/SW 8240)	Both	$188.83	1	$377.66	0	$188.83

Facility: PFNW-R **Unit:** Unit1 07/24/2014

Treatment and Disposal Summary (TD_01-1)

Treatment and Disposal of Wastes (TD-02)	$0.00
Treatment and Disposal of Decontamination Fluids (TD-03)	$20,560.65
Total Cost of Treatment and Disposal	$20,560.65

Facility: PFNW-R **Unit:** Unit1 07/24/2014

Treatment and Disposal of Decon Fluid (TD_03-1)

Volume of decontamination fluid generated from closure activities		
Volume of decontamination fluid from Primary Unit	45,094.5	gal
Volume of decontamination fluid generated by steam cleaning or pressure washing (DC-02)	3,029.8	gal
Volume of decontamination fluid from heavy equipment (DC-04)	0.0	gal
Total Volume of Decontamination Fluid	48,124.3	gal
Choose the appropriate level of PPE		
Labor and equipment cost per hour	$77.41	per Work Hour
Work rate to pump decontamination fluid to a holding tank	0.0001	Work hr per gal
Number of hours required to pump decontamination fluid to a holding tank	4.81243	Work hrs
Subtotal of labor and equipment costs to pump decontamination fluid to a holding tank	$372.53	
Number of days required to rent a holding tank	1	Days
Holding tank rental fee (10,000 gal tank per day)	$187.68	per Day
Number of tanks required	5	Tanks
Subtotal of tank rental costs	$938.40	
Cost for treatment and disposal	$0.40	per Gallon
Treatment and disposal costs for bulk liquid	$19,249.72	
TOTAL COST TO TREATMENT AND DISPOSE OF DECONTAMINATION FLUID AS A BULK LIQUID	$20,560.65	

Facility: PFNW-R **Unit:** Unit1 07/24/2014

Transportation of Waste (TR_01-1)

TRANSPORTATION OF WASTE IN DRUMS

Number of drums of waste	0	Drums
Number of truckloads needed to transport waste in drums	0	Truckloads
Type of waste	Hazardous	
Number of miles	300.0	Mi
Cost per mile	$5.64	per Mile
Cost to transport one truckload of 55-gallon drums	$1,692.00	per Truckload
Cost to transport Waste in Drums	$0.00	

TRANSPORTATION OF BULK LIQUID

Gallons of liquid waste	48,124.0	gal
Number of truckloads needed to transport bulk free liquid waste	7	Truckloads
Type of waste	Hazardous	
Number of miles	300.0	Mi
Cost per mile	$5.64	per Mile
Cost to transport one truckload of bulk liquids	$1,692.00	per Truckload
Cost to Transport Bulk Liquid Wastes	$11,844.00	

TRANSPORATION OF BULK WASTE

Number of waste debris boxes	0	Containers
Number of truckloads needed to transport bulk waste	0	Truckloads
Type of waste	Hazardous	
Number of miles	300.0	Mi
Cost per mile	$5.64	per Mile
Cost to transport one truckload of bulk waste	$1,692.00	per Truckload
Cost to Transport Bulk Waste	$0.00	
TOTAL COST OF TRANSPORTATION OF WASTE	$11,844.00	

Notes: HW inventory will be shipped back to generators at their expense. The tranportation cost calculated here is for the decontamination water from the secondary containment and for the tank cleaning solutions.

System Cleaning Methods		
System	Vacuuming	Rinsing/Flushing
TP-01	X	
TP-02	X	
TP-03	X	
TP-04		X
TP-06		X
TP-07	X	
TP-08	X	
TP-09		X
TT-01		X
TT-02		X
TT-03		X
TT-04		X
TT-05		X
TT-06		X
GASVIT™TP-16		X

Waste Reporting and Management:
Treatment equipment identified for removal from service will be managed as follows:

- Designated as contaminated debris and applicable waste codes assigned based on process knowledge
- Logged into the waste inventory as Pacific EcoSolutionsPFNW-R-generated waste in accordance with the applicable section of PFNW-RPacific EcoSolutions MWF Material Tracking Procedure (MWOP 403)
- Scheduled for processing through the MWF

This procedure establishes the requirements and methods used for reporting and managing contaminated equipment generated during mixed waste operations. Contaminated equipment (i.e., hand tools, pumps, tanks, conveyors) will be managed as mixed waste or mixed-TSCA waste debris once it is removed from service.

Contaminated equipment, which only processed dangerous waste, and which meets the clean debris surface performance standard listed in 40 CFR 268.45 will be managed as radioactively contaminated debris and not mixed debris.

Contaminated equipment, which processed mixed-TSCA regulated PCBs, and which has been decontaminated to meet the decontamination standards listed in 40 CFR 761.79 will be managed as radioactively contaminated debris and not as mixed-TSCA debris.

Hand Tools

Hand Tool cleaning:
Hand tools will be cleaned after each use whenever there ~~is~~ are visible signs of contamination ~~with a~~of mixed waste or mixed-TSCA waste.

Waste Reporting and Management
Once a hand tool is determined to not be functional or repairable, it will be identified as debris and managed as follows:

- Accumulated in a container at a designated satellite accumulation area until the container is full (e.g., volume limits for the container are met)
- Logged into the waste inventory as ~~Pacific EcoSolutions~~MWF-generated waste in accordance with the applicable sections of ~~Pacific EcoSolutions~~PFNW-R ~~Mixed Waste Facility (~~MWF~~)~~ Material Tracking Procedure (MWOP 403)
- Scheduled for processing through the MWF.

Equipment

Treatment System Cleaning:
Each treatment system will be cleaned at the end of each processing campaign as detailed in the applicable sections of Attachment PP, Process Engineering Description for Stabilization Building, and Attachment QQ, Process Engineering Description for ~~GASVIT™~~MWTH Building.

The table below identifies the system cleaning methods listed in Attachments ~~VV~~ PP and QQ for the treatment systems.

Comment [BN4]: The was a typo.

Reporting and Managing of Contaminated Equipment

Mixed Waste Facility

PFNW-R~~Pacific EcoSolutions~~

Richland, Washington

ATTACHMENT 14
APPENDIX B

Combustible Gas Analyzer Brochure (typical)

MIXED WASTE FACILITY
RCRA/TSCA PERMIT APPLICATION

~~Pacific EcoSolutions~~PFNW-R
RICHLAND, WASHINGTON

Gas:_____Date:_____SN_____

PERMIT WILL NOT BE ISSUED IF:

- OXYGEN LEVEL TEST RESULT EXCEEDS 2%.
- COMBUSTIBLE GAS DETECTOR TEST RESULT EXCEEDS 2%.
- RETEST REQUIRED IF CREW GOES OFF SITE FOR MORE THAN 30 MINUTES OR CREW CHANGES.

CHECKLIST APPROVAL SIGNATURES

Project supervisor:_____

Personnel performing work:_____

Fire Watch:_____

Completion date:_____ Manager/Supervisor Initials:_____

CHECKLIST

ALL APPLICABLE ITEMS MUST BE ANSWERED "YES" TO ISSUE PERMIT

Confined Space Entry Permit No.:_____ Attached

Line Breaking Permit No.:_____ Attached
(The above are to be obtained from the Plant Engineering Supervisor)

1) Equipment and lines purged with Nitrogen (or) Carbon Dioxide and other inerting or cleaning material as appropriate to minimize the hazard. _____

2) Combustibles in vicinity removed/covered. _____

3) Area wet down to minimize hazard. _____

4) Additional protective equipment required. Leathers, hood, perimeter or entry suite, other _____ _____

5) Fire watch assigned, present and advised of duties. _____
Assigned to: _____
Assigned by: _____

1) Fire hose (1.5" - 600 minimum) or extinguishers (4A-40BC minimum) available and connected for fire watch use. _____

2) Combustible Gas Detector test result inside and outside vessel/space is less than 2% of the LEL. _____

3) Vessel/space inerted with (N_2 or CO_2); oxygen sensor readout is less than 2% by volume.

Combustible Gas Tester Signature: _____
Combustible gas detector/oxygen deficiency instrument calibration gas, date and instrument serial number:

APPENDIX A

HOT WORK PERMIT

PERMIT GOOD ONLY FOR DATE OF ISSUE

Permit No.:_____

Start Date:_____Time:_____ End Date:_____

Issued to:_____ Issued by:_____

Location of work:_____

_____

_____

Work to be done:_____

_____

_____

Special Precautions for this job:_____

_____

_____

Dept.:_____ Vessel/Space Involved:_____

Approval to Perform Hot Work.

Approved by:_____
(Facility Manager)

The attached checklist is to be completed and attached.

ATTACHMENT 14
APPENDIX A

HOT WORK PERMIT

MIXED WASTE FACILITY
RCRA/TSCA PERMIT APPLICATION

~~*Pacific EcoSolutions*~~*PFNW-R*
RICHLAND, WASHINGTON

5. ADDENDUM / SAFE WORK PROGRAM ELEMENTS REQUEST TO DEVIATE

Date_____ Number_____ of _____ Permit

Check the Affected Program Element (PE)

_____ Confined Space and Vessel Entry _____ Hot Work Vessels/Space

_____ Line, Sea. and Flange Breaking _____ Lockout, Tag and Try

_____ PE Name _____

NOTE: The above exposure prevention program elements will be followed unless a deviation from a specified program element is submitted by the appropriate Operations or Project Manager and signed into use either for a limited time or an indefinite period by the Plant Manager, Laboratory Manager, Technical Manager, and the Safety Supervisor.

Line executives may delegate sign off authority one step down their chain of management at their discretion. The Regulatory Compliance Manager will sign in the absence of the Safety Supervisor.

To apply for a deviation place and "X" on the line in front of the program element from which you wish to deviate and then describe your deviation in detail on the back of this form. Your description must spell out how you propose to maintain the same high level of employee safety and health afforded by the original program element.

THIS DEVIATION MUST BE POSTED WITH ANY SAFE WORK PERMIT AT THE JOB SITE WHERE BOTH ARE READILY VISIBLE.

Approved by:_____(MWF Manager)

Position:_____

- Remote sensor at the end of a 20 foot line to monitor for accumulation of combustible gas and oxygen rise or deficiency at the interior apex of slant roofs, above processes or in the depths of vessels.
- Recorder output.
- Oxygen sensor exchange and replacement guarantee.

4.2. Procedures for Care and Maintenance

4.2.1 The limit used to decide whether to approve Hot Work on the surface or interior of vessels/spaces or not in any ~~Pacific EcoSolutions~~PFNW-R operation is less than 2% of the LEL **unless a request to deviate from procedure is approved** by Plant Engineering Supervisor in the form for that purpose. The absolute limit which voids an existing job from continuing is the first alarm, i.e., 5% of the LEL and 4% oxygen by volume.

4.2.2 **The combustible gas/oxygen deficiency detector will not be recharged after each use. The battery will run until it completely discharges first.** If batteries will not recharge, first check the condition of your battery charger cord and male plug. It's a lot less expensive to replace than a battery.

The Nickel Cadmium battery used in these detectors will "memorize" the time between charges and shorten the battery life. If you recharge after two (2) hours use, it will begin to discharge completely after two (2) hours of use. **Batteries properly charged should provide** power for approximately 10 hours after being discharged entirely and then put on overnight charge.

4.2.3 Calibration is performed monthly if the instrument is used several times each week and quarterly if its use approximates once per week whether the instrument **appears** to be in calibration or not.

- **This calibration will be a function of the ~~Pacific EcoSolutions~~PFNW-R laboratory.** Facility and project management may elect to have calibration done by **the instrument distributor nearest to their location or site if they offer this service.**
- In either case, gas calibration checks will be recorded on a sticker (available for this purpose) on the instrument which shows the date of the last calibration, the initials of the person who performed the calibrating and the calibration gas used (H_2-N_2, Hexane, etc.).

4.2.4 The face of the oxygen sensors is cleaned with a soft, damp, clean cloth after each use, **but under no circumstances are the combustible gas sensors cleaned.**

3.2.3.2 The permit issuer will void the permit and correct the job preparation should it be found that any permit condition is not being met or a job practice may be unsafe.

3.2.3.3 All Hot Work Permits will only be issued for one day - one crew, however, they may be renewed for a crew change within a 24 hour period based on a new analysis of the interior/exterior vessel/space environment which verified the continued validity of the permit.

- The person performing the additional analysis shall add his/her clearly written, easily read signature and the current date to the posted permit's "signature of tester" blank beside or below the original tester's signature.

3.2.3.4 The card copy of all Hot Work Permits is posted at the job site.

3.2.3.5 The permit will show the following:

- All analysis results;
  All abnormal conditions that resulted in special protection (such as fire perimeter or entry suit use);
- All work stoppage;
- Any other steps taken to implement job progress to completion.

3.2.4. Post Hot Work Procedures

- The permit issuer shall see that any fire fighting, inerting or safety equipment is recharged, serviced, repaired and/or otherwise made ready for reuse on the next Hot Work job site.
- If SCBA or airline regulators or valves need to be serviced or repaired, the SCBA or airline will be tagged "DEFECTIVE - DO NOT USE" and sent to the closest reputable vendor or manufacturer's shop for repair.
- The permit issuer will inspect for job completion and make sure that all waste generated by the work is properly disposed. Only then will the work be accepted as completed.
- The permit issuer will collect the posted card copy of the Hot Work Permit and forward it to the safety supervisor.

4. PROCEDURES FOR OPERATING COMBUSTIBLE GAS DETECTOR AND OXYGEN DEFICIENCY MONITORS

4.1. Type

All combustible gas detector and oxygen monitors will meet or exceed the specifications of the Gastech 1214, or equivalent instrument, with high/low oxygen alarm switch option, 20 foot remote sensors with LEL sensor air dilution and readily available parts and supplies inventory, calibration and repair services.

~~A brochure for a suitable detector is shown in Appendix B.~~ This instrument has the following specifications:

Comment [BN3]: Redundant.

- Nickel Cadmium battery provides 10 hours of operation.
- May be used for spot, continuous and remote combustible gas monitoring.
- Visual and audio warning system that also has a connection to add an alarm amplifier horn.

3.2.1.7 For work performed in a vessel or confined space, the space will be continuously monitored for combustible gas and oxygen deficiency using a remote sensor attached to a combustible gas detector and oxygen deficiency detector outside with a fire watch employee. An audible alarm amplifier horn will be connected to the instrument if the fire watch is allowed to perform other work within 50 feet of the entry point.

3.2.1.8 No tank cutting job will be started unless the oxygen reading is below 2%.

3.2.1.9 If at anytime during the job the combustible gas detector indicates greater than 2% of the LEL, the Hot Work Permit is voided and work shall stop until less than 2% is attained.

3.2.1.10 If at anytime during the job the oxygen reading rises to 4%, the Hot Work Permit is voided and work shall stop until less than 2% by volume is again attained.

3.2.2 Job Preparation Prior to Use of Open Flame

3.2.2.1 Thoroughly remove content from the vessel/space.

- Pump or drain as much hazardous material out of the vessel/space as possible.
- Flush the vessel/space with steam or an appropriate cleaning solution as required to effectively remove chemical deposits.
- Follow with a final water flush ~~(~~or~~)~~ fill the vessel with water and drain.
- Purge the vessel with inert gas under pressure in order to render its remaining content absolutely non-flammable and to achieve less than 2% LEL and oxygen continuous instrument readings (nitrogen inert gas is recommended because carbon dioxide and other inert gases will poison the oxygen remote sensor).

3.2.2.2 Check the oxygen level around the outside of the vessel/space to be sure it is holding at 20.9%, i.e., unaffected by inert gas leaks.

- Care must be taken to make sure no inert gas or contaminant is expelled from the vessel/space into the environment upon which employees are depending for breathable air (use self-contained breathing apparatus (SCBA or airline as necessary).
- Vessels will not be hot worked where neighboring structures, materials, etc. create a confined area or impede air flow through the area.

3.2.3 Hot Work Permit Issuance and Handling

3.2.3.1 The MWF manager is responsible for all items on the Hot Work Permit (shown in Appendix A) being filled in, carried out, checked off as carried out, securing all personal protective equipment and clothing, securing any "Request For Deviation" from these procedures to maintain an equivalent level of safety, posting any approved deviation, and obtaining signatures and dates before the job is allowed to start, and ultimately issuing an approved permit.

- The authority to issue a permit may be delegated by the MWF manager to personnel with the appropriate training.
- The permit issuer will retain copies of the hot work permits dated back to at least one year, available for review.

3. HOT WORK PERMIT PROCEDURE

3.1 Introduction

To establish control over job hazards, a hot work permit is required for any work that requires an open flame or other sources of heat applied to the surface of vessels or other containers that have or may contain flammable vapors.

An example of a hot work permit is provided in Attachment A, and the hot work procedures are summarized below. The MWF manager who is trained to carry out all segments of this program will check the site before work starts. Procedures include: 1) initial combustible gas monitoring; 2) job preparation prior to use of open flame; 3) hot work permit issuance and handling, and 4) post work checks.

3.2 Procedures

3.2.1 Initial Combustible Gas Monitoring

3.2.1.1 The facility or project supervisor determines the type and level of combustible gas in the work site using a combustible gas detector and oxygen deficiency instrument with remote oxygen and Lower Explosive Limit (LEL) sensors. A brochure for the recommended analyzer is shown in Appendix B.

Comment [BN2]: Need to find.

- The oxygen deficiency alarms on this instrument may be switched off for use in nitrogen atmospheres and "on" for ambient air monitoring.
- The LEL sensor is outfitted with an air dilution fitting to enable accurate monitoring for pockets of combustible gas in a pressurized nitrogen environment.
- Alarms are set for 5% and 10% of the LEL.

3.2.1.2 The facility or project manager is responsible for ensuring that instruments have been calibrated as follows:

- The combustible gas detection and oxygen deficiency instruments will be calibrated to "0%" of the LEL by the Pacific EcoSolutionsPFNW-R laboratory.
- Calibration will be performed monthly if the instrument is used several times each week and quarterly if its use approximates once per week.
- A calibration sticker will be placed on instruments following calibration noting the type of calibration gas used, the calibration date and the calibration technician's initials.

3.2.1.3 No hot work job will be started if the combustible gas detector reading is over 2% of the LEL.

3.2.1.4 Instruments used for monitoring have two alarm levels. The first alarm will sound and be seen in response to combustible gas concentration equaling 5% of the LEL. The second alarm level will sound and be seen at 10% of the LEL.

3.2.1.5 All facility and project combustible gas detection/O_2 instruments are designed to monitor the work area approximately every five seconds (continuously) for combustible gas and simultaneously and continuously for oxygen deficiency (oxygen levels below 19.5%).

3.2.1.6 Each instrument has a separate 20 feet remote LEL and oxygen sensor. A list of the instruments will be added to this program element as facility and project managers secure and/or upgrade their combustible gas detector/ O_2 instruments and report the serial number to the safety supervisor.

- Vandalized buildings.
- Unusual or suspect package delivery.

1.5.3 For bomb threats, the Emergency Response procedure shall be initiated.

NOTE: If the PM deems action levels are exceeded, appropriate authorities will be contacted.

1.6 Records

1.6.1 All security investigations by the PM shall be documented and maintained on file.

1.6.2 The PM shall maintain a log for key issue.

2. TANK ENTRY PROCEDURES

2.1 Introduction

Tanks may be entered for inspection and repair. Prior to such entry the tank will be emptied and the confined space entry procedure described below are followed.

2.2 Procedures

2.2.1 Prior to Tank Entry

- All free liquids and sludges are pumped from the tank to another compatible tank.
- The tank is isolated by locking, blanking, or removing all directly connected fill, suction, purge treating, or other lines and piping to and from the tank. When this is not possible, double block valves with a bleed between the valves are used.
- All ignition sources are removed.
- Once the tanks has been isolated, it is cleaned and purged of all residues and air-ventilated.
- Following air ventilation, the air is tested for oxygen deficiency, combustibility, and toxicity to check for safe entry conditions.
- A continuous flow of fresh air ventilation will be pumped through the tank (bottom to top or top to bottom) at all times, and the air will be continuously monitored for oxygen deficiency and combustibility.
- Toxicity checks will be performed periodically.

2.2.2 During Tank Entry

- Employees are required to use appropriate personal protective equipment including a safety harness with lifeline.
- At all times while workers are inside the tank, an observer suitably equipped for entry and trained in emergency procedures (including first aid) is stationed outside the tank.
- All gas cylinders or welding machines are left outside the tank during report.

- Torches, hoses, cables and electrodes may be taken inside the tank.
- Electrical equipment used inside the tank is properly grounded and in safe condition.
- Double-insulated electrical tools are acceptable as properly grounded.

A. Keys shall be issued to all Lead Technicians, Supervisors, and Managers.

B. Each key issued shall be entered in the key log and signed for by the individual to whom it is issued.

C. The PM shall instruct the individual in his/her responsibility to report the loss of a facility key immediately.

D. The loss of a key shall be investigated by the PM. Corrective actions (i.e., key replacement or re-keying locks) shall be taken as deemed necessary.

1.4.3 Public Demonstration/Civil Disturbances

- Recent years have seen a variety of demonstrations for different purposes in many locations throughout the country. Some demonstrations develop slowly, allowing authorities to assess the problem, to conduct negotiations with the organizers, and to arrange for control measures. On other occasions, violence may flare up with little advance notice. Even these incidences are usually preceded by earlier indications of a buildup of tensions and pressures.

- In a situation which is developing slowly and deliberately, company representatives should operate out of their regular offices during the preliminary or negotiating phase and should routinely circulate information to personnel concerned.

- In a situation where there is a sudden eruption of violence accompanied perhaps by attempted arson and assaults, security personnel and local law enforcement will usually be involved initially and will serve as the source of information regarding the characteristics and extent of the disturbance.

A. The PM will conduct an analysis of the situation and inform Supervisors.

B. Personnel not at work shall remain out of the area. They shall go to the nearest phone and contact the facility.

C. The PM shall consider early release or direct employees to remain at home.

D. When the situation has ended, the PM will inform Supervisors. Supervisors will notify personnel and inform them of start date, time, and shift.

1.5 Action Levels

1.5.1 Supervisors and Managers report all missing keys to the PM.

1.5.2 If any of the items below are identified, they shall be reported to the PM immediately:

- Open gate, unattended;
- Broken locks or locks that have been tampered with;
- Vandalized or degraded perimeter fence; or

1. FACILITY SECURITY PROCEDURES

1.1 Introduction

The following instructions are for maintaining facility security.

Additionally, this procedure provides instructions for issuing keys and controlling access to the restricted area to ensure proper material control.

1.2 Equipment

Keys and locks for all restricted area gates.

1.3 Precautions

Gate keys are assigned to Lead Technicians, Supervisors, and Managers. If any of the keys are missing or unaccounted for, the Plant Manager (PM) will be notified.

1.4 Procedures

1.4.1 Facility Access

- The PM shall ensure the fence is maintained in good condition. All gates must be in good working order and locked at all times when unattended.
- Normal personnel access is through the access control building.
- The office buildings and manifest trailer should remain locked during non-working hours.

If a gate must be opened for vehicle access or movement of equipment or materials, the gate shall be attended until secured.

- The facility employs security services to provide one unarmed security guard on the premises when personnel are not scheduled for work. Security personnel shall be instructed to immediately notify the PM or Duty Supervisor any time a condition exists that threatens facility security.
- Any of the following conditions are considered threatening to facility security:

  A. Open gate, unattended;

  B. Broken locks or locks which have been tampered with;

  C. Vandalized or degraded perimeter fence; or

  D. Vandalized buildings.

1.4.2 The PM shall have the responsibility for issuing all keys to the facility.

ATTACHMENT 14

MWF Work procedures for hazardous operations

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Acronym List

PM ..... PLANT MANAGER
MWF ..... MIXED WASTE FACILITY
LEL ..... LOWER EXPLOSIVE LIMIT
MWF ..... MIXED WASTE FACILITY
SCUBA ..... SELF CONTAINED UNDERWATER BREATHING APPARATUS

ATTACHMENT 14
ATTACHMENT (II) PERMIT

MWF WORK PROCEDURES FOR HAZARDOUS OPERATIONS

MIXED WASTE FACILITY
RCRA/TSCA PERMIT APPLICATION

~~Pacific EcoSolutions~~PFNW-R
RICHLAND, WASHINGTON

Table F-6 Emergency Generator and Unintrruptible Power Supply Load Distribution

ARE	ITEM	APPR. KW@.	APPR @208
EMERGENCY GENERATOR POWER SUPPLY			
	Emergency Generator		
GAS#	Process Chamber	265	355
	Scrubber	60	88.4
	Confinement	19.72	28
	Process Vent	15.81	23.6
	Service/Instrument Air	148	192
	Heat Recovery Boiler	20	28.6
	Process Cooling Water	14.78	22
	Chilled Water	29.6	44
	Non System Loads	40	56
	SUBTOTAL	613	837
2STB			
	Line 100 (Cooling Water)	9.86	14
	Line 300 (Extruder Cooling Pump)	7.89	14
	Misc. (Blowers/Exhaust Units)	167.65	223
	Emergency Lighting	15	30
	TOTAL	200	281
	MWF TOTALS	813	1118
	For 75 % Diversity Factor	610	
UNINTRRUPTIBLE POWER SUPPLY			
STB	Alarm Panel	5	13.9
	Total STB	5	13.9
GVB			
	Entire GASVIT System Computerized control unit including PLC1 and PLC 2 (GV-03 through GV-06)	4.4	12.22
	Converter PLC (GV-07)	2.2	6.11
	Process Cooling Water PLC	2	5.56
	Instrument air compressor PLC	2.2	6.11
	Total GVB	10.8	30

Comment [BN1]: Deleted because it is also found in Table F-6 of Att. DD

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Table F-5 Systems Supported by the Emergency Generator & UPS

SYSTEM	BACK UP POWER FUNCTION
~~including PLC1 and PLC 2 (GV-03 through GV-06)~~Evaporator PLC	
~~Converter PLC (GV-07)~~	~~UPS maintains the integrity of the settings and logic in the control devices in the event of a power failure.~~
~~Process Cooling Water PLC~~	~~UPS maintains the integrity of the settings and logic in the control devices in the event of a power failure.~~
~~Instrument air compressor PLC~~	~~UPS maintains the integrity of the settings and logic in the control devices in the event of a power failure.~~

Table F-5 Systems Supported by the Emergency Generator & UPS

SYSTEM	BACK UP POWER FUNCTION
EMERGENCY GENERATOR	
STB	
HVAC to all systems except container rinse (TT-6) and liquid holding (TP-6)	To maintain dust/vapor collection
TT-1 Container Staging	
TT-2 Bulk Staging	
TP-1 Size Reduction	
TP-2 Cutting/Shearing	
TP-3 Sorting	
TP-4 Liquid Treatment	To maintain power to vapor collection hoods and mixer, and prevent heat buildup
TP-5 Filter	To maintain power to vapor collection hoods
TP-6 Liquid Holding	No anticipated hazard
TP-7 Compaction	
TP-8 Dryer	
TP-9 Liquid Consolidation	To maintain power to vapor collection hoods
TT-1 Bulk Mixing	To maintain power to the mixer and prevent waste solidification in tank
TT-2 Solids Mixing	To maintain power to the mixer and prevent waste solidification in tank
TT-3 In-Container Mixing	To maintain power to the mixer and prevent waste solidification in tank
TT-4 Polymer Mixing	To maintain power to cooling water pump and prevent overheating
TT-5 Physical Extraction	
TT-6 Container Rinse	No anticipated hazard
GVBMWTH	
Plasma ElectrodeTP-16 Evaporator System	Upon shutdown, electrodes will be lifted out of the molten bathMaintain process operation, PLC, and operator display panels
Blower	To maintain syngas treatment and prevent fugitive emissions.
Syngas Converter	Conversion of any gas generated in the process chamber
Scrubber	Maintain offgas flow and scrubbing to minimize emissions
Pumps	Maintain evaporation processcooling of the process chamber and offgas system components
Feed System	Close feed cut-off valves
Monitoring Devices	Monitor and control GASVIT system temperature and pressure parameters.
Instrument Air	Maintain operation of instruments and air operated devices.
UNINTERRUPTABLE POWER SUPPLY	
STB	
Alarm Panel	UPS maintains the integrity of the settings and logic in the control devices in the event of a power failure.
GVBMWTH	
Entire GASVIT System Computerized control unit	UPS maintains the integrity of the settings and logic in for the control devices (e.g. alarms) in the event of a power failure.

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Table F-4: ~~GasVit~~ MWTH~~Building (GVB) and Waste Storage Building (~~WSB~~)
Hazard Prevention Systems

Area/ Room No.	Area/ Room Name	Hazard Prevention System

		Process Unit Controls	Secondary Contain-ment	Enclosed Process Units	Process Venting -ΔP	Personnel Radiation Monitor	Hooded Work Station	Stack Monitor
~~GVB~~ MWTH	~~GasVit~~ MWTH building							X
1	~~GasVit system unit A~~Evaporator storage tanks	~~X~~	X		~~X~~			
2	~~GasVit system Unit B~~Evaporator sludge tank	~~X~~	X		~~X~~			
3	~~PCB Storage Area~~Two Evaporators		X					
~~4~~	~~HAZMAT enclosure~~							
~~5~~	~~Electrical~~	~~X~~						
~~6~~	~~GVB ventilation~~	~~X~~						
~~7~~	~~Control room~~					~~X~~		
~~8~~4	Utility room							
~~9~~	~~Equipment pad (west)~~							
~~10~~	~~Equipment pad (east)~~							
WSB	Waste storage building		X					
1	Raw waste storage		X					
2	Treated waste storage ~~(north)~~		X					
3	Treated waste storage ~~(south)~~		X					
4	~~Covered~~ Waste storage ~~racks~~		X					

Table F-3: Stabilization Building (STB) Hazard Prevention Systems

Area/ Room No.	Area/ Room Name	Hazard Prevention System

		Process Unit Controls	Secondary Containment	Enclosed Process Units	Process Venting -ΔP	Personnel Radiation Monitor-	Hooded Work Station	Stack Monitor-
Yard	Main yard		X					
STB	Stabilization building	X	X		X	X		X
1	Access corridor					X		
2	Containerized waste staging				X		X	
3	Bulk container staging				X			
4	Container inspection				X		X	
5	Cutting and shearing	X			X		X	
6	Size reduction and screening	X		X	X		X	
7	Sorting and stabilization	X		X	X		X	
8	Compaction and liquid handling	X	X	X	X		X	
9	Empty container rinsing		X	X	X			
10	STB ventilation			X				
11	Reagent storage		X					
12	Interconnection corridor							
13	STB control room					X		

- Design of equipment and piping will minimize any arrangement that requires employees to place extremities of the body in potential pinch point areas.
- The design will avoid personnel contact with, or exposure to, corrosive chemicals.

operation and waste type. A detailed description of PPE availability and its use may be found in ~~Section 6,~~ Attachment ~~15~~GG. A summary of key equipment and usage follows:

Foot Protection
Prior to the start of any operation that might expose employees to the risk of foot injury, a review of the operation will be performed to ensure that the appropriate foot protection is available and used.

Eye and Face Protection
Each work area will be evaluated to determine the need for eye and face protection, and signs reading "Eye Protection Required" will be posted at access points to appropriate areas, as necessary. Flexible-fitting goggles with hooded ventilation or a face shield with spectacles will be worn for chemical handling with potential for splashing, acid burns, fumes, or glass breakage. Eye and face protection will be provided for personnel when they are located in areas or assigned to tasks where a potential for eye and face injury exists.

The MWF design ~~will~~ includes eyewash stations and safety showers in all locations where hazardous liquid chemicals are used or liquid wastes are managed and there is potential for contact.

Respiratory Protection
Under normal operations, fugitive emissions to the building are expected to be insignificant. Exposures to toxic particulates, fumes, mists, gases, and vapors will be controlled by accepted engineering and/or administrative controls wherever possible. Respiratory protection will be used only when effective engineering or administrative controls are not feasible.

All respirators will be approved by the National Institute for Occupational Safety and Health (NIOSH) and the Mine Safety and Health Administration. The type of respirator used will be based on a thorough evaluation of the job and associated hazards. The proper respirator to be used for each respiratory hazard will be specified in the MWF work procedures.

Protective Apparel
Employees will be required to wear protective clothing that covers their legs, trunks, and shoulders when performing physical work at the MWF, unless job hazards dictate more stringent protective measures. Material safety data sheets and procedures will outline protective apparel requirements.

Head Protection
Employees working in locations where there is a potential for falling or flying objects will be required to wear adequate head protection. Hard hats can be worn to satisfy this requirement. The MWF personnel will evaluate work areas for potential hazards, clearly designate head protection areas, and strictly enforce the use of protection in designated areas.

Additional Personnel Protection
To further minimize exposure to dangerous waste and hazardous chemicals, equipment design will follow guidelines such as the following:

- All loads will be securely fastened for transport, inspection, and storage.

~~continue for approximately 3 minutes. The system will continue to process the syngas produced as follows: 1) the syngas fan powdered by an emergency power system will move the residual syngas through the cleaning process; 2) the flow of syngas will ensure that the first-stage filter will perform its basic function; 3) the quench tank will revert to its back-up water supply to quench the gas, 4) the scrubber tank will have sufficient reserve capacity to supply the water and sorbent needed to scrub the residual syngas; 5) the converter heat exchange media will have sufficient thermal energy to convert the residual syngas into carbon dioxide and water; and 6) the building ventilation fan, powered by an emergency power unit, will perform the normal HEPA/charcoal filtration and discharge of the converter effluent.~~

~~F-4d(2)(e) Protection Against Pressure Surges~~

~~The system will also ensure safe shutdown in the event of a rapid or instantaneous pressure surge. Such a pressure surge could be caused by an inadvertent introduction of a high-energy feedstock or air inleakage into the process chamber or a premature oxidation of syngas in the low-temperature sections of the syngas cleaning components, such as the scrubber.~~

~~A pressure surge in the process chamber will be released through the emergency seal relief seal pot. The process chamber and waste feed units will be purged with nitrogen. Oxygen monitors located in the process chamber will signal a shutdown of the system if oxygen is detected.~~

~~A pressure surge in the scrubber or other units in the syngas train could occur as a result of air intrusion combined with the presence of an ignition source such as a spark- a double event scenario which is highly unlikely. To prevent such an event, both air in-leakage prevention and spark arrest features will be included in the design. As an additional safety measure, rupture dises will be installed at the scrubber and quench tanks. In the event of an air/syngas reaction, the pressure surge will cause the rupture disk to open, releasing pressure to a separate duct connected to the inlet of the converter. Any relieved gas will be oxidized in the converter and filtered by the HEPA/charcoal filters before it is released. The pressure surge will also activate the safe shutdown, as discussed above. Before restarting the system after any such shutdown, the rupture dise will be replaced.~~

~~F-4d(2)(d) Protection Against Syngas Leakage~~

~~The GASVIT™ process will operate at a negative pressure with respect to the room pressure. As an additional safety measure, sensors will be located outside the process lines to detect and alert the operators of any syngas leakage.~~

~~During the demonstration test and subsequent operations, the GASVIT™ system will be periodically monitored for leaks as described in Section 4.4.2.1.1 of the Inspection Plan include in Attachment 19.~~

F-4e Personal Protective Equipment

Personal protective equipment (PPE) is used by all personnel working at the MWF. The level of protection is selected to be commensurate with the work being performed. The minimum level is level E (safety glasses, hard hat, etc.). Occasionally additional personal protective equipment will be required for employees working with hazardous chemicals or dangerous waste, and in activities that might result in unnecessary injury or illness because of exposure. The process data sheets will identify the PPE for the specific operation. Under normal operations minimal PPE requirements are expected throughout the MWF. The requirements may be upgraded depending on the

2. To minimize random failure of equipment only commercially available and proven equipment will be used. Equipment operational data will be used to predict expected reliability of equipment. New equipment will be tested to establish confidence in operational life and maintainability. Based on equipment information, replacements will be made available before equipment reaches its expected design life.
3. The design and layout of the process systems will enhance physical access for operation and maintenance. Redundant equipment and systems will be provided for crucial systems which run continuously during process operations, and spare parts will be maintained for essential production and safety equipment.

F-4d(2)~~GASVIT™~~MWTH Building

Evaporators:
Each evaporator is equipped with Key KOYO DL06 Micro PLC in conjunction with the C-more Micro operaor panel controls which display all of the functions on the evaporator and its accessories. By reading the display on the panel, an operator can quickly see if the evaporator is operating properly and can schedule maintenance procedures easily based on displayed information. Each evaporator has set points established for proper operation. These set points include:

- Low air pressure
- High air pressure
- High water temperature
- Blower shut-off

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Each evaporator screen will display operation alarm (alarms while the evaporator is operating) and diagnostic alarms (hardware-related alarms). Each evaporator will be maintained per the manufacturer's instructions.
~~The GASVIT thermal unit will include features to ensure that the process will safely shut down if a critical utility or key component were to fail or a subsystem were to malfunction. Utility failure may include interruption of electricity, service water, process/instrument air, steam or nitrogen. Failure of a key component could include refractory failure or glass drain valve failure. Potential subsystem malfunction may be related to one or more utility and component failures and may include fire in the screw feed hopper, loss of process cooling water, loss of chilled water, loss of exhaust quench, loss of RO water treatment, natural gas leak and loss of electrode heating. A description of safety features to prevent hazards resulting from incidents described above is presented in the following sections.~~

~~F-4d(2)(a) Automatic Safe Shutdown~~

~~The GASVIT™ will have an automatic waste feed cut-off (AWFCO). A computerized control system connected to a series of sensors will automatically shut the system down in the event of a process condition discrepancy or key component failure.~~

~~F-4d(2)(b) Post Shut-Down Syngas Handling~~

~~Once a safe shutdown is initiated, feedstock will cease entering the chamber and power to the plasma arc will be cut off. The chamber's refractory walls and the molten bath will contain sufficient thermal energy to gasify up to approximately 9 kilograms (20 pounds) of the waste remaining in the chamber. Process calculations show that after the shutdown, gasification will~~

F-4b Prevention of Run-Off

Structures and equipment to prevent run-off and flooding at the MWF ~~will be~~are included in the facility design in accordance with the safety requirements of WAC 173-303. To prevent run-off and subsequent releases, dangerous waste and hazardous chemical handling areas ~~will~~ include design features such as secondary containment structures to contain spills, leaks, ~~wash water,~~ and precipitation.

The liquid waste handling areas in the STB include a system of bermed areas, drains, and sumps to provide for containment of leaks, spills, and overflows of dangerous waste. The ~~GASVIT~~ MWTH building has a coated concrete floor with a 6 to 12-inch high perimeter curbing to provide a secondary containment system in accordance with RCRA standards. The floor is constructed with expansion joints to prevent cracking and is coated with a chemical-resistant coating designed to prevent break through of the most reactive chemical stored for a minimum of three hours. Spills will be contained within the secondary containment floor and directed by the sloped surface toward a dry sump ~~with a leak sensor and an alarm~~. In case of a spill, the plant operators will immediately implement corrective measures to stop the leaks and contain and cleanup the spilled substance.

Details of secondary containment design, construction and volume calculations are provided in Sections D-1 and D-2 and Attachment 7 (Construction Drawings).

F-4c Prevention of Contamination of Water Supplies

The MWF ~~will be~~is designed and operated to safely contain wastes and prevent the contamination of water supplies. The MWF ~~will be~~is inspected regularly for the present of leaks or other abnormal conditions with potential to affect water supplies. The structures and equipment included in the facility design to prevent contamination of water supplies ~~will be~~is the same as the structures and equipment used to prevent run-off from dangerous waste handling areas (see Sections D-1 and D-2).

F-4d Equipment Failure and Power Outage

~~A 750 KVA~~ There are three diesel generators that provides emergency backup power for critical components associated with both the STB and the ~~GVB~~ MWTH in the event of power outage. Systems supported by the emergency generators for maintenance of safe operating conditions, including treatment of dangerous in-process waste and vent gases, are shown in Table F-5. Emergency power requirements, summarized in Table F-6 (Att. DD), show that the generators ~~is~~are sized to meet the expected load in an emergency situation that results in a power outage.

In the event of equipment failure or power outage, the general safety features and additional safety features associated with the ~~GasVit~~ MWTH building are presented below.

F-4d(1) General Safety Features

1. To minimize random failure of equipment, preventive maintenance and surveillance will be performed. The batch nature of the MWF systems, coupled with in-process surge storage capabilities, will minimize process downtime and allow for preventive maintenance.

emergency situations, an area will be designated. Personnel will be issued with respirators that will be stored in an area convenient to the work station.

F-3a(4) Water for Fire Control

The primary water supply for fire protection ~~will be~~is supplied from the City of Richland water systems. Water ~~will be~~is supplied to the MWF fire hydrant through an underground pipeline that ~~will~~ ties into existing water mains. All underground installations will be in accordance with National Fire Protection Association, Code 24 (NFPA 1989).

For fires requiring high water volume and pressure, additional water for fire control at the MWF ~~will be~~is supplied by the Richland Fire Department. Each fire station normally has a truck equipped with a hydraulically operated aerial ladder, and one pumper (a backup fire engine without a boom, in case the aerial ladder is inoperable). Fire engines have a pumping capacity of at least 1,500 gallons of water per minute. Fire engines are also equipped with other fire protection equipment which use chemicals rather than water as an extinguishing media.

F-3b Aisle Space Requirement
340(3)

Aisle spacing ~~will be~~is based on WAC 173-303-630(5)(c), National Fire Protection Association, Code 101 (NFPA ~~1989~~2012), or other appropriate national building standards.

Daily inspections will ensure that all areas, including aisle ways, are maintained in a manner that allows for unobstructed movement of personnel and equipment (e.g., fire protection equipment, spill control equipment, decontamination equipment) that may be required to respond to any emergency event. At times operation and maintenance activities may cause obstructions, but daily inspections will ensure that unnecessary obstructions are removed in a timely manner. Details of inspections that will demonstrate adequate aisle space are included in Section 4.2.2.2 of Attachment 19.

F-4 PREVENTIVE PROCEDURES, STRUCTURES, AND EQUIPMENT
896(4)(a)(viii)

Hazard prevention systems in the STB, ~~GVB~~ MWTH and WSB are summarized in tables F-3 and F-4. In the following section, procedures, structures and equipment used to prevent key potential hazards are described.

F-4a Unloading Operations

The following methods ~~will be~~are implemented to minimize the potential for puncturing or opening containers during waste unloading, waste packaging, and loading:

- Containers ~~will be~~are inspected for damage before being loaded.
- Waste ~~will be~~is handled by appropriate equipment such as a forklift or crane during unloading. Off-site generator or onsite generating units will be required to provide rigging and instructions for unloading packages requiring special handling. Containers will not be stored in the unloading area.
- Floors in the receiving area(s) ~~will be~~are sloped towards blind sumps to collect any spills that might occur during unloading operations.

F-3 PREPAREDNESS AND PREVENTION REQUIREMENTS

806(4)(a)(vi), 340

This section documents the preparations and preventive measures to help avoid or mitigate the possibility of a fire, explosion, or any unplanned release of dangerous waste or dangerous waste constituents that could threaten human health or the environment.

F-3a Equipment Requirements

340(1) and (2)

The following sections describe the internal and external communications and emergency equipment to be used at the MWF. The locations of preparedness and prevention equipment are shown in Figures 3, 4, and ~~5~~6, Attachment ~~15~~ GG (Contingency Plan).

F-3a(1) Internal Communications

Alarm systems, two-way radios, cell phone, and telephone lines ~~will be~~are established at the MWF. All of these systems can be used to summon internal emergency assistance. Whenever dangerous waste is being handled, all personnel involved will have immediate access to the telephone and alarm systems that will allow notification of the Emergency Coordinator in the event of an emergency situation. There will always be at least two employees at the MWF. When operations involving hazardous wastes are conducted.

F-3a(2) External Communications

Fire and radiation alarms monitoring conditions at the MWF will summon direct response from the Richland Fire Department. The telephone system can be used to access emergency assistance by dialing the emergency number 911. In addition, a cellular phone will be available for external communications on an as needed basis.

F-3a(3) Emergency Equipment

A fire hydrant ~~will be~~is located in the main yard of the MWF. The MWF design includes portable fire extinguishers, spill control equipment, and decontamination equipment located throughout the facility. Several types of fire extinguishers are available in the MWF and are located in areas considered appropriate based on the waste being handled or the equipment in use. The list of emergency equipment is provided in Table ~~5~~ 7 of Attachment ~~15~~GG.

To minimize the combustible loading, the building design ~~will make~~ uses ~~of~~ components of fire resistant and noncombustible material wherever possible, particularly walls, partitions, columns, beams, floors, and roofs. Other building design components such as suspended ceilings, pipe and duct insulation, adhesives, and other such materials ~~will be~~ made of low or noncombustible substances. Any concealed spaces ~~will c~~ontains a minimum number of combustible materials. To minimize flame-spread potential, the building design ~~will~~ includes cable enclosures, non-flame propagating electrical insulation, and fire stops in the penetrations through walls, floors, and ceilings.

Emergency eye washes and safety showers ~~will be~~are distributed strategically throughout the MWF for emergency situations involving dangerous materials. For personnel decontamination in

ATTACHMENT II

PREPAREDNESS AND PREVENTION REQUIREMENTS

Table of Contents

Section	Description	Rev. No.	Issue Date
(1)	Preparedness & Prevention Requirements Section F-3 of the Permit Application	2	2/14/98
(2)	Preventive Procedures, Structures and Tables F-3, F-4, & F-5 ~~& F-6~~ of the Permit Application	2	7/09/98
(3)	MWF Work Procedures for Hazardous Operations, Attachment 14 of the Permit Application	2	2/14/98
(4)	Reporting and Managing of Contaminated Equipment	0	9/03/99

ATTACHMENT II (PERMIT)

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PREPAREDNESS & PREVENTION PLAN

MIXED WASTE FACILITY RCRA/TSCA PERMIT & APPLICATION

PFNW-R WAR000010355