E.2. Batch Waste Treatment Unit and Container Storage Area

The Batch Waste Treatment Unit is located in Building 1 at Technical Area 50 (Figure E.2.1). The system consists of a totally enclosed, vented, 500-gallon pressure vessel equipped with a filtering system, condenser, and vacuum transfer lines. Total system washdown between batches allows for the treatment of incompatible wastes in the unit. Wastes treated in the Batch Waste Treatment Unit include cyanide, chromate plating solutions, and solutions of acids, bases and heavy metals. The batch treatment equipment is mounted on a crack-free concrete floor that is curbed to contain the contents of the process equipment should a leak occur.

A waste transfer and packaging area is also housed in the room in which the Batch Waste Treatment Unit is located. This area consists of a small space that is covered with a ventilation hood. Small quantities of waste are repacked within this area, when necessary.

E.2.1. Estimate of Maximum Waste in Storage

The maximum inventory of hazardous wastes in storage or treatment at the Batch Waste Treatment Unit, including drum storage and pipe and vessel inventory, is estimated at 5 cubic meters (1,300 gallons).

E.2.2. Description of Waste Handled

Three waste streams compose the bulk of the waste treated in the Batch Waste Treatment Unit, although the system is flexible enough to allow treatment of other wastes that may be generated through new Laboratory projects. These streams are an acid/base waste that contains copper, chromate plating waste, and waste cyanide plating solutions. Treatment includes neutralization of acids and bases, decomposition of cyanides and precipitation of metals.

Upon completion of treatment, the resulting solution is filtered and the filtered liquid discharged to either the effluent tank/headworks at the industrial wastewater treatment plant or containers for disposal as hazardous waste. The effluent from the industrial wastewater treatment plant is discharged under a NPDES permit. Metal sludges recovered in the filters are taken to TA-54, Area L for storage, sampling, analysis and off site disposal at a permitted facility.

E.2.3. Closure Procedures and Decontamination

E.2.3.1. Partial Closure

No partial closure of this unit is expected to occur. Any decontamination necessary to perform maintenance, with no intention to remove the unit, is not considered partial closure.

E.2.3.2. Final Closure

Wastes in storage at the initiation of closure will be either shipped off site for disposal or treated using the standard operating procedure (SOP) for the waste, and no more waste will be received. Following the treatment of the last waste, the system will be washed down using the facility's washdown system, and the resulting liquid will be discharged to the industrial wastewater sewer in accordance with standard operating procedures. Following washdown, the system filter cartridges will be replaced with new cartridges. The used cartridges will be placed in drums and transferred to TA-54, Area L for storage and sampling, analysis and off site disposal at a permitted facility. The equipment will then be charged with a Liquinox(@) or Alconox(@) solution in water and circulated and flushed for two hours. Following circulation, the solution will be sampled and analyzed for hazardous constituents to verify decontamination, then pumped into drums and transported to TA-54, Area L for shipment off site. If analysis of the solution indicates contamination, a new filter will be installed and additional washings will be conducted until decontamination is verified. Following successful internal decontamination, the filter cartridges will be removed, placed in drums and transported to TA-54, Area L, for sampling, analysis and off site disposal at a permitted facility.

When internal decontamination is complete, the outside of the equipment will be scrubbed and rinsed with a warm solution of Liquinox(@) or Alconox(@) in water. The cleaning solutions will accumulate in the curbed area and will be pumped into drums with a small manually operated drum pump. Samples of this solution will be taken from the drum to verify decontamination. Washdown will be repeated until decontamination is verified. The contained liquid will be transported to TA-54, Area L for sampling, analysis and shipment off site for treatment and/or disposal.

Upon successful external decontamination, the equipment will be disassembled and internally inspected. Any residual matter found will be scraped or brushed off the area where the residue occurred, then washed and rinsed. Dry residues will be placed in approved DOT containers for transport to TA-54, Area L for sampling, analysis and off site disposal at a permitted facility. Liquids from washing and rinsing will be placed in drums and transported to TA-54, Area L for sampling, analysis and off site disposal. Cleaned equipment will be removed from the building and handled as a nonregulated waste.

Following removal of the batch treatment equipment, the floor within the curbed area and the waste handling hood will be washed and rinsed with a warm Liquinox(@) or Alconox(@) solution in water. The wash water will be picked up and put in drums using a drum pump, rags and/or mops, wringing the excess water into a drum. This water will be sampled to demonstrate decontamination. Regulated wastes or residues will be shipped off site for treatment or disposal.

Personnel involved in disassembly and handling of equipment will wear protective equipment, including: acid resistant coveralls, head protection, neoprene-coated gloves, and boots. Wrists and ankles are to be taped to protect against upward and inward splash. As a minimum protection, face shields will be worn. Full face respirators will be used if specified by the Laboratory's Industrial Hygiene Group, ~~HSE-5~~ HS-5, following a field inspection.

Spills occurring during equipment disassembly will be contained in the curbed area and will be picked up with mops. No decontamination of container handling

equipment is anticipated during closure because the wastes are inside containers and no contact is expected between wastes and handling equipment. If a container is breached, the handling equipment involved will be decontaminated by washing as above. If the spill occurs outside the curbed area, the spilled materials will be absorbed and cleaned as above. The spill area will be included in the final decontamination verification washdown. All spill residues will be handled in accordance with applicable hazardous waste regulations.

Protective clothing, coveralls, face shields, and boots worn during the wash down will be rinsed in clean water while the items are within the curbed area. The rinse water will be handled with the dirty water from the external wash down. Following internal and external decontamination, the equipment will be considered free from regulated wastes. Protective clothing will be worn by personnel disassembling the equipment. The protective clothing and tools used during disassembling will be washed with detergent and water. The wash water will be collected and analyzed. If the wash water is nonhazardous, the water will be discharged to the industrial waste water sewer. If the wash water contains hazardous constituents, it will be treated on site or transported off site to a permitted disposal facility. Mops and rags used for cleanup will be placed in drums for transport to TA-54, Area L, for sampling, analysis and off site disposal at a permitted facility.

E.2.4. Decontamination Verification

Before the first wash down two samples will be taken of the clean Liquinox(@) or Alconox(@) solution in water and analyzed for the constituents listed in Table E.2.2.

One additional clean solution sample will be taken for each additional washdown event. These analytical results provide background data for decontamination verification.

Dirty washdown solutions will also be analyzed for the constituents listed in Table E.2.2. Analytical procedures will conform to methods found in SW-846. Equipment will be considered to be contaminated if the used wash solutions show a significant increase in the listed constituents over the clean wash solution.

The constituents listed in Table E.2.2. include regulated constituents normally stored and treated in the plant, and additional metals that may have been inadvertently included in treated solutions. A scan for volatile and semivolatile organics ~~is~~ will be performed to ensure that solvents commonly used within the Laboratory have not contaminated the equipment.

Successful decontamination is defined as:

1. No detectable hazardous constituents in the final sample, or
2. Detectable hazardous constituents in the final sample are equal to or less than, at the 0.01 confidence level, their concentration in the unused washwater or background sample.

An alternative demonstration of decontamination may be proposed and justified at the time of closure as circumstances indicate. The Director will evaluate the proposed alternative in accordance with the standards and guidance then in effect and, if approved, incorporate by permit modification the alternative into the closure plan.

E.2.5. Closure Schedule

The year of closure for the TA-50-1 Batch Waste Treatment Unit is ~~2100~~ 1993. Closure will observe the schedule given in Table E.2.1. The contract for equipment disassembly is expected to exceed $100,000. Because Laboratory policy requires that the work be put out for bid, 90 days are required to solicit and process the bids. The selection of a contractor will be made before closure begins. Closure is estimated to take 210 days.

E.2.6. Closure Certification

An independent registered professional engineer and the Permittee shall witness the closure and ensure that the closure follows this plan. Upon completion of closure, the engineer and the DOE shall prepare a letter certifying that the facility has been closed in accordance with this plan. The letter shall be dated and signed by each party, stamped by the registered engineer, and the original copy submitted by the DOE to the ~~Director~~ Secretary of ~~NMEID~~ NMED. One copy shall be maintained at the DOE office and one copy maintained by the ~~HSE-8~~ EM-8 Regulatory Compliance Section.

E.2.7. Sampling and Analytical Procedure

The following section defines procedures and methods for sampling, analysis and documentation applicable to closure plans. While the procedures and method are specific, any applicable procedure or method given in SW-846 may be used if conditions or experience shows the alternate method to be more appropriate. All analytical procedures actually used will be annotated in the final closure report. Disposable samplers may be used.

Samples will be taken, placed in bottles, sealed, tagged, and immediately packed in vermiculite, sawdust, or, if refrigeration is required, an insulated container with ice. One sample for every ten samples will be either duplicated or split. The duplicated or split sample will be identified by a code so that its source is not available to the analytical laboratory, but analytical results can be compared to its twin.

Sample containers appropriate for the requested analyses will be used for all samples. Sampling will be conducted in accordance with procedures given in *Samplers and Sampling Procedures for Hazardous Waste Streams*, EPA 600/2-80-018 and/or SW-846.

E.2.7.1. Solid Residues Sampling

The sampling procedures outlined below are used to determine the amount of hazardous material in a container or to determine the leaching rate of the material. Adequate preparation ensures that proper sampling is accomplished. Residues left on the concrete surface will be sampled and analyzed. Drums of solid residues will be sampled with a core sampler or a Veihmeyer soil sampler. Drums not capable of being sampled will be assumed to be hazardous waste.

E.2.7.1.1. Cleaning of Sampler

It is important to clean the samplers after each site is sampled. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The samplers will be washed with a warm Liquinox(@) or Alconox(@) solution, rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. Prevention of cross contamination is of particular importance in these

samples.

E.2.7.1.2. Sampling Procedures

Trowel or Scoop

- Take small, equal portions of sample from the surface or near the surface of the material to be sampled.
- Combine the samples in a glass container.
- Cap the container, attach a label and seal, record in field log book, and complete the sample analysis request sheet and chain-of-custody record.

Veihmeyer Sampler

- Assemble the sampler by screwing in the tip and drive head on the sampling tube.
- Insert the tapered handle (drive guide) of the drive hammer through the drive head.
- Place the sampler in a perpendicular position on the material to be sampled.
- With the left hand holding the tube, drive the sampler into the ground/material to the desired sampling depth by pounding the drive head with the drive hammer. Do not drive the tube further than the tip of the hammer's drive guide.
- Record the length of the tube that penetrated the material.
- Move the drive hammer onto the drive head. In this position, the hammer serves as a handle for the sampler.
- Rotate the sampler at least two revolutions to shear off the sample at the bottom.
- Lower the sampler handle (hammer) until it just clears the two ear-like protrusions on the drive head and rotate about 90 degrees.
- Withdraw the sampler from the material by pulling the handle (hammer) upwards. When the sampler cannot be withdrawn by hand, as in deep soil sampling, use a pullerjack and grip.
- Dislodge the hammer from the sampler, turn the sampler tube upside down, tap the head gently against the hammer, and carefully recover the sample from the tube. The sample should slip out easily.
- Store the core sample in a 1,000 or 2,000 ml (1 qt or l/2 gal) sample container.
- Label the sample, affix the seals, record in the field log book, complete the sample analysis request sheet and chain-of-custody record, and deliver the samples to the laboratory for analysis.

E.2.7.2. Liquid Sampling

A Coliwasa sampler or similar device will be used to sample water solutions in order to determine background parameters before washing the area; it will also be used to sample the dirty wash water used in cleaning equipment. The recommended model of the Coliwasa is shown in Figure E.2.2, the main parts consisting of the sampling tube, the closure-locking mechanism, and the closure system. As an alternative to the Coliwasa, glass tubes may be used to sample liquids. The primary advantage in using a glass tube is that the tube will be disposed of as hazardous waste after each sample is collected, thus eliminating the potential for cross contamination.

E.2.7.2.1. Cleaning of Sampler

The sampler must be clean before use. An unused disposable sampler may be presumed clean if still in a factory sealed wrapper. Unsealed samplers will be cleaned prior to use. The used sampler must be washed with a warm detergent solution (Liquinox(@) or Alconox(@)), rinsed several times with tap water, rinsed with distilled water, drained of excess water, and air-dried or wiped dry. A necessary piece of equipment for cleaning the tube of the Coliwasa is a bottle brush that fits tightly inside the diameter of the tube. The brush is connected to a rod of sufficient length to reach the entire length of the sampler tube. Using the ramrod and fiber reinforced paper towels, the Coliwasa tube may be quickly cleaned. Improper cleaning of sample equipment will cause cross contamination of samples. Prevention of contamination is of particular importance in these samples. Clean samplers should be stored in polyethylene plastic tubes or bags in a clean an protected area.

E.2.7.2.2. Sampling Procedures

- Assemble the Coliwasa sampler.
- Make sure that the Coliwasa sampler is clean.
- Check to make sure the sampler is functioning properly. Adjust the locking mechanism, if necessary, to make sure the neoprene rubber stopper provides a tight closure.
- Wear necessary protective clothing and gear and observe required sampling precautions.
- Put the sampler in the open position by placing the stopper rod handle in the T-position and pushing the rod down until the handle sits against the sampler's locking block.
- Slowly lower the Coliwasa sampler into the liquid at a rate that permits the levels of the Liquid inside and outside the sampler tube to be about the same. If the level of the liquid in the sampler tube is lower than that outside the sampler, the sampling rate is too fast and will result in a nonrepresentative sample.
- When the sampler stopper hits the bottom of the liquid container, push the sampler tube downward against the stopper to close the sampler. Lock the sampler in the closed

position by turning the T-handle until it is upright and one end rests tightly on the locking block.

- Slowly withdraw the sampler from the container with one hand while wiping the sampler tube with a disposable cloth with the other hand.

- Carefully discharge the sample into a glass container by slowly opening the sampler. This is done by slowly pulling the lower end of the T-handle away from the locking block while the lower end of the sampler is positioned in the glass container.

- Cap the glass container, attach a label and seal, record in the field log book, and complete the sample analysis request sheet and chain-of-custody record.

- Unscrew the T-handle of the sampler and disengage the locking block. Clean the sampler on site or store the contaminated parts of the sampler in a plastic storage tube or bag for subsequent cleaning. Store used rags in plastic bags for subsequent disposal.

E.2.7.3. Sample Handling and Documentation

Soil and liquid samples will be analyzed either at LANL or at a commercial laboratory. In either case, each sample will be labeled, sealed, and accompanied by a chain-of-custody and a sample analysis request form.

The sample container must be sealed with a gummed paper seal attached to the container in such a way that the seal must be broken in order to open the container. The seal and sample tag must be completed with a waterproof pen. An example of a sample seal is shown in Figure E.2.3.

The sample label is necessary to prevent misidentification of samples and shall include, if applicable, the grid number referenced to positions staked on the site perimeter. The "field information" in the case of soil sampling, shall include observations such as the soil texture and surface appearance, ambient temperature and cloud cover at time of sampling, and precipitation conditions 24 hours before sampling. An example of a sample label is shown in Figure E.2.4.

The chain-of-custody form is necessary to trace sample possession from the time of collection and must accompany every sample. This record becomes especially important when the sample is to be introduced as evidence in litigation. This is a two-page record with the original accompanying shipment and the "copy" retained by the Laboratory. An example of this form is shown in Figure E.2.5.

A separate closure sampling field log book will be kept and will contain all information pertinent to field surveys and sampling. The log book shall have bound and consecutively numbered pages in 8-1/2 by 11-inch format. Minimum entries include:

a. Purpose of sample (routine sampling, special sampling),

b. Location of sampling (coordinates referenced to staked field points, if soil sample),

c. Name and address of person making log entry,

d. Type of process producing waste,

e. Number and volume of sample,

f. Description of each sampling location, sampling methodology, equipment used, etc.,

g. Date and time of sample collection,

h. Sample destination and transporter's name (name of laboratory, UPS, etc),

i. Map or photograph of the sampling site, if any,

j. Field observations (ambient temperature, sky conditions, past 24-hour precipitation, etc),

k. Field measurements, if any (pH, flammability, conductivity, explosivity, etc),

l. Collector's sample identification number(s), and

m. Signature of person responsible for the log entry.

Sampling situations vary widely. No general rule can be given as to the extent of information that must be entered in the log book. A good rule, however, is to record sufficient information so that someone can reconstruct the sampling situation without relying on the collector's memory.

The sample shipment and chain-of-custody record is accompanied by a sample analysis request sheet. The request sheet has two parts: field and laboratory. The field portion of this form must be ~~completely~~ completed by the person collecting the sample and include most of the pertinent information noted in the log book. The laboratory portion is intended to be completed by the laboratory personnel when the sample is received.

E.2.8. Quality Assurance/Quality Control

The Permittee shall designate a qualified individual or individuals to independently oversee the closure activities and report directly to senior management on the quality of the performance of this closure. This individual will personally observe a portion of the key activities, assure that sample blanks are used and analyzed and review the analysis reports for accuracy and adequacy. A written QA/QC plan in accordance with SW-846 guidance shall be prepared and followed, with variations from the plan documented and explained. The designated individual shall prepare a written statement for the final report commenting on the adequacy of the analysis showing decontamination.

E.2.9. Final Closure Report

Upon completion of the closure activities, the Permittee shall submit a Final Closure Report to the Director. The report shall document the final closure and contain, at a minimum, the following:

A. The certification described in paragraph E.2.6.

B. Any variance from the approved activities and the reason for the variance.

C. A tabular summary of all sampling results, showing:

1. Sample identification,

2. Sampling location,

3. The datum reported,

4. Detection limit for each datum,

5. A measure of analytical precision (e.g. uncertainty, range, variance),

6. Identification of analytical procedure, and

7. Identification of analytical laboratory.

D. A QA/QC statement on the adequacy of the analyses and decontamination demonstration.

E. The location of the file of supporting documentation:

1. Field log books,

2. Laboratory sample analysis reports,

3. The QA/QC documentation, and

4. Chain of custody records.

F. Disposal location of all regulated and nonregulated residues.

G. A certification of accuracy of the report.

TABLE E.2.1.

CLOSURE SCHEDULE

ACTIVITY	MAXIMUM TIME REQUIRED
Notify ~~EID~~ NMED of the closure	-90 Days
Let contract request for proposals	-90 Days
Receive proposals	-30 Days
Select and award Contract	-10 Days
Begin closure activities	Day 0
Treatement of final wastes	Day 30
Internal wash down	Day 40
External wash down	Day 60
Equipment disassembly	Day 130
Floor wash down	Day 140
Final clean up	Day 160
Decontamination verification	Day 180
Submittal of final report to ~~EID~~ NMED	Day 210

NOTE:

The calendar days given above are completion dates for each activity. In some cases more than one activity may occur simultaneously.

TABLE E.2.2.

ANALYTICAL PARAMETERS

METALS	ORGANICS
Arsenic	Halogenated volatile organics
Barium	Nonhalogenated volatile organics
Cadmium	Acid-extractable semivolatile organics
Chromium	Base-neutral extractable semivolatile organics
Lead	
Mercury	
Selenium	
Silver	
Nickel	
Beryllium	

OTHER

Cyanides
pH

NOTE:

Analytical methods are taken from *Test Methods for Evaluating Solid Waste*, EPA SW-846, and may be superseded by more current methods from SW-846 or alternate EPA-approved methods.

Metals may be analyzed for total content. Any metal whose total concentration exceeds the standard for ~~Extraction Procedure Toxicity~~ Toxic Characteristic Leaching Procedure (TCLP) shall be analyzed ~~by Extraction Procedure Toxicity procedures~~ using TCLP methods. Both data shall be reported in the final report.

TABLE E.2.3

SAMPLING SUMMARY

MATERIAL SAMPLED	METALS	ORGANICS	OTHER
Internal tank washwater (after)	X	X	X
External tank washwater (before)	X	X	X
External tank washwater (after)	X	X	X
Floor washwater (before)		X	
Floor washwater (after)		X	
Solid wastes & residues	X	X	X

NOTE:

Analytical parameters are given in Table E.2.2.

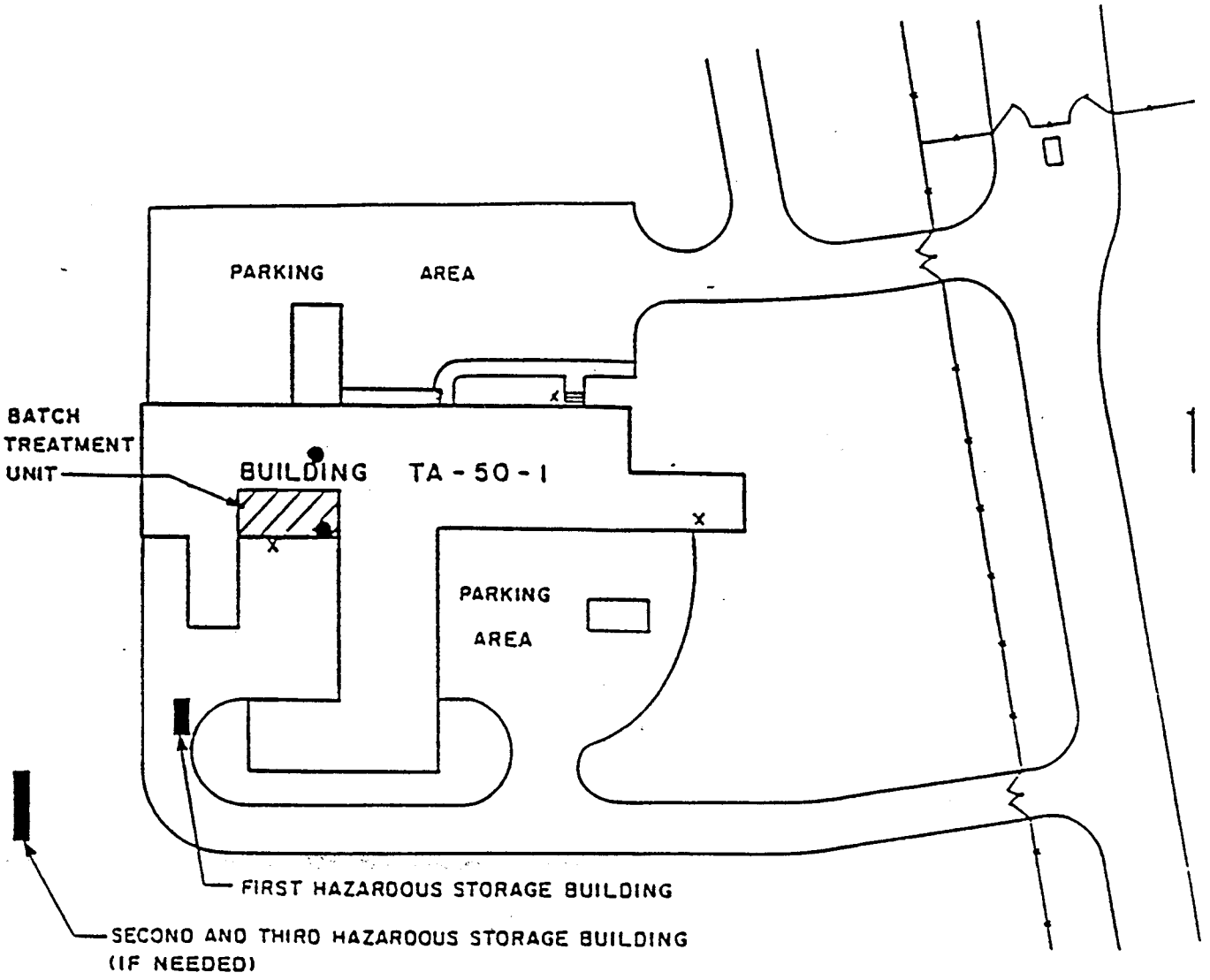

FIGURE E.2-1 BATCH TREATMENT UNIT BUILDING TA-50-1

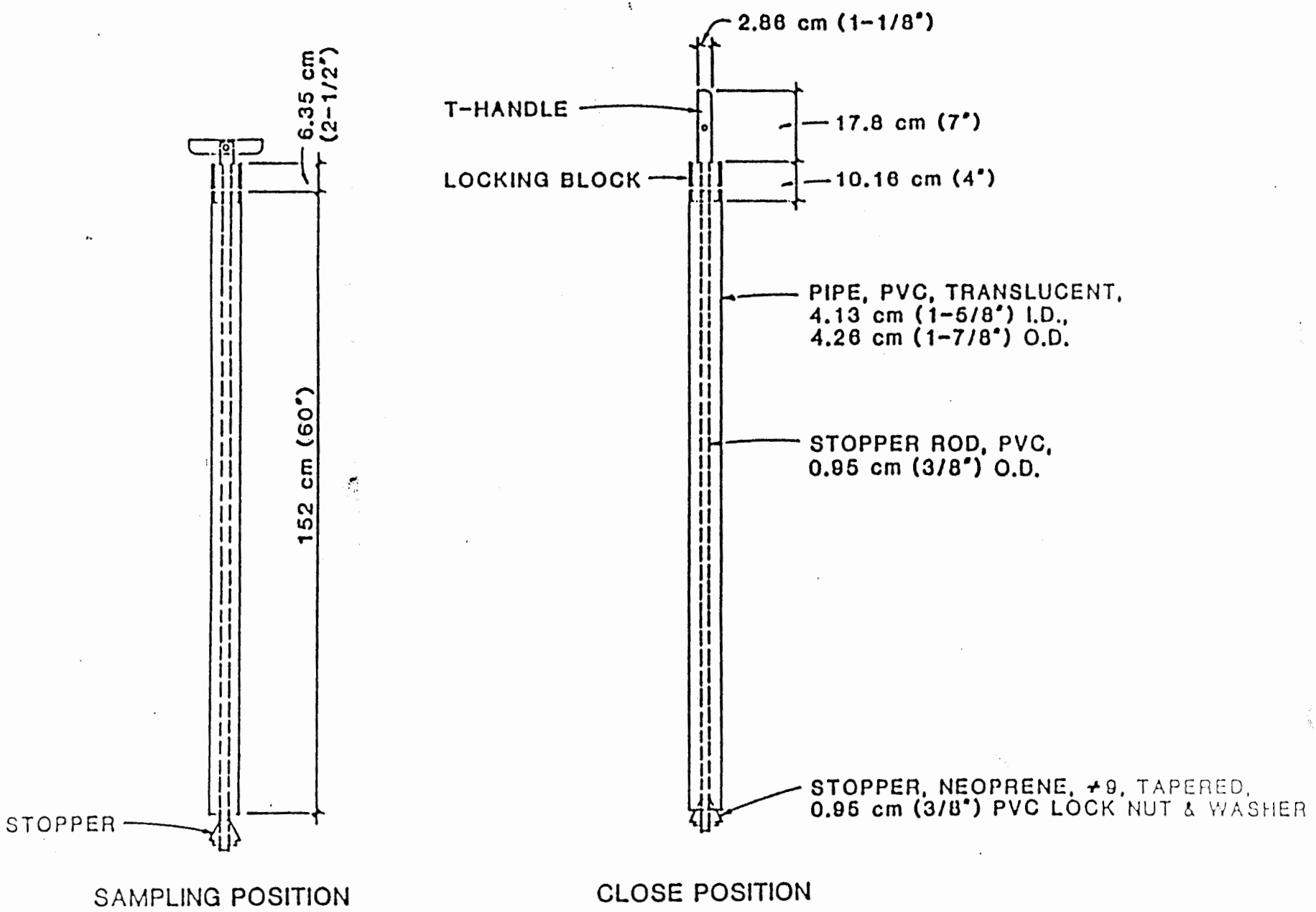

FIGURE E-2.2 - COMPOSITE LIQUID WASTE SAMPLER (COLIWASA)

OFFICIAL SAMPLE SEAL

Collected by__ Collector's sample No._____
(Signature)

Date Collected_____ Time Collected_____

Place Collected_____

_____

_____

FIGURE E.2-3 EXAMPLE OF SAMPLE SEAL

OFFICIAL SAMPLE LABEL

Collector_____ Collector's Sample No._____

Place of Collection_____

_____

Date Sampled_____ Time Sampled _____

Field Information_____

FIGURE E.2-4 EXAMPLE OF SAMPLE LABEL

Hazardous Materials
Collector's Sample No.___

Location of Sampling: __Producer __Hauler
__Disposal Site
__Other:_____

_____

Company's Name _____Telephone (___)_____

Address_____
number street city state zip

Collector's Name_____Telephone (___)_____
signature

Date Sampled_____Time Sampled_____hours

Type of Process Producing Waste_____

Waste Type Code_____Other_____

Field Information_____

_____

_____

Sample Allocation:

1. _____
name of organization
2. _____
name of organization
3. _____
name of organization

Chain of Possession:

1. _____ _____ _____
signature title inclusive dates

2. _____ _____ _____
signature title inclusive dates

3. _____ _____ _____
signature title inclusive dates

FIGURE E.2-5 CHAIN OF CUSTODY RECORD