

# ***In Situ Bioremediation Final Inspection Report***

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# **In Situ Bioremediation Final Inspection Report**

**Kesley K. Kimmell  
Gary D. Mecham**

**June 2009**

**Idaho Completion Project  
Idaho Falls, Idaho 83415**

**Prepared for the  
U.S. Department of Energy  
Assistant Secretary for Environmental Management  
Under DOE/NE Idaho Operations Office  
Contract DE-AC07-99ID13727**

## **ABSTRACT**

This Final Inspection Report addresses the results of the In Situ Bioremediation Treat final inspection held on October 16, 2003, through October 17, 2003, and subsequent operations. During this final inspection, the project demonstrated that all regulatory requirements were satisfied and ensured the operating requirements could be met.



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## ACRONYMS

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
EPA	U.S. Environmental Protection Agency
HASP	health and safety plan
IDEQ	Idaho Department of Environmental Quality
INEEL	Idaho National Engineering and Environmental Laboratory
ISB	in situ bioremediation
NE-ID	U.S. Department of Energy Idaho Operations Office
O&M	operation and maintenance
OU	operable unit
PPE	personal protection equipment
SO	system operability
TAN	Test Area North
VOC	volatile organic compound



# In Situ Bioremediation Final Inspection Report

## 1. INTRODUCTION

In situ bioremediation (ISB) is a part of the groundwater cleanup efforts associated with Operable Unit (OU) 1-07B at Test Area North (TAN) of the Idaho National Engineering and Environmental Laboratory (INEEL). As part of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remediation activities, the ISB Facility is designed to inject amendment into the aquifer to enhance the growth of indigenous subsurface microorganisms that naturally dechlorinate trichloroethene, tetrachloroethene, dichloroethene, and vinyl chloride to nonhazardous compounds ethene, ethane, chloride, carbon dioxide, and water (DOE-ID 2003a).

After ISB construction was complete, checkout component testing was performed on the system to ensure that the equipment was properly installed and operated in accordance with the design specifications. The component testing was followed by a system operability (SO) test using potable water to demonstrate proper operation of the total treatment system. Concurrent with the SO test, a management self-assessment of the facility was used to determine the facility's operational readiness, including a review of procedures, training, and other items necessary to safely operate the system. Afterwards, a final inspection was conducted with the U.S. Department of Energy Idaho Operations Office (NE-ID<sup>a</sup>), U.S. Environmental Protection Agency (EPA) and Idaho Department of Environmental Quality (IDEQ), (herein referred to as the Agencies) in accordance with the operations and maintenance (O&M) plan (DOE-ID 2003b), to determine if the facility was ready to begin operations.

This report addresses the results of the ISB final inspection activities that took place from October 16, 2003, through October 17, 2003, and documents the agencies' concurrence that the ISB facility is ready to begin operations. Inspection items addressed in this report include:

- Prefinal inspection checklist items
- Documentation of the final Agency inspection of ISB
- Discussion of Agency inspection findings and resolutions
- Discussion of remedial action implementation
- Set date for the ISB Remedial Action Report.

## 2. OBJECTIVES AND SCOPE

This final inspection report provides a means to document the final inspection performed by the NE-ID (see footnote a), EPA, and IDEQ project managers, or their designees, at completion of construction activities for the ISB. The primary objectives of the final inspection are to provide a check to make sure all regulatory requirements are satisfied and to ensure that the identified operating requirements can be obtained. This included a presentation of the governing documents to the Agencies such that the project managers could confirm, upon inspection, that all documents required to govern ISB

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a. NE-ID signifies that the U. S. Department of Energy Idaho Operations Office (abbreviated as DOE-ID before October 1, 2003) reports to the DOE Office of Nuclear Energy, Science, and Technology.

operations, such as O&M procedures, were complete and ready for full-scale operations. The regulatory requirements have been identified in the prefinal inspection checklist (Appendix A) and were reviewed during the final inspection meetings with the agencies. This checklist is discussed in Section 3. Also, it was demonstrated during the inspection that the system will meet the operating requirements established in the ISB technical and functional requirements (T&FRs) (TFR-2539). These operational requirements are summarized as follows:

ISB will be able to inject amendment in 1 to 5 locations within 100 ft of Well Technical Support Facility (TSF) -05

- Injection flow rate will be between 0 and 50 gpm in a single well at a time
- Amendment concentration will be  $\leq 60\%$  sodium lactate equivalent
- Injection duration of 8 hours per day, up to 4 days per week
- Capable of operating year round
- Must have flow meters and gauges with which to measure and control injection flow rates and quantities
- Provide amendment storage to maintain solution temperatures  $\geq 50^{\circ}\text{F}$
- Provide field laboratory and office space.

### **3. PREFINAL INSPECTION CHECKLIST**

Prior to the final inspection, a prefinal inspection checklist (see Appendix A) was generated to identify operational and regulatory requirements that must be in place before the start of operations. The items shown on the checklist represent the status of the ISB system at the completion of the final inspection meetings held on October 16 and 17, 2003. All items from this list were acceptable, with the exception of those listed in Section 6.

### **4. PREFINAL INSPECTION CHRONOLOGY**

On October 16, 2003, representatives from the NE-ID (see footnote a), EPA, and IDEQ met to begin the final inspection process of the ISB. Interested parties met at IDEQ, after which a health and safety plan (HASP) briefing was given. Upon arrival at the project location, appropriate personal protective equipment (PPE) was issued and a facility walk-down of the ISB system was performed. This included an overview of equipment in the injection facility as well as a walk-down of the injection wells. System readiness was evaluated, which included PPE, fire protection equipment, emergency communication, spare parts, component labeling, evacuation routes, emergency notification, and institutional controls. Following these discussions, a facility demonstration was given to illustrate the method of operation of the ISB system. A walk-through of the existing ISB lab trailer was also conducted to verify all necessary sample analysis equipment was available for ISB field lab operations. Finally, a walk-down of the Monitored Natural Attenuation (MNA) wells was conducted, and everyone returned to Idaho Falls.

The next morning (October 17, 2003) a review of project documents took place. The documents discussed and reviewed included:

- Remedial Action Work Plan (DOE-ID 2003a)
- ISB O&M Plan (DOE-ID 2003b)
- ISB Groundwater Monitoring Plan (INEEL 2003)
- OU 1-07B Waste Management Plan (INEEL 2002a)
- Environmental Checklist
- OU 1-07B Interim Decontamination Plan (INEEL 2002b)
- HASP (INEEL 2002c)
- ISB Essential As-built Drawings
- Hazard Evaluation
- Applicable Hazardous Waste Determination
- Daily Inspection Requirements
- ISB O&M Procedures
- ISB Operator Training and Qualifications (PDD-150)
- ISB Checkout Component Testing
- ISB Sampling Equipment and Sampling Analyses
- Management Self-Assessment Completed
- Safety System Documentation (operational limits).

Based on successful completion of the inspection during the out-briefing, agreement was received to proceed with ISB operations. As a result of the system walk-down and inspection, the agencies submitted separate inspection summaries addressing issues that were observed. These observations, as well as the appropriate resolutions, are provided in Table 1.

## **5. OPERATIONS**

After the final inspection, the agencies agreed that full-scale operations could begin. During the first injection event with the new ISB system, the components that could not be properly tested with potable water were tested (for instance, the injection pump and coriolis flow meter (FI-3) designed for use with high viscosity fluids). During these early operations, system parameters were carefully monitored and compared to the specified operating criteria. A process flow diagram of the ISB injection system is shown in Figure 1 below.

During the first two injection events, 55-gal drums of sodium lactate were used. The first injection, on November 3, 2003, injected 24 drums of 60% sodium lactate solution into TSF-05 at 4.2 gpm mixed with 36 gpm potable water (5.25 hrs at 6.25% sodium lactate). This was followed by a one-hour flush of

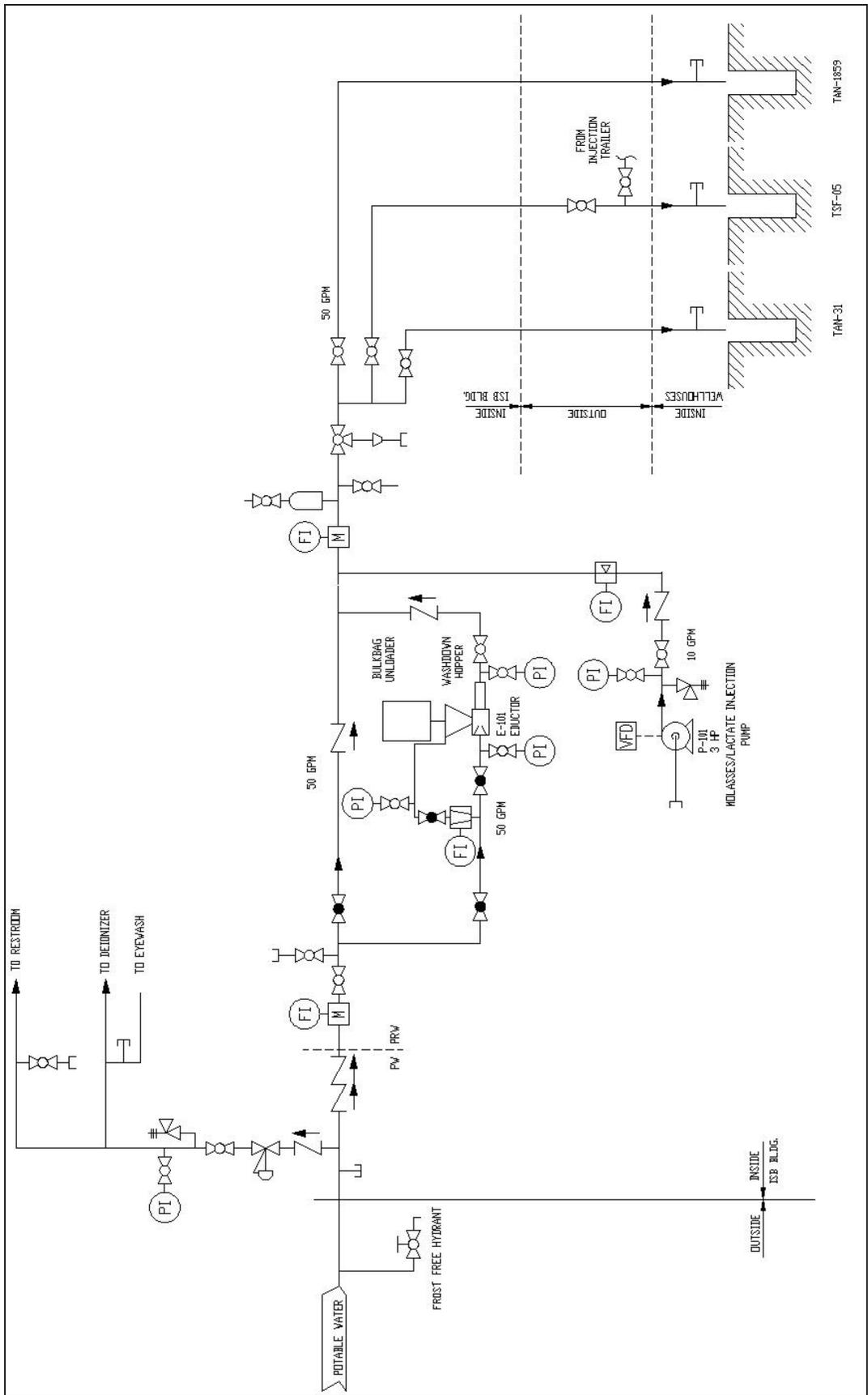


Figure 1. In Situ Bioremediation process flow diagram.

potable water at 36 gpm. The second injection, on December 1, 2003, injected 24 drums of 60% sodium lactate solution into TAN-1859 at 4.2 gpm mixed with 36.5 gpm potable water (5.25 hrs at 6.20% sodium lactate). This was followed by a one-hour flush of potable water at 36.5 gpm.

The first observation during these injections was that the lactate suction hose collapsed when trying to inject. This was caused by the high head capacity of the injection pump. Due to the requirements, a pump able to inject both molasses and sodium lactate was needed, but this also provides a lot of suction in the hose. To remedy this, a smaller hose and different adapter were used with no further difficulties.

The second observation was that the coriolis flow meter (FI-3) did not provide an accurate indication of amendment flow rate when compared with the estimated flow rate using a stopwatch. It was determined that the flow meter was defective and will be replaced. Until that can be accomplished, the variable frequency drive turned out to be a reliable method of flow rate control and will continue to be the method used for monitoring amendment injection flow rates.

Other than these two observations, no other problems were identified and injections were completed in accordance with all work planning and control documentation.

## 6. CORRECTIVE ACTIONS

Table 1 below lists the open issues that resulted from the system walk-down and Agency inspection. Along with each issue listed is a resolution and status. For any issue not yet completed, a scheduled completion date is provided. Upon completion of these issues, an issue completion letter will be sent to the Agencies documenting their final resolution.

Table 1. Agency inspection issues and status.

Inspection Checklist Item #	Issue	Resolution	Status
1.j	IDEQ 2: The ISB building lacked heat tape on the gutters and drain spouts, which could allow ice buildup during winter in the gutters causing unwanted discharge or flooding in the building.	Heat tape and a diffuser will be added to the gutters and drain spouts to prevent ice buildup during winter.	Due date: 1/31/2004
2.e	EPA 1: Operating procedures were not field tested for efficiency as the operator needed to leave the building to check on the water supply and the valving of the injection well at separate points in the procedures. Also no final procedures set for valve setting after injection of electron donor was complete.	Agree. Amendment injection procedures will be modified to reduce the number of times operators need to leave the building to no more than once. This modified valve lineup will be moved to the prerequisite section of the procedure. Also, the valve setting required for a safe shutdown condition after injection is complete will be added to the injection procedures.	Due date: 1/15/2004

Table 1. (continued).

Inspection Checklist			
Item #	Issue	Resolution	Status
4.c	EPA 2: The fire extinguisher in process building inspection was not up to date.	The fire extinguisher will be mounted and a current inspection sticker will be attached (see Appendix D).	Complete
4.d	<p>IDEQ 5: Lack of phones in the designated areas, especially by the emergency phone number list.</p> <p>EPA 5: Lack of phones in the designated areas. However, two-way radios were evident.</p>	The cell phone in the laboratory trailer will be relocated into the ISB facility and placed near the emergency phone number list.	Due date: 1/31/2004
4.h	EPA 3: Equipment spares not located onsite, nor were there any inspection procedures established for ensuring their presence.	<p>There are a limited number of spares required for operation of the facility (see Appendix B). These are currently on order and will be stored in the ISB facility. A line item (and inspection log) will be added to the injection procedures to check for the presence of spares for the facility after each injection.</p>	Due date: 1/15/2004
Non-checklist items			
x.1	IDEQ 1: Potential problems with the pressure relief valve by the injection pump. As observed, there was no protection for the operator if the valve was accidentally opened with someone in front of it.	Piping will be added to the outlet of the pressure relief valve to direct flow to the ground and away from the operator.	Complete
x.2	IDEQ 3: The laboratory in the ISB building was not operational during our inspection. Therefore, the Agencies could not evaluate the effectiveness or potential deficiencies in the lab. The temporary laboratory trailer did meet the requirements of the inspection checklist. It is assumed the permanent lab will be set up as efficiently.	Equipment from the laboratory trailer was moved into the new facility on 11/13/2003. Operations in the lab are expected to be as efficient as they have been in the laboratory trailer.	Complete
x.3	Well house inspections not defined.	Well houses will be added to inspection procedure.	Due date: 1/31/2004
x.4	CERCLA Waste Storage Unit (CWSU) inspection logs not available.	CWSU inspection logs from week of 10/10/03 provided in Appendix C.	Complete

Table 1. (continued).

Inspection Checklist		Issue	Resolution	Status
Item #				
x.5	Current pump does not require priming.		Technical procedure will be changed to remove the pump priming step.	Complete

Based on the ISB Remedial Action Work Plan (DOE-ID 2003a), the ISB will be operated in three phases. Initial operations, which are planned to occur during the first two years of the ISB facility, will be complete when the downgradient flux, as measured at TAN-28 and -30A, are cut off (volatile organic compound [VOC] concentrations reduced to less than maximum contaminant levels [MCLs]). Optimization operations are planned to occur during the five years following the completion of initial operations and will be complete when the crossgradient flux as measured at TAN-1860 and -1861, in addition to the downgradient flux as measured at TAN-28 and -30A, has been cut off (VOC concentrations reduced to less than MCLs for a year). Therefore, approximately seven years after the start of operations (October 31, 2010) the Agencies will evaluate the project progress to determine if the ISB is performing as expected. If it can be determined that the facility has cut off the flux of VOCs to the medial zone, a Remedial Action Report will be written declaring the ISB operational and functional and recommend proceeding to long-term operations.

## 7. REFERENCES

- DOE-ID, 2003a, In Situ Bioremediation Remedial Action Work Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B, DOE/ID-11015, Revision 1, U.S. Department of Energy Idaho Operations Office, January 2003.
- DOE-ID, 2003b, In Situ Bioremediation Operations and Maintenance Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B, DOE/ID-11012, Revision 0, U. S. Department of Energy Idaho Operations Office, January 2003.
- INEEL, 2002a, Waste Management Plan for Test Area North Final Groundwater Remediation Operable Unit 1-07B, INEEL/EXT-98-00267, Revision 4, Idaho National Engineering and Environmental Laboratory, May 2002.
- INEEL, 2002b, Interim Decontamination Plan for Operable Unit 1-07B, INEEL/EXT-97-01287, Revision 4, Idaho National Engineering and Environmental Laboratory, June 2002.
- ICP 2009, PLN-2128, "Environmental Restoration Project Health and Safety Plan," Revision 6, Idaho Cleanup Project, May 2009.
- INEEL, 2003, In Situ Bioremediation Remedial Action Groundwater Monitoring Plan for the Test Area North, Operable Unit 1-07B, INEEL/EXT-2002-00779, Revision 2, Idaho National Engineering and Environmental Laboratory, December 2003.
- PDD-150, "ICP D&D/ER Training Plan for LTHC3 Facilities" March, 2009.
- TFR-2539, 2002, "Technical and Functional Requirements for the In Situ Bioremediation Design at TAN, OU 1-07B," Revision 0, March 2002.



**Appendix A**  
**ISB Prefinal Inspection Checklist**



# Appendix A

## ISB Prefinal Inspection Checklist

Table A-1. In Situ Bioremediation prefinal inspection checklist.

Item	Item Description	Status	Comments
1	Project Documents		
a	Environmental Checklist (National Environmental Policy Act [NEPA]) is approved and on file	Complete	
b	Site Health and Safety Plan with ISB included is approved and issued	Complete	
c	ISB Remedial Action Work Plan is approved and issued	Complete	
d	ISB Operations and Maintenance Plan is approved and issued	Complete	
e	ISB Groundwater Monitoring Plan (GWMP) is approved and issued	Complete	
f	Waste Management Plan is approved and issued	Complete	
g	Interim Decon Plan is approved and issued	Complete	
h	Essential As-Built Drawings and change description completed	Complete	
i	ISB Remedial Design	Revising	See Table 1
2	Procedures and Work Control Documents		
a	Required material safety data sheets (MSDSs) are available	Complete	
b	Emergency Notification List is posted	Complete	
c	WAG 1 Institutional Controls are in place	Complete	
d	Inspection requirements during operations have been established	Complete	
e	Operation and Maintenance procedures are approved and issued	Revising	See Table 1
f	Lab procedures ready for use in new facility	Complete	
3	Personnel Qualification and Training		
a	All operators have been identified and are available	Complete	
b	Operators have been trained in the following as applicable:	Complete	
	Conduct of Ops Conformance Matrix (LST-235)	Complete	
	OSHA 29 CFR 1910.120 40-hour HAZWOPER	Complete	

Table A-1. (continued).

Item	Item Description	Status	Comments
	OSHA 29 CFR 1910.120 8-hour Supervisor (OS only)	Complete	
	First Aid/CPR	Complete	
	Radiological Worker I or II, per HASP	Complete	
	Crane/Hoist and Rigging (000TRN12)	Complete	
	OU 1-07B Site Health and Safety Plan	Complete	
	Waste Management Plan	Complete	
	ISB Remedial Action Work Plan	Complete	
	ISB O&M Plan	Complete	
	Lock-out/tag-out training	Complete	
	Logbook Practices for ER and D&D&D (MCP-1194)	Complete	
	Logkeeping (MCP-2980)	Complete	
c	TAN Resource Conservation and Recovery Act (RCRA) emergency coordinators and fire response trained onsite	Complete	
4	Equipment and System Readiness		
a	Subcontractor has completed checkout, and component testing and deficiencies have been corrected	Complete	
b	Personal protective equipment (PPE) is identified and available	Complete	
c	Fire protection equipment is identified and available	In-work	See Table 1
d	Emergency communication equipment is identified and available	In-work	See Table 1
e	Sampling equipment required to support sampling effort (e.g., summa canisters, field logbooks, shipping containers) is identified and available	Complete	
f	Sample analysis support services have been arranged	Complete	
g	Freeze protection plan is in place	Complete	
h	Recommended spare parts are available	In-work	See Table 1
I	All components have been appropriately labeled	Complete	
j	Construction turnover to project is complete (MCP-2811 & MCP-2869)	Complete	
5	Operation of Safety Systems		
a	System Operability test has been completed (SO test)	Complete	
b	Operational limits have been established and tested	Complete	

Table A-1. (continued).

Item	Item Description	Status	Comments
6	Management Programs		
a	Personnel responsibilities and line of authority are clearly defined	Complete	
b	Primary and Secondary emergency evacuation routes posted with the building	Complete	
c	Management Self Assessment completed	Complete	
7	Routine and Emergency Operations Program		
a	TAN Facilities are aware of ISB facility for emergency response	Complete	
8	Conduct of Operations		
a	Conduct of Operation Matrix is identified and available	Complete	
b	Appropriate logbooks are available	Complete	
c	Facility management chain of command is established		



**Appendix B**  
**Spare Parts Inventory**



## Appendix B

### Spare Parts Inventory

Table B-1. Spare parts inventory.

Type	Quantity	Description
Pressure indicator	1	Ashcroft pressure gauge, P/N 45-1279-04L-0/160, 1/2-in. NPT connection, 0–160 psig.
	1	Ashcroft pressure gauge, P/N 45-1279-04L-0/30, 1/2-in. NPT connection, 0–30 psig.
Pump	1	Viking HD internal gear pump, P/N HL124AD, 1-1/2-in. NPT connection, 3 hp.



## **Appendix C**

### **CERCLA Waste Storage Area Daily Inspection Checklists**



**CERCLA STORAGE AREA INSPECTION CHECKLIST**

Registration Number: TAN-GWTF-001-A

- | YES | NO                                  | N/A                                 |                                     |  |
|-----|-------------------------------------|-------------------------------------|-------------------------------------|--|
| 1.  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Is there Waste in the Area? IF "NO", Inspection is complete, sign and date below.  |
| 2.  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Is an up-to-date copy of the registration form posted at the area?   |
| 3.  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Are " <b>NO SMOKING</b> " signs posted in the area if storing RCRA-defined Ignitable or Reactive waste?  |
| 4.  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Are all waste containers labeled with the words "CERCLA WASTE"?  |
| 5.  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Are all non-waste items stored in the area appropriately marked or labeled for identification?   |
| 6.  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Is the housekeeping in the area adequate?  |
| 7.  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Is there adequate aisle space for personal and equipment to respond to emergencies?  |
| 8.  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Are all waste containers closed except when adding or removing waste?  |
| 9.  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Is each waste container compatible with the waste stored in it?  |
| 10. | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Are all wastes segregated within the area to maintain requirements for compatibility?  |
| 11. | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Do quantities recorded in the log book equal quantities stored in the area?  |
| 12. | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Are waste types and quantities in accordance with those specified in the Appendix L?   |
| 13. | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Is the Emergency and Communications Equipment present as listed in the Appendix L?   |
| 14. | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | Are there, or have there been, any releases or spills in the area since the last inspection?   |
| 15. | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | If "Yes" to question 14, has the spill or release been reported to the Emergency Coordinator listed in the Appendix L?   |
| 16. | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | If "Yes" to 14, has the spill or release been remediated and the spill and remediation documented on this checklist?   |
| 17. | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Are all containers and/or PCB items in good condition with no leakage or signs of deterioration?   |
| 18. | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Is PCB containment volume equal to 2 times the internal volume of the largest PCB article or PCB container, or 25% of the total internal volume of all PCB articles or containers, whichever is greater? |
| 19. | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Is the entrance to PCB storage marked with a large PCB M <sub>1</sub> mark? (40 CFR 761.45)?   |
| 20. | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Is each PCB item or container marked with a PCB M <sub>1</sub> or M <sub>2</sub> mark?   |
| 21. | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Are items marked with an out-of-service date, or is there an inventory list indicating out-of-service dates for items stored within a container?   |
| 22. | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Have previously identified deficiencies undergone resolution? Indicate status on back of inspection form.  |

**CERTIFICATION OF INSPECTION**

I certify that all of the above applicable items have been inspected. Date 10/3/03 Time 11:59

Name (print) Larry Tzzo Inspector Signature [Signature]

Registration Number: TAN-GWTF-001-A

- | YES | NO                                  | N/A                                 |                                     |  |
|-----|-------------------------------------|-------------------------------------|-------------------------------------|--|
| 1.  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Is there Waste in the Area? IF "NO", Inspection is complete, sign and date below.  |
| 2.  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Is an up-to-date copy of the registration form posted at the area?   |
| 3.  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Are " <b>NO SMOKING</b> " signs posted in the area if storing RCRA-defined Ignitable or Reactive waste?  |
| 4.  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Are all waste containers labeled with the words "CERCLA WASTE"?  |
| 5.  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Are all non-waste items stored in the area appropriately marked or labeled for identification?   |
| 6.  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Is the housekeeping in the area adequate?  |
| 7.  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Is there adequate aisle space for personal and equipment to respond to emergencies?  |
| 8.  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Are all waste containers closed except when adding or removing waste?  |
| 9.  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Is each waste container compatible with the waste stored in it?  |
| 10. | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Are all wastes segregated within the area to maintain requirements for compatibility?  |
| 11. | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Do quantities recorded in the log book equal quantities stored in the area?  |
| 12. | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Are waste types and quantities in accordance with those specified in the Appendix L?   |
| 13. | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Is the Emergency and Communications Equipment present as listed in the Appendix L?   |
| 14. | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | Are there, or have there been, any releases or spills in the area since the last inspection?   |
| 15. | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | If "Yes" to question 14, has the spill or release been reported to the Emergency Coordinator listed in the Appendix L?   |
| 16. | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | If "Yes" to 14, has the spill or release been remediated and the spill and remediation documented on this checklist?   |
| 17. | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Are all containers and/or PCB items in good condition with no leakage or signs of deterioration?   |
| 18. | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Is PCB containment volume equal to 2 times the internal volume of the largest PCB article or PCB container, or 25% of the total internal volume of all PCB articles or containers, whichever is greater? |
| 19. | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Is the entrance to PCB storage marked with a large PCB M <sub>1</sub> mark? (40 CFR 761.45)?   |
| 20. | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Is each PCB item or container marked with a PCB M <sub>1</sub> or M <sub>5</sub> mark?   |
| 21. | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Are items marked with an out-of-service date, or is there an inventory list indicating out-of-service dates for items stored within a container?   |
| 22. | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Have previously identified deficiencies undergone resolution? Indicate status on back of inspection form.  |

**CERTIFICATION OF INSPECTION**

I certify that all of the above applicable items have been inspected. Date 10/9/03 Time 10:45  
 Name (print) Larry Izzo Inspector Signature [Signature]

**CERCLA STORAGE AREA INSPECTION CHECKLIST**

Registration Number: TAN-GWTF-001-A

- | YES | NO                                  | N/A                                 |                                     |  |
|-----|-------------------------------------|-------------------------------------|-------------------------------------|--|
| 1.  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Is there Waste in the Area? IF "NO", Inspection is complete, sign and date below.  |
| 2.  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Is an up-to-date copy of the registration form posted at the area?   |
| 3.  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Are <b>"NO SMOKING"</b> signs posted in the area if storing RCRA-defined Ignitable or Reactive waste?  |
| 4.  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Are all waste containers labeled with the words "CERCLA WASTE"?  |
| 5.  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Are all non-waste items stored in the area appropriately marked or labeled for identification?   |
| 6.  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Is the housekeeping in the area adequate?  |
| 7.  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Is there adequate aisle space for personal and equipment to respond to emergencies?  |
| 8.  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Are all waste containers closed except when adding or removing waste?  |
| 9.  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Is each waste container compatible with the waste stored in it?  |
| 10. | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Are all wastes segregated within the area to maintain requirements for compatibility?  |
| 11. | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Do quantities recorded in the log book equal quantities stored in the area?  |
| 12. | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Are waste types and quantities in accordance with those specified in the Appendix L?   |
| 13. | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Is the Emergency and Communications Equipment present as listed in the Appendix L?   |
| 14. | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | Are there, or have there been, any releases or spills in the area since the last inspection?   |
| 15. | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | If "Yes" to question 14, has the spill or release been reported to the Emergency Coordinator listed in the Appendix L?   |
| 16. | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | If "Yes" to 14, has the spill or release been remediated and the spill and remediation documented on this checklist?   |
| 17. | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Are all containers and/or PCB items in good condition with no leakage or signs of deterioration?   |
| 18. | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Is PCB containment volume equal to 2 times the internal volume of the largest PCB article or PCB container, or 25% of the total internal volume of all PCB articles or containers, whichever is greater? |
| 19. | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Is the entrance to PCB storage marked with a large PCB M <sub>1</sub> mark? (40 CFR 761.45)?   |
| 20. | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Is each PCB item or container marked with a PCB M <sub>1</sub> or M <sub>2</sub> mark?   |
| 21. | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Are items marked with an out-of-service date, or is there an inventory list indicating out-of-service dates for items stored within a container?   |
| 22. | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Have previously identified deficiencies undergone resolution? Indicate status on back of inspection form.  |

**CERTIFICATION OF INSPECTION**

I certify that all of the above applicable items have been inspected. Date 10/16/03 Time 10:10

Name (print) Larry J... .. Inspector Signature Larry J...



## **Appendix D**

### **Fire Extinguisher Installation Photo**





Fire Extinguisher Installation.

