COMPLETE

ENGINEERING CHANGE NOTICE

Page 1 of 3

1. ECN 612303

Proj. ECN

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.		4. Date
Supplemental [] Direct Revision [X] Change ECN [] Temporary [] Standby [] Supersedure [] Cancel/Void []	V Roscha, WRAP Eng., G3-15, 3-0317		11/9/94
	5. Project Title/No./Work Order No. W-025	6. Bldg./Sys./Fac. No.	7. Approval Designator Q
	8. Document Numbers Changed by this ECN (includes sheet no. and rev.) WHC-SD-W025-ATR-001, Rev. 0	9. Related ECN No(s). 601086	10. Related PO No.

11a. Modification Work	11b. Work Package No.	11c. Modification Work Complete	11d. Restored to Original Condition (Temp. or Standby ECN only)
[] Yes (fill out Blk. 11b) [X] No (NA Blks. 11b, 11c, 11d)	N/A	N/A Cog. Engineer Signature & Date	N/A Cog. Engineer Signature & Date

12. Description of Change

WHC-SD-W025-ATR-001 is being revised per this ECN.

13a. Justification (mark one)							
Criteria Change	[]	Design Improvement	[X]	Environmental	[]	As-Found	[]
Facilitate Const.	[]	Const. Error/Omission	[]	Design Error/Omission	[]		

13b. Justification Details

Reflect change in flowmeter type and dimensions, thus improve flowmeter accuracy.

14. Distribution (include name, MSIN, and no. of copies)

V. Roscha G3-15
WRAP 1 DMC G3-15
JR McGee G3-15
OSTI (2) L8-07

RELEASE STAMP

OFFICIAL RELEASE 38
BY WHC
DATE NOV 16 1994
Ste #10

A-7900-013-2 (06/94) GEF095

A-7900-013-1 (06/92)

ENGINEERING CHANGE NOTICE

1. ECN (use no. from pg. 1): 612303

15. Design Verification Required	16. Cost Impact				17. Schedule Impact (days)	
	ENGINEERING		CONSTRUCTION			
[] Yes	Additional	[] $	Additional	[] $	Improvement	[]
[] No	Savings	[] $	Savings	[] $	Delay	[]

18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD	[]	Seismic/Stress Analysis	[]	Tank Calibration Manual	[]
Functional Design Criteria	[]	Stress/Design Report	[]	Health Physics Procedure	[]
Operating Specification	[]	Interface Control Drawing	[]	Spares Multiple Unit Listing	[]
Criticality Specification	[]	Calibration Procedure	[]	Test Procedures/Specification	[]
Conceptual Design Report	[]	Installation Procedure	[]	Component Index	[]
Equipment Spec.	[]	Maintenance Procedure	[]	ASME Coded Item	[]
Const. Spec.	[]	Engineering Procedure	[]	Human Factor Consideration	[]
Procurement Spec.	[]	Operating Instruction	[]	Computer Software	[]
Vendor Information	[]	Operating Procedure	[]	Electric Circuit Schedule	[]
OM Manual	[]	Operational Safety Requirement	[]	ICRS Procedure	[]
FSAR/SAR	[]	IEFD Drawing	[]	Process Control Manual/Plan	[]
Safety Equipment List	[]	Cell Arrangement Drawing	[]	Process Flow Chart	[]
Radiation Work Permit	[]	Essential Material Specification	[]	Purchase Requisition	[]
Environmental Impact Statement	[]	Fac. Proc. Samp. Schedule	[]	Tickler File	[]
Environmental Report	[]	Inspection Plan	[]		[]
Environmental Permit	[]	Inventory Adjustment Request	[]		[]

19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number Revision

20. Approvals

OPERATIONS AND ENGINEERING	Signature	Date
Cog. Eng. V Roscha		11/11/94
Cog. Mgr. DR Lucas		11.11.94
QA JR McGee		11/11/94
Safety		
Environ.		
Other		

ARCHITECT-ENGINEER	Signature	Date
PE		
QA		
Safety		
Design		
Environ.		
Other		

DEPARTMENT OF ENERGY

Signature or a Control Number that tracks the Approval Signature

ADDITIONAL

RELEASE AUTHORIZATION

Document Number:	WHC-SD-W025-ATR-001, Rev. 1
Document Title:	Acceptance Test Report for Project W-025
Release Date:	11/11/94

This document was reviewed following the procedures described in WHC-CM-3-4 and is:

APPROVED FOR PUBLIC RELEASE

WHC Information Release Administration Specialist:

Chris Willingham

C. Willingham

11/11/94

SUPPORTING DOCUMENT

1. Total Pages 46

2. Title	3. Number	4. Rev No.
W-025, ACCEPTANCE TEST REPORT	WHC-SD-W025-ATR-001	1

5. Key Words

ATR
W-025

6. Author

Name: V. Roscha

Signature

Organization/Charge Code W7FD30/

7. Abstract

This ATR has been prepared to establish the results of the field testing conducted on W-025 to demonstrate that the electrical/instrumentation systems functioned as intended by design.

8. PURPOSE AND USE OF DOCUMENT - This document was prepared for use within the U.S. Department of Energy and its contractors. It is to be used only to perform, direct, or integrate work under U.S. Department of Energy contracts. This document is not approved for public release until reviewed.

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9. Impact Level Q

10. RELEASE STAMP

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BY WHC
DATE NOV 16 1994
Sta # 10

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CW 1-11-94

RECORD OF REVISION	(1) Document Number WHC-SD-W025-ATR-001	Page 1

(2) Title
ACCEPTANCE TEST REPORT

CHANGE CONTROL RECORD

(3) Revision	(4) Description of Change - Replace, Add, and Delete Pages	Authorized for Release	
		(5) Cog. Engr.	(6) Cog. Mgr. Date
0	(7) EDT 601086, dated 4/18/94 (Released 5/4/94)		
RS 1	WHC-SD-W025-ATR-001 changed per attached ECN 612303.	V Roscha	DR Lucas

ACCEPTANCE TEST REPORT NO. WHC-SD-W025-ATR-001, REV. 1 DATE: 10-4-94

SUBJECT INSTRUMENTATION/ELECTRICAL

LOCATION 200 WEST

PROJECT NUMBER W-025 WORK ORDER N/A

PROJECT TITLE RMW LAND DISPOSAL FACILITY

Prepared By

Westinghous Hanford Company.
Richland, Washington

For the US Department of Energy

Rev 1

TEST REPORT APPROVED

WESTINGHOUSE HANFORD COMPANY

Projects Department	Date	Quality Assurance	Date
Programs	Date	Operations	Date

CONTENTS

CONTENTS (cont.)

ACCEPTANCE TEST REPORT

RMW LAND DISPOSAL FACILITY

PROJECT W-025

1.0 PURPOSE OF THE ACCEPTANCE TEST

This acceptance test procedure (ATP) has been prepared to establish field testing procedures to demonstrate that the Electrical/Instrumentation systems function as intended by the design.

2.0 REFERENCE DRAWINGS AND SPECIFICATIONS

2.1 DRAWINGS

H-2-131585	1 OF 1	Leachate Collection Tank & Piping
H-2-131586	1 OF 1	Sump Pump Details
H-2-131587	1 OF 4	Electrical - Control
H-2-131587	2 OF 4	Electrical - Tank & Control Bldg.
H-2-131587	3 OF 4	Electrical Site Plan
H-2-131587	4 OF 4	Electrical Details

2.2 SPECIFICATIONS

WHC-S-045 Radioactive Mixed Waste Land Disposal Facility, Non-Drag-Off, Technical Specifications.

3.0 RESPONSIBILITIES

Each company or organization participating in the conduct of this ATP will designate personnel to assume the responsibilities and duties as defined herein for their respective roles. The names of these designees shall be provided to the Recorder for listing on the Recorder's copy of the Test Execution Sheet prior to the performance of any part of this ATP.

3.1 WHC PROJECT ENGINEER

3.1.1 Designate a Test Director.

3.1.2 Act as liaison between the participants in acceptance testing.

3.1.3 Distribute the approved testing schedule as soon as approval has been obtained (one or more weeks prior to testing).

3.1.4 Schedule and conduct a pre-ATP kickoff meeting with test participants one or more weeks prior to start of testing.

3.1.5 Notify the persons performing and witnessing the test two days prior to the start of testing.

3.1.6 Notify all concerned parties when a change is made in the testing schedule.

3.1.7 Sign Test Execution Sheet when ATP is approved and accepted.

3.1.8 Take necessary action to clear exceptions to the ATP.

3.1.9 Sign Exception Sheet when exception has been resolved.

3.1.10 Provide a distribution list for the approved and accepted ATP.

.2 TEST DIRECTOR

3.2.1 Coordinate all acceptance testing.

3.2.2 Distribute all documents including completed ATP, exceptions, resolutions and approvals.

3.2.3 Confirm that field testing and inspection of the system or portion of the system to be tested has been completed.

3.2.4 Stop any test which, in the judgement of the Director, may cause damage to the system until the test procedure has been revised.

3.2.5 Obtain revisions to the ATP, as necessary, to comply with authorized field changes or to accommodate existing field conditions.

3.2.6 Evaluate recorded data, discrepancies, and exceptions.

3.2.7 Obtain from Golder Associates Inc. (GAI) any information related to this ATP or changes necessary to clear or resolve objections.

3.2.8 Sign Test Execution Sheet when ATP has been performed.

3.2.9 Sign Exception Sheet when retest has been executed and accepted.

3.2.10 Obtain required signatures on the ATP Master prior to reproduction and distribution.

3.3 WITNESSES

Witnesses shall be provided by participating organizations.

3.3.1 Witness the tests.

3.3.2 Evaluate results of testing.

3.3.3 Assist the Test Director when requested.

3.3.4 Sign Test Execution Sheet as a Witness.

3.3.5 Sign Exception Sheet as a Witness when retest has been executed and accepted.

3.3.6 An Acceptance Inspector will witness the test for the Design Engineer.

3.4 RECORDER

The Recorder will be provided by Golder Construction Services.

3.4.1 Record names of all designated personnel on Recorder's copy of ATP prior to start of testing.

3.4.2 Observe tests and record test data.

3.4.3 Sign the Test Execution Sheet as the Recorder.

3.4.4 Initial and date every test step on the Recorder's copy as it is completed, next to the step number or on a table, when provided. On tables where there is not room for both the initial and date, date may be entered in space provided at bottom of column.

3.4.5 On the Exception Sheet, record objections or exceptions and test steps which are not performed. Have the information transferred in ink or typed to the Master of the Exception Sheet(s). Additional Exception Sheets are to be added as needed.

3.4.6 Orally notify the Test Director at time the objection is made.

3.4.7 Assign page numbers to Data Sheets and Exception Sheets, after ATP is complete. Record page numbers for these items and make corrections, as necessary, to page numbers shown for these pages in the index.

3.4.8 Transfer changes and the final test results with Recorder's signature and dates for each step to the Master in ink or type. Submit the completed Master to Construction Document Control for approval signature routing. Also submit the Recorder's copy for record retention.

3.5 CONSTRUCTION CONTRACTOR

3.5.1 Organize and perform this acceptance test under coordination of the Test Director.

3.5.2 Confirm that all equipment required for performing this test will be available at the start of testing.

3.5.3 Provide equipment required for performing this acceptance test, which has not been designated as being provided by others.

3.5.4 Request in writing from the Project Engineer those services, materials, or equipment that have been designated as being supplied by the DOE or others.

3.6 OCCUPATIONAL SAFETY AND HEALTH

Individuals shall carry out their assigned work in a safe manner to protect themselves and others from undue hazards and to prevent damage to property and environment. Facility line managers shall assure the safety of all activities within their areas to prevent injury, property damage, or interruption of operation. Performance of test activities shall always include safety and health aspects as delineated in the most current version of the Federal Occupational Safety and Health Administration/Washington Industrial Safety and Health Act (OSHA/WISHA) safety health codes and standards.

4.0 ACCEPTANCE TEST PROCEDURE CHANGE CONTROL

Acceptance testing shall be conducted in accordance with the steps and requirements specified in this procedure. Any required changes must be authorized in accordance with approved change control procedures for this project and promptly accomplished. Procedure changes during testing must be approved by the WHC project engineer, WHC quality assurance, and the GAI inspector (via initials). The GCS recorder shall note these changes as exceptions (see Section 5.2), provided that these changes do not affect safety and health. The changes shall be incorporated in the final acceptance test report.

5.0 TEST EXECUTION

5.1 WITHOUT EXCEPTION

5.1.1 Check applicable space on Test Execution Sheet to show that the ATP has been performed and no exceptions have been recorded.

5.1.2 Sign and date Test Execution Sheet in the spaces provided.

5.1.3 Distribute requisite copies and send master of ATP to the WHC Project Engineer.

5.2 WITH EXCEPTION/RESOLVED

5.2.1 Check applicable space on Test Execution Sheet to show that the ATP has been performed with exceptions recorded and resolved.

5.2.2 Sign and date Test Execution Sheet in the spaces provided.

5.2.3 Distribute requisite copies and send master of ATP to the WHC Project Engineer

5.3 WITH EXCEPTION/OUTSTANDING

5.3.1 Check applicable space on Test Execution Sheet to show that the ATP has been performed with exceptions recorded, in part or all of which are presently outstanding and unresolved.

5.3.2 Sign and date Test Execution Sheet in the spaces provided.

5.3.3 Distribute requisite copies and send master of ATP to the WHC Project Engineer.

6.0 RECORDING AND RESOLVING EXCEPTIONS

6.1 GENERAL

Exceptions to the ATP are sequentially numbered and recorded on individual Exception Sheets. This enables case-by-case resolution, recording, approval, and distribution of each exception.

6.2 RECORDING

6.2.1 Number each exception sequentially as it occurs and record it on an Exception Sheet.

6.2.2 Enter name and organization of objecting party for each exception.

6.2.3 Enter planned action to resolve each exception when such determination is made.

6.3 RETEST/RESOLUTION

Record the action taken to resolve each exception. Action taken may not be the same as planned action.

6.3.1 When action taken results in an acceptable retest, sign and date Retest Execution and Acceptance section of the Exception Sheet.

6.3.2 When action taken does not involve an acceptable retest, strike out the Retest Execution and Acceptance section of the Exception Sheet. Resolve exception as shown under 6.4, below.

6.4 APPROVAL AND ACCEPTANCE

The WHC Project Engineer provides final approval and acceptance of exceptions by checking one of the following on Exception Sheet:

6.4.1 Retest Approved and Accepted: Applicable when Retest Execution and Acceptance section is completed.

6.4.2 Exception Accepted-as-is: Requires detailed explanation.

6.4.3 Other: Requires detailed explanation.

The Project Engineer signs and dates the Exception Sheet and obtains other internal approvals, if required.

6.5 DISTRIBUTION

Distribute requisite copies of completed Exception Sheets to WHC personnel and departments as directed by the WHC Project Engineer.

7.0 TEST CONDITIONS AND EQUIPMENT REQUIRED

7.1 GENERAL

The following conditions shall exist at the start of the acceptance testing for that portion of the system being tested.

7.1.1 Systems being tested have been inspected for workmanship and for compliance with design.

7.1.2 Continuity tests have been performed on portions of the electrical system being tested.

7.1.3 Power is available to components of systems being tested.

7.1.4 Continuity tests of instrumentation wiring have been performed in accordance with technical specifications WHC-S-045, latest revision.

7.1.5 All test instruments have a valid calibration stamp attached that indicates a calibration traceable to the National Institute of Standards and Technology.

7.1.6 Methods of water disposal used in this ATP have been approved by the Facilities Management.

7.1.7 Personnel responsible for directing, witnessing and performing the tests described in this ATP are familiar with the equipment to be tested, have reviewed the vendor information pertaining to the operation of the equipment, and are familiar with the requirements of this acceptance test procedure.

7.1.8 Values used to simulate process inputs (such as water levels D1, D2, D3, DS-1, DS-2, etc.) and alarm conditions for execution of ATP will be provided by the Design Engineer.

7.2 EQUIPMENT REQUIRED

The Contractor shall supply all test equipment unless otherwise noted.

7.2.1 Digital multimeter (DMM): 4-1/2 digit or better, 2 percent accuracy.

7.2.2 Seven shorting jumpers with ON-OFF switch, 14-gage wire, 12 inch approximate length.

7.2.3 Clamp-on Ammeter (COA): Scale 0-6 amp.

7.2.4 One highway water tanker, 5,000 gallon capacity, with discharge capability, with comparable KAMVALOK fitting 1673-A, 3 inches diameter.

7.2.5 Water level transducer (WLT): 0-10 psi, pre-calibrated with sufficient cable to reach from primary sump to control building (approximately 200 feet). Alternatively, a water level indicator or other measuring device as approved by the Project Engineer may be used, provided that real-time communications with personnel in the control room are established.

7.2.6 Measuring tape, measuring rod, folding scale, or equivalent: 6 ft (min.), +/- 0.5 in.

7.2.7 Dry Ice (summer only).

7.2.8 Hair dryer or equivalent forced air heater (winter).

7.2.9 Water Container (barrel), 60-inches deep minimum.

7.2.10 Receptacle Tester: Hand-held device which verifies correct connections of receptacle and simulates ground-fault condition. Ideal #61-051 or equal.

7.2.11 Valve for pump discharge line.

7.2.12 Pressure gages for pump discharge line, 0 to 50 psi range (valved) and 0 to 200 psi range.

8.0 ELECTRICAL HEAT TRACE SYSTEM

This procedure will demonstrate the correct functioning of electrical heat trace system and the temperature sensing (thermostat) devices. Verify and record the following:

8.1 TEMPERATURE SENSOR

Record all data on Test Data Form 8-1 (see Appendix A).

8.1.1 Energize heat trace circuit (close breaker B8). Disconnect the power conductors to the thermostat.

8.1.2 Visually inspect the sensor and contacts for damage.

8.1.3 Using digital multimeter set to measure resistance (ohms), place connections on opposite sides of thermostat contacts.

8.1.4 Cool or heat (depending upon exterior temperature at time of testing) thermostat sensor to simulate outside temperature changes.

8.1.5 Observe multimeter output during testing. When simulated temperature of thermostat is above 40° F (approximately), the resistance should be high (above 500 ohms), indicating that the contacts are open. When the simulated temperature is below 40° F (approximately), the resistance should be low (below 2 ohms), indicating that the contacts are closed. Verify both conditions.

8.1.6 Remove meter connections and reconnect power conductors.

8.2 HEAT TRACE CABLE

Record all data on Test Data Form 8-2 (see Appendix A).

8.2.1 Energize heat trace circuit (close breaker B8).

8.2.2 Manually force the contacts on the thermostat closed. Measure the current in the conductors to the heat trace cable using COA. Current should be 5 amps minimum (note: current is dependent upon temperature of heat trace cable. The current will increase as the temperature of the cable decreases).

8.2.3 Manually force the contacts on the thermostat open. Measure the current in the conductors to the heat trace cable using COA. The current should be less than 0.1 amps.

9.0 TRANSDUCERS AND METER/CONTROLLERS

This procedure will demonstrate the correct functioning of the level transducers and the associated meter/controllers and relays. See Figure 1 for definitions of water levels and associated pumps and relays. Verify and record the following:

9.1 PRIMARY SUMP

Record all data on Test Data Form 9-1 (see Appendix A).

9.1.1 Remove power to pumps W5P1 and W5P3 by opening circuit breakers B1 and A7.

9.1.2 Through the vertical riser pipe, install the water level transducer (WLT) in the bottom of the primary sump leachate collection well with remote readout in the control building. Verify that the reading is equal to the water level in the sump (if any), as measured with a tape measure, measuring rod, or similar device. Alternatively, measure the water level in the sump with the water level indicator and calculate the depth of water.

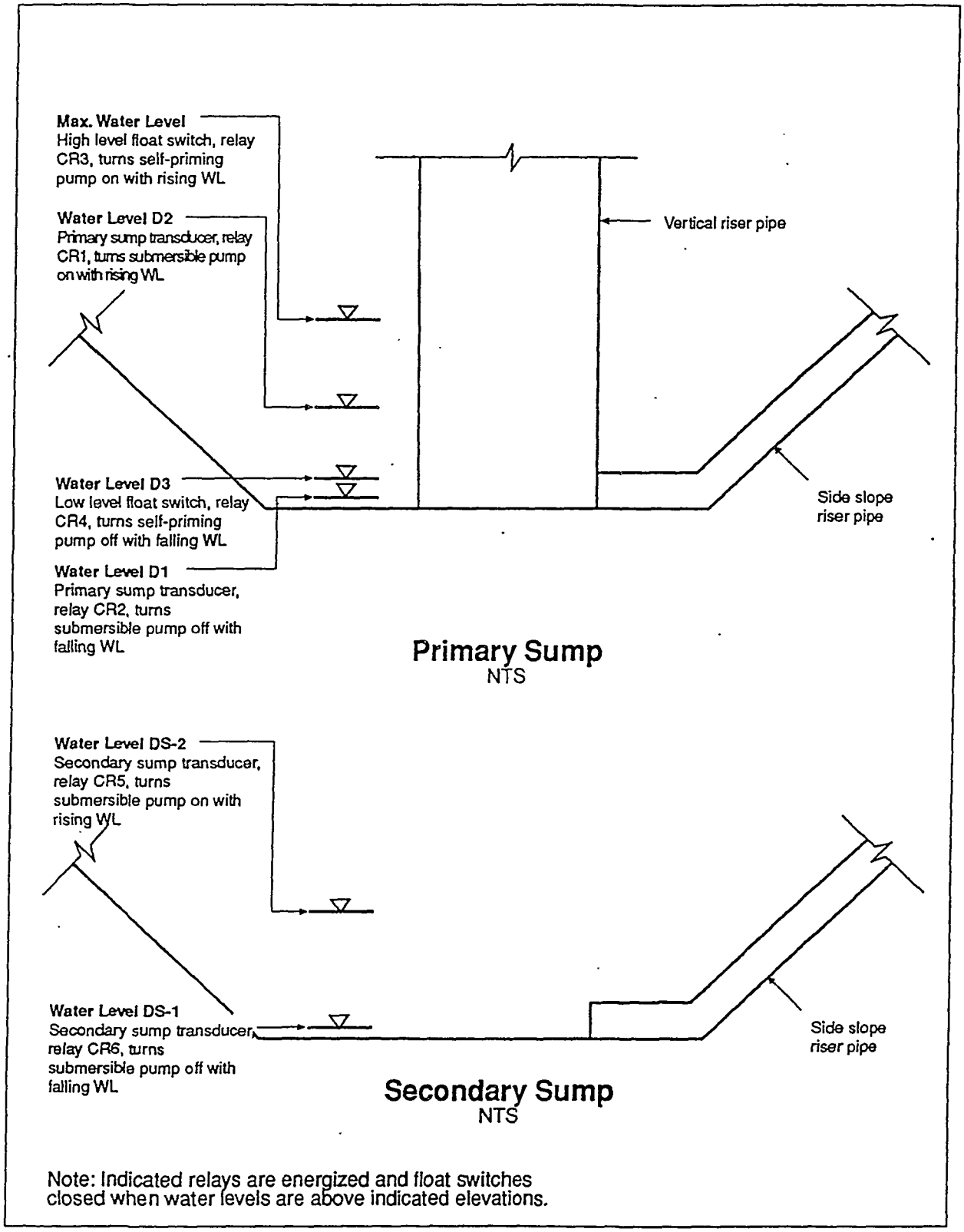

Figure 1. Water Level Definitions.

9.1.3 Energize control panel. Observe readout of primary sump level meter. The primary sump reading should be equal to the actual water depth within +/- 1 inch. Adjust meter readings as required.

9.1.4 If the water level in the primary sump is above D1, energize pump W5P1 and pump the sump to below level D1. De-energize W5P1. Verify that relays CR1, and CR3, are "off" (de-energized) and relays CR2 and CR4 are "on" (energized) by observing the LED on each relay.

9.1.5 Begin adding potable water to the primary sump through the vertical riser pipe. Add water at a uniform rate so that the rise of the water level in the leachate collection well is no more than 2 inches/minute. Take care to avoid excessive turbulence during filling. If necessary, stop filling at 2-inch intervals and allow the water level to stabilize. Record the actual rise in the sump level and on the Primary Sump Level Meter at 2 inch intervals. Both readings should be within +/- 1 inch. Continue throughout filling.

9.1.6 Continue adding water to primary sump. Observe relay CR2 being de-energized when the level indicated by WLT reaches D1.

9.1.7 Continue adding water to primary sump. Observe relay CR4 being de-energized at level D3 and relay CR1 being energized at level D2. Stop filling sump.

9.1.8 Confirm that the actual water level and Primary Sump Level Meter are within +/- 1 inch.

9.1.9 Manually lift (simulate operation) the high level float on the primary sump vertical riser float switch. Verify that relay CR3 is energized. Lower the float and verify that relay CR3 is de-energized.

9.2 SECONDARY SUMP

Record all data on Test Data Form 9-2 (see Appendix A).

9.2.1 Pump the secondary sump to below level DS-1. Remove power to pump W5P2 by opening circuit breaker B5.

9.2.2 Verify that relay CR5 is "off" (de-energized) and CR6 is "on" (energized) by observing the LED on each relay.

9.2.3 Remove secondary sump transducer from installed location. Using the water container, slowly fill the container with water and manually calibrate the transducer over the range of 0" to 48". Use at least 10 data points for the calibration. Attach the calibration sheet to Test Data Form 9-2.

9.2.4 Reinstall transducer and observe secondary sump level meter reading. This should be near DS-1.

9.2.5 Add water in increments as directed by the Test Director to secondary sump via the secondary slope riser pipe. Record the volume of water added to the sump. Wait 2 minutes after each increment of water, and record the secondary sump level meter reading. Verify that the secondary sump level meter reading increases as water is added.

9.2.6 Continue adding water in increments and observe that relay CR6 is de-energized when the level is DS-1, and that CR5 is energized when the level is DS-2. Stop filling sump.

10.0 PUMP TESTS

This procedure will demonstrate the correct functioning of the pumps and associated controls. See Figure 1 for definitions of water levels and associated pumps and relays.

For pumps W5P1, W5P2, W5P3, and W5P4, measure the phase currents prior to beginning pumping tests. Record this information on the top of the test data forms 10-2, 10-3, 10-4, 11-1 respectively. Verify that motor overload devices are sized correctly.

10.1 INITIAL CONDITIONS FOR PUMP TESTS

Prior to testing pumps, verify that relay CR7 (high tank) is de-energized (closed). Record all data on Test Data Form 10-1 (see Appendix A).

10.1.1 Primary Sump

This testing should begin with water in the primary sump above level D2. Verify the following conditions on the control panel:

a. CR1 is energized.
b. CR2 is de-energized.
c. CR3 is de-energized.
d. CR4 is de-energized.
e. Pump failure light for the primary submersible pump is on.
f. The roof alarm light is on.
g. The panel lights associated with relays CR1 is on, and CR4 is off.

10.1.2 Secondary Sump

The water level in the secondary sump should be above the level of the high level switch (water level DS-2). Verify the following conditions on the control panel:

a. CR5 is energized.
b. CR6 is de-energized.
c. Pump failure light for the secondary submersible pump is on.
d. The roof alarm light is on.
e. The panel light associated with relay CR5 is on.

10.2 PRIMARY SUBMERSIBLE PUMP (W5P1)

Record all data on Test Data Form 10-2 (see Appendix A).

10.2.1 The switch on the control panel for the pump should be in the "off" position. Close circuit breaker B1.

10.2.2 Turn the switch for the Primary Submersible Pump to the "hand" position.

10.2.3 Verify by direct visual observation that water is being pumped from the sump into the storage tank.

10.2.4 Verify that the N/0 drain back solenoid valve (W54) is closed (energized).

10.2.5 Verify that the associated "pump run" light is on. Run the pump until the primary sump is drained below the high water level (D2).

10.2.6 Turn switch on motor controller to "automatic" position. Add water to primary sump until high level relay CR1 is activated (water level D2).

10.2.7 Verify that the pump starts automatically and that the pump run light is on.

10.2.8 Verify by direct visual observation that water is being pumped from the sump into the storage tank.

10.2.9 Verify that when the water level in the sump reaches low level (water level D1), relay CR2 is energized, and the pump is automatically shut off. W5P3 may be used to assist in primary sump draw-down.

10.2.10 Add water to the primary sump to above level D1. Manually initiate operation of Timer TM1 and verify that the pump is automatically started.

10.2.11 While pump is running, connect terminals H2F and #10 across FS3 using a jumper, to simulate high water level in the storage tank. Verify that the pump is automatically stopped and that the roof alarm is initiated. Remove the jumper and re-initiate the automatic operation.

10.2.12 Turn the switch on the motor starter to the "off" position.

10.3 SECONDARY SUBMERSIBLE PUMP (W5P2)

Record all data on Test Data Form 10-3 (see Appendix A).

Repeat steps 10.2.1 through 10.2.8 and 10.2.11 except for the secondary submersible pump, adding water to the secondary sump through the secondary riser pipe as required.

10.4 PRIMARY SUMP SELF-PRIMING PUMP (W5P3)

Record all data on Test Data Form 10-4 (see Appendix A).

10.4.1 The switch on the control panel for pump W5P3 should be in the "off" position. Fill the primary sump with water to above level D2. Close circuit breaker A7.

10.4.2 Turn the switch on the control panel to the "hand" position.

10.4.3. Verify by direct visual observation that the pump is running and that water is being pumped from the sump into the leachate storage tank.

10.4.4 Verify that the "pump run" light is on.

10.4.5 Verify operation for one minute.

10.4.6 Turn the switch on the motor controller to the "automatic" position. Add water to the sump to above level D2.

10.4.7 Manually raise the high level vertical riser float switch to simulate high water condition.

10.4.8 Verify that the pump is automatically started.

10.4.9 Verify that the pump continues running until the water level reaches the low level vertical riser float switch (water level D3), when the pump is automatically shut off.

10.4.10 Add water to the primary sump and perform step 10.2.11 for this pump.

10.5 FLOWMETER CALIBRATION

Record all data on Test Data Form 10-5 (see Appendix A).

10.5.1 Verify that there is sufficient water in the secondary sump to pump 500 gallons and still maintain a final water level of at least 8 inches.

10.5.2 Verify that the water in the sump is clean and will not produce foam when pumped. Flush sump if necessary until clean, non-foaming water is obtained.

10.5.3 Verify that ball valve W65 is open and ball valve W66 is closed. Verify that the ball valve in series with the solenoid draindown valve is closed.

10.5.4 Measure the water level in the leachate temporary storage tank to the nearest 0.01 foot with a rigid rod. Measure through port in top of tank. If necessary, add water until depth in tank is at least 0.3 feet.

10.5.5 Remove 1/4-inch plug immediately upstream of 2-inch flowmeter. Energize secondary submersible pump. Pump until air no longer escapes through 1/4-inch hole. Replace plug. De-energize pump.

10.5.6 Measure the water level in the leachate temporary storage tank as described in step 10.5.4. Record on Test Data Sheet 10-5.

10.5.7 Record the readings of the 1.5-inch and 2-inch flowmeters on Test Data Sheet 10-5.

10.5.8 Energize the secondary submersible pump and pump at least 500 gallons into the leachate temporary storage tank.

10.5.9 Measure the water level in the leachate temporary storage tank as described in step 10.5.4. Record on Test Data Sheet 10-5.

10.5.10 Record the readings of the 1.5-inch and 2-inch flowmeters on Test Data Sheet 10-5. If the meter readings differ from the calculated volume (based on measurements of water depth in the tank) by more than 5 percent, repeat step 10.5.5 using the self-priming pump (primary sump). Ensure that there is sufficient water in the primary sump prior to purging the discharge pipes. Continue the ATP from step 10.5.6 using the secondary submersible pump.

10.5.11 Repeat steps 10.5.8 through 10.5.10 twice, for a total pumped volume of about 1500 gallons.

10.6 SPARE PUMP TESTS

Test spare pumps at the ground surface to verify that they function. Test submersible pumps in a "barrel" that allows complete immersion. Record all data on Test Data Form 10-6.

10.6.1 Install the valve on the pump discharge line to simulate head.

10.6.2 Install the pressure gage between the valve and pump to measure the head.

10.6.3 Energize the pump and allow it to achieve steady state conditions at a pressure of approximately 90% of the maximum efficiency discharge head as shown on the manufacturer's pump performance curves. Measure the volume of water pumped for at least 30 seconds.

10.6.4 Repeat the test with the pressure set at about 110% of the maximum efficiency discharge head.

10.6.5 Repeat the test with the discharge valve closed to determine the "shutoff" pressure.

10.6.6 Repeat steps 10.6.1 through 10.6.5 for all spare pumps.

11.0 LEACHATE STORAGE TANK

This procedure will demonstrate correct functioning of the transfer pump and controls associated with the leachate storage tank. Verify and record the following:

11.1 LEACHATE STORAGE TANK PUMP (W5P4)

Record all data on Test Data Form 11-1 (see Appendix A).

11.1.1 Verify that the storage tank is at least 25 percent full of water. Turn on circuit breaker A1 for the pump.

11.1.2 Using the DMM, measure the voltage at the motor terminals (T1, T2, T3). The voltage should read 0 between terminals T1 & T2, T2 & T3, and between T1 and the metal frame.

11.1.3 Push the "start" pushbutton on the motor starter. Verify that the motor is operating correctly with proper rotation. Verify by direct visual observation that water is being pumped from the tank.

11.1.4 Using the DMM, measure the voltage at the motor terminals. The voltage should read between 460 and 500 volts between terminals T1 & T2 and between terminals T2 & T3.

11.1.5 Continue pumping for 2 minutes minimum. Push the "stop" pushbutton and verify that the pump stops running.

11.2 HIGH LEVEL FLOAT SWITCH (FS3) AND LIMIT SWITCH (L1)

Record all data on Test Data Forms 11-2A and 11-2B (see Appendix A).

11.2.1 Observe that the red "high tank level" light on the control panel is off and that relay CR7 is de-energized. Disconnect limit switch L1.

11.2.2 Fill the storage tank with water to above the high level. Verify that FS3 operates at the selected "high water" level.

11.2.3 Observe that relay CR7 is energized and time delay is functional.

11.2.4 Observe that the red "high tank level" light on the control panel is on.

11.2.5 Observe that the roof alarm light is on and time delay is functional.

11.2.6 Verify that the submersible pumps and self primary pumps will not operate (3 pumps total) by temporarily turning the appropriate control switches on the control panel to "hand" position and observing that the associated "pump run" light does not come on.

11.2.7 Lower the water level in the tank and observe that FS3 returns to normal condition (repeat step 11.2.1).

11.2.8 Reconnect limit switch L1 and disconnect the high level float switch FS3.

11.2.9 Repeat steps 11.2.1 through 11.2.7 to test L1. Record all data on Test Data Form 11-2B (see Appendix A).

11.2.10 Reconnect high level float switch FS3.

12.0 BUILDING POWER AND LIGHTING

This procedure will demonstrate the correct functioning of control building power and lighting, and area lighting. Verify and record the following:

12.1 BUILDING POWER RECEPTACLE

Record all data on Test Data Form 12-1 (see Appendix A).

12.1.1 Insert receptacle tester into one outlet of the duplex GFI receptacle. Verify that receptacle is correctly wired.

12.1.2 Push the button on the receptacle tester. This will initiate a ground fault current into the receptacle. Verify that the receptacle ground fault device trips. Verify that the outlet is now de-energized (observe that all the lights on the tester are now off).

12.1.3 Repeat Step 12.1.2 for the other outlet.

12.2 BUILDING LIGHTING FIXTURES

Record all data on Test Data Form 12-2 (see Appendix A).

12.2.1 Turn on light switch for fixture in the Control Building. Observe that both fluorescent lamps are illuminated.

12.3 AREA LIGHTING FIXTURES

Record all data on Test Data Form 12-3 (see Appendix A).

12.3.1 Cover the sensors of all photocells to simulate darkness. Observe that the light fixtures are automatically turned on and illuminated to full brightness within 5 minutes.

12.3.2 Observe the operation of the exterior fixtures at 15 minute intervals over a 75 minute period. Verify that the fixtures remain illuminated (do not cycle on and off).

12.3.3 Remove covers from photocell sensors. Verify that all fixtures turn off.

12.4 CONTROL PANEL HEATERS

Record all data on Test Data Form 12-4 (see Appendix A).

12.4.1 Turn thermostat on heater in Control Panel C off. Verify that heater is at ambient temperature. Wait for heater to cool if necessary.

12.4.2 Turn thermostat until it energizes. Verify that heater becomes warm.

12.4.3 Repeat procedure for Control Panels A and B.

APPENDIX A

TEST DATA FORMS

LIST OF FORMS

TEST EXECUTION SHEET

EXCEPTION SHEET

TEST DATA FORM 8-1 HEAT TRACE SYSTEM - TEMPERATURE SENSOR TEST

TEST DATA FORM 8-2 HEAT TRACE SYSTEM - HEAT TRACE CABLE TEST

TEST DATA FORM 9-1 TRANSDUCERS AND METER/CONTROLLERS - PRIMARY SUMP

TEST DATA FORM 9-2 TRANSDUCERS AND METER/CONTROLLERS - SECONDARY SUMP

TEST DATA FORM 10-1 PUMP TESTS - INITIAL CONDITIONS

TEST DATA FORM 10-2 PUMP TESTS - PRIMARY SUBMERSIBLE PUMP (W5P1)

TEST DATA FORM 10-3 PUMP TESTS - SECONDARY SUBMERSIBLE PUMP (W5P2)

TEST DATA FORM 10-4 PUMP TESTS - PRIMARY SUMP SELF-PRIMING PUMP (W5P3)

TEST DATA FORM 10-5 PUMP TESTS - FLOWMETER CALIBRATION

TEST DATA FORM 10-6 PUMP TESTS - SPARE PUMPS

TEST DATA FORM 11-1 LEACHATE STORAGE TANK - TANK PUMP (W5P4)

TEST DATA FORM 11-2A LEACHATE STORAGE TANK - HIGH LEVEL FLOAT SWITCH (FS3)

TEST DATA FORM 11-2B LEACHATE STORAGE TANK - HIGH LEVEL LIMIT SWITCH (L1)

TEST DATA FORM 12-1 BUILDING POWER AND LIGHTING - BUILDING POWER RECEPTACLE

TEST DATA FORM 12-2 BUILDING POWER AND LIGHTING - BUILDING LIGHTING FIXTURES

TEST DATA FORM 12-3 BUILDING POWER AND LIGHTING - AREA LIGHTING FIXTURES

TEST DATA FORM 12-4 BUILDING POWER AND LIGHTING - CONTROL PANEL HEATERS

TEST EXECUTION SHEET

ATP No. WHC-SD-W025-ATR-001
Test No. 2

TEST EXECUTION

Installation Contractor	Date		
Scott A. Matthews (GCS)	10-4-94	[signature] WHC	10/4/94
Recorder/Organization	Date	Test Director/Organization	Date

TEST WITNESS

[signature]	10/4/94	WHC PE	10/4/94
Witness/Organization	Date	Witness/Organization	Date
Lawrence W Fry (SWO)	10/07/94		
Witness/Organization	Date	Witness/Organization	Date

TEST ACCEPTANCE

~~Kaiser Engineers Hanford~~ Sam GOLDER

✓ Without Exception	___ With Exception/Resolved	___ With Exception/Outstanding

Scott A. Matthews (GCS)	10-4-94		
Field Engineer	Date		
Frank S. Shuri (GAI)	10-6-94	[signature] (WHC)	10/11/94
Design Engineer	Date	Project Engineer	Date

TEST APPROVAL AND ACCEPTANCE

Westinghouse Hanford Company

✓ Without Exception	___ With Exception/Resolved	___ With Exception/Outstanding

[signature]	10/7/94	WHC PE	
(Title or Department)	Date	(Title or Department)	Date
[signature]	10/7/94	WHC QAE	10/7/94
(Title or Department)	Date	(Title or Department)	Date
[signature]	10/7/94	WHC SWO	

TEST DATA FORM 8-1

HEAT TRACE SYSTEM - TEMPERATURE SENSOR TEST

Test Equipment: DMM Manufacturer and Model No. FLUKE 23 SERIES II
Serial No. 55851127

Step No.	Activity	Verify	Reading	Date	By
8.1.1	Disconnect conductors	X	NA	4-14-94	SAM
8.1.2	Visual inspection	X	NA	4-14-94	SAM
8.1.3	Connect DMM	X	NA	4-14-94	SAM
8.1.4	Cool or heat	X	NA	4-14-94	SAM
8.1.5	Contacts open	NA	INFINITY	4-14-94	SAM
	Contacts closed	NA	0.00	4-14-94	SAM
8.1.6	Reconnect conductors	X	NA	4-14-94	SAM

TEST DATA FORM 8-2

HEAT TRACE SYSTEM - HEAT TRACE CABLE TEST

Test Equipment: COA Manufacturer and Model No. AMPROBE ULTRA RS-3
Serial No. 2126683

Step No.	Activity	Verify	Reading	Date	By
8.2.1	Energize circuit	X	NA	4-14-94	SAM
8.2.2	Contacts closed	NA	16 AMPS	4-14-94	SAM
8.2.3	Contacts open	NA	0 AMPS	4-14-94	SAM

TEST DATA FORM 9-1

TRANSDUCERS AND METER/CONTROLLERS - PRIMARY SUMP

Test Equipment: WLT Manufacturer and Model No. N/A
Serial No. N/A

Water depths for pump controls: D1 = 6.0 INCHES
D2 = 12.0 INCHES
D3 = 6.8 INCHES

NOTE: Water Level in Sump Manually Measured

Step No.	Activity	Verify	Reading	Date	By
9.1.1	Disconnect pump power	X	NA	4-14-94	SAM
9.1.2	Install WLT	X	NA	4-14-94	SAM
	WLT reading	NA	7.8 Inches	4-14-94	SAM
	Sump water level	NA	8.5 Inches	4-14-94	SAM
9.1.3	Sump water level	NA	8.5 Inches	4-14-94	SAM
	Sump level meter reading	NA	7.8 Inches	4-14-94	SAM
9.1.4	Verify relays are correct	X	NA	4-14-94	SAM
9.1.5	Water level #1	NA	6.1 Inches	4-14-94	SAM
	Sump level meter reading #1	NA	7.0 Inches	4-14-94	SAM
	Water level #2	NA	8.6 Inches	4-14-94	SAM
	Sump level meter reading #2	NA	9.6 Inches	4-14-94	SAM
	Water level #3 (this reading was taken while filling sump)	NA	10.3 Inches	4-14-94	SAM
	Sump level meter reading #3	NA	10.0 Inches	4-14-94	SAM
	Water level #4	NA	10.4 Inches	4-14-94	SAM
	Sump level meter reading #4	NA	11.3 Inches	4-14-94	SAM
	Water level #5	NA	12.9 Inches	4-14-94	SAM
	Sump level meter reading #5	NA	13.8 Inches	4-14-94	SAM
	Water level #6	NA	-	-	-
	Sump level meter reading #6	NA	-	-	-

TEST DATA FORM 9-1 (Cont.)

Step No.	Activity	Verify	Reading	Date	By
	Water level #7	NA	-	-	-
	Sump level meter reading #7	NA	-	-	-
	Water level #8	NA	-	-	-
	Sump level meter reading #8	NA	-	-	-
	Water level #9	NA	-	-	-
	Sump level meter reading #9	NA	-	-	-
	Water level #10	NA	-	-	-
	Sump level meter reading #10	NA	-	-	-
9.1.6	Verify CR2 de-energized	X	NA	4-14-94	SAM
	Water level	NA	6.0 Inches	4-14-94	SAM
9.1.7	Verify CR4 de-energized	X	NA	4-14-94	SAM
	Water level (CR4)	NA	6.8 Inches	4-14-94	SAM
	Verify CR1 energized	X	NA	4-14-94	SAM
	Water level (CR1)	NA	12.0 Inches	4-14-94	SAM
9.1.8	Water level	NA	12.9 Inches	4-14-94	SAM
	Sump level meter reading	NA	13.8 Inches	4-14-94	SAM
9.1.9	Check high level float on	X	NA	4-14-94	SAM
	Check high level float off	X	NA	4-14-94	SAM

TEST DATA FORM 9-2

TRANSDUCERS AND METER/CONTROLLERS - SECONDARY SUMP

Water depths for pump controls: DS-1 = 6.0 INCHES
DS-2 = 12.0 INCHES

Step No.	Activity	Verify	Reading	Date	Total	By
9.2.1	Disconnect pump power	X	NA	4-14-94	-	SAM
9.2.2	Verify relays are correct	X	NA	4-14-94	-	SAM
9.2.3	Calibrate transducer (attach calibration sheet)	X	NA	4-14-94	-	SAM
9.2.4	Sump level meter reading	NA	8.1 Inches	4-14-94	-	SAM
9.2.5	Water volume #1	NA	75 GAL	4-14-94	75 GAL	SAM
	Sump level meter reading #1	NA	9.5 Inches	4-14-94	-	SAM
	Water volume #2	NA	95 GAL	4-14-94	170 GAL	SAM
	Sump level meter reading #2	NA	10.9 Inches	4-14-94	-	SAM
	Water volume #3	NA	95 GAL	4-14-94	265 GAL	SAM
	Sump level meter reading #3	NA	12.4 Inches	4-14-94	-	SAM
	Water volume #4	NA	-	-	-	-
	Sump level meter reading #4	NA	-	-	-	-
	Water volume #5	NA	-	-	-	-
	Sump level meter reading #5	NA	-	-	-	-
	Water volume #6	NA	-	-	-	-
	Sump level meter reading #6	NA	-	-	-	-
	Water volume #7	NA	-	-	-	-
	Sump level meter reading #7	NA	-	-	-	-
	Water volume #8	NA	-	-	-	-
	Sump level meter reading #8	NA	-	-	-	-
	Water volume #9	NA	-	-	-	-
	Sump level meter reading #9	NA	-	-		-
	Water volume #10	NA	-	-		-
	Sump level meter reading #10	NA	-	-		-

TEST DATA FORM 9-2 (Cont.)

Step No.	Activity	Verify	Reading	Date	Total	By
9.2.6	Verify CR6 de-energized	X	NA	4-14-94	-	SAM
	Sump level meter reading (CR6)	NA	6.0 Inches	4-14-94	-	SAM
	Verify CR5 energized		NA	4-14-94	-	SAM
	Sump level meter reading (CR5)	NA	12.0 Inches	4-14-94	-	SAM

Note: At the start of the test, water level was drawn-down below level DS-1. CR 6 was de-energized when the water back flushed through the pump, at which time the water level was raised above level DS-1.

TEST DATA FORM 10-1

PUMP TESTS - INITIAL CONDITIONS

Water depths for pump controls: D1 = 6.0 Inches
D2 = 12.0 Inches
D3 = 6.8 Inches
DS-1 = 6.0 Inches
DS-2 = 12.0 Inches

Step No.	Activity	Verify	Reading	Date	By
	Verify CR7 de-energized	X	NA	4-14-94	SAM
10.1.1	Primary sump water level	NA	14.5 Inches	4-14-94	SAM
	Verify on control panel:				
	CR1 energized	X	NA	4-14-94	SAM
	CR2 de-energized	X	NA	4-14-94	SAM
	CR3 de-energized	X	NA	4-14-94	SAM
	CR4 de-energized	X	NA	4-14-94	SAM
	Pump failure light on	X	NA	4-14-94	SAM
	Roof alarm light on	X	NA	4-14-94	SAM
	Relay indicator lights:				
	CR1 on	X	NA	4-14-94	SAM
	CR4 off	X	NA	4-14-94	SAM
10.1.2	Secondary sump water level	NA	12.1 Inches	4-14-94	SAM
	Verify on control panel:				
	CR5 energized	X	NA	4-14-94	SAM
	CR6 de-energized	X	NA	4-14-94	SAM
	Pump failure light on	X	NA	4-14-94	SAM
	Roof alarm light on	X	NA	4-14-94	SAM
	Relay indicator lights on:				
	CR5	X	NA	4-14-94	SAM

TEST DATA FORM 10-2

PUMP TESTS - PRIMARY SUBMERSIBLE PUMP (W5P1)

Step No.	Activity	Verify	Reading	Date	By
10.0	Phase current	NA	4.2 Amps	4-14-94	SAM
		NA	4.2 Amps	4-14-94	SAM
		NA	-	-	-
10.0	Motor overload size	X	NA	4-14-94	SAM
10.2.1	Energize pump	X	NA	4-14-94	SAM
10.2.2	Switch to "hand"	X	NA	4-14-94	SAM
10.2.3	Verify pumping	X	NA	4-14-94	SAM
10.2.4	Verify W54 energized	X	NA	4-14-94	SAM
10.2.5	Verify "run" light on	X	NA	4-14-94	SAM
	~~Drain sump below low level~~	NA	NA	-	-
10.2.6	Activate CR1	X	NA	4-14-94	SAM
	Water level at start	NA	12.0 Inches	4-14-94	SAM
10.2.7	Verify auto start	X	NA	4-14-94	SAM
	Verify "run" light on	X	NA	4-14-94	SAM
10.2.8	Verify pumping	X	NA	4-14-94	SAM
10.2.9	Verify pump shut off	X	NA	4-14-94	SAM
	Water level at shut off	NA	6.0 Inches	4-14-94	SAM
10.2.10	Verify auto start	X	NA	4-14-94	SAM
10.2.11	Verify automatic stop	X	NA	4-14-94	SAM
	Verify roof alarm	X	NA	4-14-94	SAM
10.2.12	Switch motor starter to "off"	X	NA	4-14-94	SAM

TEST DATA FORM 10-3

PUMP TESTS - SECONDARY SUBMERSIBLE PUMP (W5P2)

Step No.	Activity	Verify	Reading	Date	By
10.0	Phase current	NA	4.34 AMPS	4-14-94	SAM
		NA	4.25 AMPS	4-14-94	SAM
		NA	-	-	-
10.0	Motor overload size	X	NA	4-14-94	SAM
10.3.1	Energize pump	X	NA	4-14-94	SAM
10.3.2	Switch to "hand"	X	NA	4-14-94	SAM
10.3.3	Verify pumping	X	NA	4-14-94	SAM
10.3.4	Verify "run" light on	X	NA	4-14-94	SAM
	Drain sump below low level	X	NA	4-14-94	SAM
10.3.5	Activate CR5	X	NA	4-14-94	SAM
	Water level at start	NA	12.1 Inches	4-14-94	SAM
10.3.6	Verify auto start	X	NA	4-14-94	SAM
	Verify "run" light on	X	NA	4-14-94	SAM
10.3.7	Verify pumping	X	NA	4-14-94	SAM
10.3.8	Verify pump shut off	X	NA	4-14-94	SAM
	Water level at shut off	NA	6.0 Inches	4-14-94	SAM
10.3.10	Verify automatic stop	X	NA	4-14-94	SAM
	Verify roof alarm	X	NA	4-14-94	SAM

TEST DATA FORM 10-4

PUMP TESTS - PRIMARY SUMP SELF-PRIMING PUMP (W5P3)

Step No.	Activity	Verify	Reading	Date	By
10.0	Phase current	NA	6.1 AMPS	4-14-94	SAM
		NA	6.0 AMPS	4-14-94	SAM
		NA	6.25 AMPS	4-14-94	SAM
10.0	Motor overload size	X	NA	4-14-94	SAM
10.4.1	Add water to sump	NA	X	4-14-94	SAM
	Energize pump	X	NA	4-14-94	SAM
10.4.2	Switch to "hand"	X	NA	4-14-94	SAM
10.4.3	Verify pumping	X	NA	4-14-94	SAM
10.4.4	Verify "run" light on	X	NA	4-14-94	SAM
10.4.5	Verify pumping 1 minute	X	NA	4-14-94	SAM
10.4.6	Switch to "auto"	X	NA	4-14-94	SAM
	Add water to sump	NA	X	4-14-94	SAM
10.4.7	Raise high level switch	X	NA	4-14-94	SAM
10.4.8	Verify auto start	X	NA	4-14-94	SAM
10.4.9	Verify pump shut off	X	NA	4-14-94	SAM
	Water level at shut off	NA	X	4-14-94	SAM
10.4.10	Verify automatic stop	X	NA	4-14-94	SAM
	Verify roof alarm	X	NA	4-14-94	SAM

TEST DATA FORM 10-5

PUMP TESTS - FLOWMETER CALIBRATION

Step No.	Activity	Verify	Reading	Date	By
10.5.1	Verify water volume	X	NA	10-4-94	SAM
10.5.2	Verify water clean	X	NA	10-4-94	SAM
10.5.3	Ball valve W65 open	X	NA	10-4-94	SAM
	Ball valve W66 closed	X	NA	10-4-94	SAM
	Solenoid ball valve closed	X	NA	10-4-94	SAM
10.5.4	Water level in tank	NA	57 15/16"	10-4-94	SAM
10.5.5	Purge air	X	NA	10-4-94	SAM
10.5.6	Water level in tank	NA	58 5/16"	10-4-94	SAM
10.5.7	1.5-inch flowmeter reading	NA	2512 GAL	10-4-94	SAM
	2-inch flowmeter reading	NA	2407 GAL	10-4-94	SAM
10.5.8	Pump 500 gallons - 1st cycle	X	NA	10-4-94	SAM
10.5.9	Water level in tank - 1st cycle	NA	62 5/32"	10-4-94	SAM
10.5.10	1.5-inch flowmeter reading - 1st cycle	NA	3027	10-4-94	SAM
	2-inch flowmeter reading - 1st cycle	NA	2924	10-4-94	SAM
	Purge air	X	NA	10-4-94	SAM
10.5.11	Pump 500 gallons - 2nd cycle	X	NA	10-4-94	SAM
	Water level in tank - 2nd cycle	NA	START 63 7/8"	END 67 15/16"	SAM
	1.5-inch flowmeter reading - 2nd cycle	NA	START 3027	END 3539	SAM
	2-inch flowmeter reading - 2nd cycle	NA	START 3164	END 3679.5	SAM
	Pump 500 gallons - 3rd cycle	X	NA	10-4-94	SAM
	Water level in tank - 3rd cycle	NA	START 67 15/16"	END 72 3/8"	SAM
	1.5-inch flowmeter reading - 3rd cycle	NA	START 3539	END 4071	SAM
	2-inch flowmeter reading - 3rd cycle	NA	START 3679.5	END 4215	SAM

TEST DATA FORM 10-6

PUMP TESTS - SPARE PUMPS

Pressure Gage Model and S/N MARSH PG-73, 096280

Pump Type and Serial No.	Volume Pumped (units)	Time	Pressure Head (units)	Date	By
Transfer Pump, PACO YH93A01610	Approximately 250 GAL	-	-	4-14-94	SAM
Spare Submersible Pump- Grundfos 993351713	5 GAL	30 SEC	55 psig	4-14-94	SAM
	2.5 GAL	30 SEC	55 psig	4-14-94	SAM
	3.7 GAL	30 SEC	55 psig	4-14-94	SAM
	3.5 GAL	30 SEC	55 psig	4-14-94	SAM
	2.5 GAL	30 SEC	55 psig	4-14-94	SAM
	1.7 GAL	30 SEC	85 psig	4-14-94	SAM
	1.4 GAL	30 SEC	85 psig	4-14-94	SAM
	1.7 GAL	30 SEC	85 psig	4-14-94	SAM
	1.7 GAL	30 SEC	85 psig	4-14-94	SAM
SHUT-OFF HEAD PRESSURE	-	-	96 psig	4-14-94	SAM

TEST DATA FORM 11-1

LEACHATE STORAGE TANK - TANK PUMP (W5P4)

DMM Manufacturer and Model No. FLUKE 23 SERIES II
Serial No. 55851127

Step No.	Activity	Verify	Reading	Date	By
10.0	Phase current	NA	9.3 AMPS	4-14-94	SAM
		NA	9.4 AMPS	4-14-94	SAM
		NA	9.5 AMPS	4-14-94	SAM
10.0	Motor overload size	X	NA	4-14-94	SAM
11.1.1	Check tank; activate breaker	X	NA	4-14-94	SAM
11.1.2	Voltage between terminals:				
	T1 and T2	NA	0	4-14-94	SAM
	T2 and T3	NA	0	4-14-94	SAM
	T1 and metal frame	NA	0	4-14-94	SAM
11.1.3	Verify motor rotation	X	NA	4-14-94	SAM
	Verify pumping	X	NA	4-14-94	SAM
11.1.4	Voltage between terminals:				
	T1 and T2	NA	491	4-14-94	SAM
	T2 and T3	NA	495	4-14-94	SAM
11.1.5	Verify pump shut off	X	NA	4-14-94	SAM

TEST DATA FORM 11-2A

LEACHATE STORAGE TANK - HIGH LEVEL FLOAT SWITCH (FS3)

Tank high water level 11 Inches below top of tank
7 Feet 1 Inch on tank level indicator

Step No.	Activity	Verify	Reading	Date	By
11.2.1	Verify "high tank level" light	X	NA	4-14-94	SAM
	Verify CR7 de-energized	X	NA	4-14-94	SAM
11.2.2	Verify FS3	X	NA	4-14-94	SAM
	Water level at FS3 turn on	NA	7' 1"	4-14-94	SAM
11.2.3	Verify CR7 energized and record time delay	X	-	4-14-94	SAM
11.2.4	Verify "high tank level" light	X	NA	4-14-94	SAM
11.2.5	Verify roof alarm and record time delay	X	4 SEC	4-14-94	SAM
11.2.6	Verify pumps inoperable:				
	W5P1	X	NA	4-14-94	SAM
	W5P2	X	NA	4-14-94	SAM
	W5P3	X	NA	4-14-94	SAM
11.2.7	Verify "high tank level" light	X	NA	4-14-94	SAM
	Verify CR7 de-energized	X	NA	4-14-94	SAM
	Water level at FS3 turn off	NA	7' 1"	4-14-94	SAM

TEST DATA FORM 11-2B

LEACHATE STORAGE TANK - HIGH LEVEL LIMIT SWITCH (L1)

Tank high water level 9 Inches below top of tank
7 Feet 3 Inches on tank level indicator

Step No.	Activity	Verify	Reading	Date	By
11.2.1	Verify "high tank level" light	X	NA	4-14-94	SAM
	Verify CR7 de-energized	X	NA	4-14-94	SAM
11.2.2	Verify L1	X	NA	4-14-94	SAM
	Water level at L1 turn on	NA	7' 3"	4-14-94	SAM
11.2.3	Verify CR7 energized and record time delay	X	-	4-14-94	SAM
11.2.4	Verify "high tank level" light	X	NA	4-14-94	SAM
11.2.5	Verify roof alarm and record time delay	X	4 SEC	4-14-94	SAM
11.2.6	Verify pumps inoperable:				
	W5P1	X	NA	4-14-94	SAM
	W5P2	X	NA	4-14-94	SAM
	W5P3	X	NA	4-14-94	SAM
11.2.7	Verify "high tank level" light	X	NA	4-14-94	SAM
	Verify CR7 de-energized	X	NA	4-14-94	SAM
	Water level at L1 turn off	NA	7' 3"	4-14-94	SAM

TEST DATA FORM 12-1

BUILDING POWER AND LIGHTING - BUILDING POWER RECEPTACLE

Test Equipment: Receptacle Tester Manufacturer and Model No. IDEAL INDUSTRIES
Serial No. 61-051

Step No.	Activity	Verify	Reading	Date	By
12.1.1	Verify receptacle wiring	X	NA	4-14-94	SAM
12.1.2	Verify that GFI trips (outlet 1)	X	NA	4-14-94	SAM
12.1.3	Verify that GFI trips (outlet 2)	X	NA	4-14-94	SAM

TEST DATA FORM 12-2

BUILDING POWER AND LIGHTING - BUILDING LIGHTING FIXTURES

Step No	Activity	Verify	Reading	Date	By
12.2.1	Verify lights function	X	NA	4-14-94	SAM

TEST DATA FORM 12-3

BUILDING POWER AND LIGHTING - AREA LIGHTING FIXTURES

Step No.	Activity	Verify	Reading	Date	By
12.3.1	Verify initial illumination: Start at 10:00 am				
	P1a	X	NA	4-14-94	SAM
	P1b	X	NA	4-14-94	SAM
	P2	X	NA	4-14-94	SAM
	P3	X	NA	4-14-94	SAM
	P4	X	NA	4-14-94	SAM
12.3.2	Verify illumination over time:				
	Time #1	NA	15 MIN	4-14-94	SAM
	P1a	X	NA	4-14-94	SAM
	P1b	X	NA	4-14-94	SAM
	P2	X	NA	4-14-94	SAM
	P3	X	NA	4-14-94	SAM
	P4	X	NA	4-14-94	SAM
	Time #2	NA	30 MIN	4-14-94	SAM
	P1a	X	NA	4-14-94	SAM
	P1b	X	NA	4-14-94	SAM
	P2	X	NA	4-14-94	SAM
	P3	X	NA	4-14-94	SAM
	P4	X	NA	4-14-94	SAM
	Time #3	NA	45 MIN	4-14-94	SAM
	P1a	X	NA	4-14-94	SAM
	P1b	X	NA	4-14-94	SAM
	P2	X	NA	4-14-94	SAM
	P3	X	NA	4-14-94	SAM
	P4	X	NA	4-14-94	SAM

TEST DATA FORM 12-3 (Cont.)

Step No.	Activity	Verify	Reading	Date	By
	Time #4	NA	60 MIN	4-14-94	SAM
	P1a	X	NA	4-14-94	SAM
	P1b	X	NA	4-14-94	SAM
	P2	X	NA	4-14-94	SAM
	P3	X	NA	4-14-94	SAM
	P4	X	NA	4-14-94	SAM
	Time #5	NA	75 MIN	4-14-94	SAM
	P1a	X	NA	4-14-94	SAM
	P1b	X	NA	4-14-94	SAM
	P2	X	NA	4-14-94	SAM
	P3	X	NA	4-14-94	SAM
	P4	X	NA	4-14-94	SAM
12.3.3	Verify fixtures turn off:				
	P1a	X	NA	4-14-94	SAM
	P1b	X	NA	4-14-94	SAM
	P2	X	NA	4-14-94	SAM
	P3	X	NA	4-14-94	SAM
	P4	X	NA	4-14-94	SAM

TEST DATA FORM 12-4

BUILDING POWER AND LIGHTING - CONTROL PANEL HEATERS

Step No.	Activity	Verify	Reading	Date	By
12.4.1	Heater at ambient - Control Panel A	X	NA	4-14-94	SAM
12.4.2	Heater becomes warm - Control Panel A	X	NA	4-14-94	SAM
12.4.3	Heater at ambient - Control Panel B	X	NA	4-14-94	SAM
	Heater becomes warm - Control Panel B	X	NA	4-14-94	SAM
	Heater at ambient - Control Panel C	X	NA	4-14-94	SAM
	Heater becomes warm - Control Panel C	X	NA	4-14-94	SAM