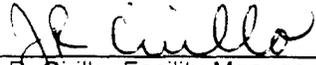


CONSOLIDATED WATER TREATMENT FACILITY
INFLUENT COLLECTION, TRANSFER AND STORAGE OPERATIONS

RMRS/OPS-PRO.149
Revision 0
Effective Date: May 3rd, 1999

APPROVED: _____


J.R. Cirillo, Facility Manager

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1.0 PURPOSE

This procedure provides instructions for influent collection, transfer and storage operations at the Consolidated Water Treatment Facility (CWTF).

2.0 SCOPE

This procedure applies to all Water Operations employees and subcontractors.

This document supercedes *Influent Collection, Transfer and Storage Normal Operations Consolidated Water Treatment Facility, 4-149-ENV-OPS-FO.31.*

This procedure addresses the following topics:

- Collection, transfer and storage of Collection Well and French Drain water;
- Receipt and storage of Main Decontamination Facility (MDF) and Protected Area Decontamination Facility (PADF) decontamination water; and
- Receipt and storage of other Environmental Restoration (ER) waters.

3.0 OVERVIEW

The CWTF accepts water from four primary influent sources and treats these waters through four treatment processes.

The CWTF currently treats potentially contaminated water from the following sources:

- OU-1 groundwater (French Drain and Collection Well);
- Decontamination water from the main and protected area decontamination facilities; and
- Other Environmental Restoration waters.

The CWTF contains the following treatment processes:

- A chemical precipitation system;
- An ultraviolet/hydrogen peroxide (UV/H₂O₂) oxidation system;
- A liquid-phase granular activated carbon (GAC) unit; and
- An ion exchange (IX) system.

Water to be treated at the CWTF is temporarily stored in influent tanks T-201 or T-202 (15,000 gallons each) or in T-200 (10,000 gallons). When an influent tank is full, the contents are pumped either to T-900A/T-900B or to Building 891 for treatment.

A layout diagram of the CWTF is included as Appendix 1 and a process flow diagram of the CWTF is included as Appendix 2. Appendix 3 and 4 contain the CWTF Major Equipment List and Valve List, respectively. Appendix 5 contains the CWTF Receiving Water Tracking Log, Appendix 6 includes the CWTF Influent Water Assessment Worksheet and Appendix 7 contains the CWTF Influent Water Receiving Log.

Each subsection of the instructions section is a stand-alone section that may be performed independently of other subsections.

4.0 LIMITATIONS AND PRECAUTIONS

- Operation of any pump (P-100, P-101, P-102) associated with the OU1 Groundwater Recovery System in the manual mode (local pump switch is the "JOG" position) may lower the water level until the pump suction is lost. Continued operation of the pumps with the water at low levels will result in damage to the pump.
- P-101 and P-102 shall not be started simultaneously because the self-cleaning filter cannot handle the resultant surge. If both pumps are needed, the pumps shall be started sequentially.
- The level in the influent tanks shall be monitored regularly. Manually operating the French Drain Sump pumps overrides the tank level controls and may result in the tank overflowing. Tank levels for T-201 and T-202 may be monitored either at the Allen Bradley touch screen or at the respective local tank level indicator. T-200 may be monitored at the local tank level indicator.
- The tanks and vessels associated with the CWTF are confined spaces requiring special training and entry precautions in accordance with 1-E36-HSP-6.04, *Confined Space Entry*.

5.0 PREREQUISITE ACTIONS

5.1 Planning and Coordination

Responsible Manager/Designee

- [1] Ensure that the planned activity is scheduled and discussed in the CWTF Plan of the Day (POD) meeting.
- [2] Complete the CWTF Influent Water Assessment Worksheet (Appendix 6), as appropriate.
- [3] Ensure that all personnel performing this evolution are trained in the use of this procedure and have the appropriate health and safety training as specified in the CWTF Health and Safety Plan, RF/ER-95-0118.
- [4] Ensure that the Operator is certified, at a minimum, as Colorado Class C, Industrial Wastewater Treatment Plant Operator.
- [5] Ensure that all personnel performing confined space entry are qualified for confined space entry in accordance with 1-E36-HSP-6.04, *Confined Space Entry*.
- [6] Direct the Operator to collect, transfer and store influent water in accordance with this procedure.

Operator

- [1] Operate and monitor the influent collection, transfer and storage system equipment.
- [2] Report abnormal conditions, occurrences and incidents to the Responsible Manager/Designee.
- [3] Ensure compliance with the CWTF Health and Safety Plan.
- [4] Ensure that the chosen influent tank has adequate volume to accept water planned for transfer.

- [5] Complete required entries in logs including the CWTF Logbook and, as applicable, the CWTF Receiving Water Tracking Log (Appendix 5) and CWTF Influent Water Receiving Log (Appendix 7).

Health and Safety Specialist/Designee

- [1] Conduct a health and safety briefing prior to commencement of operations.

6.0 INSTRUCTIONS—COLLECTION WELL

The Collection Well (891COLWEL) is located on the 881 Hillside. The Collection Well is equipped with a bubbler system which is used to determine the depth of the water in the well. The bubbler system is energized only during pumping of the Collection Well. The bubbler panel pressure reading is converted to depth by multiplying the reading (psi) by 2.31 (ft/psi) to obtain feet of water in the well.

A submersible pump (P-100) installed in the Collection Well is used to pump groundwater from the Collection Well to the OU1 trailer-mounted container. Detailed manufacturer information on the pump is available in the Building 891 office.

Originally, the water collected at the Collection Well was routed through piping to the French Drain Sump. However, after a directive from DOE to immediately discontinue the pumping of water from the Collection Well to the French Drain Sump, the connecting piping was disconnected. Collection Well water is now transferred each working day from the well to the CWTF using the OU1 trailer-mounted container. When not in use, the OU1 trailer-mounted container is located at Building 891.

Since Collection Well water is now transferred using a trailer-mounted container, the Collection Well pump P-100 should only be operated in the "MANUAL" mode. The Collection Well pump P-100 should not be operated in the "AUTOMATIC" or "REMOTE" modes. The operational mode of pump P-100 is controlled by properly setting three separate switches. The following table lists the switch names, locations and possible settings.

<u>Label/Name</u>	<u>Location</u>	<u>Possible Setting</u>
FP-100, MCC breaker	Electrical room of Building 891, west wall	"ON" or "OFF"
P-100, Main PLC switch	Electrical room of Building 891, beneath the Allen Bradley touch screen	"HAND", "OFF", or "AUTO"
P-100, local pump switch	At the Collection Well	"JOG", "OFF", or "AUTO"

6.1 Collection Instructions

When the Collection Well is operated in the "MANUAL" mode, the Collection Well pump P-100 operates regardless of the well water level or position of the P-100 Main Programmable Logic Controller (PLC) switch in the Building 891 electrical room. The operators will energize the bubbler system prior to activating pump P-100. The bubbler panel pressure reading will be monitored periodically and pump P-100 is turned off when the pressure reaches approximately 0.3 psi. The pressure readings can be converted to depth by multiplying the reading (psi) by 2.31 (ft/psi) to obtain feet of water in the well. Detailed manufacturer information on the bubbler system is available in the Building 891 office.

CAUTION

OPERATE THE COLLECTION WELL IN THE "MANUAL" MODE ONLY.

NOTE: *The piping which historically ran from the Collection Well to the French Drain Sump has been disconnected and capped. Therefore the "REMOTE" and "AUTOMATIC" operation of the Collection Well has been PURPOSEFULLY DISABLED by modifying the PLC program to eliminate "REMOTE" and "AUTOMATIC" operation.*

DO NOT OPERATE THE COLLECTION WELL IN "REMOTE" OR "AUTOMATIC" MODE.

NOTE: *REMOTE mode = P-100 MCC breaker "ON", P-100 MAIN PLC switch "HAND", and P-100 local pump switch "AUTO". AUTOMATIC mode = Bubbler system "ON", P-100 MCC breaker "ON", P-100 MAIN PLC switch "AUTO" and P-100 local pump switch "AUTO".*

Operator

- [1] Inspect the trailer-mounted container for leaks and internal residue.
- [2] Verify that the trailer has been hitched and properly chained before transporting the trailer-mounted container from the CWTF to the Collection Well.
- [3] Position the trailer-mounted container next to the Collection Well.
- [4] Record the proper accumulation date on the "Hazardous Waste" label and apply the label to the trailer-mounted container.

- [5] Remove the six-inch cap that covers the Collection Well one-inch camlock fitting.
- [6] Remove the six-inch cap that covers the Collection Well bleed valve (HV-100D) and sample port.
- [7] Ensure that the bleed valve is closed.
- [8] Connect the transfer hose to the one-inch camlock fitting.
- [9] Remove the fill cap from the trailer-mounted container.
- [10] Place the other end of the transfer hose into the fill plug opening on the trailer-mounted container and extend the hose to the bottom of the container.
- [11] OPEN the valve (HV-100E) located below the one-inch camlock fitting.
- [12] Maintain physical control of the transfer hose and ensure the hose remains in the trailer-mounted container throughout the pumping operation.
- [13] Plug in the compressor for the bubbler system.
- [14] Ensure that the P-100 MCC breaker is in the "ON" position.
- [15] Place the P-100 local pump switch in the "JOG" position to begin filling the trailer-mounted container.

CAUTION

With the local pump switch in "JOG", the water level in the Collection Well may be lowered until the pump suction is lost. Continued operation of the pump at low water levels damages the pump.

- [16] **IF** a leak is observed,
THEN immediately place the P-100 local pump switch in the " OFF" position and notify the Responsible Manager/Designee.
- [17] Monitor the bubbler panel reading and the sight tube on the trailer-mounted container.

- [18] **WHEN** the panel reading reaches approximately 0.3 psi,
THEN place the P-100 local pump switch in the "OFF" position.
- OR**
- WHEN** the site tube indicates that the container is approximately 90% full,
THEN place the P-100 local pump switch in the "OFF" position.
- [19] Unplug the compressor to the bubbler system.
- [20] OPEN the bleed valve (HV-100D) to allow the portion of the hose near the camlock fitting to drain.
- [21] CLOSE the valve (HV-100E) located below the one-inch camlock fitting.
- [22] Unhook the transfer hose from the camlock fitting. Walk-down the hose to ensure that any excess water remaining in the hose is drained into the trailer-mounted container. Ensure that the camlock end of the transfer hose remains higher than the container fill hole when draining excess water into the container.
- [23] Insert and secure the trailer-mounted container fill cap into the fill hole.
- [24] CLOSE the bleed valve (HV-100D).
- [25] Replace the six-inch cap that covers the one-inch camlock fitting.
- [26] Replace the six-inch cap that covers the bleed valve and sample port.
- [27] Transport the trailer-mounted container from the Collection Well to the Building 891 truck dock or to the east bay door near the 891 sump.

6.2 Transfer Instructions

Operator

- [1] Position the OU1 trailer-mounted container in the Building 891 truck dock near the fill port labeled "INFLUENT TO TANKS T-200, 201 OR 202". Chock the wheels of the trailer.

- [2] Attach a transfer hose to the discharge fitting located at the bottom of the trailer-mounted container. Attach the other end of the hose to the suction of the transfer pump. Attach a second transfer hose to the discharge of the transfer pump and to the camlock fitting on the "INFLUENT TO TANKS T-200, 201 OR 202" fill port.

- [3] OPEN the appropriate manual inlet valve at the influent tank:
 - For T-200, OPEN HVA-200, Influent to T-200.
Ensure that HVA-201 and HVA-202 are CLOSED.
 - For T-201, OPEN HVA-201, Influent to T-201.
Ensure that HVA-200 and HVA-202 are CLOSED.
 - For T-202, OPEN HVA-202, Influent to T-202.
Ensure that HVA-200 and HVA-201 are CLOSED.

- [4] OPEN V-103, Truck Dock Influent.

- [5] Remove the container fill cap to provide a vent for the tank during the pumping operation.

- [6] OPEN the discharge valve located at the bottom of the OU1 trailer-mounted container.

- [7] Start the portable transfer pump and monitor the container sight tube.

- [8] Remove as much water as possible from the container and ensure that the water in the sight tube is draining properly.

- [9] **WHEN** the sight tube indicates that the container is empty
THEN stop the portable transfer pump.

- [10] CLOSE the discharge valve located at the bottom of the OU1 trailer-mounted container.

- [11] CLOSE V-103, Truck Dock Influent.

- [12] CLOSE the appropriate inlet valve at the influent tank:
 - For T-200, CLOSE HVA-200, Influent to T-200.
 - For T-201, CLOSE HVA-201, Influent to T-201.
 - For T-202, CLOSE HVA-202, Influent to T-202.

- [13] Replace the container fill cap.
- [14] Disconnect the transfer hoses and collect any water remaining in the hoses. Transfer any collected water to the appropriate influent tank via the Building 891 sump.
- [15] Remove the "Hazardous Waste" label from the OU1 trailer-mounted container.
- [16] Record the date, time and volume of water pumped from the Collection Well in the CWTF Logbook and on the CWTF Receiving Water Tracking Log (Appendix 5), as applicable.

7.0 INSTRUCTIONS—FRENCH DRAIN SUMP

Groundwater collected in the 881 Hillside French Drain Sump (891COLWEL) is pumped via pipeline to the appropriate CWTF influent tank. The French Drain Sump is equipped with a bubbler system which is used to determine the depth of the water in the sump. Operators energize the bubbler system prior to activating either P-101/P-102. The bubbler panel pressure reading will be periodically monitored and pumps P-101/P-102 will be manually turned off when the pressure reaches approximately 1.5 psi. The bubbler panel pressure reading can be converted to depth by multiplying the reading (psi) by 2.31 (ft/psi) to obtain feet of water in the well.

Two submersible pumps (P-101 and P-102) are installed at the French Drain Sump. P-101 and P-102 pump water collected in the French Drain Sump via piping to tanks (T-200, T-201 and T-202) at the CWTF.

Originally, the French Drain Sump was operated in the "AUTOMATIC" mode. One of the pumps was automatically turned on when the rising water level in the French Drain Sump reached eight feet and was automatically turned off when the falling water level in the sump reached four feet. The second pump was activated only if the first pump was not able to keep up with the flow into the sump or if the first pump was not operating.

Presently, the French Drain Sump pumps P-101 and P-102 can only be operated in the "MANUAL" mode because of concern that leaving the bubbler system on continuously might strip volatile organic compounds (VOCs) from the French Drain Sump water. The operational mode of the pumps (P-101 and P-102) is controlled by properly setting three separate switches for each pump. The following table lists the pump switch names, locations and possible settings.

Label/Name	Location	Possible Setting
FP-101 MCC breaker	Electrical room of Building 891, west wall	"ON" or "OFF"
P-101, Main PLC switch P-102, Main PLC switch	Electrical room of Building 891, beneath the Allen Bradley touch- screen	"HAND", "OFF", or "AUTO"
P-101, local pump switch P-102, local pump switch	At the French Drain Sump	"JOG", "OFF", or "AUTO"

7.1 Collection

When the French Drain Sump is operated in the "MANUAL" mode, pumps P-101 and P-102 operate regardless of the French Drain Sump water level or position of the P-101 and P-102 Main PLC switches in the Building 891 electrical room. When operating in the "MANUAL" mode, the bubbler panel pressure reading is monitored periodically by the operators. The pressure reading can be converted to depth by multiplying the reading (psi) by 2.31 (ft/psi) to obtain feet of water in the well.

CAUTION

OPERATE THE FRENCH DRAIN SUMP IN "MANUAL" MODE ONLY.

NOTE: *The "AUTOMATIC" operation of the French Drain Sump has been PURPOSELY DISABLED by disconnecting the bubbler system wires and removing associated fuses from the terminal strip in Building 891. The PLC program has also been modified to eliminate "AUTOMATIC" operation.*

DO NOT OPERATE THE FRENCH DRAIN SUMP IN "AUTOMATIC" MODE

NOTE: *AUTOMATIC mode = Bubbler system "ON", P-101/102 MCC breaker "ON", P-101/102 MAIN PLC switch "AUTO" and P-101/102 local pump switch "AUTO".*

Operator

- [1] Plug in the compressor for the bubbler system.

- [2] Record the bubbler panel pressure reading in the CWTF Logbook. Verify that the French Drain Sump has greater than 3.5 feet of water for pumping by multiplying the bubbler panel pressure reading by 2.31 ft/psi. (Note: 1.5 psi is equivalent to approximately 3.5 feet of water.)

WARNING

Confined space entry procedures in accordance with 1-E36-HSP-06.04 may be required to perform this evolution.

- [3] **IF** the bubbler panel is out of service,
THEN measure the French Drain Sump water level using the portable level measuring instrument.
- [A] Drop the sensor through the valve vault drain. (Note that the maximum allowable reading is two feet above the bottom of the vault because overflow from the French Drain cleanouts occurs when the water level reaches 2.4 feet above the bottom of the vault).

- [4] **OPEN** the appropriate manual inlet valve at the influent tank:

- For T-200, **OPEN** HVA-200, Influent to T-200
Ensure that HVA-201 and HVA-202 are closed.
- For T-201, **OPEN** HVA-201, Influent to T-201.
Ensure that HVA-200 and HVA-202 are closed.
- For T-202, **OPEN** HVA-202, Influent to T-202.
Ensure that HVA-200 and HVA-201 are closed.

- [5] Place the FP-101 MCC breaker in the "ON" position.

- [6] Place the local pump switch for the pump to be operated in the "JOG" position.

CAUTION

With the local pump switch in "JOG", the water level in the French Drain Sump may be lowered until the pump suction is lost. Continued operation of the pump at low water levels damages the pump.

- [7] **IF** the leak detection monitor alarms,
THEN immediately turn the local pump switches to the "OFF" position and notify the Responsible Manager/Designee.
- [8] Record the date and time that pumping began in the CWTF Logbook.
- [9] Monitor the influent tank level regularly to prevent overfilling.

CAUTION

Operation of the French Drain Sump Pumps (P-101, P-102)
with the local pump switch in "JOG" overrides the influent tanks level controls.

- [10] Monitor the French Drain Sump bubbler panel reading.
- [11] **WHEN** the panel reading drops to approximately 1.5 psi (3.5 feet)
THEN place the P-101 and P-102 local pump switches in the "OFF" position.
- OR**
- WHEN** the influent tank level control indicates that the tank being filled has reached the high level set-point,
THEN place the P-101 and P-102 local pump switches in the "OFF" position.
- NOTE 1** *The high level set-point for both T-201 and T-202 is set at 7.7 feet. The high level set-point for T-200 is set at 132 inches.*
- [12] Record the bubbler panel pressure reading in the CWTF Logbook. The pressure reading can be converted to depth by multiplying the reading (psi) by 2.31 (ft/psi) to obtain feet of water in the well (Note: 1.5 psi is equivalent to approximately 3.5 feet of water).
- [13] Unplug the compressor from the bubbler system.
- [14] **CLOSE** the appropriate manual inlet valve at the influent tank:
- For T-200, CLOSE HVA-200, Influent to T-200.
 - For T-201, CLOSE HVA-201, Influent to T-201.
 - For T-202, CLOSE HVA-202, Influent to T-202.

- [15] Record the date and time that pumping stopped in the CWTF Logbook.
- [16] Calculate the quantity of water collected from the French Drain Sump by multiplying the number of pumps in use times the pumping time (minutes) times 15 gallons per minute (15 gallons per minute is the average pumping rate for each pump). Record the quantity of water collected on the CWTF Receiving Water Tracking Log (Appendix 5).

8.0 INSTRUCTIONS—RECEIVING MDF, PADF AND OTHER ER WATER

Decontamination water from the MDF and PADF, as well as other ER waters are received by tanker truck for treatment at the CWTF. The Responsible Manager/Designee, using process knowledge and analytical data if available, will assess whether a particular water is acceptable for treatment at the CWTF (refer to Appendix 6, CWTF Influent Water Assessment Worksheet). Upon authorization by the Responsible Manager/Designee, the tanker truck is transported to the CWTF for off-loading into an influent tank. It is possible that water contained in a tanker truck would require pretreatment using the skid-mounted oil-absorbent media drum prior to routing the water to a CWTF influent tank. Receipt of this water should be recorded on the CWTF Receiving Water Tracking Log (Appendix 5) and the CWTF Influent Water Receiving Checklist (Appendix 7).

Responsible Manager/Designee

- [1] Complete the CWTF Influent Water Assessment Worksheet (Appendix 6) prior to accepting the tanker truck of water at the CWTF.

Responsible Manager/Designee/Operator (as appropriate)

- [2] Complete the CWTF Influent Water Receiving Log (Appendix 7) as tanker truck off-loading steps are completed.
- [3] Verify that the tanker truck wheels are chocked.

CAUTION

Influent tanks must have adequate capacity to receive water from tanker trucks.

- [4] Verify that the chosen influent tank has adequate capacity to receive the water in the tanker truck.

- [5] OPEN the appropriate manual inlet valve at the influent tank:
- For T-200, OPEN HVA-200, Influent to T-200.
Ensure that HVA-201 and HVA-202 are CLOSED.
 - For T-201, OPEN HVA-201, Influent to T-201.
Ensure that HVA-200 and HVA-202 are CLOSED.
 - For T-202, OPEN HVA-202, Influent to T-202.
Ensure that HVA-200 and HVA-201 are CLOSED.
- [6] Connect the pump discharge hose to the pump discharge outlet and to the Building 891 fill port labeled " INFLUENT TO TANKS T-200, 201 OR 202".
- [7] Connect the pump suction hose to the tanker discharge line and to the pump suction inlet.
- [8] OPEN V-103, Truck Dock Influent.
- [9] OPEN the tanker vent valve.
- [10] OPEN the discharge valve on the tanker.
- [11] Start the pump and begin the transfer of water from the truck to the appropriate influent tank.
- [12] Monitor the level of the chosen influent tank. The level of T-201 and T-202 may be monitored from the local readout or from the Allen Bradley screen. T-200 may be monitored from the local readout.
- [13] **IF** the pump is **NOT** equipped with an automatic shut off,
THEN monitor the pump during transfer.
- [14] **IF** the pump begins to cavitate,
THEN immediately shut the pump OFF.

- [15] **WHEN** the tanker is empty,
THEN CLOSE the following:
- Tanker truck discharge valve;
 - Tanker truck vent valve; and
 - V-103, Truck Dock Influent.
- [16] Disconnect the pump suction and discharge hoses. Collect any water that drains out of the hoses in a bucket.
- [17] Transfer the water collected in the bucket to the chosen influent tank via the Building 891 sump.
- [18] After transferring the bucket water to the appropriate influent tank, **CLOSE** the appropriate manual inlet valve:
- For T-200, **CLOSE** HVA-200, Influent to T-200.
 - For T-201, **CLOSE** HVA-201, Influent to T-201.
 - For T-202, **CLOSE** HVA-202, Influent to T-202.
- [19] Ensure that the transfer activity is recorded in the CWTF Logbook, the CWTF Receiving Water Tracking Log (Appendix 5), the CWTF Influent Water Assessment Worksheet (Appendix 6) and the CWTF Influent Water Receiving Log (Appendix 7).

9.0 POST-PERFORMANCE ACTIVITY

Responsible Manager/Designee

Complete a Post-Job Review Checklist, as necessary, in accordance with the Integrated Work Control Program Manual.

Ensure that the CWTF Logbook, the CWTF Receiving Water Tracking Log, the CWTF Influent Water Assessment Worksheet and the CWTF Influent Water Receiving Checklist are forwarded to the RMRS Records Center for disposition in accordance with RMRS/RM-06.02, *Records Identification, Generation and Transmittal* and RMRS/RM-06.03, *Records Receipt, Processing, Retrieval and Disposition*.

10.0 RECORDS

The following documents generated during the performance of the tasks defined in this document must be copied and distributed as follows:

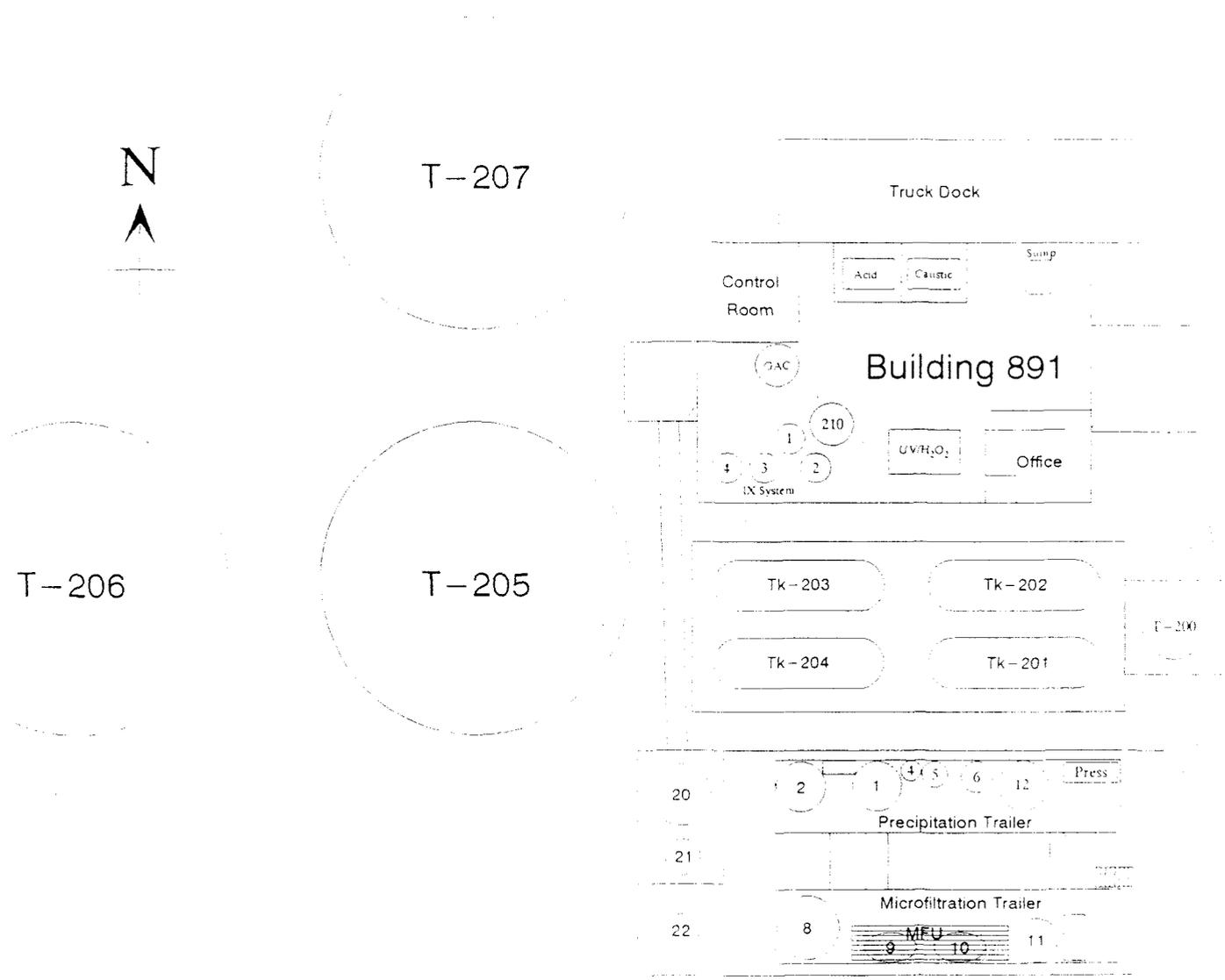
<u>Document</u>	<u>Record Type-Determination</u>	<u>Protection/Storage Methods</u>	<u>Processing Instructions</u>
CWTF Logbook	QA	RM shall implement a reasonable level of protection to prevent loss and/or degradation while in process.	RM transmits to RMRS Document Control
Appendix 5, CWTF Receiving Water Tracking Log	QA	Documents shall be protected utilizing standard office equipment and methods while in process.	
Appendix 6, CWTF Influent Water Assessment Worksheet	QA		
Appendix 7, CWTF Influent Water Receiving Checklist	QA		

11.0 REFERENCES

- Hazardous Waste Requirements Manual
- Integrated Work Control Program Manual
- 1-E36-HSP-6.04, Confined Space Entry
- RF/ER-95-0118, Consolidated Water Treatment Facility Health and Safety Plan
- RMRS/RM-06.02, Records Identification, Generation and Transmittal
- RMRS/RM-06.03, Records Receipt, Processing, Retrieval and Disposition.

APPENDIX 1

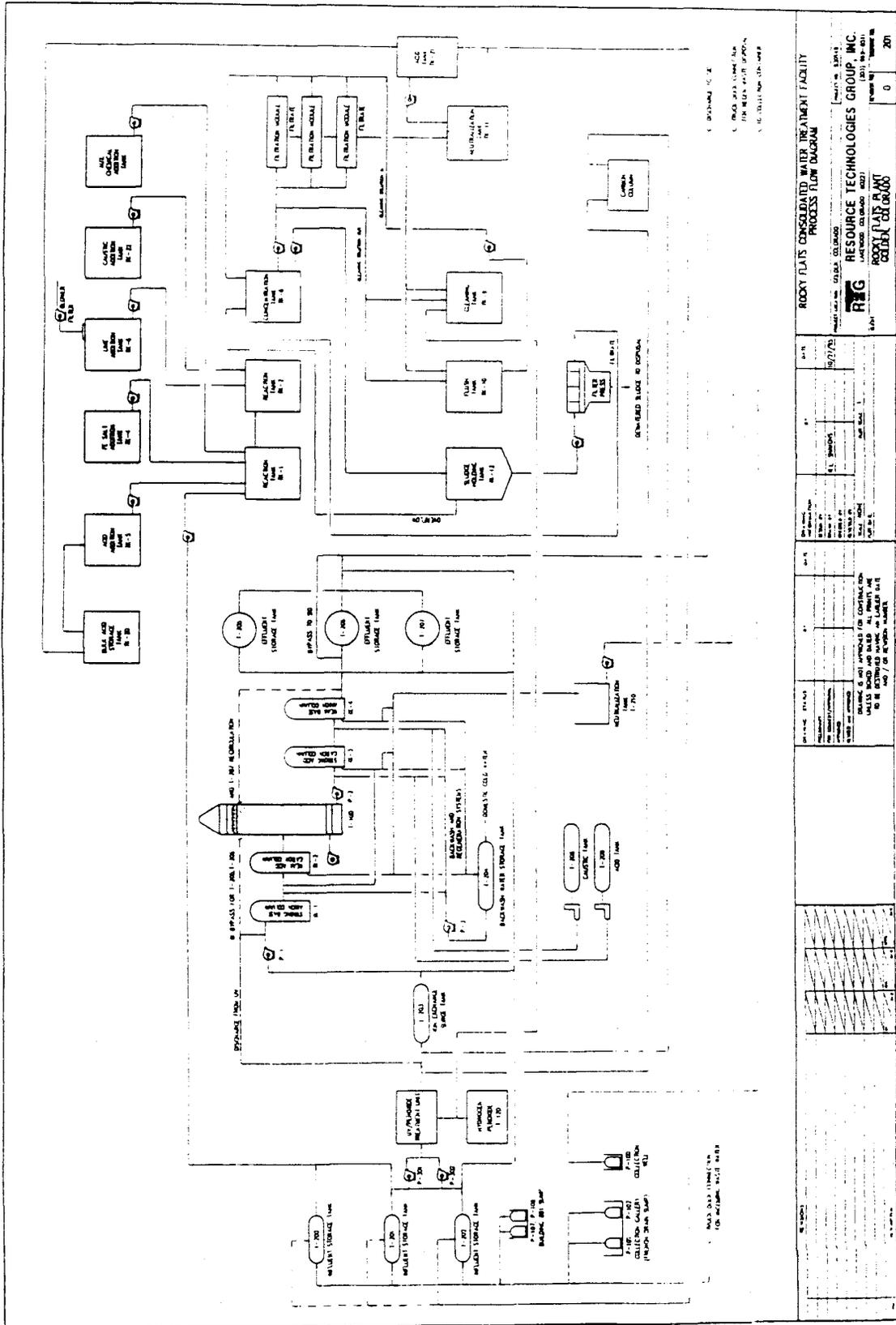
CONSOLIDATED WATER TREATMENT FACILITY
LAYOUT DIAGRAM



* Drawing is not to scale.

APPENDIX 2

CONSOLIDATED WATER TREATMENT FACILITY
 PROCESS FLOW DIAGRAM



Best Available Copy

APPENDIX 3

**CONSOLIDATED WATER TREATMENT FACILITY
 MAJOR EQUIPMENT LIST**

Number	Location	Description	Material	Capacity
TK-1	T-900B	Reaction Tank #1	FRP	1,200 gal
TK-2	T-900B	Reaction Tank #2	FRP	1,200 gal
TK-4	T-900B	Ferric Sulfate Tank	HDPE	50 gal
TK-5	T-900B	Sulfuric Acid Tank	FRP	250 gal
TK-6	T-900B	Lime Slurry Tank	FRP	250 gal
		Auxiliary Chemical Feed		55-gal drum
TK-8	T-900A	Concentration Tank	FRP	1,800 gal
TK-9	T-900A	Cleaning Chemical Tank	HDPE	400 gal
TK-10	T-900A	Cleaning Flush Tank	HDPE	400 gal
TK-11	T-900A	Final pH Adjustment / Transfer Tank	FRP	1,000 gal
TK-12	T-900B	Sludge Holding Tank	FRP	Working vol.: 600 gal
TK-20	Outside, in containment	Bulk Sulfuric Acid Tank: 98% H ₂ SO ₄	Cross-Linked Polyethylene	1,325 gal
TK-21	Outside, in containment	Dilute Sulfuric Acid Tank: 3% H ₂ SO ₄	Cross-Linked Polyethylene	200 gal
TK-22	Outside, in containment	Sodium Hydroxide Tank: 25% NaOH	Cross-Linked Polyethylene	200 gal
T-100	In B891	Degasifier Sump		----
T-120	In B891	Hydrogen Peroxide Feed Tank	HDPE	550 gal
T-200	Outside, SE corner of B891	Influent tank	PP	10,000 gal
T-201	Outside, in containment	Influent tank	Steel, inner lining, insulated	15,000 gal
T-202	Outside, in containment	Influent tank	Steel, inner lining, insulated	15,000 gal
T-203	Outside, in containment	Surge Tank	Steel, inner lining, insulated	15,000 gal
T-204	Outside, in containment	Backwash Water Storage Tank	Steel, inner lining, insulated	15,000 gal
T-205	Outside, west of B891	Effluent Storage Tank	Steel, double-walled	159,000 gal
T-206	Outside, west of B891	Effluent Storage Tank	Steel, double-walled	159,000 gal
T-207	Outside, west of B891	Effluent Storage Tank	Steel, double-walled	159,000 gal
T-208	B891	Caustic Tank: NaOH	FRP	1,270 gal
T-209	B891	Acid Tank: HCl	FRP	2,540 gal
T-210	B891	Neutralization Tank	FRP	5,000 gal

APPENDIX 3

CONSOLIDATED WATER TREATMENT FACILITY MAJOR EQUIPMENT LIST				
Number	Location	Description	Material	Capacity
NA	B891	UV/Hydrogen Peroxide Unit		
	B891	GAC Unit	Steel	57" DIA x 94" H 3000 lbs of carbon
IX-1	B891	Ion Exchange Column No. 1	Steel, inner lining	28 ft ³ of AMBERLITE IRA-900
IX-2	B891	Ion Exchange Column No. 2	Steel, inner lining	32 ft ³ of IONAC CC
IX-3	B891	Ion Exchange Column No. 3	Steel, inner lining	56 ft ³ of IONAC C-267
IX-4	B891	Ion Exchange Column No. 4	Steel, inner lining	56 ft ³ of IONAC AFP-329
M-1	T-900A	Membrane Train 1		12 modules
M-2	T-900A	Membrane Train 2		12 modules
M-3	T-900A	Membrane Train 3		12 modules
FP-1	T-900B	Filter Press		
AC-1	T-900B	Air Compressor		
BFL-1	B891	IX Feed Filter		
BFL-2	B891	Backwash Water Filter (Rinse Recycle Filter)		
DG-1	B891	Degasifier		
BLR-1	B891	Degasifier Blower		
BLR-2	B891	Air Scour Blower		

APPENDIX 3

**CONSOLIDATED WATER TREATMENT FACILITY
 MAJOR EQUIPMENT LIST**

Number	Location	Description	Material	Capacity
CP-1	T-900A	Cleaning Pump		7 1/2 HP
FP-1	T-900B	Influent Feed Pump		1/2 HP
DP-2	T-900B	Lime Slurry Feed Pump		Diaphragm Pump
MP-4-1	T-900B	Ferric Sulfate Metering Pump		----
MP-5-1	T-900B	Auxiliary Chemical Metering Pump		----
MP-11-1	T-900A	Dilute Sulfuric Acid Metering Pump: pH Adjustment		----
MP-11-2	T-900A	Turbidity Monitoring Pump		----
MP-20-1	Outside, in chemical containment	Concentrated Sulfuric Acid Metering Pump		----
MP-22-1	Outside, in chemical containment	Sodium Hydroxide Metering Pump		----
MP-300-1	B891	H ₂ O ₂ Metering Pump: 50% to T-900A		----
P-1	B891	IX-1 and 2 Feed Pump		5 HP
P-2	B891	IX-3 and 4 Feed Pump		5 HP
P-3	B891	Backwash Water Pump		5 HP
P-4	B891	Acid Feed Metering Pump		1 HP
P-5	B891	Caustic Feed Metering Pump		3/4 HP
P-100	881 Hillside	Collection Well Pump		
P-107	B891 sump	Sump Pump		
P-108	B891 sump	Sump Pump		
P-210	B891	T-210 Discharge Pump		
P-301	B891	UV Process Feed Pump		1/2 HP
P-302	B891	UV Process Feed Pump		1/2 HP
PP-8-1	T-900A	Process Pump		50 HP
Pump-1	B891	H ₂ O ₂ Metering Pump: 50% to UV/H ₂ O ₂ Unit		----
Pump-2	B891	H ₂ O ₂ Metering Pump: 50% to UV/H ₂ O ₂ Unit		----
SP-1	T-900B	Sludge Pump: Sludge from TK-8 to TK-12		Air Diaphragm
SP-2	T-900B	Filter Press Feed Pump		Air Diaphragm
TP-6-1	T-900B	Lime Slurry Recirculation Pump		Air Diaphragm
TP-11-1	T-900A	Effluent Pump		5 HP
TP-11-2	T-900A	Seal/Flush Water Pump		1/2 HP

APPENDIX 4

CONSOLIDATED WATER TREATMENT FACILITY VALVE LIST			
Valve No.	Location	Description	Type
V-1	B891	P-1 Service Inlet	2" ball
V-2	B891	P-1 Service Outlet	2" ball
V-3	B891	Bag Filter Outlet	2" ball
V-4	B891	IX-1 Inlet Isolation	1 ½" ball
V-5	B891	IX-1 Outlet Isolation	1 ½" ball
V-6	B891	IX-2 Inlet Isolation	1 ½" ball
V-7	B891	IX-2 Outlet Isolation	1 ½" ball
V-8	B891	Degasifier Inlet Isolation	1 ½" ball
V-9	B891	Degasifier Outlet/P-2 Inlet	1 ½" ball
V-10	B891	P-2 Outlet	1 ½" ball
V-11	B891	IX-3 Inlet Isolation	1 ½" ball
V-12	B891	IX-3 Outlet Isolation	1 ½" ball
V-13	B891	IX-4 Inlet Isolation	1 ½" ball
V-14	B891	Sample Port: UV Chamber #2	½" ball
V-15	B891	P-3 Inlet	2" ball
V-16	B891	P-3 Outlet	3" ball
V-17	B891	IX-2 Subsurface Backwash Inlet	2" ball
V-18	B891	IX-1 Subsurface Backwash Inlet	2" ball
V-19	B891	IX-3 Subsurface Backwash Inlet	2" ball
V-20	B891	IX-4 Subsurface Backwash Inlet	2" ball
V-21	B891	Bag Filter #2 Inlet (Backwash from IX Columns to T-203)	2" ball
V-22	B891	Bag Filter #2 Outlet (Backwash from IX Columns to T-203)	2" ball
V-23	B891	Caustic Makeup Water	1" ball
V-24	B891	Acid Makeup Water	1" ball
V-25	B891	P-5 to T-210 Influent	1 ½" ball
V-26	B891	P-4 to T-210 Influent	1 ½" ball
V-27	B891	P-5 Service Outlet	¾" ball
V-28	B891	No longer used	
V-29	B891	P-5 Service Inlet	¾" ball
V-30	B891	No longer used	
V-31	B891	T-208 Outlet	¾" ball
V-32	B891	No longer used	
V-33	B891	BLR-2 Outlet (Air Scour Blower Outlet)	1 ½" ball
V-34	B891	Sample Port: Degasifier Drain	1" ball
V-35	B891	Bag Filter #2 (BFL-2) Drain	½" ball
V-36	B891	Sample Port: IX-1 Influent and Bag Filter #1 Drain	½" ball
V-37	B891	Sample Port: P-5 Caustic	¼" ball

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APPENDIX 4

**CONSOLIDATED WATER TREATMENT FACILITY
 VALVE LIST**

Valve No.	Location	Description	Type
V-38	B891	Sample Port: P-4 Acid	¼" ball
V-39	B891	Sample Port: IX-2 Effluent	¾" ball
V-40	B891	Sample Port: IX-1 Effluent	¾" ball
V-41	B891	Sample Port: IX-3 Effluent	¾" ball
V-42	B891	Unused Sample Port: IX-4	¾" ball
V-43	B891	IX-2 Vent	¾" ball
V-44	B891	IX-1 Vent	¾" ball
V-45	B891	IX-3 Vent	¾" ball
V-46	B891	IX-4 Vent	¾" ball
V-47	B891	IX-2 Acid Regenerant	1 ½" ball
V-48	B891	IX-3 Acid Regenerant	1 ½" ball
V-49	B891	IX-4 Caustic Regenerant	1 ½" ball
V-50	Collection Well	P-100 Outlet	1 ½" ball
V-51	881 Hillside Vault	P-101 Outlet	1" ball
V-52	881 Hillside Vault	P-102 Outlet	1" ball
V-53	881 Hillside Vault	French Drain Sump Filter Inlet	2" ball
V-54	881 Hillside Vault	French Drain Sump Filter Bypass	2" ball
V-55	881 Hillside Vault	French Drain Sump Filter Outlet	2" ball
V-56	881 Hillside Vault	P-101, P-102 Effluent	2" ball
V-57	Outside	T-201, T-202 Influent	2" ball
V-58	Outside B891	Domestic Influent Backflow Preventor	2" ball
V-59	Outside B891	Domestic Infuent Backflow Preventor	2" ball
V-60		Not assigned	
V-61	Outside B891	T-201 Secondary Containment Purge	2" ball
V-62	Outside B891	T-201 Secondary Containment Purge	2" ball
V-63	Outside: south side of B891	T-202 Secondary Containment Purge	2" ball
V-64	Outside: south side of B891	T-202 Secondary Containment Purge	2" ball
V-65	B891	Caustic Dilution Water Flow Control	¾" gate
V-66	B891	Acid Dilution Water Flow Control	¾" gate
V-67		Not assigned	
V-68	B891	Acid Pressure	¼" ball
V-69	Outside	T-203 Secondary Containment Purge	2" ball
V-70	Outside	T-204 Secondary Containment Purge	2" ball
V-71	B891	Chemical Metering Isolation	¾" ball
V-72	B891	Chemical Metering Isolation	¾" ball
V-73	Outside	T-203 Secondary Containment Purge	2" ball
V-74	B891	UV Influent Camlock	2" ball
V-75	B891	UV Basket Strainer Influent	2" ball

APPENDIX 4

CONSOLIDATED WATER TREATMENT FACILITY VALVE LIST			
Valve No.	Location	Description	Type
V-76	B891	Basket Strainer Camlock	2" ball
V-77	B891	P-301, P-302 Effluent Camlock	2" ball
V-78	B891	Sample Port: UV Influent	½" ball
V-79	B891	Sample Port: UV Chamber #1 Effluent	½" ball
V-80	B891	1) From IX through flowmeter to effluent tanks, or 2) IX by-pass	2" ball
V-81	B891	Feed for new H ₂ O ₂ transfer	¾" ball
V-82	B891	H ₂ O ₂ Outlet	¼" ball
V-83	B891	H ₂ O ₂ Sample Port	¼" ball
V-84	B891	H ₂ O ₂ P-1 Influent	¼" ball
V-85	B891	H ₂ O ₂ P-2 Influent	¼" ball
V-86	B891	Sample Port: T-209 Influent Line	¼" ball
V-87	B891	Sample Port: T-208 Influent Line	¼" ball
V-88	B891	H ₂ O ₂ P-1 Effluent	¼" ball
V-89	B891	Air Scour Unloader	1 ½" butterfly
V-90	B891	H ₂ O ₂ P-2 Effluent	¼" ball
V-91	B891	H ₂ O ₂ Splitter Pump Influent	½" ball
V-92	B891	Splitter Pump Surge	½" ball
V-93	B891	No longer used	
V-94	B891	IX-4 Effluent	1 ½" ball
V-95	B891	Plant Effluent	2" ball
V-96	B891	Sample Port: IX 4 Effluent-Plant Effluent - T-205, T-206, T-207 (sample port when these tanks are being recirculated)	1" ball
V-97	B891	T-210 Purge Port	½" ball
V-98	B891	T-210 Sightglass	2" ball
V-99	B891	P-210 Effluent Isolation	2" ball
V-100	B891	P-210 Discharge Isolation	2" ball
V-101	B891	No longer used	
V-102	B891	Influent Secondary Containment Purge	2" ball
V-103	B891	Truck Dock Influent	2" ball
V-104	B891	Truck Dock Influent Secondary Containment Purge	2" ball
V-105	B891	Influent Line Secondary Containment Purge	2" ball
V-106	Outside, west of B891	Effluent Tank Bypass (underground)	N/A

APPENDIX 4

CONSOLIDATED WATER TREATMENT FACILITY VALVE LIST			
Valve No.	Location	Description	Type
V-107	B891	UV #1 Drain	½" ball
V-108	B891	Recirculation Isolation	2" ball
V-109	B891	UV #2 Drain	½" ball
V-110	Outside, West of B891	Makeup Water	2" ball
V-111	B891	Inlet H ₂ O ₂ Rotameter 1	½" gate
V-112	B891	Inlet H ₂ O ₂ Rotameter 2	½" gate
V-113	B891	Inlet H ₂ O ₂ Rotameter 3	½" gate
V-114	B891	Outlet H ₂ O ₂ Rotameter 1	½" ball
V-115	B891	Outlet H ₂ O ₂ Rotameter 2	½" ball
V-116	B891	Outlet H ₂ O ₂ Rotameter 3	½" ball
V-117	B891	T-210 Recirculation Isolation	2" ball
V-118	B891	IX Feed Camlock	2" ball
V-119	B891	PSIG IX-1 Purge	¼" ball
V-120	B891	PSIG IX-2 Purge	¼" ball
V-121	B891	No longer used	
V-122	B891	PSIG IX-2 Purge	¼" ball
V-123	B891	PSIG IX-3 Purge	¼" ball
V-124	B891	PSIG IX-3 Purge	¼" ball
V-125	B891	PSIG IX-4 Purge	¼" ball
V-126	B891	PSIG UV #1	½" ball
V-127	B891	PSIG UV #2	½" ball
V-128	B891	Gamma Detection Isolation	2" ball
V-129	B891	Recirculation Purge	1" ball
V-130	B891	IX-2 Effluent Isolation	2" ball
V-131	B891	IX-4 Effluent Isolation	2" ball
V-132	B891	Sample Port: T-204 Clean Water Line	¼" sample cock
V-135	B891	P-3 service inlet isolation: Recirculation	2" ball
V-136	B891	IX-4 By-pass	2" ball
V-137	B891	H ₂ O ₂ pump discharge, S.S.	¼" swaglock ball
V-138	B891	PI on UV effluent, brass	½" ball
V-139	B891	Caustic pump: pulse dampener isolation, CPVC	½" Tru-Union ball
V-140	B891	Acid pump: pulse dampener isolation, CPVC	½" Tru-Union ball
V-141	B891	Acid pump: line drain, CPVC	½" Tru-Union ball
V-142	B891	Acid regeneration line drain, PVC	¼" Tru-Union ball
V-143	B891	Acid pump line drain, CPVC	½" Tru-Union ball
V-144	B891	Acid pump: pulse dampener isolation, CPVC	½" Tru-Union ball

APPENDIX 4

CONSOLIDATED WATER TREATMENT FACILITY VALVE LIST			
Valve No.	Location	Description	Type
V-145	B891	Caustic pump line drain, CPVC	½" Tru-Union ball
V-146	B891	Caustic pump line drain, CPVC	½" Tru-Union ball
V-147	B891	Caustic pump line drain, CPVC	½" Tru-Union ball
V-148	B891	Acid pump line drain, CPVC	½" Tru-Union ball
V-149	B891	PI-1, isolation, PVC	¼" ball
V-150	B891	PI-2, isolation, PVC	¼" ball
V-151	B891	PI-5, isolation, PVC	¼" ball
V-152	B891	PI-6, isolation, PVC	¼" ball
V-153	B891	Isolates domestic water to GC, brass	¾" ball
PRV-154	B891	No longer used	
V-155	B891	Domestic water, North wall, brass	2" ball
V-156	B891	Domestic water, North wall, brass	2" gate
V-157	B891	Domestic water, North wall, brass	2" gate
V-158	B891	T-210, DP switch, drain, CPVC	½" Tru-Union ball
V-159	B891	PVC, NaOH	¼" stop cock
PRV-160	B891	Caustic Pump Service Outlet	1" ball
V-161	B891	T-209 Effluent, isolation	2" ball
V-162	B891	P-4 influent	1" ball
V-170	B891	Influent to GAC Tank	2" ball
V-171	B891	Effluent from GAC Unit	2" ball
V-172	B891	GAC Unit Bypass	2" ball
V-173	B891	GAC Unit Drain	2" ball
V-174	B891	GAC Unit Vent	¾" ball
V-175	B891	Sample Port: GAC Unit Effluent	½" ball
V-180	B891	UV outlet	1" ball
V-181	B891	UV outlet	2" ball
FV-7	B891	Dilute Acid for T-210 Neutralization	1 ½" auto
FV-9	B891	Acid Regenerant	1 ½" auto
FV-17	B891	Dilute Caustic for T-210 Neutralization	1 ½" auto
FV-19	B891	Caustic Regenerant	1 ½" auto
FV-1A	B891	IX-1 Service Inlet	1 ½" auto
FV-2A	B891	IX-1 Backwash Inlet	1 ½" auto
FV-5A	B891	IX-4 Backwash Outlet	1 ½" auto
FV-8A	B891	IX-1 Fast Rinse Inlet	1 ½" auto
FV-10A	B891	IX-1 Fast Rinse Outlet	1 ½" auto
B891	FV-11A	IX-1 Air Scour Inlet	1 ½" auto
FV-12A	B891	IX-1 Subsurface Wash Inlet	1 ½" auto
FV-13A	B891	IX-1 Air Scour Outlet	1" auto
FV-1B	B891	IX-1 Outlet / IX-2 Service Inlet	1 ½" auto

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APPENDIX 4

CONSOLIDATED WATER TREATMENT FACILITY VALVE LIST			
Valve No.	Location	Description	Type
FV-2B	B891	IX-2 Backwash Inlet	1 1/2" auto
FV-3B	B891	IX-2 Acid Regeneration / Settler Rinse Inlet	1 1/2" auto
FV-4B	B891	IX-2 Outlet	1 1/2" auto
FV-5B	B891	IX-2 Backwash Outlet	1 1/2" auto
FV-6B	B891	IX-2 Spent Regenerant Outlet	1 1/2" auto
FV-8B	B891	IX-2 Fast Rinse Inlet	1 1/2" auto
FV-10B	B891	IX-2 Fast Rinse Outlet	1 1/2" auto
FV-11B	B891	IX-2 Air Scour Outlet	1 1/2" auto
FV-12B	B891	IX-2 Subsurface Wash Inlet	1 1/2" auto
FV-13B	B891	IX-2 Air Scour Outlet	1" auto
FV-1C	B891	IX-2 Outlet / IX-3 Service Inlet	1 1/2" auto
FV-2C	B891	IX-3 Backwash Inlet	1 1/2" auto
FV-3C	B891	IX-3 Acid Regeneration / Settler Rinse Inlet	1 1/2" auto
FV-5C	B891	IX-3 Backwash Outlet	1 1/2" auto
FV-6C	B891	IX-3 Spent Regenerant Outlet	1 1/2" auto
FV-8C	B891	IX-3 Fast Rinse Inlet	2" auto
FV-10C	B891	IX-3 Fast Rinse Outlet	2" auto
FV-11C	B891	IX-3 Air Scour Outlet	1 1/2" auto
FV-12C	B891	IX-3 Subsurface Wash Inlet	1 1/2" auto
FV-13C	B891	IX-3 Air Scour Outlet	1" auto
FV-1D	B891	IX-3 Outlet / IX-4 Service Inlet	1 1/2" auto
FV-2D	B891	IX-4 Backwash Inlet	1 1/2" auto
FV-3D	B891	IX-4 Acid Regeneration / Settler Rinse Inlet	1 1/2" auto
FV-4D	B891	IX-4 Outlet	1 1/2" auto
FV-5D	B891	IX-4 Backwash Outlet	1 1/2" auto
FV-6D	B891	IX-4 Spent Regenerant Outlet	1 1/2" auto
FV-8D	B891	IX-4 Fast Rinse Inlet	2" auto
FV-10D	B891	IX-4 Fast Rinse Outlet	2" auto
FV-11D	B891	IX-4 Air Scour Outlet	1 1/2" auto
FV-12D	B891	IX-4 Subsurface Wash Inlet	1 1/2" auto
FV-13D	B891	IX-4 Air Scour Outlet	1" auto
HV-100A	Collection Well	No longer in use	
CV-100A	Collection Well Vault	No longer in use	
HV-100B	Collection Well Vault	No longer in use	
HV-100C	Collection Well Vault	No longer in use	
HV-100D	Collection Well	Air bleed valve	3/8" ball
HV-100E	Collection Well	Discharge from P-100: located just below one-inch camlock	1" ball
HV 101A	French Drain Sump	P-101 Outlet: Valve at Frost Protected Hydrant (FPH)	FPH

APPENDIX 4

CONSOLIDATED WATER TREATMENT FACILITY VALVE LIST			
Valve No.	Location	Description	Type
CV-101	French Drain Sump	Check valve located after FPH	2" check
HV-101B	French Drain Sump	Groundwater from P-101 to flowmeter	2" globe
HV-102A	French Drain Sump	P-102 Outlet: Valve at FPH	FPH
CV-102	French Drain Sump	Check valve located after FPH	2" check
HV-102B	French Drain Sump	Groundwater from P-102 to flowmeter	2" globe
HV-101C	French Drain Sump	Groundwater from flowmeter to Influent tanks	2" globe
HV-107	B891	P-107: Sump Pump Discharge	2" ball
CV-107	B891	Check valve located after P-107	2" check
HV-108	B891	P-108: Sump Pump Discharge	2" ball
CV-108	B891	Check valve located after P-108	2" check
CV-109	B891	B891 Sump Effluent	2" check
HVA-200	Outside	Influent to T-200	2" ball
HVB-200	Outside	Effluent from T-200	6" butterfly
HVA-201	Outside	Influent to T-201	2" ball
HVB-201	Outside	Effluent from T-201	2" ball
HVA-202	Outside	Influent to T-202	2" ball
HVB-202	Outside	Effluent from T-202	2" ball
HVA-203	Outside	UV Effluent to T-203	2" ball
HVB-203	Outside	IX Feed From T-203	2" ball
HVA-204	Outside	Backwash Water from T-204 to IX	2" ball
CV-204A	Outside	T-204 to IX	2" check
HVC-204	Outside	Clean RFP Water to T-204 (backwash)	2 " ball
HVA-205	Outside	Plant Effluent: T-205 Influent	2" ball
HVB-205	Outside, west of B891	T-205 Discharge	4" butterfly
HVC-205	Outside, west of B891	T-205 Recirculation	4" butterfly
HVA-206	Outside, west of B891	Plant Effluent: T-206 Influent	2" ball
HVB-206	Outside, west of B891	T-206 Discharge	4" butterfly
HVC-206	Outside, west of B891	T-206 Recirculation	4" butterfly
HVA-207	Outside, west of B891	Plant Effluent: T-207 Influent	2" ball
HVB-207	Outside, west of B891	T-207 Discharge	4" butterfly
HVC-207	Outside, west of B891	T-207 Recirculation	4" butterfly
HVD-207	Outside, west of B891	T-207 Isolation	2" ball
CV-208	B891	Sodium Hydroxide Inlet: T-208	2" check
HVA-208	B891	Sodium Hydroxide Inlet: T-208	2" ball
HVB-208	B891	Sodium Hydroxide Outlet: T-208	2" ball
CV-209	B891	Hydrochloric Acid: Inlet: T-209	2" check
HVA-209	B891	Hydrochloric Acid Inlet: T-209	2" ball
HVB-209	B891	Hydrochloric Acid Outlet: T-209	2" ball
HVA-210	B891	P-210 Inlet	2" ball

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APPENDIX 4

CONSOLIDATED WATER TREATMENT FACILITY VALVE LIST			
Valve No.	Location	Description	Type
CV-210	B891	Discharge of P-201	2" check
HVB-210	B891	P-210 Outlet	2" ball
HVC-210	B891	Sample Port: Discharge Camlock	2" ball
HVD-210	B891	Discharge Truck Dock	2" ball
HVA-301	B891	P-301 Inlet	2" ball
CV-301	B891	P-301 Outlet	2" check
HVB-301	B891	P-301 Outlet	2" ball
HVA-302	B891	P-302 Inlet	2" ball
CV-302	B891	P-302 Outlet	2" check
HVB-302	B891	P-302 Outlet	2" ball
CV-500	B891	Check valve located in treated effluent recirculation line	3" ball
HV-500	B891	Recirculation From Effluent Storage Tanks	2" ball
HV-501	B891	Recirculation to UV	2" ball
CV-501	B891	Check valve located between UV recirculation line and Influent tanks T-201 and T-202	2" ball
HV-502	B891	Recirculation to IX	2" ball
CV-502	B891	Check valve located after T-203 and before IX	2" ball
HV-503	B891	Recirculation	2" ball
FCV-1	B891	Fail Close Plant Effluent	1 1/2" selenoid
FCV-2		Fail Close Recycle	2" diaphragm
FCV-3	French Drain Sump Vault	French Drain Sump Flow Control	2" diaphragm
FCV-4	B891	UV Influent Control	1 1/2" ball
MV-901	T-900A	Suction of PP-8-1	6" butterfly
MV-902	T-900A	Discharge of PP-8-1: Feed to Top Membrane Train	6" butterfly
MV-903	T-900A	Discharge of PP-8-1: Feed to Middle Membrane Train	6" butterfly
MV-904	T-900A	Discharge of PP-8-1: Feed to Bottom Membrane Train	6" butterfly
MV-905	T-900A	Top Train Discharge	6" butterfly
MV-906	T-900A	Middle Train Discharge	6" butterfly
MV-907	T-900A	Bottom Train Discharge	6" butterfly
AV-908	T-900A	Cleaning Inlet: Located on Bottom Train Discharge	2" ball
AV-909	T-900A	Cleaning Outlet: Located on Top Train Inlet	2" ball
MV-910	T-900A	Cleaning Pump CP-1 Discharge	2" ball

APPENDIX 4

**CONSOLIDATED WATER TREATMENT FACILITY
 VALVE LIST**

Valve No.	Location	Description	Type
AV-911	T-900A	Cleaning Pump Discharge: Return to TK1 and TK2	2" ball
AV-912	T-900A	TK-9: CP-1 Pump Suction	2" ball
AV-913	T-900A	TK-10: CP-1 Pump Suction	2" ball
AV-914	T-900A	TK-9: TK-10 Fill Inlet	2" ball
AV-915	T-900A	TK-9: Cleaning Return	2" ball
AV-916	T-900A	TK-9: Filtrate Return	2" ball
AV-917	T-900A	TK-10: Cleaning Return	2" ball
AV-918	T-900A	TK-10: Filtrate Return	2" ball
AV-919	T-900A	Filtrate to Neutralization: Open/Close	3" butterfly
MV-920	T-900A	TK-9 and TK-10 Drain	2" ball
MV-921	T-900A	Membrane Discharge: Control Flow to TK-11	3" gate
MV-922	T-900A	TK-8 Drain	2" ball
MV-923	T-900A	Sludge Pump Suction	2" ball
MV-924	T-900A	TK-11 Drain	2" ball
MV-925	T-900A	TP-11-1 Inlet: Suction	2" ball
MV-929	T-900A	TP-11-1: Discharge	2" ball
AV-930	T-900A	Top Train Inlet: Cleaning Return to TK-8	2" ball
MV-931	T-900A	TP-11-2 Feed	2" ball
MV-933	T-900A	TK-9 Chemical Fill	2" ball
MV-934	T-900A	TK-10 Chemical Fill	2" ball
AV-935	T-900A	Filtrate above PP-8-1: Filtrate Return to TK-8	2" ball
MV-936	T-900A	Sample Port: T-900B Influent	½" ball
MV-937	T-900A	Seal Water Filter Isolation	½" ball
MV-938	T-900A	TP-11-1: Trailer No. 1 Water Supply	2" ball
MV-939	T-900A	Water to TK-21 for sulfuric acid dilution	2" ball
MV-940	T-900A	Train No. 2 Isolation	2" butterfly
MV-941	T-900A	Train No. 3 Isolation	2" butterfly
MV-942	T-900A	Not assigned	
MV-943	T-900A	Drain for T-900A: West End of T-900A	3" ball
MV-944	T-900B	Drain for T-900B: West End of T-900B	3" ball
MV-945	T-900B	Sample Port: T-900A Effluent	¼" ball
MV-946	T-900B	TK-12 overflow	2" ball
MV-947	T-900B	TK-12 service water/flush	1" ball
MV-955	T-900B	Drain for TK-6	2" ball
MV-956	T-900B	Filtrate line from Filter Press	1 ½" ball
MV-957	T-900B	Drain for TK-5	2" ball
MV-958	T-900B	Effluent from TK-5: Influent to Acid Metering Pump	1" ball

APPENDIX 4

CONSOLIDATED WATER TREATMENT FACILITY VALVE LIST			
Valve No.	Location	Description	Type
MV-959	T-900B	TK-4 Fill Water	1" ball
MV-960	T-900B	Sludge to Filter Press	2" ball
MV-961	T-900B	TK-6 Fill Water	1" ball
MV-962	T-900B	Water Spigot	¾" gate
MV-963	T-900B	Influent Water to TK-5	1" ball
MV-964	T-900B	TK-1: Acid Delivery	½" ball
MV-965	T-900B	TK-2: Lime Delivery	1 ½" ball
MV-966	T-900B	TK-1: Drain	2" ball
MV-967	T-900B	TK-2: Drain	2" ball
MV-968	T-900B	Cleaning Pump Discharge to TK-1	2" ball
MV-969	T-900B	Cleaning Pump Discharge to TK-2	2" ball
MV-970	T-900B	Air valve to regulator for SP-2	½" ball, brass
MV-971	T-900B	SP-2 air inlet	½" gate
MV-972	T-900B	Air compressor outlet	¾" ball
MV-973	T-900B	Filter press air isolation	½" ball
MV-974	T-900B	Air valve to quick coupling	½" ball, brass
AV-980	T-900B	Effluent from TK-11: Filtrate Discharge Flow Control	1 ½" ball
MV-981	T-900B	TK-2: Sulfuric Acid Injection	½" ball
MV-982	T-900A	Effluent from Seal Water Pump	1" ball
MV-983	T-900A	Not assigned	
MV-984	T-900B	Lime Feed to .25 HP Wilden	1" ball
MV-985	T-900B	Lime Line Flush	1" ball
MV-986	T-900B	Lime Pump Suction Isolation	1" ball
MV-987	T-900B	Lime Pump Discharge	1" ball
MV-988	T-900B	SP-2 flush	¾" ball, PVC
MV-989	T-900B	Filter press feed line flush	2" ball, PVC
MV-990	T-900B	Sludge Press: Effluent Sludge Filtrate	1 ½" ball
MV-991	T-900B	Sludge Press: Effluent Sludge Filtrate	1 ½" ball
MV-992	T-900B	Effluent from Sludge Wilden Pump: Drain	2" ball
MV-993	T-900B	Sludge Pump Suction Isolation	2" ball
MV-994	T-900B	Effluent line from T-200	3" ball
MV-995	T-900B	Influent to TK-1: Isolation	2" ball
MV-996	T-900B	Influent to TK-1: Flow Adjust to TK-1	2" gate
MV-997	T-900B	Influent Air to Filter Press: Filter Press Blow-Down	½" ball
MV-998	T-900A	TK-11 Filtrate: Recirculation to TK-8	2" ball
MV-999	T-900A	Effluent from TK-11: Recirculation	2" ball
MV-9001	Inside B891, north wall	Tank truck unloading to TK-20	2" ball
MV-9002	Inside B891, north wall	Check valve located after MV-9002	2" check

APPENDIX 4

CONSOLIDATED WATER TREATMENT FACILITY VALVE LIST			
Valve No.	Location	Description	Type
MV-9003	Outside, Chem. Feed	TK-20: 98% Sulfuric Acid to TK-20	2" ball
MV-9004	Outside, Chem. Feed	TK-20: 98% H ₂ SO ₄ to TK-21 and TK-5	1" ball
MV-9005	Outside, Chem. Feed	PI Isolation Valve: located after MP-20-1	½" ball
CV-9006	Outside, Chem. Feed	Check valve: located after MP-20-1	1" check
MV-9007	Outside, Chem. Feed	Route 98% H ₂ SO ₄ to TK-21: located after MP-20-1	1" ball
MV-9008	Outside, Chem. Feed	Service water inlet to TK-21	2" ball
MV-9009	Outside, Chem. Feed	Dilute H ₂ SO ₄ from TK-21 to TK-11	1" ball
MV-9010	Outside, Chem. Feed	NaOH from T-208 to TK-22	1" ball
MV-9011	Outside, Chem. Feed	NaOH to from TK-22 to MP-22-1: pump suction	1" ball
MV-9012	Outside, Chem. Feed	Pressure Indicator Isolation Valve: located after MP-22-1	½" ball
CV-9013	Outside, Chem. Feed	Check valve: located after MP-22-1	1" check
MV-9014	Outside, Chem. Feed	NaOH to TK-2: located after MP-22-1	1" ball
MV-9015	Outside, Chem. Feed	H ₂ SO ₄ to TK-5: located after MP-20-1	1" ball
MV-9016	B891	Bulk Sodium Hydroxide Feed to T-22	1" ball
MV-9017		Not assigned	
MV-9018		Not assigned	
MV-9019		Not assigned	
MV-9020		Not assigned	
MV-9021		Not assigned	
MV-9022		Not assigned	
MV-9023		Not assigned	
MV-9024	Outside, in tank farm	Effluent: T-11 to Influent tanks T-201 or T-202	2" ball
MV-9025		Not assigned	
MV-9026	Outside, in tank farm	From T-200 to either T-900B or UV Oxidation System	4" ball
MV-9027	Outside, in tank farm	From T-201 to T-900B	2" ball
MV-9028	Inside 891, Chem. Feed	H ₂ O ₂ feed line drain	
CV-9029	Inside 891, Chem. Feed	H ₂ O ₂ : Check valve	1" ball
MV-9030	Inside 891, Chem. Feed	H ₂ O ₂ : MP-300-1 to 900A	1" ball
MV-9031		Not assigned	
MV-9032	Outside, in tank farm	Effluent : T-11 to T-202	2" ball
MV-9033	B891	PI isolation valve	½" ball

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APPENDIX 5

CONSOLIDATED WATER TREATMENT FACILITY CWTF RECEIVING WATER TRACKING LOG ¹									
MONTH OF _____ YEAR _____									
DATE	FRENCH DRAIN	TANK	COLLECTION WELL	TANK	DECON WATER	TANK	RAIN/SNOW TANK	OTHER TANK	TANK
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
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29									
30									
31									

¹ All Totals are in gallons. (French Drain = minutes X 15 gpm)
 Totals are from external gauges, site tubes or PLC

¹ For use with MDF, PADF and other ER waters

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APPENDIX 7

CONSOLIDATED WATER TREATMENT FACILITY INFLUENT WATER RECEIVING CHECKLIST¹	
DELIVERY INFORMATION	
Date: _____	Time: _____
Source of Water: _____	
Estimated quantity (gallons): _____	Influent tank to be used: <input type="checkbox"/> T-200 <input type="checkbox"/> T-201 <input type="checkbox"/> T-202
Influent tank level/volume prior to transfer: _____ inches / _____ gallons	
Does influent tank have adequate capacity to receive water being delivered? <input type="checkbox"/> YES <input type="checkbox"/> NO	
Responsible Manager/Designee present during delivery: _____	
Operator present during delivery: _____	
Other personnel present during delivery: _____	
DELIVERY OPERATION	
Are adequate radio communications available?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is the tanker truck trailer parked in spill containment area?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are wheel chocks in place?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are CAUTION-DO NOT ENTER signs in place?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is the tank level indicator functioning properly?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Is the tanker discharge line connected to the pump suction inlet?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are inlet valves in proper position?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Transfer to T-200: HVA-200 is OPEN. HVA-201 and HVA-202 are CLOSED.	<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
Transfer to T-201: HVA-201 is OPEN. HVA-200 and HVA-202 are CLOSED.	<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
Transfer to T-202: HVA-202 is OPEN. HVA-200 and HVA-201 are CLOSED.	<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
Valve V-103 (Truck dock influent) is OPEN.	<input type="checkbox"/> YES <input type="checkbox"/> NO
Tanker truck vent valve is OPEN.	<input type="checkbox"/> YES <input type="checkbox"/> NO
Tanker truck discharge valve is OPEN.	<input type="checkbox"/> YES <input type="checkbox"/> NO
Are routine checks being made during the transfer operation?	<input type="checkbox"/> YES <input type="checkbox"/> NO
POST-DELIVERY OPERATION	
Have all valves been returned to proper position?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Has the area been inspected for spills and is the area spill-free?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Have end caps been replaced?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Influent tank level/volume after transfer: _____ inches / _____ gallons	
COMMENTS	
Operator	/
Responsible Manager/Designee	/
	Date
	Date

† For use with MDF, PADF and other ER waters

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