OPERATION OF THE WASTE WATER RETENTION BASINS AUTOMATIC SAMPLE COMPOSITORS

PROCEDURE USAGE REQUIREMENTS-		SECTIONS
Continuous Use:	Procedure must be open and readily available at the work location. Follow procedure step by step unless otherwise directed.	NONE
Reference Use:	Procedure or applicable section(s) available at the work location for ready reference by person performing steps.	4.0 To End
Information Use:	Available on plant site for reference as needed.	1.0 To 3.0

INFORMATION USE

1.0 PURPOSE

This procedure provides instructions for the Operation of the ISCO Sample Compositors Model 2710 and Model 3710 and associated equipment.

2.0 PRECAUTIONS

2.1 In the unlikely event the Waste Water Retention Basins (WWRB) becomes contaminated, the composited samples should be handled as radioactive material in accordance with standard Health Physics practices.

2.2 Observe all safety precautions outlined in 30006-C, "Laboratory Safety Manual".

2.3 Do not attempt to retrieve a composite sample while the sampler is in the run mode.

2.4 The sampler is pre-programmed to automatically purge and deliver the proper amount of sample to the sample container. Do not attempt to reprogram the compositor without notifying Laboratory Supervision.

2.5 Sample volume per composite is affected by pressure in the sample line, sample tubing length and pump tubing size. Ensure sample line pressure down stream of the pressure reducing valve remains less than 4 psig. Recalibrate delivering volume following replacement of sample tubing or pump tubing for the ISCO Model 2710 compositor. The ISCO Model 3710 compositor is self calibrating and pump maintenance does not require re-calibration of the sample volume.

2.6 Even if no primary to secondary leak is confirmed, the operation of the compositors is required. The sample should be discarded into the associated WWRB if there is no confirmed primary to secondary leak.

3.0 SYSTEM DESCRIPTION

The automatic sample compositors and associated piping are designed to collect composite samples from each of the Waste Water Retention Basins during basin pumping evolutions. Each sampler pumps uniform, small sample increments into its respective container at equal flow volume intervals using flow pulse inputs from an external flow meter. A sample recirculation flowpath is established in the compositor suction piping whenever the WWRB discharge piping is pressurized. This piping arrangement provides a representative sample when the pre-programmed compositing sequence is initiated. Sample collection may also be manually initiated at any time. (Refer to Figure 1)

REFERENCE USE

4.0 PROCEDURES

4.1 ROUTINE MONITORING OF THE ISCO MODEL 3710 COMPOSITOR

4.1.1 Note the sampler's LCD display and record the number of composite samples collected on the WWRB Effluent Worksheet.

4.1.2 Note the WWRB flow integrator reading located at the upper back portion of the sample cabinet and record on the WWRB Effluent Worksheet.

4.1.3 Place the sampler in the PROGRAM HALTED mode by pressing "STOP" on the control panel.

4.1.4 If the display indicates FULL, the sample container tub has filled completely and the sampler has ceased compositing automatically. This occurs when 160 samples have been collected.

4.1.5 During periods of confirmed primary-to-secondary leakage the provisions of ODCM Table 2-3 apply. Save and analyze the sample in accordance with 30025-C, "Periodic Analysis Scheduling Program", and 35420-C, "Monitoring of the Radioactive Liquid Waste Management System".

4.1.6 During periods of no confirmed primary-to-secondary leakage the sample container should be emptied by pouring the contents back into the associated WWRB.

4.1.7 During winter months, ensure the cabinet heaters are operating to avoid system freeze-up.

4.1.8 Visually inspect sampler components for cleanliness and system leakage. Repair or report any leaks.

4.1.9 Restart the compositor by pressing the "START SAMPLING" key, and then press the "ENTER/PROGRAM" key on the control panel.

4.1.10 Update CDM using the data from the WWRB EFFLUENT WORKSHEET. The worksheet may be discarded after use.

4.2 SAMPLER PROGRAM EDITING FOR THE ISCO 3710 COMPOSITOR

4.2.1 The sampler programming is stored in non-volatile memory and should not require editing under normal operating conditions.

4.2.2 Sampler Advanced Programming

4.2.2.1 Press "STOP" if program is running. Press the "ENTER/PROGRAM" key; this places the sampler in the "PROGRAM" mode.

4.2.2.2 The display will read "{PROGRAM, CONFIGURE}". Select "PROGRAM" by using the left and right arrow keys, then press the "ENTER/PROGRAM" key.

4.2.2.3 The display will read "{TIME, FLOW} PACED SAMPLING". Select "FLOW" by using the left or right arrow keys then press the "ENTER/PROGRAM" key.

4.2.2.4 The display will read "SAMPLE EVERY --- PULSES (1-9999)". Enter 100 using the keypad and press the "ENTER/PROGRAM" key.

NOTE

This setting means a sample is taken every 10,000 gal. of effluent flow.

4.2.2.5 The display will read "--- COMPOSITE SAMPLES". Enter 160 using the keypad and press "ENTER/PROGRAM" key.

4.2.2.6 The display will read "SAMPLE VOLUMES OF --- ml EACH (10-90)". Enter 90 using the keypad and press the "ENTER/PROGRAM" key.

4.2.2.7 The display will read "ENTER START TIME? [YES, NO]". Select "NO" by using the left or right arrow key and press the "ENTER/PROGRAM" key.

4.2.2.8 The display will read "--- STANDBY---". The sampler is programmed to collect a 90 ml. sample for every 10,000 gallons of water discharged from the WWRB.

4.2.2.9 To start the program press the "START SAMPLING" key.

4.3 ROUTINE MONITORING OF THE ISCO MODEL 2710 COMPOSITOR

4.3.1 Note the sampler's LCD display and record the number of composite samples collected on the WWRB Effluent Worksheet.

4.3.2 Note the WWRB flow integrator reading located at the upper back portion of the sample cabinet and record on the WWRB Effluent Worksheet.

4.3.3 Place the sampler in the STANDBY mode by pressing "HALT PROGRAM" on the control panel of the ISCO Model 2710 compositor.

4.3.4 If the display indicates FULL, the sample container tub has filled completely and the sampler has ceased compositing automatically. This occurs when 160 samples have been collected.

4.3.5 During winter months, ensure the cabinet heaters are operating to avoid system freeze-up.

4.3.6 Visually inspect sampler components for cleanliness and system leakage. Repair or report any leaks.

4.3.7 `During periods of confirmed primary-to-secondary leakage the provisions of ODCM Table 2-3 apply. Save and analyze the sample in accordance with 30025-C, "Periodic Analysis Scheduling Program", and 35420-C, "Monitoring of the Radioactive Liquid Waste Management System".

4.3.8 During periods of no confirmed primary-to-secondary leakage the sample container should be emptied by pouring the contents back into the associated WWRB.

4.3.9 Restart the compositor by pressing the "START PROGRAM" key for the Model 2710 compositor.

4.3.10 Update CDM using the data from the WWRB EFFLUENT WORKSHEET. The worksheet may be discarded after use.

4.4 SAMPLER PROGRAM EDITING FOR THE ISCO MODEL 2710 COMPOSITOR.

4.4.1 The sampler programming is stored in non-volatile memory and should not require editing under normal operating conditions.

4.4.2 Sampler Advanced Programming

4.4.3 Press "HALT" if program is running. Press the "PROGRAM/STEP PROGRAM" key, this places the sampler in the program mode.

4.4.4 Enter on the numeric keypad mode 2, for flow compositing operation, then press the "ENTER VALUE" key.

4.4.5 Press the "PROGRAM/STEP PROGRAM" key. The "INTERVAL BETWEEN SAMPLES" light will sequence on.

4.4.6 Enter on the numeric keypad the desired interval between samples in flow pulses (UNIT 1 = 100, UNIT 2 =100). Press the 'ENTER VALUE" key.

NOTE

This setting means a sample is taken every 10,000 gal. of effluent flow.

4.4.7 Press the "PROGRAM/STEP PROGRAM" key. The "NOMINAL SAMPLE VOLUME" light will sequence on.

4.4.8 Enter zero on the numeric keypad. Press the "ENTER VALUE" key. Press the "Program/Step Program" key. The "CALIBRATE SAMPLE VOLUME" light will sequence on.

4.4.9 Enter the pre-purge (PO--) volume counts, (UNIT 1 =450, UNIT 2 = 450). Press the "ENTER VALUE" key.

4.4.10 Press the 'PROGRAM/STEP PROGRAM" key, enter the fill cycle (F1--) volume counts, (UNIT 1 = 550, UNIT 2 =550). Press the 'ENTER VALUE" key.

NOTE

These values may be changed as necessary to keep sample volume delivered at or near 100 ml. Notify Laboratory Supervision of any changes.

4.4.11 Press the "PROGRAM/STEP PROGRAM" key, enter post-purge (P1--) volume counts, (Unit 1=450, Unit 2=450). Press the "ENTER VALUE" key.

4.4.12 Press the "PROGRAM/STEP PROGRAM" key, enter zero for the second fill cycle (F2--) volume count. Press the "ENTER VALUE" key.

4.4.13 Press the "PROGRAM/STEP PROGRAM" key. The NUMBER OF COMPOSITE SAMPLES light will sequence on. Enter the total number of samples to be composited, (UNIT 1 =160, UNIT 2 =160). Press the "ENTER VALUE" key. Press the "PROGRAM/STEP PROGRAM" key to (----) indication.

4.4.14 Press the "START PROGRAM" key to initiate the program sequence. This program is now set such that each 100 counts on the flow integrator (at back of cabinet) causes a composite sample to be collected. This sample is approximately 100 ml in volume. Each count on the flow integrator represents 100 gallons pumped from the WWRB, this means that for every 10,000 gal pumped from the WWRB we obtain a sample.

4.5 SAMPLE DELIVERY VOLUME CALIBRATION FOR THE ISCO MODEL 2710

4.5.1 Initial conditions:

A. WWRB is being discharged (or is on recirculation)

B. Sampling system valves are aligned as shown in Figure 1

C. Pressure regulator 1(2)-PCV-17808 is reading 4 psig or less. Regulator may be adjusted to achieve the desired reading.

4.5.2 Press "HALT PROGRAM" key.

4.5.3 Remove the compositor lid and choose one of the following two options:

A. Replace the composite with a clean, empty bottle and replace the compositor lid,

OR

B. Place the compositor lid on a temporary stand with a small, clean empty vessel underneath the compositor discharge.

4.5.4 Press "MANUAL SAMPLE" key to initiate normal sample sequence (Pre-purge-Sample-Post Purge).

4.5.5 Measure the delivered volume. The desired volume is approximately 100 ml.

4.5.6 If necessary, adjust the F1 parameter to obtain approximately 100 ml.

4.5.7 Press the "PROGRAM/STEP PROGRAM" key to enter the program mode.

4.5.8 Press the "PROGRAM/STEP PROGRAM" key until the "CALIBRATE SAMPLE VOLUME" light is lit.

4.5.9 Press the "PROGRAM/STEP PROGRAM" key until F1 (and its corresponding value) is displayed.

4.5.10 Use the numeric keys on the keypad to make changes to the F1 parameter.

4.5.11 Press the "ENTER VALUE" key.

4.5.12 Press the "PROGRAM/PROGRAM STEP" key until four dashes (----) are displayed.

4.5.13 Return to step 4.5.4 to determine the new delivered volume.

4.5.14 When the desired volume has been obtained, re-assemble the compositor and press "START PROGRAM" to re-set the aliquot count to zero.

4.5.15 Complete the calibration certificate and forward to chemistry supervision.

5.0 TROUBLESHOOTING

NOTE

The following steps should be used as needed, and no sequence is implied.

5.1 When the compositor collects 160 aliquots it will shut off as full. To re-start the counter, it may be required to press "OFF", then "ON", then "START PROGRAM".

5.2 To calculate the number of aliquots that should be collected, subtract the totalizer reading corresponding to the last time the aliquot counter was reset from the current totalizer reading and divide the difference by 100. Discrepancies should be brought to the attention of lab supervision.

5.3 Valve alignment should be checked (Using Figure 1) when routine monitoring indicates no water is entering the compositor.

6.0 MAINTENANCE

6.1 Routine maintenance consists mainly of keeping sample tubing and containers clean and free of debris. Whenever composited samples are recovered a visual inspection of sampler components should be performed.

6.2 Section 3.0 of the Manufacturer's Instruction Manual provides detailed maintenance procedures for the compositors.

6.3 If the ISCO sampler fails and can not be repaired quickly, a spare ISCO Model 2710 sampler is stored in the Demineralizer Building and can be utilized until a repair can be completed.

6.4 Pressure regulator 1(2)-PCV-17808 should be set just below 4 psig when a WWRB pump is running. The regulator can be adjusted with the adjusting screw under the cap.

7.0 REFERENCES

7.1 Instructions Manual, ISCO Model 2710 Sampler. VEGP Vendor number 1X5A617L-126

7.2 Instruction Manual, ISCO Model 3710 Sampler.

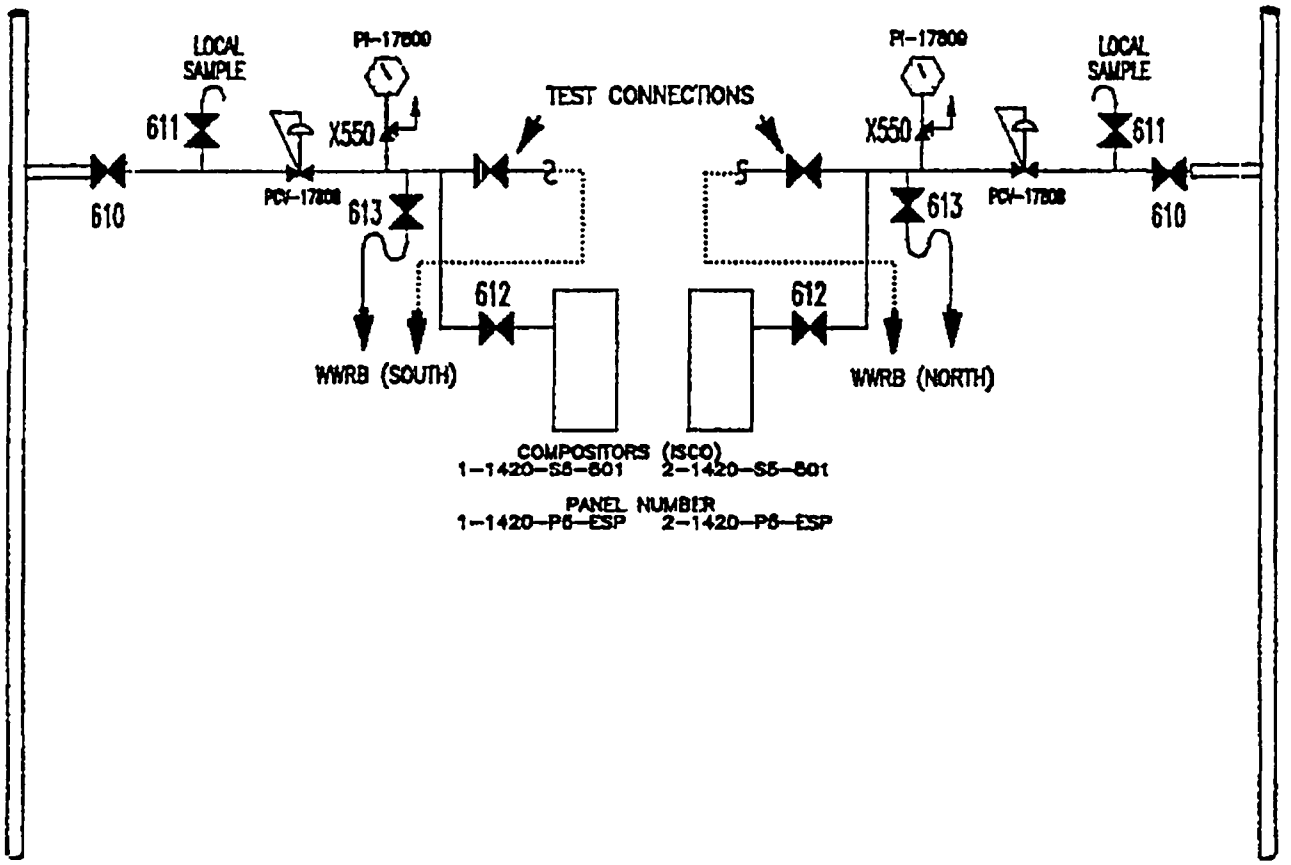
7.3 PROCEDURES

7.3.1 33000-C, "Preparation Of Liquid Samples For Radiological Chemical Analyses"

7.3.2 36015-C, "Radioactive Liquid Effluent Release Permit Generation And Data Control"

6.2.3 36010-C, "Off-Side Dose Calculation Manual (ODCM) Implementation And Control"

END OF PROCEDURE TEXT



1. Valve line-up to allow composite sampling from the Unit #1 Waste Water Retention Basin.

   a. Open valve 1-1420-U4-610
   b. Close valve 1-1420-U4-611
   c. Open valve 1-1420-X4-550
   d. Open valve 1-1420-U4-613
   e. Close Test Connection 1-PI-17809 DD
   f. Open valve 1-1420-U4-612

2. Valve line-up to allow composite sampling from the Unit #2 Waste Water Retention Basin.

   a. Open valve 2-1420-U4-610
   b. Close valve 2-1420-U4-611
   c. Open valve 2-1420-X4-550
   d. Open valve 2-1420-U4-613
   e. Close Test Connection 2-PI-17809 DD
   f. Open valve 2-1420-U4-612

FIGURE 1

CHEMISTRY DEPARTMENT
CALIBRATION CERTIFICATE
DATA SHEET 1

PROCEDURE TITLE AND NUMBER	37015-C OPERATION OF THE WASTE WATER RETENTION BASINS AUTOMATIC SAMPLE COMPOSITORS
FREQUENCY	MONTHLY
MAXIMUM TIME BETWEEN CALIBRATION	45 DAYS
TOLERANCE	+/- 15%
MINIMUM SENSITIVITY	
EQUIPMENT I.D. NUMBER	ISCO COMPOSITE SAMPLER MODEL 2710
DATE OF LAST CALIBRATION	
DATE OF THIS CALIBRATION	

SPECIAL INSTRUCTIONS: _____

VOLUMES COUNT (F1)	CALIBRATION RESULTS	ACCEPTANCE TOLERANCE	REMARKS

SAT	UNSAT

Performed by: _____

Approved by: _____ Date _____

WASTE WATER RETENTION BASIN
EFFLUENT WORKSHEET
SYSTEM 1420

UNIT# WWRB	DATE	TIME	FLOW TOTALIZER READING	COMPOSITE SAMPLES COLLECTED	INITIALS