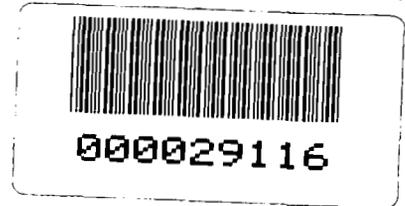




Department of Energy

ROCKY FLATS OFFICE  
P.O. BOX 928  
GOLDEN, COLORADO 80402-0928



MAY 19 1993

93-DOE-05870

Mr. Martin Hestmark  
U. S. Environmental Protection Agency, Region VIII  
ATTN: Rocky Flats Project Manager, 8HWM-RI  
999 18th Street, Suite 500, 8WM-C  
Denver, Colorado 80202-2405

Mr. Gary Baughman  
Hazardous Waste Facilities Unit Leader  
Colorado Department of Health  
4300 Cherry Creek Drive South  
Denver, Colorado 80222-1530

Gentlemen:

Enclosed are the minutes of our discussions during the April 20, 1993, Solar Evaporation Ponds Remediation Project Monthly Meeting. We have also enclosed copies of the presentations on 1) the sampling and analyses performed to meet the acceptance requirements in Appendix B of the Building 910 Interim Measure/Interim Remedial Action (IM/IRA) Decision Document, and 2) our plans relating to the waste pile designation for the 904 storage pad. We have included these presentations to provide you with a formal record of these important topics, which were discussed at length but never presented as complete plans until the recent monthly meeting. You will receive additional information on these topics as the Building 910 acceptance testing results are reported and in a letter outlining the management and regulatory proposals for the waste pile designation for the 904 Pad.

Please contact me or Scott R. Surovchak of my staff at 966-3551 if you should have any questions or comments.

Sincerely,

Frazer R. Lockhart  
SPRP Manager  
Environmental Restoration Division

Enclosure

cc w/Enclosure:  
J. Schieffelin, CDH  
D. Fox, CDH  
F. Dowsett, CDH  
D. Maxwell, EPA

ADMIN RECORD

A-OU04-000508

Minutes of the Monthly Rocky Flats, Solar Ponds Remediation Project  
April 20, 1993

Attached:        Agenda  
                  List of those attending  
                  Presentation Charts: Pondcrete/Saltcrete Triwall Storage  
                  Presentation Charts: Process Qualification Run

The status of the IM/IRA remedy was discussed. EG&G plans to extract lessons-learned from the start-up of the Temporary Modular Storage Tanks to prepare for the start-up of Building 910. These lessons-learned may be applied by the DOE Rocky Flats Office (RFO) to a broader range of remediation projects, to perform readiness-evaluations at an appropriate level of detail for such projects. RFO refers to this as the graded approach to readiness. They plan to codify the approach in a DOE Rocky Flats Instruction (an internal document to direct operations at the plant), which is expected to be helpful in future reviews by the Nuclear Facilities Safety Board.

Last week, DOE presented a video showing activities at the Solar Ponds to a public meeting. EPA observed that the workers in the 207 A impoundment were wearing different personal protective equipment than workers on the impoundment berm, and asked about the difference. Rocky Flats staff responded that the workers in the impoundment were drilling into soils below the impoundment liner. This operation generates the potential for dust generation and involves in incompletely characterized soil; therefore the level of protection for those workers was higher than for workers on the berm.

Regarding the Building 910 acceptance-phase sampling plan, a question arose regarding conversion of grams of plutonium per liter to picocuries per liter. (The question was not answered specifically in the meeting. The conversion for total activities is:  $4.1 \times 10^{-10}$  pCi/g EPA asked if the plant utilities system, which is planned to receive the Building 910 distillate, has sufficient demand for the distillate to be produced. EG&G responded that, between the cooling towers and the steam plant, there is sufficient demand. Also, the stream to be processed (pond water and interceptor trench system water) is currently processed in Building 374, and Building 374 has been sending all its distillate to the utilities system on a regular basis.

In discussing the storage pads, EPA pointed out that, in deferring field work for characterization of the pads under Operable Unit 10, the agreement is based on no migration of contaminants from the pads. This may need to be reviewed as work proceeds. DOE is considering suggesting a move of the pads out of OU 10 and under OU 4, so the Individual Hazardous Substance Sites (IHSS) related to the Solar Ponds remediation schedule can be administered together. CDH noted that, for OU 15, an area of the OU found to be needed for on-going operation was deleted from the OU and added to the plant's RCRA permit, with a closure plan as appropriate to the permitting process. This approach may have merit for the pads.

Rocky Flats' current plans do assume the pads will be needed to store existing pondcrete, existing and current-generation saltcrete, and pondcrete remixed and generated in the future. A Part B permit modification request for the 750 Pad has been submitted to CDH. EPA may not look favorably on continuing operation of the storage pads indefinitely.

The 904 pad includes a Permacon unit that is valuable to operations as a location where potentially radioactively-contaminated-waste containers can be repacked. CDH advised EG&G to review the permit for air emissions from the pads to ensure that any anticipated repacking is appropriately covered.

DOE's letter regarding the move of the pads from OU 10 to OU 4 has been in the signature loop, and may be released without updating based on today's meeting. DOE asked meeting participants to check their schedules and let Scott Surovchak know if they will be free to discuss the issue again before the next monthly meeting.

The practice of cementing the current-generation saltcrete was discussed. An earlier designation of the nitrate-containing brine and resulting salt as an oxidizer led to the cementing process, but the composition of the salt may have changed since plutonium production was ceased. EG&G Waste Operations staff are leading an effort to either justify ceasing cementing or improving the cementing to meet disposal requirements; Solar Ponds Project staff are keenly interested in the effort and are participating. EPA encouraged DOE to pursue this effort, and requested DOE share the results.

CDH asked for Rocky Flats' rationale in requesting a permit modification for the 750 pad, but a change to interim status for the waste pile designation on the 904 Pad. The 904 pad was set up as temporary storage until the pondcrete could be shipped offsite for disposal. If that "temporary" designation is less applicable given the status of the Nevada test Site, perhaps a permit is more appropriate. EG&G noted the waste pile designation involves a code change from S01 to S03, and that was felt to be a change to interim status. Also, CDH has allowed changes to interim status for units that are also under consideration for a Part B permit. There was some discussion of CDH's ability to grant changes to interim status after November 8, 1992. EG&G thinks that only capacity increases are no longer allowed under change to interim status.

The potential for free liquids in excess of de minimus amounts will also be a concern of CDH is reviewing the waste pile designation. DOE described the de minimus liquids that have been observed in the past and how those liquids were handled. CDH staff present suggested DOE contact the CDH RCRA permit staff directly on this issue. The potential for free-liquids could be the most important concern for CDH to resolve in their review and decision-making on the waste pile designation.

- Open items from last month were reviewed:

EPA and CDH have just received the "path-forward" letter, and are reviewing the request.

EPA and CDH are working on their comments for the OU 4 technical memos, but will be later than we requested with their comments. Doing three technical memos simultaneously stretches them thin. CDH has provided some verbal comments to Randy Ogg. TM #2 may have no technical problems, but EPA thinks the inclusion of an overall schedule is misplaced. Comments from the toxicologist could be sizable. The scope of the *Ecological Evaluation (EE)* may be excessive. The plans to begin field work, however, should not be delayed due to the review cycle. DOE was planning to issue the request for extension of the two IAG milestones after receiving the technical memo comments; that may lead to the request being delayed until the last minute. CDH will try to have comments complete on TM #2 and #4 by the middle of next week, but their formal transmittal process takes a little time.

CDH stated they try to turn around comments in two weeks, but sometimes it takes longer. They appreciate hearing if the comment-cycle has been pushed onto the critical path, so they can respond appropriately. But it is up to DOE to allow enough time. TMs should be submitted as early as possible in the assessment. The three OU 4 TMs could have all been submitted much earlier.

CDH noted that upcoming submittals from several OUs may be simultaneous, and that will overload the review process and slow down comments for several projects. EG&G should plan with that in mind.

Whether CDH staffing is an appropriate topic for the Quality Action Team (QAT) was discussed. CDH reported the team members are still considering whether the team should tackle that issue.

DOE will issue the IM/IRA amendment letters to Reading Rooms very soon. This action had secondary priority.

- A new item was introduced:

EG&G expects DOE to add RCRA waste code F039 to the trench water and B Ponds, but not C Pond and the clarifier. This is a hazardous waste determination, so DOE will transmit a letter stating their determination, and CDH may object if they disagree. DOE expects to have the letter signed by next week.

- New action item:

Scott Surovchak will try to arrange a meeting, before the next monthly meeting, with Rocky Flats staff and the regulators to discuss the status of 750 Pad and 904 Pad: do they belong in an Operable Unit, if so which one; and if not, should DOE request they be added to the Part B permit.

- Summary of Open Action Items:

ACTIONEE	ITEM	ORIG. DUE DATE	PROJECTED COMPLETION
CDH/EPA	Response to "Path-Forward"	none	tbd
CDH/EPA	TM comments	EG&G requested 4/16/93	tbd, target 4/29 for two TMs
DOE	IM/IRA amendment to Reading Rooms	none, but "soon"	ASAP
DOE	Arrange meeting on pads: OU 4 vs OU 10 vs Part B Permit	before 5/18	tbd
DOE	Transmit F039 determination	none	4/30/93
EG&G	Present sludge consolidation schedule	5/18/93	5/18/93

- The next monthly meeting was planned:

EPA requested presentation of a schedule for the sludge consolidation. EG&G will include that next month.

Meeting was set for May 18, 9:00 am, at EG&G Interlocken offices.

SOLAR PONDS REMEDIATION PROGRAM  
REGULATORY AGENCY MEETING

AGENDA

9:00 A.M.	INTRODUCTION/WELCOME	F. R. LOCKHART/ E. M. LEE
9:30 A.M.	STATUS OF IM/IRA REMEDY ITS DIVERSION BUILDING 910	R. W. BOYLE
10:30 A.M.	IMPLEMENTING IM/IRA WAP (APPENDIX B)	K. C. LONDON
11:00 A.M.	STORAGE ON 750 AND 904 PADS	R. E. JAMES
11:30 A.M.	OPEN ACTION ITEMS	ALL

Monthly CDH/EPA MEETING  
4/20/93

<u>Name</u>	<u>Orgzn</u>	<u>Tel. No</u>
Ed Lee	EG&G	966-8648
Scott Surouchok	DOE/RFO	466-3551
Joe Roberts	EG&G	966-3324/D3562
HARLEN AINSWORTH	CDH	766-3337
David Maxwell	EPA	294-1082
Dick Fox	CDH	692-3251
Arthur Duran	EPA	294-1080
Joe Schieffelin	CDH	692-3356
Kurt Penner	Co. Ag.	866-5131
Henry Linden	Co. Ag.	866-5117
R. E. JAMES	EG&G	966-8568
W. BRUNINGA	EG&G	966-8281
D. R. FERREN	EG&G	966-8767
ERNE O'NEIL	EG&G	966-8585
Larry London	EG&G	966-8541
Steve Keith	EG&G	

# RCRA COMPLIANCE PLAN

## PONDCRETE/SALTCRETE TRIWALL STORAGE

Limited to 904 Pad

Current Status

Interim Status Container Storage Area

Compliance Issues to be Resolved

Condition of Containers

Aisle Space Requirements

Other Issues

DOT Containers

Adequacy of Plastic Wrapping

Viability of Interim Status

Available Secondary

Containment

Remedy

Technical Recommendations - Study

Program Plan (Compliance Plan)

RCRA Compliance Plan  
Pondcrete/Saltcrete Triwall Storage  
April 1993

Program Approach

Aggressively Pursue Waste Pile  
Designation

Prepare Compliance Plan

Seek Regulator Approval of Plan

Pursue Actions Preliminary to  
Restacking/Rewrapping contingency

Remove Excess Equip in Tents 10 &  
11 to Create Add'l Space

Initiate Pre-procurement Actions for  
Re-wrap Mat'ls

ID	Name	Duration	Scheduled	Scheduled	93	Qtr 3, 1993				Qtr 4, 1993			Qtr 1, 1994			Qtr 2, 1994			Qtr 3, 1994		
					Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May		
1	904 PAD COMPLIANCE PLAN	275d	4/1/93	4/20/94																	
2	Waste Pile CTIS	115d	5/1/93	10/8/93																	
3	Submit Request for CTIS, RFO	0w	5/1/93	5/1/93																	
4	Negotiate Change with CDH	12w	5/1/93	7/23/93																	
5	Rev Haz Wste Rqmts Manual	4w	7/19/93	8/13/93																	
6	Develop Wste Pile Opns Proced	8w	8/16/93	10/8/93																	
7	Compliance as Waste Pile	0d	10/8/93	10/8/93																	
8	Rt Stack w/Aisle Space	275d	4/1/93	4/20/94																	
9	Remove Excess Equipment	170d	4/1/93	11/24/93																	
10	Reinstate Project Auth & Funding	6w	4/1/93	5/12/93																	
11	Rev Title II PKG	12w	5/13/93	8/4/93																	
12	Issue Const Contr	4w	8/5/93	9/1/93																	
13	Mobilize Contr	4w	9/2/93	9/29/93																	
14	Remove Excess Equip	8w	9/30/93	11/24/93																	
15	Pre Procmt Actions Bags & Tape	12w	4/1/93	6/23/93																	
16	Order, Fab, & Deliver Bags & Tape	8w	9/30/93	11/24/93																	
17	Rt wrap & Restack Triwalls	21w	11/25/93	4/20/94																	
18	Rev Haz Wste Rqmts Manual	12w	7/19/93	10/8/93																	
19	Container Storage Compliance	0d	4/20/94	4/20/94																	

Project: 904 Plnd Compliance Plan  
Date: 4/20/93

Critical



Progress



Summary



Noncritical



Milestone



Rolled Up



**SOLAR PONDS  
REMIEDIATION PROGRAMS**

**PROCESS QUALIFICATION RUN  
aka  
HOT SO TEST  
aka  
ACCEPTANCE PHASE OF WASTE  
ANALYSIS PLAN**

K. C. London  
April 20, 1993

# OBJECTIVE

This waste analysis plan covers the analytical requirements and procedures necessary to demonstrate that the quality level of product water from the Building 910 Evaporators meets the criteria of the "reuse" exclusion defined by the State of Colorado - 6 CCR 1007-3 Part 261.2(e)(1)(ii).

As a result of the information obtained from this plan, Waste Operations will be able to determine that the product water is suitable for reuse as make-up water to cooling towers or steam plant and the concrete can be processed by HNUS or by Building 374, Unit 42.

# OBJECTIVE

(continued)

## Summarized Objectives

- Distillate (aka product water) meets reuse criteria
- Brine (aka concentrate) can be processed in Building 374
- Also includes some general requirements for pretreatment and treatment

# BRINE CRITERIA

- **Brine will be treated further B374 via evaporation**
  - Enter B374 through T231A (as pond water and Modular Tank water currently does)
  - Distillate reused, per 6 CCR 1007-3 Part 261.2(e)(ii) and DOE/CDH correspondence of August 22, 1989
  - Brine treated through saltcrete process
- **Building 374 acceptance criteria**
  - Maximum for routine transfer: 0.001 g/l Pu and/or 0.001 g/l AM (Operational Safety Requirement)
  - Maximum fissile material to cold-side: 0.0000002 g/l (ie 0.2 ug/l) (Nuclear Materials Safety Manual)
  - pH 2.0 or higher (RCRA Part B)
  - MCLs from 40 CFR 141 (internal control for any liquid suspected of containing organics that will be introduced to B374)

# MEETING B374 BRINE ACCEPTANCE CRITERIA

- Analyze each batch transferred to T231A for:
  - ph
  - Total alpha
- MCLs for organics to be demonstrated via:
  - Existing data base on trench water and pond water shows a lack of the organics of interest
  - Organic analyses in distillate
    - » Organics would tend to partition to distillate, and
    - » Distillate will be shown to meet reuse criteria

# DISTILLATE ACCEPTANCE CRITERIA

- Distillate will replace raw water
  - Demineralized and used for boiler water
  - Raw water used for cooling tower water
- § 261.2 definition of solid waste
  - (e) Materials that are not solid waste when recycled
    - (1) materials are not solid wastes when they can be shown to be recycled by being:
      - (ii) used or reused as effective substitutes for commercial products
- Criteria to show water is effective substitute for raw water
  - DOE/CDH letter of August 22, 1989: “[Building 374 evaporator distillate] water has been excluded...provided it has essentially the same general characteristics of the substituted commercially available water. These general characteristics include the ability to meet MCLs as identified in 40 CFR 141 Subpart B with the exception of turbidity and microbiological contamination.
  - IM/IRA DD Appendix B references standard used for B374

# DISTILLATE ACCEPTANCE CRITERIA

(continued)

- Criteria for transfer to boiler use (Operating Targets)
  - Without demineralization:
    - » ph 6.8 to 8.3
    - » Conductivity  $\leq$  100 umho/cm
    - » Gross alpha  $\leq$  3 pCi/l
    - » Gross beta  $\leq$  1 pCi/l
    - » Total iron  $\leq$  0.10 ppm
    - » Total hardness  $\leq$  0.5 ppm
    - » Total silica  $\leq$  1.0 ppm
    - » Higher levels acceptable with Utilities Manager's review and approval

# MEETING DISTILLATE ACCEPTANCE CRITERIA

- Criteria for utilities (boiler) reuse
  - Sample for constituents
  - Transfer if all criteria met
  - Notify Utilities Management of any exceedences, and recycle or transfer as warranted

# MEETING THE REUSE CRITERIA

- Details of the reuse criteria from IM/IRA Appendix B:
  - Product water must meet general characteristics of raw water
  - Applicable requirements from 40 CFR 141 Subpart B with exception of turbidity and microbiological requirements Table 1B and 1D specifies analytes from Table 2 and 40 CFR 141 Subpart B standards
  - Detailed requirements listed in Tables 1A, 1B, 1C, and 1D
  - Methods per 374 Product Water Sampling Program Rev. 1
- Details of reuse criteria from DOE/CDH correspondence of August 1989
  - MCLs identified in 40 CFR 141 Subpart B except turbidity and microbiological contamination
- Details of reuse criteria from B374 practice (374 Product Water Sampling Program Rev. 3, July 1, 1992)

# MEETING THE REUSE CRITERIA

(continued)

- The key references:
  - IM/IRA Appendix B Table 2
  - 40 CFR 1241 Subpart B
  - 374 Produce Water Sampling Program Rev. 3
- The list of analytes vary among key references

## RECONCILING ANALYTICAL REQUIREMENTS FOR B910 DISTILLATE

- IM/IRA Appendix B Table 2 list will be used for monthly testing
  - Acceptance phase includes organic and inorganic constituents
  - Production phase include inorganic constituents
- Building 374 implementation of applicable requirements from 40 CFR 141 Subpart B
  - Used for tracking
  - Distillate transferred based on conductivity measurements
- Routine analysis
  - TAL Metals
  - Nitrate as Nitrogen
  - VO (EPA CLP)
  - Semi-Volatiles (EPA CLP)
  - Gross (Total) alpha/beta
  - Tritium
  - Total phosphate
  - Ortho phosphate
  - Field parameters temperature, pH, and conductivity

# RECONCILING ANALYTICAL REQUIREMENTS FOR B910 DISTILLATE

(continued)

- **Non-routine radionuclides (if alpha activity  $\geq$  15 pCi/l)**
  - Pu-239/240
  - U-233/234, 235, 238
  - Am-241
- **40 CFR 141 Subpart B pesticides, asbestos, and secondary standards not applicable**
  - Based on satisfactory B374 practice, and intent as demonstrated in IM/IRA Appendix B Table 2
- **Analyses may be added by Rocky Flats for operational convenience (for example, by Utilities)**

# ACCEPTANCE/QUALIFICATION RUN

- Empty all cold-test water from system
- Feed to be water from Pond 207B-?
- Distillate may be returned to the pond during acceptance phase
- Results to be collected
  - Test performance data
  - Operator log
  - On-line detection
  - Daily analyses
  - Monthly analyses
  - Laboratory analyses will be interred into RFEDS
  - Operating Logs will be retained as the original hardcopy log books
  - On-line measurements used in operational decisions will be entered into the operating logs

# ACCEPTANCE/QUALIFICATION RUN (continued)

- **Laboratories to be used**
  - Acceptance phase analytical work will be performed by ER off-site labs
  - Production phase analytical work will be performed by on-site labs, paralleling B374 use (off-site labs may be used as necessary to supplement on-site capacities)
  - Acceptance phase analysis for boron may be performed on-site
  - On-site support for rad screening, etc., for both phases
- **Quality Control**
  - Existing lab plans
    - » GRRASP/GASP
    - » Data Quality requirements (blanks, etc.) per established B374 product water sampling program
    - » CLP methods and practices

# ACCEPTANCE/QUALIFICATION RUN (continued)

- **Two sets of tests are specified**
  - Pretreatment to determine effectiveness of chelation
  - Treatment tests to determine treatment effective at each step in process
    - » Sampling per Tables 1B and 1D
    - » Action criteria for transfer to next process step specified in Tables 1B and 1D
    - » Additional data from the samples is also collected to track water quality
- **Plate operating requirements**
  - Distillate transfer to utilities
    - » Reuse criteria from 40 CFR 141
    - » Operational Controls on iron, hardness, silica, pH, and gross alpha/beta
  - Brine transfer to B374
    - » Consistent with B374 distillate reuse
    - » Operational controls on pH and actinide levels

# ACCEPTANCE PHASE: USE OF ANALYSIS

## STREAM IM/IRA RATIONALE

## PLANNED USE

### Pretreatment Test:

Main feed header	Determine EDTA feed rate
VC feedline	Determine baseline reference
VC product water	Determine EDTA setpoint
MEMS product water	Determine EDTA setpoint

Show feed flow rate

### Treatment Test

Dwnstr duplex filter	Verification
VC product water	Determine next step
MEMS product water	Determine next step
Product water to batch	Determine process acceptance

Feed composition is what we expect

Automatically transfer to recycle (if exceeds 150 umho/cm) or distillate tank

Automatically transfer to recycle (if exceeds 150 umho/cm) or distillate tank

Show distillate meets IM/IRA tanks requirements (in production phase, confirm meets characteristics of raw water and provide monthly analyses for records)

Concentrate	Verify concentrate characteristics	Show brine ok to ship to B374 T231A
-------------	------------------------------------	-------------------------------------

- In production, distillate analysis results are compared to 40 CFR 141 Subpart B standards for metals, nitrate, nitrite, cyanide, fluoride, gross alpha, gross beta, and VOCs to document the distillate meets raw water characteristics. Distillate is transferred into reuse based on conductivity.

# ACCEPTANCE PHASE: SAMPLING LOCATIONS

<u>STREAM</u>	<u>IM/IRA LOCATION</u>	<u>SPECIFIC LOCATION</u>
<b>Pretreatment Test:</b>		
Feed	Main header	FE-823
Feed	Feedline to VC (omitted in production phase)	MV-1039 & 1040
VC product water	P-4002 discharge	CIC-421
MEMS product water	P-4009 discharge	CIC-421 (488???)
Concentrate	D-6001 and D-6005 (omitted in production phase)	P-11/MV-4054 & 4055 P-12/MV-4056 & 4057
<b>Treatment Test</b>		
Pond Water	Dwnstr duplex filter	MV-1039 & 1040
VC product water	P-4002 discharge	CIC-421
MEMS product water	P-4009 discharge	CIC-421
Product water	Upstrm D-2, D-6, or D-7 (add T215D during production phase)	S-3 and MV-2072 & 2073 S-2 and MV-2064 & 2065 or S-1 and MV-2056 & 2057
Concentrate	D-18/P-11 or D-9/P-12 discharge	MV-4054 & 4055 or MV-4056 & 4057

\* Production phase notes: In production, the treatment test product water sample is replaced by a weekly sample at tanks D-2, 6, and 7, and a monthly sample at tank T215D; pretreatment test locations for VC feed header and concentrate tanks D-6001, and 6005 are omitted.

# ACCEPTANCE PHASE: SAMPLE ANALYSIS

## STREAM

## IM/IRA TEST

## LAB ANALYSES

### Pretreatment Test:

Feed/main header  
Feed/VC feedline

Volumetric feed rate

Conductivity, silica, chloride,  
total hardness, Ca hardness,  
alkalinity, pH

na

see Analytical Parameters, 910  
Product Qualification Test Plan, §6A

VC product water  
MEMS product water  
Concentrate

Conductivity  
Conductivity

na  
na

*Silica, chloride, total hardness,  
Ca hardness, alkalinity, pH*

Gross alpha, gross beta, pH, free  
chelate

Treatment Test  
Feed/duplex filter

Total alpha, pH, TDS

see Analytical Parameters, 910  
Product Qualification Test Plan, § 6A

VC product water  
MEMS product water  
Product water upstream  
of batch tanks  
Concentrate

Conductivity  
Conductivity  
Table 2 in IM/IRA

na  
na

see Analytical Parameters, 910  
Product Qualification Test Plan, § 6A

Total alpha, total beta, density  
plus other tbd

Gross alpha, gross beta, pH, free  
chelate

- Conductivity measurements are performed in B910, so no lab analysis is required
- Italicized test appears to be a cut-and-paste error; see rationale for the test to determine analyses needed
- Production Phase Note: Table 2 organics not required after acceptance phase if undetected

ACCEPTANCE PHASE: Use of Analyses

STREAM	MIRA RATIONALE	PLANNED USE
PRETREATMENT TEST:		
Main feed header	<i>Determine EDTA feed rate</i>	Show feed flow rate
VC feedline	Determine baseline reference	Baseline data
VC product water	<i>Determine EDTA setpoint</i>	Determine meets transfer conductivity requirement
MEMS product water	<i>Determine EDTA setpoint</i>	Determine meets transfer conductivity requirement
Concentrate	Determine EDTA setpoint	Decrease EDTA if excess in brine
TREATMENT TEST:		
Dwnstr duplex filter	Verification	Feed composition is what we expect
VC product water	Determine next step	Automatically transfer to recycle (if exceeds 150 umho/cm) or distillate tank
MEMS product water	Determine next step	Automatically transfer to recycle (if exceeds 150 umho/cm) or distillate tank
Product water to batch tanks	Determine process acceptance	Show distillate meets MIRA requirements (in production phase, confirm meets characteristics of raw water and provide monthly analyses for records)
Concentrate	Verify concentrate characteristics	Show brine ok to ship to B374 T231A

- Rationalized rationale appears to be misplaced, note planned use of data.
- In production, distillate analysis results are compared to 40 CFR 141 Subpart B standards for metals, nitrate, nitrite, cyanide, fluoride, gross alpha, gross beta, and VOCs to document the distillate meets raw water characteristics. Distillate is transferred into reuse based on conductivity.

ACCEPTANCE PHASE: Sample Analyses

STREAM	IMIRA TEST	LAB ANALYSES
PRETREATMENT TEST:		
Feed/main header	Volumetric feed rate	na
Feed/VC feedline	Conductivity, silica, chloride, total hardness, Ca hardness, alkalinity, pH	see Analytical Parameters, same for feed and distillate
VC product water	Conductivity	na
MEMS product water	Conductivity	na
Concentrate	Silica, chloride, total hardness, Ca hardness, alkalinity, pH	Free chelate
TREATMENT TEST:		
Feed/duplex filter	Total alpha, pH, TDS	see Analytical Parameters, same for feed and distillate
VC product water	Conductivity	na
MEMS product water	Conductivity	na
Product water upstream of batch tanks	Table 2 In IMIRA	see Analytical Parameters, same for feed and distillate
Concentrate	Total alpha, total beta, density, plus other tbd	Gross alpha, gross beta, pH

- Conductivity measurements are performed in B910, so no lab analysis is required.
- Italicized test appears to be a cut-and-paste error; see rationale for the use of analysis to determine analyses needed.
- Production Phase Note: Table 2 organics not required after acceptance phase if undetected.

Summary of Analyses by Phase

ACCEPTANCE PHASE FEED AND DISTILLATE ANALYTICAL PARAMETERS	PRODUCTION PHASE DISTILLATE
TAL Metals plus Boron	TAL Metals plus Boron
Nitrate as N	Nitrate as N
Nitrite as N	Nitrite as N
Total nitrate & nitrite	Total nitrate & nitrite
Total cyanide	Total cyanide
Fluoride	Fluoride
VOC (EPA 524.2 plus acetone)	na
Semi VOC (EPA 626)	na
Triazine Pesticides (EPA 619)	na
Gross alpha / gross beta	Gross alpha / gross beta
Total phosphate	Total Phosphate
Ortho phosphate	Ortho phosphate
Ammonia	Ammonia
Chloride	Chloride
Carbonate	Carbonate
Bicarbonate	Bicarbonate
Sulfate	Sulfate
Sulfite	Sulfide
Silica	Silica
Total hardness	Total hardness
Alkalinity	Alkalinity
TDS	TDS
TOC/DOC	TOC/DOC
Temperature/pH/conductivity (field measurements)	Temperature/pH/conductivity (field measurement)
Nonroutine actinides if total alpha > 13,500 pCi/l	Nonroutine actinides if total alpha > 15 pCi/l

## ACCEPTANCE PHASE: Sampling Locations

STREAM	IMVIRA LOCATION	SPECIFIC LOCATION
PRETREATMENT TEST:		
Feed	Main header	FE-823
Feed	Feedline to VC (Omitted in production phase)	MV-1039 & 1040
VC product water	P-4002 discharge	CIC-421
MEMS product water	P-4009 discharge	CIC-421
Concentrate	D-6001 and D-6005 (Omitted in production phase)	P-11/MV-4054 & 4055 P-12/MV-4056 & 4057
TREATMENT TEST:		
Pond water	Dwnstr duplex filter	MV-1039 & 1040
VC product water	P-4002 discharge	CIC-421
MEMS product water	P-4009 discharge	CIC-421
Product water	Upstrm D-2, D-6, or D-7 (add T215D during production phase) S-1, S-2, & S-3	MV-2072 & 2073 MV-2064 & 2065 or MV-2056 & 2057 (add S-1, 2, & 3 during production phase)
Concentrate	D-18/P-11 or D-9/P-12 discharge	MV-4054 & 4055 or MV-4056 & 4057

- Automatic samplers will not be used to pull acceptance samples, manual samples provide better control
- Production phase notes: In production, the treatment test product water sample is replaced by a weekly sample at tanks D-2, 6, and 7, and a monthly sample at tank T215D; pretreatment test locations for VC feed header and concentrate tanks D-6001, 6005 are omitted.