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START

December 23, 1991

**Meeting Minutes Transmittal/Approval
Status of 200 AAMS Activities
450 Hills Street, Rm 47, Richland Washington
November 21, 1991**

From/ Appvl.: allan Harris Date: 1-22-92
Allan Harris, 200 AAMS Unit Manager, DOE-RL (A5-19)

Appvl.: Doug Sherwood Date: 1/22/92
Doug Sherwood, 200 AAMS Unit Manager, EPA (B5-01)

Appvl.: Charles S. Olive for LG Date: 1/22/92
Larry Goldstein, 200 AAMS Unit Manager, WA Department of Ecology

Meeting Minutes are attached. Minutes are comprised of the following:

- Attachment #1 - Meeting Summary/Summary of Commitments and Agreements
- Attachment #2 - Attendance List
- Attachment #3 - 200 AAMS Program
- Attachment #4 - 200 AAMS Groundwater Sampling Field Activity
- Attachment #5 - 200 AAMS Borehole Geophysics Field Activity; Sampling and Analysis Plan; U and Z Plant Aggregate Areas

Prepared by: Doug Fassett Date: 1/24/92
SWEC Support Services

Concurrence by: [Signature] Date: 1/23/92
WHC RI Coordinator

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Distribution

Status of 200 Aggregate Area Activities
November 21, 1991

Donna Lacombe, PRC
 Ward Staubitz, USGS
 Doug Fassett, SWEC (A4-35)
 Linda Powers, WHC (B2-35)
 Tom Wintczak, WHC (B2-15)
 Mel Adams, WHC (H4-55)
 Wayne Johnson, WHC (H4-55)
 Rich Carlson, WHC (H4-55)
 Brian Sprouse, WHC (H4-22)
 Bill Price, WHC (S0-03)
 Ralph O. Patt,
 OR Water Resources Dept.
 Mike Thompson, DOE (A6-95)
 Diane Clark, DOE (A5-55)
 Mark Buckmaster, WHC (H4-55)
 Don Praast, GAO (A1-80)
 Curt Wittreich, WHC (H4-55)
 David Pabst, WHC (B2-35)

Ronald D. Izatt (A6-95)
 Director, DOE-RL, ERD
 Donald E. Gerton (A6-80)
 Director, DOE-RL, WMD
 Roger D. Freeberg (A6-95)
 Chief, Rstr. Br., DOE-RL/ERD
 Steven H. Wisness (A6-95)
 Tri-Party Agreement Proj. Mgr
 Richard D. Wojtasek (B2-15)
 Prgm. Mgr. WHC
 Mary Harmon, DOE-HQ (EM-442)

ADMINISTRATIVE RECORD: ~~200-BP-1~~; Care of Susan Wray, WHC (H4-51C)
 200 AAMS *DKL*

Please inform Doug Fassett (SWEC) of deletions or additions to the distribution list.

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Attachment #1

Meeting Summary and Summary of Commitments and Agreements
Status of 200 AAMS Activities
November 21, 1991

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1. **200 Aggregate Area Management Study Programs:** Curt Wittreich (WHC) presented an update on the aggregate area management study reports (see Attachment #3). WHC/DOE are on schedule to meet the aggregate area milestones. Studies of *existing* gross gamma ray logs from boreholes will go into *the* source aggregate area studies. *Geophysical data developed from the RLS logging program will be summarized in two topical reports that will be separate from the aggregate area reports.*
 2. A meeting was scheduled on December 12, 1991, from 8:00 am to noon to review the first aggregate area management study package with the regulators.
 3. **Groundwater Sampling Activities:** Bruce Ford (WHC) presented an update on the 200 aggregate area groundwater sampling activities and the groundwater sampling analysis plan which was submitted to DOE on October 12, 1991 (see Attachment #4). Mr. Ford emphasized that the sampling efforts will be *EPA Level III screening level* efforts. Ward Staubitz (USGS) asked why cyanide, which was a contaminant at 200-BP-1, did not appear on the list. Mr. Ford replied that the only regulatory standard where cyanide appears is chronic water toxicity level, and cyanide appears in the purgewater standard based on the levels set in this regulation. Mr. Ford is currently doing plume mapping on cyanide, and it will be included as a contaminant of concern. Chuck Cline (Ecology) asked for clarification of the statement "*screening level effort.*" Mr. Ford explained that in this case screening level *does not indicate the QA requirements but that the process is applying a screening program for selecting wells.*
 4. Ward Staubitz asked if there were a figure of the 200 West area in a fold-out size that lists each of the individual wells in the area. Steve Trent (WHC) stated that he was working on getting the regulators a current set of water well maps and would check to see if they are ready before the end of the day.

Action Item #2AAMS.2: A map of the 200 West Area is to be provided to the regulators. All of the wells that have been located should be shown.
Action: Steve Trent (WHC)

5. Ward Staubitz confirmed that he had received a copy of the sampling and analysis plan and he asked if there were any major problems regarding the critical time frame. Curt Wittreich replied that WHC/DOE were going to try to disposition any comments at today's Unit Managers Meeting. Since Mr. Staubitz had not read the plan except for the geophysics section, it was decided to proceed with the geophysics presentation.
6. **Geophysical Logging Activity:** Randy Price (WHC) presented an update on the geophysical logging activities for U and Z plant aggregate areas

(see Attachment #5). Mr. Price pointed out that the gross gamma measurement only counts how many rays it captured; the spectral gamma measurement identifies the gamma-emitting radionuclides. The natural environmental radiation was identified as typically running 50 to 150 counts per second with the gross gamma. In Mr. Price's opinion, a greater reading is anything beyond 400 counts per second. However, possible contamination from Hanford activities or from natural sources has been identified in the area below 400 counts per second.

7. **Existing Data Compilation and Evaluation:** The objective of selecting the wells to be logged is to identify the wells with the maximum depth of contamination and also the deepest boreholes that traverse through the contaminants and hopefully to groundwater.
8. **RLS Logging:** The calibration of the system is being completed in Colorado and arrival is anticipated for November 25, 1991. The gross gamma calibration is being performed onsite. The logging speed should allow a borehole to be *logged* in a day.
9. **RLS Data Reporting:** The report will include the spectra of the natural and the man-made radionuclides and their relative concentrations. However, Mr. Price stated that he does not anticipate reporting all the spectral data acquired. Bob Stewart (DOE) asked if they expect to encounter any radionuclides that are not gamma emitters that they might miss. Mr. Price replied that there is a good possibility of that; for example, strontium 90 is a high beta emitter. Mr. Price indicated he would try to report on that if possible. The radionuclides that are not gamma emitters are quite often bracketed with other gamma-emitting radionuclides to aid in definition of the contaminated area. It is not anticipated that the non-gamma-emitting radionuclides would be at other depths, unless they have a completely different soil retention factor.
10. Randy Price stated that in saturated situations there may be occasions when a shield cannot be used on the logging tool. Ward Staubitz asked if a measurement could not be made in wells with multiple casings. Mr. Price replied that a limit is approached and that it is relative to the density of the material being penetrated. Mr. Price will investigate to discover if the wells selected contain multiple casings. Mr. Staubitz stated that if the historical gross gamma logs are good data, then they are not outside of the scope of the aggregate area management investigation, since the purpose of that investigation is to use existing data to determine the extent of contamination. Curt Wittreich stated that *this type of* information would be included in the source aggregate area management reports. The quality of the historical gross gamma logs will be determined, and if the information is *acceptable* then it will be determined how the data fits in with the extent of the contamination. Mr. Wittreich asked if the general approach, as far as the criteria applied to the well selection, met approval. Chuck Cline responded that he didn't know if the number of wells would be limited to just those seven wells or not. Hal Downey (WHC) stated that perhaps the area of scoping work was being broached versus what is in the actual work plan.

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Attachment #2

Attendance
 Status of 200 AAMS Activities
 November 21, 1991

<u>Name</u>	<u>Org.</u>	<u>O.U. Role</u>	<u>Phone</u>
Stewart, Bob	DOE-RL	Sit-in for UM	509-376-6192
Cline, Chuck	Ecology	Hydrogeology	206-438-7556
Teel, Darci	Ecology	CERCLA	509-545-2312
Mauss, Billie	Ecology	CERCLA	509-547-2993
Hibbard, Rich	Ecology	CERCLA Unit	206-493-9367
Mullen, Richard	PMX	Ecology Support	206-455-2550
Kane, William F.	PMX	Ecology Support	206-455-2550
Innis, Pam	EPA	Unit Mgr.	509-376-4919
Drost, Brian	USGS	EPA Support	206-593-6510
Staubitz, Ward	USGS	EPA Support	206-593-6510
Lacombe, Donna	PRC	EPA Support	206-624-2692
Fryer, Bill	SWEC	GSSC, DOE-RL	509-376-0412
McClung, Bill	SWEC	GSSC, DOE-RL	509-376-1853
King, Joseph D.	SWEC	GSSC, DOE-RL	509-376-4726
Galgoul, Michael J.	WHC	200 AAMS	509-376-2038
Pool, Karl N.	WHC	WHC OSM	509-373-3137
Wittreich, Curt	WHC	AAMS	509-376-1862
Carlson, Richard	WHC	200/300 Env. Engr.	509-376-9027
Knepp, A.J.	WHC	Geosciences	509-376-3398
Ford, Bruce	WHC	Geosciences, AAMS	509-376-6465
Trent, Steve	WHC	Geosciences, AAMS	509-376-7226

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200 AGGREGATE AREA MANAGEMENT STUDY PROGRAM

Curtis D. Wittreich
Technical Coordinator

Bruce H. Ford
Groundwater Monitoring Activity

Randy K. Price
Geophysical Logging Activity

NOVEMBER 21, 1991

200 AAMS STATUS

11/21/91

Area	AAMS	AAMS Type	Technical Baseline Report	AAMS Report	TPA Milestone
200 West	U Plant	Source	Completed	Drafted	1/92
	Z Plant	Source	Completed	Ongoing	2/92
	S Plant	Source	Completed	Ongoing	3/92
	T Plant	Source	Completed	Ongoing	4/92
	200 West	Ground Water	NA	Ongoing	9/92
200 East	PUREX	Source	Completed		5/92
	B Plant	Source	Ongoing		6/92
	Semi-Works	Source			7/92
	200 East	Ground Water	NA		9/92
200 North	200 North	Source			8/92

**200 AGGREGATE AREA
MANAGEMENT STUDY**

**GROUNDWATER SAMPLING
FIELD ACTIVITY**

NOVEMBER, 1991 STATUS

SAMPLING AND ANALYSIS PLAN:

- **PHASE I PLAN SUBMITTED TO DOE-RICH: 10/12/91**
- **PHASE II PLAN TO BE SUBMITTED TO DOE-RICH:
12/6/91**

IMPLEMENTATION STRATEGY:

PHASE I-

OCT-DEC 91:

- **SUPPLEMENT SCHEDULED SAMPLING PROGRAMS WITH ADDITIONAL CONSTITUENTS OF CONCERN**

PHASE II-

JAN-MAR 92:

- **REMEDiate CATEGORY 3 WELLS**
- **SAMPLE FULL NETWORK (~80 WELLS) FOR APP IX AND MTCA CONSTITUENTS**

APR-JUN/JUL-SEP 92:

- **SAMPLE FULL NETWORK FOR CONSTITUENTS OF CONCERN PLUS ANY NEW DETECTS FROM JAN-MAR SAMPLING**

PHASE I (OCT-DEC 91) APPROACH:

- **SELECT WELLS FROM EXISTING MONITORING NETWORKS**
- **LOCATE WELLS BASED ON BEST AREAL DISTRIBUTION VS STRICT CONTAMINANT PLUME DEFINITION**
- **DELETE WELLS THAT HAVE HAD "LONG LIST" ANALYSIS IN THE LAST 3 YEARS**
- **ATTEMPT TO ENSURE "EVEN" DISTRIBUTION OF WELLS**
- **SUPPLEMENT EXISTING CONSTITUENT LISTS WITH CONTAMINANTS OF CONCERN**

PHASE II (JAN-SEP 92) APPROACH:

- o SELECT WELLS FROM MONITORING NETWORKS AND NON-NETWORK WELLS**
- o LOCATE WELLS TO OPTIMIZE PLUME DELINEATION**
- o REMEDIATE NON-NETWORK WELLS**
- o REEVALUATE AND ADJUST NETWORK FROM QUARTER TO QUARTER TO OBTAIN MAXIMUM AMOUNT OF DATA (SCREENING LEVEL EFFORT)**

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200 AAMS Groundwater Sampling and Analysis Activity Tasks

TASK		PHASE I	PHASE II
1	DATA COMPILATION AND REVIEW	COMPLETE	COMPLETE
2	CONTAMINANT DETERMINATION	COMPLETE	COMPLETE
3	EVALUATION OF EXISTING SAMPLING PROGRAMS	COMPLETE	IN PROGRESS
4	CONTAMINANT DETECTS PLUME MAPPING	COMPLETE	IN PROGRESS
5	EVALUATION OF EXISTING WELLS	COMPLETE	IN PROGRESS
6	DATABASE DEVELOPMENT	COMPLETE	IN PROGRESS
7	PHASE I WELL NETWORK SELECTION	COMPLETE	----
8	PHASE I GROUNDWATER SAMPLING & ANALYSIS	IN PROGRESS	----
9	INITIATE NEPA DOCUMENTATION	----	IN PROGRESS
10	PHASE II WELL NETWORK SELECTION	----	IN PROGRESS
11	NON-NETWORK WELL REMEDIATION	----	IN PROGRESS
12	PHASE II GROUNDWATER SAMPLING & ANALYSIS	----	EARLIEST START 1/1/92
13	DATA EVALUATION	INITIATE UPON DATA RECEIPT	INITIATE UPON DATA RECEIPT

200 Area Contaminant Detections (by Analytical Method)
Since 1/1/88

ANALYTICAL METHOD	CONTAMINANT DETECT
<u>AA Metals</u> SW-846 7060	Arsenic
SW-846 7470	Mercury
SW-846 7421	Lead
SW-846 7471	Selenium
<u>ICP Metals</u> SW-846 6010	Barium
	Chromium
	Copper
	Iron
	Manganese
	Zinc
<u>Volatile Organics</u> SW-846 8240	Carbon Tetrachloride
	Chloroform
	Trichloroethylene
	1,1-Dichloroethane
	1,1,1-Trichloroethane
	1,2-Dichloroethane
<u>Anions</u> ASTM D4327-88 OR EPA 300.2	Chloride
	Fluoride
	Nitrate
	Sulfate
<u>Pesticide</u> SW-846 8080	DDT (a)
<u>Hydrazine</u> ASTM D1385	Hydrazine
<u>Semi-Volatile</u> SW-846 8270	Bis(2-ethylhexyl)phthalate (a)
<u>Coliform</u> SW-846 9131/9132	Coliform

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ANALYTICAL METHOD	CONTAMINANT DETECT
<u>Cyanide</u> SW-846 9010	Cyanide
<u>Radiochemistry</u> SW-846 9310 SW-846 9310	Gross Alpha
	Gross Beta
	Co-60 (b)
	I-129 (b)
	Pu-239/40 (b)
	Radium (b)
	Strontium-90 (b)
	Technetium-99
	Tritium
	Uranium

- (a) This contaminant is suspected of being a spurious detect.
- (b) Due to the limited extent of presently known plume geometry, this contaminant will be evaluated in detail during Phase II (except for peak information derived from gamma scan analysis, where appropriate).

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200 AAMS CONSTITUENTS THAT EXCEED A REGULATORY STANDARD

CONSTITUENT	STANDARD EXCEEDED	MOST STRINGENT LIMIT
ARSENIC	WWQS	.05 PPB
CHROMIUM	WWQS, DWS	50 PPB
FLUORIDE	WWQS, DWS	4000 PPB
IRON	WWQS, DWS	300 PPB
MANGANESE	WWQS, DWS	50 PPB
ALUMINUM	DWS	50 PPB *
CARBON TETRACHLORIDE	WWQS, DWS	0.3 PPB
CHLOROFORM	WWQS, DWS	7 PPB
TRICHLOROETHYLENE	WWQS, DWS	3 PPB *
HYDRAZINE	WWQS	0.03 PPB *
STYRENE	DWS	5 PPB
NITRATE	WWQS, DWS	45 PPM
SULFATE	WWQS, DWS	250 PPM
BIS(2-ETHYLHEXYL) PHTHALATE	WWQS	6 PPB *
COLIFORM	DWS	1 PPB
ALPHA	WWQS, DWS	15 PCI/L
BETA	WWQS, DWS	50 PCI/L
CESIUM-137	1/25 DCG, DWS	120 PCI/L
COBALT-60	DWS, 1/25 DCG	100 PCI/L
IODINE-129	DWS, 1/25 DCG	1 PCI/L
PLUTONIUM-239/240	1/25 DCG, DWS	1 PCI/L
RADIUM	WWQS, DWS	3 PCI/L
STRONTIUM-90	DWS, WWQS, 1/25 DCG	8 PCI/L
TECHNETIUM-99	DWS, 1/25 DCG	900 PCI/L
TRITIUM	DWS, WWQS, 1/25 DCG	20,000 PCI/L
URANIUM	DWS	40 PCI/L

* INDICATES THAT THE DETECTION LIMIT FOR THIS CONSTITUENT IS HIGHER THAN THE MOST STRINGENT REGULATORY LIMIT.

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200 AGGREGATE AREA MANAGEMENT STUDY

BOREHOLE GEOPHYSICS FIELD ACTIVITY SAMPLING AND ANALYSIS PLAN:

U AND Z PLANT AGGREGATE AREAS

GENERAL APPROACH

- I. IDENTIFICATION OF DATA QUALITY OBJECTIVES**
- II. DATA REVIEW/EVALUATION AND LOGGING TASKS**

I. DATA QUALITY OBJECTIVES

SCREENING ACTIVITY

- APPROXIMATELY 80 WELLS TO BE LOGGED
- APPROXIMATELY 10 WELLS PER SOURCE AGGREGATE AREA
- LOG FACILITIES WITH SIGNIFICANT CONTAMINATION

DATA OBJECTIVES INCLUDE:

- 1) IDENTIFICATION OF SPECIFIC GAMMA-EMITTING RADIONUCLIDES AND RELATIVE CONCENTRATIONS
- 2) DETERMINATION OF THE VERTICAL DISTRIBUTION OF GAMMA-EMITTING RADIONUCLIDES WITHIN A BOREHOLE TO WITHIN 1 FT. AT 1/2 FT. INTERVALS

II. DATA REVIEW/EVALUATION AND LOGGING TASKS

FOUR TASKS IDENTIFIED:

TASK 1: EXISTING DATA COMPILATION AND EVALUATION

TASK 2: RLS LOGGING

TASK 3: RLS DATA ANALYSIS

TASK 4: RLS DATA REPORTING

TASK 1: EXISTING DATA COMPILATION AND EVALUATION

- ASSEMBLE AND EVALUATE EXISTING GEOPHYSICAL
DATA AND GENERAL WASTE SITE DATA**
 - 1) REVIEW SELECTED GROSS GAMMA LOGS**
 - CATEGORIZED WELLS BASED ON GAMMA SURVEY**
 - 2) REVIEW TECHNICAL BASELINE REPORTS AND OTHER AVAILABLE
FACILITY PROCESS INFORMATION**
 - 3) ASSEMBLE DATABASE**

- DELINEATE WELLS TO BE LOGGED**
 - WELL DEPTH**
 - EXTENT OF CONTAMINATION**

TASK 2: RLS LOGGING

- CALIBRATION OF RADIONUCLIDE LOGGING SYSTEM**
- INITIATE LOGGING OF U AND Z PLANT BOREHOLES**
 - **ANTICIPATED LOGGING AND DATA ACQUISITION CONFIGURATION**
 - 1) **LOGGING SPEED OF 40 FEET/HOUR**
 - 2) **DATA ACQUIRED AT 0.5 FT. INTERVALS**
 - 3) **SPECTRA RECORDED ON A 4000 CHANNEL ANALYZER**
 - 4) **ALL DATA WILL BE PERMANENTLY RECORDED ON OPTICAL DISK**
- SCHEDULE FOR U AND Z PLANT LOGGING**
 - **INITIATE LOGGING FOR U PLANT LAST WEEK IN NOVEMBER**
 - **INITIATE LOGGING OF Z PLANT MID-DECEMBER**

TASK 3: RLS DATA ANALYSIS

- RADIONUCLIDES IDENTIFIED BY FULL ENERGY GAMMA-RAY PEAKS**
- MAXIMUM DEPTH RANGES DETERMINED BY THE PRESENCE OF GAMMA-RAY PHOTO PEAKS**
- RELATIVE CONCENTRATIONS COMPUTED FROM NET COUNT RATE OBSERVED IN THE FULL ENERGY GAMMA-RAY PHOTO PEAKS**

TASK 4: RLS DATA REPORTING

RLS DATA COMPILATION AND ANALYSIS REPORTS WILL INCLUDE:

- 1) GAMMA-RAY SPECTRA FOR EACH LOGGED INTERVAL**
- 2) DISTRIBUTION OF EACH DETECTED NATURAL AND CONTAMINANT RADIONUCLIDE**
- 3) RELATIVE CONCENTRATIONS**
- 4) QUALITY ASSURANCE CALIBRATION DATA**

SCHEDULE FOR RLS DATA REPORTS

- 200 WEST REPORT: 4/30/92**
- 200 EAST REPORT: 9/15/92**

U-PLANT LOG

FACILITY	WITH RLS?	WELL
216-U-1 CRIB	YES	299-W19-11
216-U-2 CRIB	YES	299-W19-9
216-U-3 CRIB	NO	
216-U-4 REV. WELL	NO	
216-U-4A/B F. DRAIN	NO	
216-U-5 TRENCH	NO	
216-U-6 TRENCH	NO	
216-U-7 F. DRAIN	NO	
216-U-8 CRIB	YES	299-W19-70
216-U-10 POND	NO	
216-U-11 TRENCH	NO	
216-U-12 CRIB	YES	299-W22-75
216-U-13 TRENCH	NO	
216-U-14 DITCH	NO	
216-U-15 TRENCH	NO	
216-U-16 CRIB	NO	
216-U-17 CRIB	NO	
241-U TANK FARM	YES	299-W18-113
241-U TANK FARM	YES	299-W18-117
241-U TANK FARM	YES	299-W18-148

U-PLANT (continued)**LOG**

FACILITY	WITH RLS?	WELL
216-Z-10 DITCH	NO	
216-Z-11 DITCH	NO	
216-Z-19 DITCH	NO	
216-Z-20 CRIB	NO	
216-S-21 CRIB	YES	299-W23-4
216-S-4 F. DRAIN	NO	

**Z-PLANT
LOG**

FACILITY	WITH RLS?	WELL
210-Z-1A TILE FIELD	YES	299-W18-150
210-Z-1, -2 CRIBS	YES	299-W18-65
210-Z-3 CRIB	NO	
210-Z-4 TRENCH	NO	
210-Z-5 CRIB	YES	299-W15-63
210-Z-6 CRIB	NO	
210-Z-7 CRIB	YES	299-W15-7
210-Z-8 F. DRAIN	NO	
210-Z-9 TRENCH	YES	299-W15-8
210-Z-12 CRIB	YES	299-W18-5
210-Z-13 F. DRAIN	NO	
210-Z-14 F. DRAIN	NO	
210-Z-15 F. DRAIN	NO	
210-Z-18 CRIB	YES	299-W18-10

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