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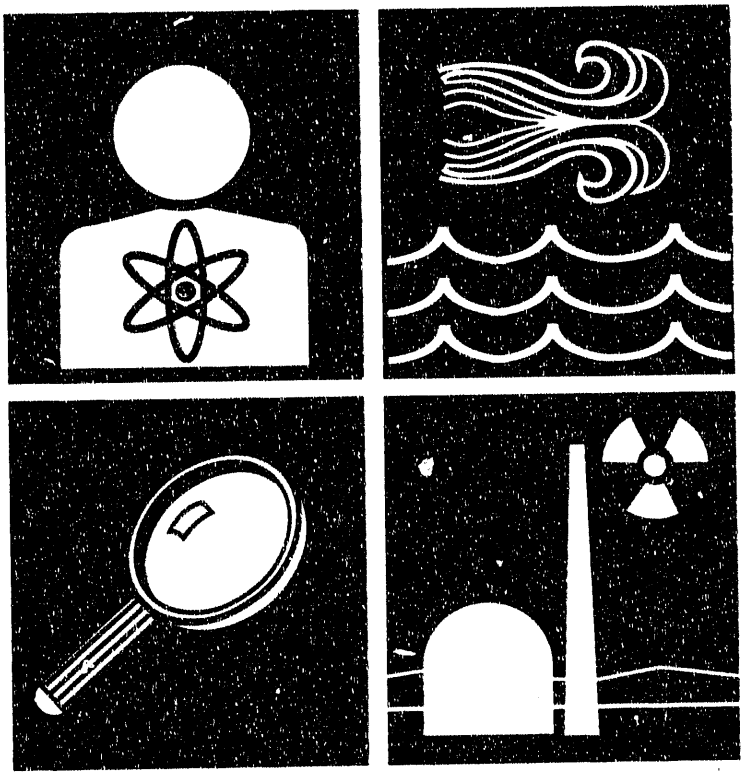
PNWD-1980-03 HEDR
UC-707

Hanford Environmental Dose Reconstruction Project

Monthly Report

August 1992



Prepared for the Technical Steering Panel
and the Centers for Disease Control
under Contract Number 200-92-0503 (CDC)/18620 (BNW)

Battelle
Pacific Northwest Laboratories

PNWD-1980-03 HEDR

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HANFORD ENVIRONMENTAL DOSE RECONSTRUCTION PROJECT

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**Battelle
Pacific Northwest Laboratories
Richland, Washington 99352**

HANFORD ENVIRONMENTAL DOSE RECONSTRUCTION PROJECT

August Monthly Report

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Preface

This monthly report summarizes the technical progress and project status for the Hanford Environmental Dose Reconstruction (HEDR) Project being conducted by Battelle Pacific Northwest Laboratories (BNW) under contract with the Centers for Disease Control (CDC). The Technical Steering Panel (TSP), which is composed of experts in numerous technical fields related to the project, provides technical direction of the project and represents the interest of the public.

Figure 1 shows the Battelle organizational structure of the HEDR Project. Table 1 shows the status of Battelle work to comply with directives issued by the TSP.

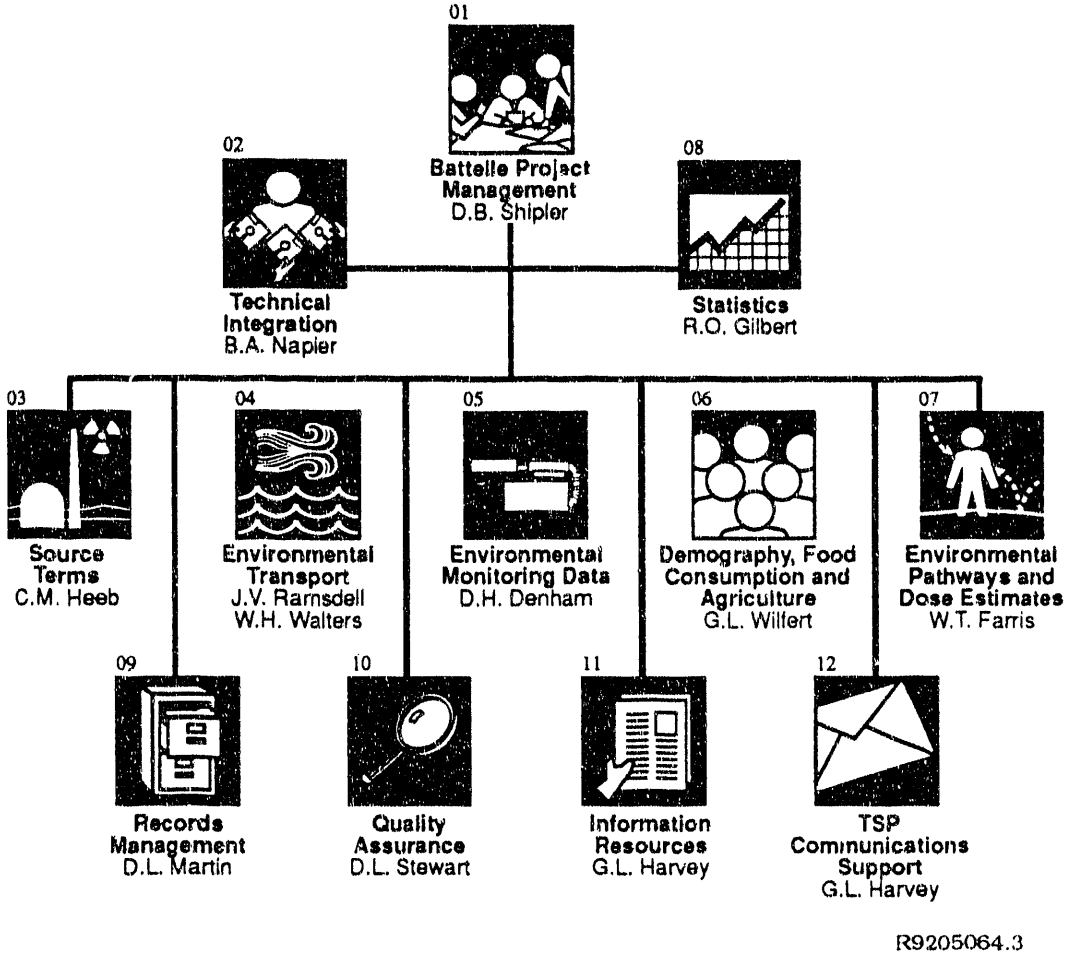


Figure 1. Organizational Structure of the HEDR Project

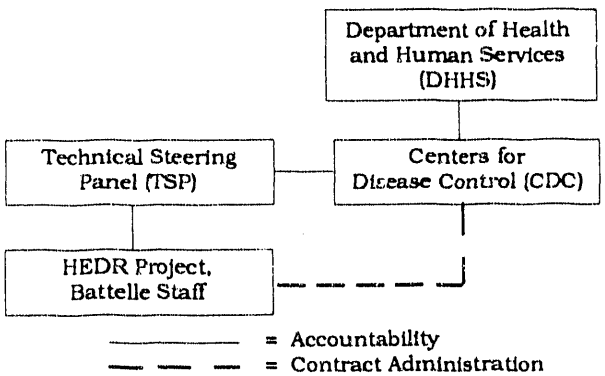
Table 1. Status of Directives[a]

		Complete	Ongoing
88-1	(a) Proposals		x
	(b) Source Terms		x
88-2	Vegetation		x
88-3	Status Reports		x
88-4	Ground Water		x
88-5	Maps	x	
88-6	Resumes	x	
89-1	Indian Tribes		x
89-2	Bioassay Data	x	
89-3	Document Handling		x
89-4	Reactor Purging		x
89-5	Phased Approach	x (modified 2/14/91)	
89-6	Meeting Materials		x
89-7	Technical Communication		x
89-8	Phase II Planning	x (modified 2/14/91)	
89-9	Project QA Plan		x
89-10	Contracts with Tribes		x (revised annually)
90-1	Project Direction (Task Plans)		x
90-2	Dose Cut-Off Limit	x	
92-1	Demography, Food, and Agriculture Tasks		x

(a) Note: For simplicity, TSP directives are identified here using only key words. The complete directives are available from the TSP.

Executive Summary

The objective of the Hanford Environmental Dose Reconstruction (HEDR) Project is to estimate the radiation doses that individuals and populations could have received from nuclear operations at Hanford since 1944. The project is being managed and conducted by Battelle Pacific Northwest Laboratories (BNW) under contract with the Centers for Disease Control (CDC). The independent Technical Steering Panel (TSP) provides technical direction.



The TSP consists of experts in environmental pathways, epidemiology, surface-water transport, ground-water transport, statistics, demography, agriculture, meteorology, nuclear engineering, radiation dosimetry, and cultural anthropology. Included are appointed technical members representing the states of Oregon, Washington, and Idaho, a representative of Native American tribes, and an individual representing the public.

The project is divided into the following technical tasks. These tasks correspond to the path radionuclides followed from release to impact on humans (dose estimates):

- Source Terms
- Environmental Transport
- Environmental Monitoring Data
- Demography, Food Consumption, and Agriculture
- Environmental Pathways and Dose Estimates.

The Source Terms Task develops estimates of radioactive emissions from Hanford facilities since 1944. These estimates are based on historical measurements and production information.

The Environmental Transport Task reconstructs the movement of radioactive materials from the areas of release to populations. Movement via the atmosphere, surface water (Columbia River), and ground water is studied.

The Environmental Monitoring Data Task assembles, evaluates, and reports historical environmental monitoring data.

The Demography, Food Consumption, and Agriculture Task develops the data needed to identify the populations that could have been affected by the releases. Population and demographic information are developed for the general population within the study area. This information is also expected to be developed for several special population groups, including Native American tribes in the study area.

In addition to population and demographic data, the food and water sources and consumption patterns for populations are estimated because they provide a primary pathway for the intake of radionuclides. Historical dairy farming practices and milk distribution systems are studied because milk is a significant pathway for iodine-131 to enter the human body. Cows could have eaten vegetation contaminated with this radionuclide.

Lifestyle and food habit information will be developed by BNW for the Fred Hutchinson Cancer Research Center to be used in the Hanford Thyroid Disease Study (HTDS).

The Environmental Pathways and Dose Estimates Task uses the information produced by the other tasks to estimate the radiation doses individuals could have received from Hanford radiation.

Project reports and Hanford-originated references used in the reports are made available to the public in a public reading room. Project progress is documented in this monthly report, which is available to the public.

Project Summary

Progress

Figure A.1 in Appendix A shows the status of Fiscal Year (FY) 1992 project milestone activities. The following is a summary of activities conducted by HEDR staff in August 1992:

- received a reallocation of $254K from the TSP and Native American tribal budgets to fund TSP-approved work left unfunded by the transfer of the contract to CDC. This leaves us approximately $40K short of the TSP-approved budget for BNW this year. The related scope of work has been moved into FY 1993. HEDR and contracts staff reconciled all budget changes that have occurred since May.
- printed and distributed Volume 2 of the study, *Recommendations to the Technical Steering Panel Regarding Approach for Estimating Individual Radiation Doses Resulting from Releases of Radionuclides to the Columbia River* (PNWD-1977 HEDR Vol. 2)
- issued final report, *Ground-Water Contribution to Dose From Past Hanford Operations* (PNWD-1974 HEDR)
- processed proposals from Native American tribes for work initially expected to be performed by September 30, 1992. Because these proposals have been so late (we are still awaiting several), we will extend the period of performance to December 31, 1992.
- met with CDC, Indian Health Service (IHS), TSP, and HTDS staff three times to discuss key elements of a standard protocol for tribes to follow in completing their remaining data collection and analysis
- developed software quality assurance procedures for the STRM code for Task 03 (Source Terms)
- presented the paper, *Uncertainty and Sensitivity Analysis of Historical Measurements of Iodine-131 for Vegetation in 1945-1947*, at the 1992 Joint Statistical Meetings in Boston
- presented the paper, *Uncertainty Issues of the Hanford Environmental Dose Reconstruction (HEDR) Project*, at the American Chemical Society symposium, Environmental Statistics, Assessment and Forecasting in Washington, D.C.
- was audited in a BNW internal Quality Assurance (QA) audit
- declassified 311 Hanford-Site-originated documents, 119 of which are of potential interest/use to the project
- collected additional separations processes data and related information. The years 1955 and 1956 were completed during the month.
- provided the U.S. Department of Energy Richland Field Office (RL) Public Reading Room with 46 documents (5400 pages) of potential interest/use in the HEDR Project

Major Problems or Changes and Action Taken

The delay in setting up the subcontract with Washington State University (WSU) (Milestone 0404B - Columbia River Conceptual Model) continues to delay the remainder of the FY 1992 work.

A corrective action plan for revising the environmental accumulation and dose computer codes is being prepared. The corrective action plan outlines a two-track process for meeting the near-term needs of Task 08 (Statistics) as well as a longer-term re-engineering of the Task 07 (Environmental Pathways and Dose Estimates) codes for all other future uses. The corrective action plan will be finished in September 1992. The overall project ability to calculate doses, starting with the HTDS inputs approximately in March 1993, will not be adversely affected.

Planned Work for the Next Three Months

- issue integrated task plans for FY 1992, 1993, and 1994 (Milestone 0101E)
- issue project management plan revision (Milestone 0101F)
- complete and issue data management plan (Milestone 0204A)
- complete and issue key radionuclides report (Milestone 0205B)
- issue the 1944-1947 iodine-131 release document (Milestone 0302A)
- complete the wind field modeling report (Milestone 0402A)
- complete interim letter report on the meteorological data base (Milestone 0402D)

- submit BNW internal audit report to TSP (Milestone 1003A)
- publish Declassified, Prioritized Document List (Milestone 1102A)
- publish Status of Document Search and Data Quality Objective (DQO) Efforts (Milestone 1103A)
- complete numerical verification of the RATCHET code
- complete Native American infants' feeding practices scoping review
- complete and begin implementing Task 07 (Environmental Pathways and Dose Estimates) corrective action plan
- conduct sensitivity/uncertainty analysis of test cases
- identify significant documents that address fuel element failures that occurred in now-decommissioned Hanford production reactors
- identify and collect documents that address reactor purges, 1944-1971
- identify and retrieve data on ruthenium releases from separations processes

Budget Status

Figure 2 shows the budget status of the HEDR Project. Table A.1 in Appendix A shows FY 1992 costs and budget by task and subtasks. Figure A.2 shows TSP budget status. Figure A.3 shows Native American research budget status.

Capital Status

The HEDR Project has been approved for $75K of capital funding for FY 1992. Funding for the $75K was transferred from RL to BNW in the March 1992 Financial Plan. The majority of equipment has been received and installed. The remaining equipment is expected to be received in September 1992.

1. ID (Contract) Number:	2. Program/Project Title:	3. Reporting Period:
200-92-0503 (CDC) 18620 (BNW)	HANFORD ENVIRONMENTAL DOSE RECONSTRUCTION - BNW	AUGUST 1992

4a. Participant Name and Adress	4b. Client Name and Address	5. Start Date	6. Completion Date
P.O. Box 999 Richland, WA 99352	CDC Atlanta, GA 30333	OCTOBER 1991	SEPTEMBER 1992

7. FY 92 | 8. Months

9. Cost Status

a. $ Expressed in: Thousands

b. B&R No./ Subaccount No. 18620

c. FIN No.

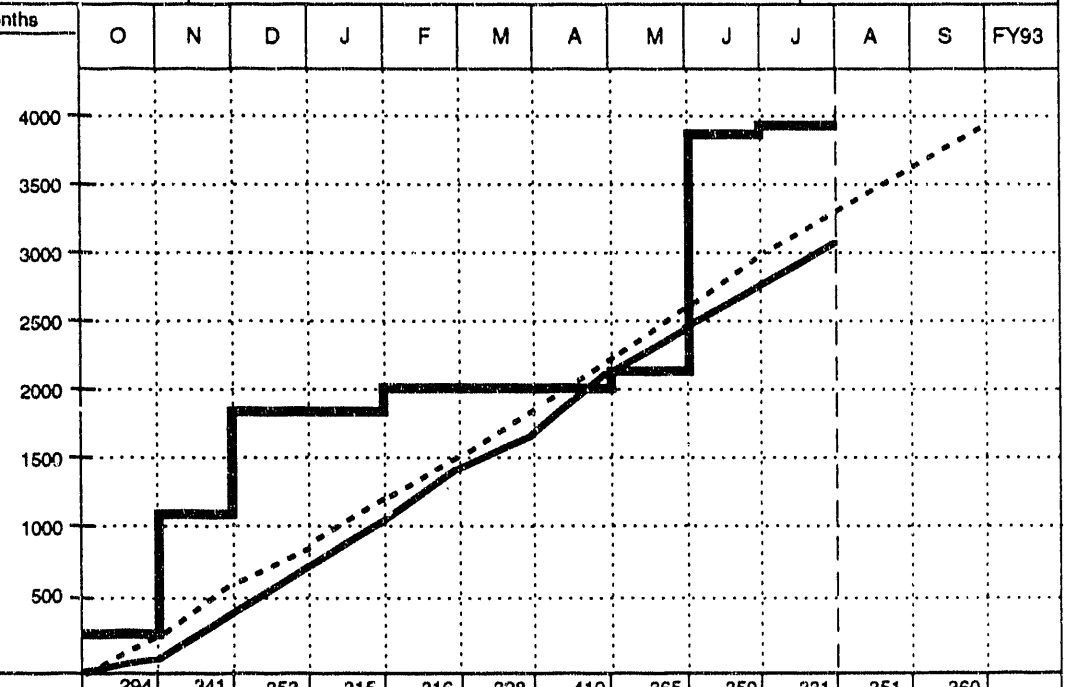
d. Actual Costs Prior Years 10,514 (a)

e. FY Budget 4,123 (b)

f. Total Budget

g. FY Funds Auth. 4,123 (c)

h. Total Funds Auth. 14,638 (d)



Costs	O	N	D	J	F	M	A	M	J	J	A	S	FY93
i. Planned	294	341	353	315	316	328	410	365	359	331	351	360	
j. Actual	191	244	310	295	307	355	344	396	332	348	379		
k. Variance	103	97	43	20	9	-27	66	-31	27	-17	-28		
l. Cum Planned	294	635	988	1303	1619	1947	2357	2722	3081	3412	3763	4123	
m. Cum Actual	191	435	745	1040	1347	1702	2046	2442	2774	3122	3501		
n. Cum Variance	103	200	243	263	272	245	311	280	307	290	262		

10. Legend: Planned - - - - - Actual ——— Funds Auth. ▬▬ 90% Funds Spent ▷ Time Now

(a) "Actual cost prior years" excludes TSP costs but includes Native American research costs. (TSP prior year costs are shown separately in Figure A.2.) (b) Projected FY budget excludes TSP and Native American research budgets. (c) Includes carryover and BNW's share of current fiscal year funding that has been received. (d) FY 88-92; excludes capital, TSP funding, and FY 91 carryover and FY 92 funding for Native American research.

11. Name/Signature of Participants Prog/Proj Manager & Date
D. B. SHIPLER

Figure 2. HEDR Project Budget Status - Battelle Pacific Northwest Laboratories

Acronyms and Abbreviations

AP	Associated Press
BNW	Battelle Pacific Northwest Laboratories
CDC	Centers for Disease Control
CIDER	calculation of individual doses from environmental radionuclides (computer code)
CTUIR	Confederated Tribes of the Umatilla Indian Reservation
DESCARTES	dynamic estimates of concentrations and accumulated radionuclides in terrestrial environments (computer code)
DOE	U.S. Department of Energy
DOE-HQ	U.S. Department of Energy Headquarters
DQO	Data Quality Objective
FHCRC	Fred Hutchinson Cancer Research Center
FY	fiscal year
GENII-S	generation II-SUNS (computer code)
HEDR	Hanford Environmental Dose Reconstruction
HHIN	Hanford Health Information Network
HNIS	Health and Nutrition Information Service
HTDS	Hanford Thyroid Disease Study
IAEA	International Atomic Energy Agency
IHS	Indian Health Service
NAWG	TSP Native American Working Group
NFCS	National Food Consumption Survey
NTIS	National Technical Information Service
OMB	Office of Management and Budget
PARSEL	parameter selection (computer code)
PNL	Pacific Northwest Laboratory
QA	quality assurance
RATCHET	regional atmospheric transport code for Hanford emissions tracking (computer code)
REPGEN	report generation code
RFP	request for proposal
RIDS	records inventory and disposition schedule
RL	U.S. Department of Energy Richland Field Office
SESRC	Social and Economic Sciences Research Center (Washington State University)
SOW	statement of work
STRM	source term release model (computer code)
SUNS	sensitivity/uncertainty system
TSP	Technical Steering Panel
USDA	U. S. Department of Agriculture
VAMP	validation of model predictions (computer code)
WSU	Washington State University
YIN	Yakima Indian Nation

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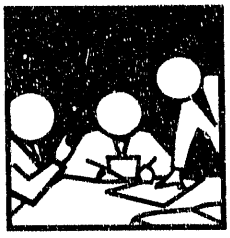


Task 01
Battelle Project Management

Objective

The objective of the Battelle Project Management Task is to provide project planning, control, and management of Battelle dose reconstruction work in accordance with the CDC contract and TSP technical direction.

Progress

Milestone 0101E - FY 1992-1994 Integrated Task Plans, due July 1992 and rescheduled to September 1992

- integrated, with TSP and CDC approval, the individual FY 1992, 1993, and 1994 task plans (scopes, schedule, and budget) into one task plan covering the period of the CDC contract and submitted the integrated report to text processing

Milestone 0101F - Project Management Plan Revision, due August 1992 and rescheduled to September 1992

- updated plan and submitted it to text processing

Other Activities

- received a reallocation of $254K from the TSP and Native American budgets to fund TSP-approved work left unfunded by the transfer of the contract to CDC. Identified $82K as excess in our budget and were authorized to reallocate it. HEDR and contracts staff reconciled all budget changes that have occurred since May.
- realigned the corrective action plan for Subtask 0702 (Path and Dose Code Development and Documentation). Suspended the recovery of the dose code until the requirements document is completed. J. Simpson will run test cases for the sensitivity/uncertainty analysis plan using off-the-shelf software and spreadsheets. B. Napier is taking the lead on pulling together all of the requirements into one document. In parallel, an evaluation of implementation sources and costs will be made with a recommendation to upper management in late September.
- initiated update of project training and training records
- notified BNW, CDC, the TSP, and RL that the 1944-1947 Iodine source term report (Milestone 0302A) will be available the end of September
- reached agreement on the Native American subcontracts. All parties involved agree that BNW should not add new scope or funding for the remainder of Calendar Year 1992.
- met with CDC's project manager for HEDR, M. Donnelly, to discuss status of technical work
- W. Wiley (Director of BNW) provided a written response to J. Till's (Chairman of the TSP) letter on funding concerns and TSP subcontracts
- determined that we can implement the TSP/Native American data management release policy implementation plan. We will probably not be able to protect Native American data from subpoenas prior to tribal council release.
- was audited in a BNW internal QA audit. The emphasis was on project management processes and procedures, computer software development, and data traceability. D. Barth (TSP) was an observer.

Major Problem Areas or Changes and Action Taken

Because of staff leaving BNW, additional BNW staff have been tapped to support burgeoning HEDR administrative and records work.

Variance

The cumulative cost underrun is the result of unexpected unavailability of the project office records custodian.

Planned Work for the Next Three Months

- Issue integrated task plans for FY 1992, 1993, and 1994 (Milestone 0101E)
- Issue revised Project Management Plan (Milestone 0101F) ❑

Task 02
Technical Integration

Objective

The objective of the Technical Integration Task is to provide technical overview of the project to ensure that appropriate technical activities are planned, that appropriate information is generated, and that technical task work is integrated effectively for performing the final dose calculations.

Progress

Milestone 0204A **- Letter Report: Data Management Plan, due May 1992 and rescheduled to FY 1993**

- completed initial draft, one round of internal review, and prepared a second draft. Particular effort is being placed on preparation of an appendix outlining all current databases, the definition of how they are created and the form of the resulting outputs.

Milestone 0204B **- Letter Report: Recommendation on Modeling or Monitoring Approach for River Pathway, due June 1992, rescheduled to July 1992 and completed (PNWD-1977 HEDR Vols. 1 and 2)**

- printed and distributed Volume 2 of the study

Milestone 0205B **- Letter Report: Key Radionuclides, due May 1992 and rescheduled to FY 1993**

- scaled this report back from the "dominant pathways and nuclides" concept described in the July monthly report to, again, just radionuclides. The additional pathway scoping information will be provided in a separate letter report or series of letter reports, as it becomes available.

Milestone 0205D **- Letter Report: Model Parameter Distributions Strategy, due September 1992**

- folded this report into Milestone 0703B, Letter Report: Iodine-131 Parameters and Dose Factors, Revised Model

Other Activities

- continued working with Task 06 on Milestone 0603C, Letter Report: Assessment of Fruit and Vegetable Pathways, 1944-1957
- mailed draft Hanford scenario and other observations to International Atomic Energy Agency VAMP project

Major Problem Areas or Changes and Action Taken

A corrective action plan for revising the environmental accumulation and dose computer codes is being prepared. The corrective action plan outlines a two-track process for meeting the near-term needs of Task 08 (Statistics) as well as a longer-term re-engineering of the Task 07 (Environmental Pathways and Dose Estimates) codes for all other future uses. The corrective action plan will be finished in September 1992. The overall project

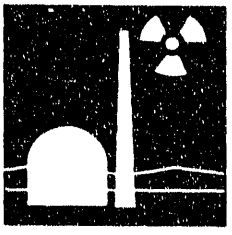
ability to calculate doses, starting with the HTDS inputs approximately in March 1993, will not be adversely affected.

Variance

The cumulative cost overrun was caused by additional efforts on the corrective action plan for subtask 0702 (Path and Dose Code Development and Documentation).

Planned Work for the Next Three Months

- complete and issue data management plan (Milestone 0204A)
- complete and issue key radionuclides report (Milestone 0205B)
- complete and begin implementing Task 07 (Environmental Pathways and Dose Estimates) corrective action plan ❑



Task 03
Source Terms

Objective

Source terms are the amount and type of radioactive materials released to the environment. The objective of the Source Terms Task is to develop estimates of radioactive emissions since 1944 from Hanford facilities based on historical measurements and production information. Source term estimates are used by Environmental Transport Task members to reconstruct the concentrations of radionuclides in the environment.

Progress

Milestone 0302A **- Documented Phase I Iodine-131 Releases, due May 1991 and rescheduled to September 1992**

- completed draft. Internal review was well under way by month's end.

Milestone 0307A **- Letter Report: Hanford Operations, 1944-1991, due September 1992 and rescheduled to FY 1993**

- completed preliminary draft

Other Activities

- was audited in a Battelle internal QA audit of the Source Terms Task

Major Problem Areas or Changes and Action Taken

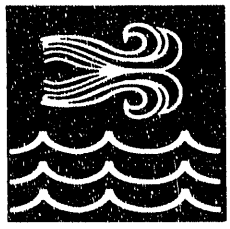
None.

Variance

No significant cumulative variance.

Planned Work for the Next Three Months

- complete the 1944-1947 Iodine-131 release document (Milestone 0302A)
- continue construction of reactor and separation facility operations data base. Produce a letter report on reactor and separations operations (Milestone 0307A).
- begin work on Iodine-131 releases post 1947 through 1972 ❑



Task 04
Environmental Transport

Objective

The objective of the Environmental Transport Task is to reconstruct the movement of radioactive materials (the source term information) from the areas of release to the environment. Radionuclide movement via the atmosphere, Columbia River, and groundwater is studied.

Progress

Milestone 0404A - Columbia River Pathway Summary Report, due December 1991, rescheduled to April 1992 and completed

- addressed TSP and public review comments. The comments indicate that a new chapter will have to be developed and more dose calculations and references added with a discussion of reference contents (e.g., contamination of water fowl).

Milestone 0404B - Letter Report: Columbia River Conceptual Model, due September 1992 and rescheduled to FY 1993

- continued to extend the Columbia River map down to the coastal area. Continued to finalize the subcontract with WSU. Some initial work was performed on the conceptual model study.

Milestone 0405A - Letter Report: Interim Atmospheric Model Database + Meteorological Data Report (Milestone 0402D), due September 1992 and rescheduled to FY 1993

- continued entry of meteorological data. All data for 1947, except for Stampede Pass, have been entered. A draft of the interim letter report is nearing completion.

Other Activities

- was audited in a BNW internal QA audit

Major Problem Areas or Changes and Action Taken

The Milestone 0402A, Wind Field Modeling White Paper, report will be delayed until the computer model runs needed to complete revision are made.

The draft report deadline of September 30, for Milestone 0404B cannot be met. However, all comments should be addressed by the end of September. The delay in setting up the subcontract with WSU (Milestone 0404B) continues to delay the remainder of the FY 1992 work.

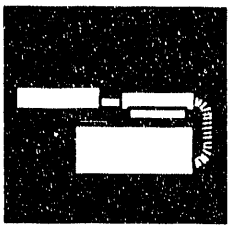
Variance

No significant cumulative variance.

Planned Work for the Next Three Months

- complete the wind field modeling report (Milestone 0402A)
- complete interim letter report on the meteorological data base (Milestone 0402D)
- address TSP comments on and publish final TSP-approved version of the Columbia River pathway summary report (Milestone 0404A)
- begin the letter report on the Columbia River conceptual model as soon as the WSU contract is in place (Milestone 0404B)
- complete numerical verification of the RATCHET code

- run RATCHET for 1945 to provide output for use in evaluation of the sensitivity and uncertainty of the dose models
- begin sensitivity and uncertainty studies of the RATCHET code
- carry out whatever river pathway work the TSP directs
- attend Seattle meeting to discuss alternatives for river pathway recommendations with the TSP/CDC ❑



Task 05
Environmental Monitoring Data

Objective

The objective of the Environmental Monitoring Data Task is to search, retrieve, evaluate, and summarize key historical measurements of the concentrations of radionuclides in the environment around the Hanford Site. Radionuclide concentrations have been measured at various times in air, drinking water, foods, fish, the Columbia River, soil, and in other materials. These measurements are evaluated to estimate their accuracies and then used by the Environmental Pathways and Dose Estimates Task to estimate radiation doses and by the Environmental Transport Task to calibrate and validate computer models.

Progress

Milestone 0501A - Environmental Monitoring Data Final Report, due FY 1991 and rescheduled to FY 1993

- continued the comment-resolution process for the draft document, *HEDR Phase I Summaries for Vegetation, River Water, Drinking Water and Fish Radionuclide Concentration Data.* Many of the earlier comments provided by on-site reviewers, authors, and the TSP were assimilated, checked against the current word-processed text and revised as necessary. A number of comments (120) remain to be resolved prior to a complete editing.

Major Problem Areas or Changes and Action Taken

After resolving the TSP, external, and internal peer review comments on the Milestone 0501A report, a more thorough editing will be needed.

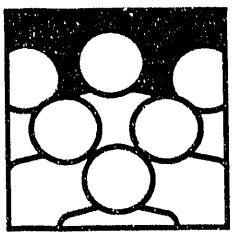
The new Task Leader and the senior author of the Milestone 0502A+B, Vegetation Data Report (1945-1951) + Letter Report: Vegetation Monitoring Data (1949-1951), Bias and Data Correction, identified the need for significant changes to the report. Because of the lack of FY 1992 funds and the recent decision to combine the two reports, their issuance has been postponed until FY 1993.

Variance

No significant cumulative variance.

Planned Work for the Next Three Months

- continue (beginning October 1, 1992) work on Phase I report (Milestone 0501A)
- continue (beginning October 1, 1992) work on combining the vegetation monitoring data (Milestone 0502A) and the vegetation monitoring data bias (Milestone 0502B) reports ❑



Task 06
Demography, Food Consumption, and Agriculture

Objective

The objective of the task is to develop the population and agricultural data needed to estimate the population doses that may have resulted from historical releases of radioactive materials from operations at the Hanford Site.

Progress

Milestone 0602B - Letter Report: Status of Food Consumption Methodology, due March 1992, rescheduled to May 1992 and completed

- developed the food consumption backcasting ratios for 1945:1977, 1951:1977, and 1957:1977. These ratios will be used with the 1977-1978 National Food Consumption Survey (NFCS) data to provide estimates of food consumption to be reported in the food consumption final report due in FY 1993. The ratios are being estimated from per capita consumption data available in the annual U.S. Department of Agriculture publication, *Agricultural Statistics*.
- began a statistical analysis to determine the representativeness of the food intake data from the 1977-1978 NFCS. This work will lead to a determination of whether data can be aggregated across regions, seasons, or urban/rural classifications, and thus diminish the required number of analysis blocks or cells in the primary analysis of consumption estimates.

Milestone 0603C - Letter Report: Assessment of Fruit and Vegetable Pathways, 1944 -1957, due June 1992 and rescheduled to September 1992

- addressed reviewers' comments. The Task 07 (Environmental Pathways and Dose Estimates) members provided the expertise and write-up relating the fruit and vegetable pathway to dose. The report has been through program office review and internal peer review. The next step is editing and text processing for clearance.
- contacted A. H. Harrington, professor emeritus of the Agricultural Economics Department at WSU, to follow up regarding the distribution estimates. Changes were made for Columbia and Douglas counties in the 1945 early- and late-season spinach distribution tables. Harrington would like the distribution information interpreted as his best judgment. This is BNW's interpretation and intended presentation of the information.
- completed drafting input to the report on produce ranking and dose estimates

Milestone 0603D - Milk Production/Distribution Report, 1944 - 1991, due FY1993

- received a TSP memo entitled *Comments on the Proposed Survey to Reconstruct Farming Practices and Feeding Regimes for 1945-1951 for the HEDR Project*. Discussed this memo with TSP member, D. Price. Battelle Pacific Northwest Laboratories will be reviewing the producers' survey with regard to this memo and the justification requirements for Office of Management and Budget (OMB) clearance of the questionnaire.
- received all the call records from Washington Agricultural Statistics of remaining 19 counties for use by WSU's Social and Economic Sciences Research Center. These call records are being prepared by separating primary contact names and secondary names for a telephone contact that will confirm name, address, telephone number, whether farming in 1945 or 1951, farm type, number of cows milked and willingness to be interviewed face to face. For the majority of names provided, this will be an initial contact to explain the study and to gain cooperation.

Milk and Other Food Model Development (Subtask 0603)

- continued work to develop supplemental expert elicitation information. Draft text and data sheets have been forwarded to the original author, D. Beck, for review and comment.

Native American Data (Subtask 0605)

- processed proposals from Native American tribes for work initially expected to be performed by September 30, 1992. Because these proposals have been so late (we are still awaiting several), we are planning to extend the period of performance to December 31, 1992. This can be done with FY 1992 funds without any additional costs or effort to Battelle. A small management cost is expected to be negotiated with the CDC as part of our 1831 contract. Most of the eight new work orders are expected to be placed by September 30, 1992 and the few remaining in early FY 1993. Completion of this TSP directive is dependent on the timely receipt of proposals and successful negotiation with the tribes.
- met with CDC, IHS, TSP, and HTDS staff three times to discuss key elements of a standard protocol for tribes to follow in completing their remaining data collection and analysis
- contacted tribal representatives to determine the status of their efforts to develop proposed statements of work. These contacts have included initial technical assessments of proposed statements of work for the next round of work orders.
- accompanied CDC and HTDS staff on visits to each tribal headquarters to discuss long-term work plans and each tribe's technical progress to date
- provided assistance to each tribe in assessing their technical progress to date regarding food consumption data compilations and population data analysis
- continued to prepare a paper for tribal project staffs to discuss concerning the concepts of "reliability," "validity," and "uncertainty," and to offer suggestions for research design elements that help maximize the reliability and validity of data collection efforts. A draft paper reviewing published accounts of Native American infants' feeding practices is being circulated for internal review.

Major Problem Areas or Changes and Action Taken

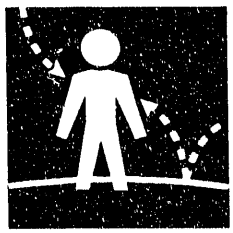
None.

Variance

The cumulative cost underrun has resulted from lack of invoicing from WSU.

Planned Work for the Next Three Months

- complete fruit and vegetables report (Milestone 0603C)
- complete Native American infants' feeding practices scoping review
- review feasibility of alternatives for representing spatial distribution of tribal members' residential locations, using unpublished residential location data compiled in the early 1960s for the Colville, Yakima, and Nez Perce tribes
- review tribal work plans for remainder of FY 1992
- attend CDC work planning session in Seattle, and participate in further discussions on standardized protocol development
- identify specific training and work planning needs derived from standardized protocol requirements ❑



Task 07
Environmental Pathways and Dose Estimates

Objective

The objective of the task is to use calculated and measured concentrations of radionuclides provided by members of the Environmental Transport Task and the Environmental Monitoring Data Task to calculate doses to populations, representative individuals, and specific individuals. These calculations include doses via direct transfer of radionuclides from concentrations in air and water to people (such as breathing, drinking, and immersion). The calculations also include doses from radionuclide concentrations in air and water transferred through environmental pathways, such as soil, plants, animals, and fish, to people.

Progress

Milestone 0702B - Documentation Report of Population Dose Model, Major Pathways, due September 1992 and rescheduled to FY 1993

- re-scoped this document to meet the commitments of the Revised Task Plans for FY 1992 (Milestone 0101D). The deliverable will include a detailed description of the population model and the plan for implementation.

Milestone 0703B + 0205D - Letter Report: Iodine-131 Parameters and Dose Factors, Revised Model + Letter Report: Model Parameter Distributions Strategy, due February 1992 and rescheduled to September 1992

- incorporated comments from project office and internal peer review. The comments from these reviews are being incorporated into the document. This document is currently on schedule for delivery to the TSP in September 1992.

Path and Dose Code Development and Documentation (Subtask 0702)

- continued work on revising the PARSEL, DESCARTES, and CIDER codes in preparation for the Task 0803 (Analysis of Model Reliability) sensitivity analysis workshop to be help in January 1993. The code is being prepared such that it can be used for the calculation of data required for the uncertainty/sensitivity analysis case studies.
- completed an analysis of current disk requirements and computer execution time for the PARSEL code. Some simplifications to the model may be required in order to reduce the run time of the code and to fit the calculated data within the storage capacity of the system.
- identified support for software configuration and system administration
- review of parameter values to be published in the 0703B letter report has been accomplished by the program developers to maintain consistency between the code and this current documentation

Dose Calculations (Subtask 0705)

- continued dose calculations in support of Milestone 0603C (Assessment of Fruit and Vegetable Pathways, 1944-1957). The calculations were done in order to determine the relative importance of 30 different commercial fresh fruits and vegetables. The impacts of the produce distribution system on the doses to representative individuals were determined.

Major Problem Areas or Changes and Action Taken

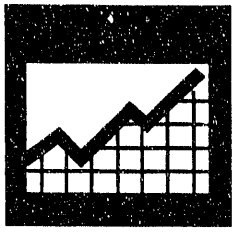
The corrective action plan for revising the environmental accumulation and dose computer code is being prepared. The corrective action plan is being developed under Task 02 (Technical Integration). The corrective action plan outlines the needs, coding modifications, code testing, personnel changes, reporting requirements and revised schedules that are required to complete the PARSEL, DESCARTES, and CIDER codes. The corrective action plan will be finished in September 1992 and will be used to direct FY 1993 coding activities.

Variance

No significant cumulative variance.

Planned Work for the Next Three Months

- continue work on the report documenting the population dose model (Milestone 0702B)
- continue work on the iodine-131 parameters and dose factors report for revised air pathway codes (Milestone 0703B)
- complete corrective action plan for Subtask 0702. This corrective action plan will then be implemented in FY 1993. ❑



Task 08
Statistics

Objective

The objective of the task is to provide statistical support to other technical tasks and develop and apply sensitivity and uncertainty analyses. Sensitivity analyses will be used to identify parameters with the greatest influence on dose estimates. Sensitivity analyses results will be used to focus resources where the benefit in terms of accurate dose estimates is greatest. Uncertainty analyses enable the project to determine the extent to which the accuracy and precision of the dose estimates are influenced by accuracy and precision in the input parameters.

Progress

Milestone 0803A - Letter Report: Project Sensitivity/Uncertainty Analysis Plan, due August 1992 and rescheduled to FY 1993

- modified current computer codes to produce test cases for the letter report

General Statistics Support (Subtask 0802)

- reviewed first draft of the Milestone 0302A report (Documented Phase I Iodine-131 Releases)
- wrote portions of the Milestone 0205D Letter Report: Model Parameter Distributions Strategy which will be included in Milestone 0703B Letter Report: Iodine-131 Parameters and Dose Factors, Revised Model
- prepared for BNW QA audit conducted the week of August 24, 1992

Analysis of Model Reliability (Subtask 0803)

- worked with Tasks 02 (Technical Integration) and 07 (Environmental Pathways and Dose Estimates) to identify errors in codes and to find inconsistencies with specification of model parameter values for Milestone 0703B letter report
- developed software quality assurance procedures for the STRM code for Task 03 (Source Terms)
- developed with Task 04 (Environmental Transport) a rough draft of the sensitivity/uncertainty analysis plan for the RATCHET code
- wrote Appendix A of the Milestone 0302A report
- reviewed the draft of the Milestone 0703B letter report
- prepared rough draft of architectural changes needed in the DESCARTES, CIDER, and PARSEL codes so that FY 1993 milestones can be met

Other Activities

- presented the paper, *Uncertainty and Sensitivity Analysis of Historical Measurements of Iodine-131 for Vegetation in 1945-1947*, at the 1992 Joint Statistical Meetings in Boston on August 13, 1992
- presented the paper, *Uncertainty Issues of the Hanford Environmental Dose Reconstruction (HEDR) Project*, at the American Chemical Society symposium, Environmental Statistics, Assessment and Forecasting, on August 26, 1992, in Washington, D.C.

Major Problem Areas or Changes and Action Taken

The computer programming problems in Task 07 (Environmental Pathways and Dose Estimates) have halted progress on the Milestone letter report

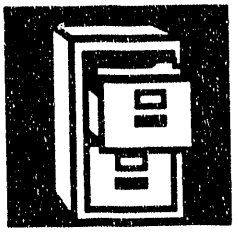
0803A because test cases are required to complete the report. A corrective action team with members from Tasks 02 (Technical Integration), 07, 08 and 10 (Quality Assurance) has been formed to correct both the short-term problems for Milestone 0803A and long-term problems for FY 1993 milestones.

Variance

The cumulative cost underrun was caused by delay in completing the dose code and postponement of the sensitivity/uncertainty plan review to January 1993.

Planned Work for the Next Three Months

- assist writing Milestone 0205D letter report, part of Milestone 0703B
- revise Milestone 0802A Iodine-131 Conversion Factor Report in response to CDC and TSP comments
- complete Milestone 0803A letter report
- continue planning for the sensitivity/uncertainty analysis workshop
- review draft reports
- continue to serve on the survey design team to support the survey of agricultural producers being conducted by WSU
- complete work with corrective action team
- conduct sensitivity/uncertainty analysis of test cases ❑



Task 09
Records Management

Objective

The objective of the Records Management Task is to provide storage and control of completed project records, maintain an automated inventory of all project documentation, and provide a reference service to project staff and the TSP.

Progress

- received project records from the HEDR Project Office - 29 records totalling 1,834 pages
- verified, processed, and stored project records - 95 records totalling 956 pages
- provided a records management briefing to HEDR staff
- met with HEDR task and subtask leaders to review records and to provide assistance in preparing for the audit

Major Problems or Changes and Action Taken

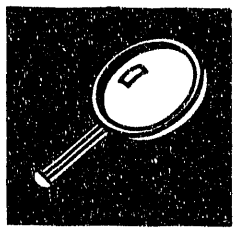
None.

Variance

No significant cumulative variance.

Planned Work for the Next Three Months

- continue processing incoming project records
- continue transferring processed project records to the RL Public Reading Room
- provide assistance to the project office in processing records to the Records Center while the project records custodian is on leave ❑



Task 10
Quality Assurance

Objective

The objective of this task is to ensure continuous QA support and coordination with all project tasks. This objective is met through the identification and documentation of QA requirements in the form of a QA Plan and periodic monitoring of project activities during the life of the project to ensure compliance with these requirements.

Progress

- provided QA assistance to the project staff in preparation for the annual internal audit
- reviewed and provided comments on the following reports to assure that data quality objectives were included and addressed adequately: the Data Management Plan (Milestone 0101C) and *Iodine-131 Releases from the Hanford Site, 1944-1947* (Milestone 0302A)
- performed surveillance to verify that appropriate documentation is in the file to support the data quality objective of completeness for the report, *Selected Hanford Reactor and Separations Operating Data for 1960-1964* (Task 11)
- participated in the internal audit by supporting the technical staff to implement BNW's QA program and procedures. The internal audit focused on the implementation of management systems (i.e., records management related to data traceability) and the implementation of software QA procedures. Results of the audit will be provided in the letter report, Internal Audit (Milestone 1003A), due the end of September.
- finalized QA checklist to be used in reviewing reports and verifying the implementation of QA procedures. Checklist will be used as a self-assessment tool for the technical staff and a verification tool for the QA personnel.

Other Activities

- developed an outline for a presentation on the implementation of data quality objectives for retrospective studies. Presentation will be given at the 1992 Society of Environmental Toxicology and Chemistry meeting held in Cincinnati in November.

Major Problem Areas or Changes and Action Taken

None.

Variance

No significant cumulative variance.

Planned Work for the Next Three Months

- submit BNW internal audit report to TSP
- close-out previous audit observation
- finalize critical decision plan and issue the implementing procedures for the different techniques described in the plan
- develop action-tracking procedure to be used for documenting results of technical staff meetings
- develop surveillance plan for the remainder of the calendar year
- continue performing oversight activities to check for compliance to project technical, QA, and data quality objective requirements ❑

Task 11 Information Resources

Objective

The objective of the Information Resources Task is to work with other tasks to meet information needs, including ensuring that all data referenced in the reports are publicly available and establishing a microcomputer-based tracking system for ready retrieval of historical information.

Progress

Milestone 1102A, Letter Report: Declassified, Prioritized Document List, due September 1992

- submitted report for editing, graphics illustration and text processing
- declassified 311 Hanford-Site-originated documents, 119 of which are of potential interest/use to the project. Table 11.1 shows the status of declassification to date.
- awaiting direction and funding from th · CDC (through RL) to prepare the title listing of Hanford-Site-originated reports which are currently classified and which address operations for years 1961-1972

Milestone 1103A, Letter Report: Status of Document Search and Data Quality Objectives Efforts, due September 1992

- submitted for editing a letter report listing document numbers for batch/daily/monthly

Table 11.1. Declassification of Hanford-Site-Originated Documents

Documents Declassified	Hanford Historical	HEDR-Related[a]
March 1987-September 1987 (FY 1987)	35	27
October 1987 through September 1988 (FY 1988)	52	37
October 1988 through September 1989 (FY 1989)	186	177
October 1989 through September 1990 (FY 1990)	455	236
October 1990 through September 1991 (FY 1991)	1323	599
October 1991 through August 1992 (FY 1992)	2519	451
TOTAL (March 1987 - Ausgust 1992)	4570	1527

(a) Reported in HEDR monthly reports and included in a HEDR master listing in the RL Public Reading Room. Some of these are from the list requested by the TSP and the public.

separations processes operating information from 1944-1972

- collected additional separations processes data and related information. The years 1955 and 1956 were completed during the month.
- assisted M. Robkin, TSP, during a 2-day stay in Richland to review documents relative to his summer assignment for the TSP
- assisted M. Blazek, TSP, during a 2-day visit to the Records Holding Area to review 32 boxes containing classified historical records
- added new citations to the tracking system that now contains more than 5700 citations
- verified references in several HEDR reports
- provided the RL Public Reading Room with 46 documents (5400 pages) of potential interest/ use in the HEDR Project. A title listing of these reports is given in Appendix B.

RL Public Reading Room Activity

In August, the Reading Room had 12 HEDR patrons and distributed 37 HEDR reports.

Other Activities

- completed staff review of QA Plan and other HEDR technical procedures

Major Problem Areas or Changes and Action Taken

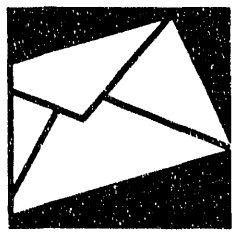
None.

Variance

No significant cumulative variance.

Planned Work for the Next Three Months

- complete document list letter report (Milestone 1102A)
- complete status of document search letter report (Milestone 1103A)
- identify significant documents that address fuel element failures that occurred in now decommissioned Hanford production reactors
- identify and collect documents that address reactor purges, 1944-1971
- identify and retrieve data on ruthenium releases from separations processes ❑



Task 12
TSP Communications Support

Objective

The objective of this task is to assist the TSP in developing competent communications strategies to further establish an effective, informative dialogue with interested audiences, provide public and media relations support, and manage activities that foster a better understanding of the HEDR process and its progress.

Progress

- initiated efforts to renew clearances for TSP members whose access badges will lapse in October 1992
- assisted in arranging information material review for several TSP members. Scheduled TSP review time in the Records Holding Area—provided an escort and requested material availability
- updated Records Inventory and Disposition Schedule files and completed review of QA Plan as well as other HEDR technical procedures
- reviewed and commented on the revised draft of the TSP HEDR Project poster as requested
- provided TSP staff with photo of Chinook salmon for use with a TSP newsletter article regarding the Columbia River
- provided general information about the HEDR Project to S. Houston, Kadlec Medical Center, Richland, Washington, and K. Scott, NUS Inc., regarding the project, its findings and research
- arranged media visit for KING Television, Seattle, Washington, to talk with M. Blazek

Major Problem Areas or Changes and Action Taken

None.

Variance

The cumulative cost underrun was the result of an accrual reversal (reversal of a booking of estimated costs) for the WSU survey work performed last fiscal year. The accrual will be rebooked to offset this credit until an invoice is received.

Planned Work for the Next Three Months

- attend the TSP Communications Subcommittee meeting in Portland, Oregon, September 18
- attend TSP Public and Communications Subcommittee meetings in Pasco, Washington, October 8-10 ❑

Appendix A

Milestones, Schedule, and Costs

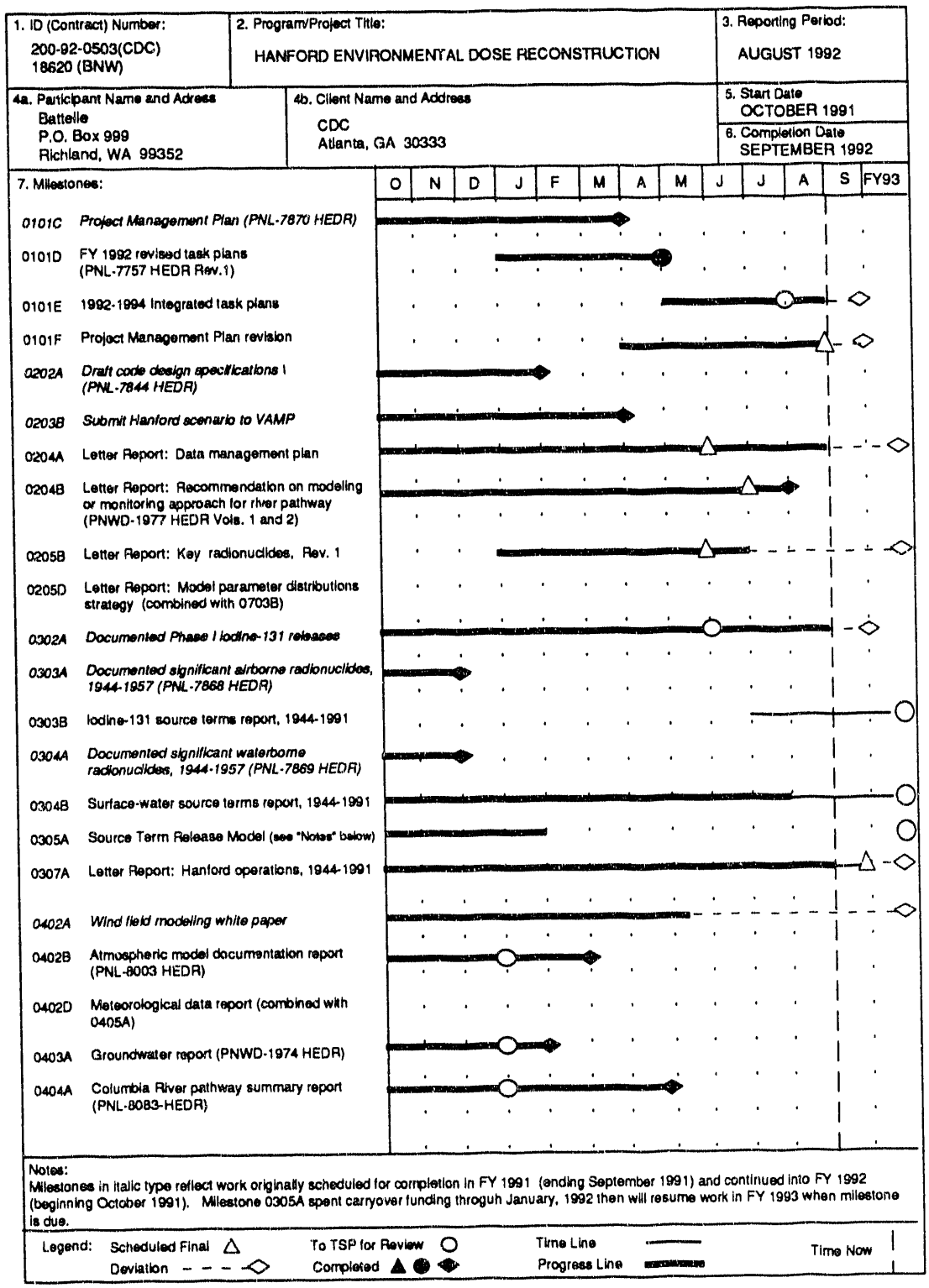


Figure A.1. HEDR Project Milestones

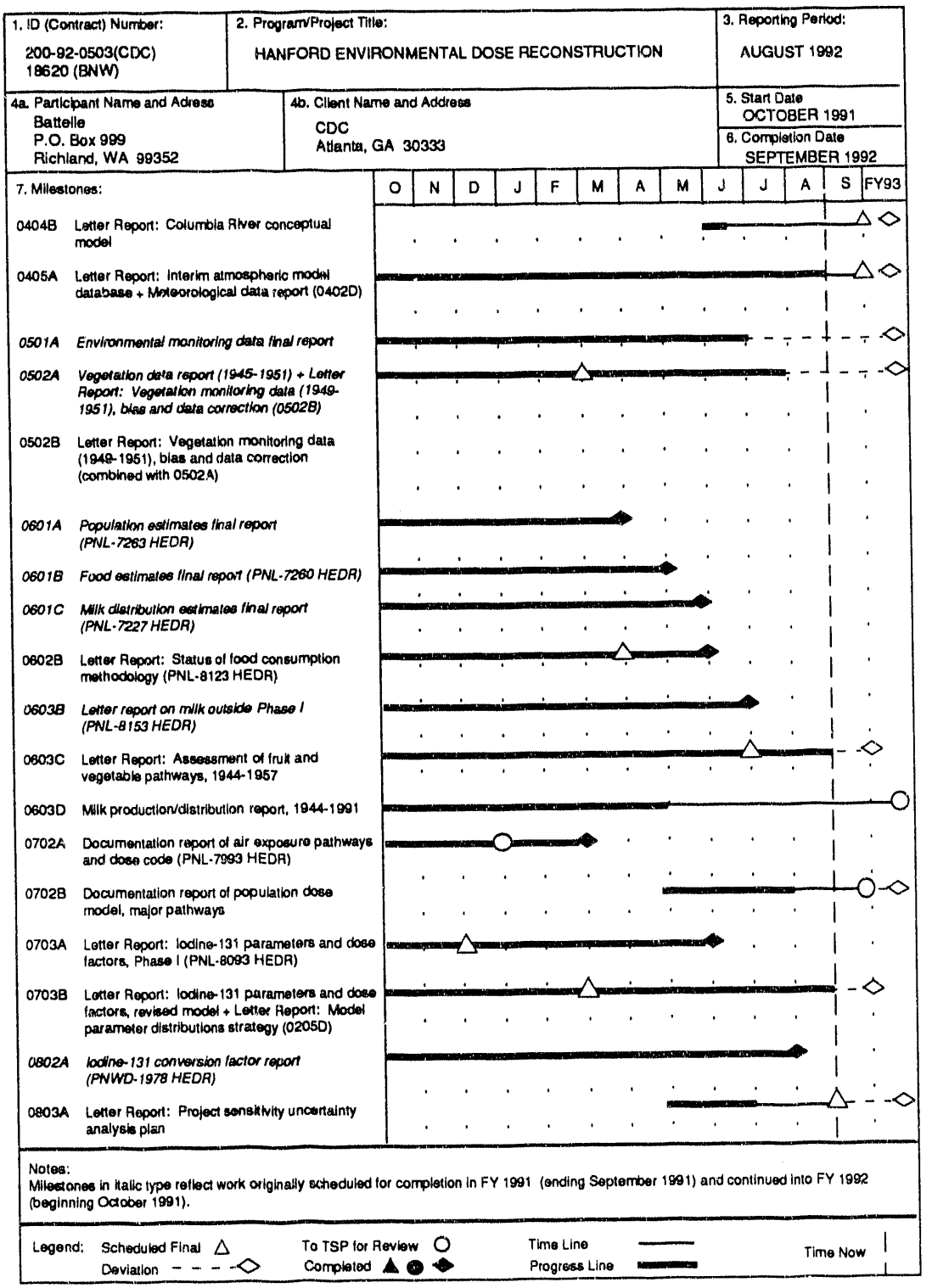
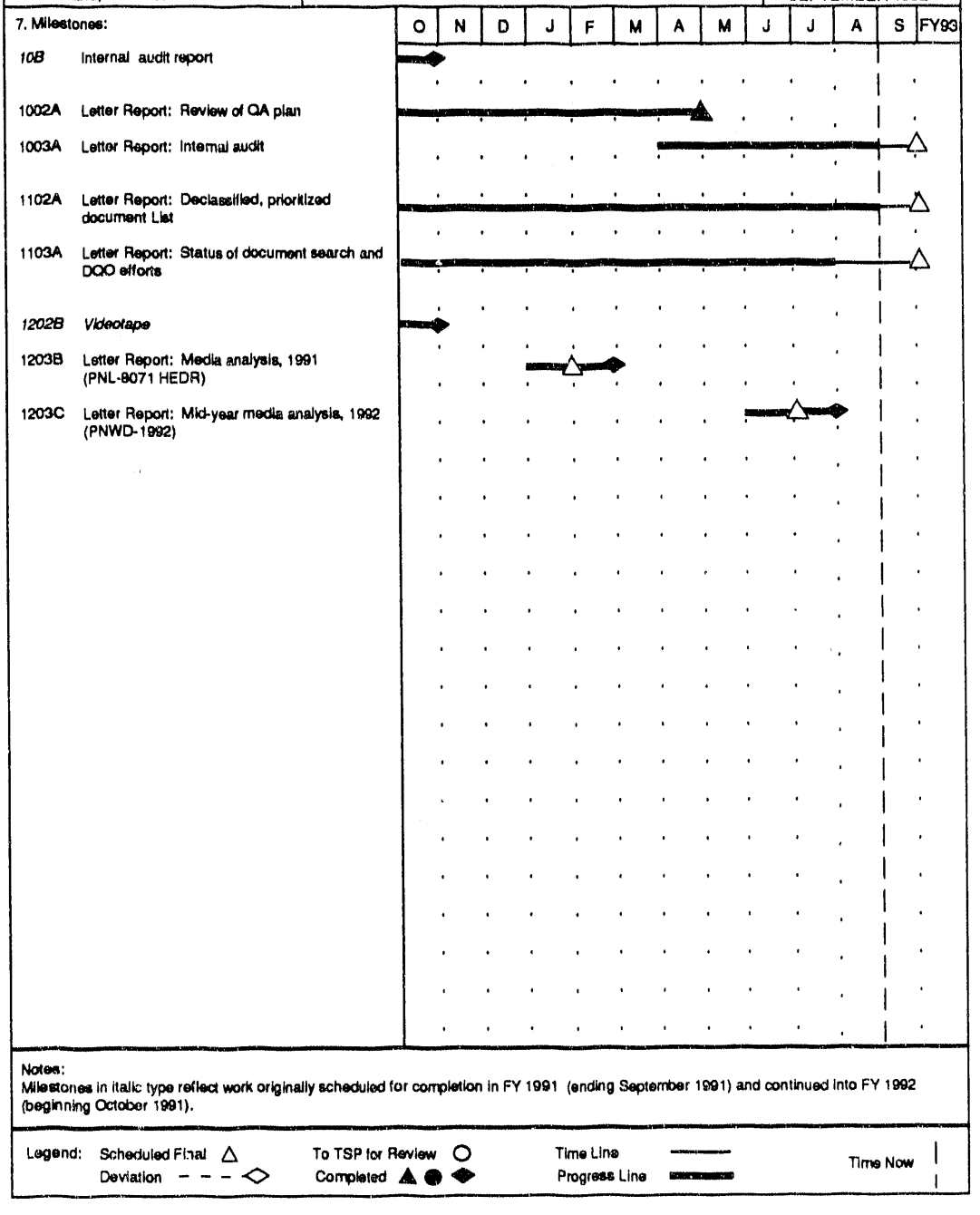


Figure A.1. HEDR Project Milestones (contd)

1. ID (Contract) Number:	2. Program/Project Title:	3. Reporting Period:
200-92-0503(CDC) 18620 (BNW)	HANFORD ENVIRONMENTAL DOSE RECONSTRUCTION - PNL	AUGUST 1992

4a. Participant Name and Adress	4b. Client Name and Address	5. Start Date	6. Completion Date
Battelle P.O. Box 999 Richland, WA 99352	CDC Atlanta, GA 30333	OCTOBER 1991	SEPTEMBER 1992



Notes:
Milestones in italic type reflect work originally scheduled for completion in FY 1991 (ending September 1991) and continued into FY 1992 (beginning October 1991).

Legend: Scheduled Final △ Deviation – – – ◇ To TSP for Review ○ Completed ▲ ● ◆ Time Line ——— Progress Line ▬▬ Time Now |

Figure A.1. HEDR Project Milestones (contd)

Table A.1. Cost Summary (Dollars in Thousands)

HEDR Project Tasks	August 1992 Labor $	August 1992 Non-Labor $ (a)	August 1992 Total $	FY 1992 to Date (October 1991 - September 1992) Labor $	Non-Labor $ (a)	Total $	Cum Planned (b)	Cum Variance	TSP Approved FY Budget (c)	CDC/TSP/ Battelle Negotiated Budget Adjustments (d)	Current Negotiated FY Budget (e)	Funds Remaining	Budgeted FY Labor Hours
Task 01 - Project Management (f)													
0101 Project Planning & Control	50	1	51	547	131	678	662	-16	727	-36	691	13	7,644
0102 Final Phase I Reports	0	0	0	11	5	16	16	0	12	4	16	0	314
0103 Project Administration	32	0	32	254	37	291	353	62	413	-32	381	90	5,704
0104 Project Peer Review	4	1	5	36	2	38	37	-1	42	-1	41	3	375
Subtotal Task 01	86	2	88	848	175	1,023	1,068	45	1,194	-65	1,129	106	14,037
Task 02 - Technical Integration													
0201 Tech Planning/Control/Rep	4	3	7	55	5	60	53	-7	71	-14	57	-3	560
0204 Proj Tech Cord /Analysis	21	0	21	111	4	115	92	-23	77	30	107	-8	943
0205 Path & Dose Model Require	48	0	48	105	6	111	115	4	129	1	130	19	1,340
Subtotal Task 02	73	3	76	271	15	286	260	-26	277	17	294	8	2,843
Task 03 - Source Terms													
0301 Tech Planning/Control/Rep	3	1	4	33	7	40	42	2	46	1	47	7	410
0302 Closure of Ph I Iodine Rel	0	0	0	20	0	20	4	-16	5	-1	4	-16	43
0304 Rad Releases to Water	4	0	4	40	1	41	83	42	98	1	99	58	866
0305 Source Term Release Model	0	0	0	6	10	16	16	0	5	11	16	0	173
0307 Rad Release Data Avail/Rev	21	11	32	160	18	178	158	-20	180	-14	166	-12	2,037
Subtotal Task 03	28	12	40	259	36	295	303	8	334	-2	332	37	3,529

Table A.1. Cost Summary (Dollars in Thousands) (contd)

	August 1992			FY 1992 to Date (October 1991 - September 1992)									
	Labor $	Non-Labor $ (a)	Total $	Labor $	Non-Labor $ (a)	Total $	Cum Planned (b)	Cum Variance	TSP Approved FY Budget (c)	CDC/TSP/ Battelle Negotiated Budget Adjustments (d)	Current Negotiated FY Budget (e)	Funds Remaining	Budgeted FY Labor Hours
Task 04 - Environmental Transport													
0401 Tech Planning/Control/Rep	0	0	0	1	0	1	1	0	0	1	1	0	10
0402 Atmospheric Model Develop	30	2	32	193	8	201	194	-7	214	-1	213	12	2,227
0403 Groundwater Transport	0	0	0	52	10	62	61	-1	61	0	61	-1	679
0404 Surface-Water Transport	2	4	6	86	14	100	114	14	132	-2	130	30	1,407
0405 Atmospheric Model Databas	5	0	5	105	3	108	87	-21	71	16	87	-21	1,146
0406 Atmospheric Model Calculat	0	0	0	0	0	0	9	9	31	-17	14	14	184
Subtotal Task 04	37	6	43	437	35	472	466	-6	509	-3	506	34	5,653
Task 05 - Environmental Monitoring Data													
0501 Tech Planning/Control/Rep	3	0	3	40	3	43	35	-8	38	0	38	-5	357
0502 Terrestrial Monitoring Data	4	0	4	66	1	67	56	-11	67	-3	64	-3	593
0503 Enviromental Monitoring Dat	3	0	3	21	18	39	49	10	46	3	49	10	582
0504 Surface-Water Monitoring	-1	0	-1	16	-1	15	15	0	15	0	15	0	186
Subtotal Task 05	9	0	9	143	21	164	155	-9	166	0	166	2	1,718
Task 06 - Demography, Food Consumption & Agriculture													
0601 Tech Planning/Control/Rep	3	0	3	34	1	35	35	0	41	-5	36	1	406
0602 Food Consumpion	4	0	4	45	7	52	56	4	60	0	60	8	512
0603 Milk/Other Food Model Dev	23	0	23	134	8	142	250	108	337	-19	318	176	1,481
0605 Native American Data	1	6	7	19	64	83	136	53	137	3	140	57	398
Subtotal Task 06	31	6	37	232	80	312	477	165	575	-21	554	242	2,797

Table A.1. Cost Summary (Dollars in Thousands) (contd)

	August 1992			FY 1992 to Date (October 1991 - September 1992)									
	Labor $	Non-Labor $ (a)	Total $	Labor $	Non-Labor $ (a)	Total $	Cum Planned (b)	Cum Variance	TSP Approved FY Budget (c)	CDC/TSP/ Battelle Negotiated Budget Adjustments (d)	Current Negotiated FY Budget (e)	Funds Remaining	Budgeted FY Labor Hours
Task 07 - Environmental Pathways & Dose Estimates													
0701 Tech Planning/Control/Rep	6	1	7	42	2	44	53	9	62	-1	61	17	615
0702 Path & Dose Code Dev/Doc	8	0	8	239	21	260	231	-29	240	1	241	-19	2,756
0703 Path & Dose Model Paramet	5	1	6	86	3	89	73	-16	75	-2	73	-16	804
0705 Dose Calculations	6	0	6	7	0	7	31	24	39	1	40	33	461
Subtotal Task 07	25	2	27	374	26	400	388	-12	416	-1	415	15	4,636
Task 08 - Statistics													
0801 Tech Planning/Control/Rep	3	0	3	29	2	31	34	3	49	-11	38	7	297
0802 Stats Support for Tech Work	23	5	28	105	5	110	117	7	140	-2	138	28	1,234
0803 Analysis of Model Reliability	29	2	31	154	2	156	180	24	205	-1	204	48	1,953
Subtotal Task 08	55	7	62	288	9	297	331	34	394	-14	380	83	3,484
Task 09 - Records Management													
0901 Tech Planning/Control/Rep	2	0	2	17	0	17	14	-3	15	0	15	-2	249
0902 Project Records Management	6	0	6	24	2	26	33	7	71	-31	40	14	850
Subtotal for Task 09	8	0	8	41	2	43	47	4	86	-31	55	12	1,099
Task 10 - Quality Assurance													
1001 Tech Planning/Control/Rep	1	0	1	14	3	17	15	-2	13	2	15	-2	194
1002 QA Program Development	5	0	5	17	0	17	15	-2	17	-1	16	-1	203
1003 QA Verification	6	1	7	13	1	14	22	8	28	1	29	15	391
Subtotal Task 10	12	1	13	44	4	48	52	4	58	2	60	12	788

Table A.1. Cost Summary (Dollars in Thousands) (contd)

	August 1992			FY 1992 to Date (October 1991 - September 1992)									
	Labor $	Non-Labor $ (a)	Total $	Labor $	Non-Labor $ (a)	Total $	Cum Planned (b)	Cum Variance	TSP Approved FY Budget (c)	CDC/TSP/ Battelle Negotiated Budget Adjustments (d)	Current Negotiated FY Budget (e)	Funds Remaining	Budgeted FY Labor Hours
Task 11 - Information Resources													
1101 Tech Planning/Control/Rep	3	0	3	36	0	36	39	3	44	-1	43	7	1,032
1102 Hanford Document Declass	1	0	1	42	1	43	51	8	51	1	52	9	1,183
1103 Hanford Info Resources Iden	9	0	9	61	5	66	64	-2	63	6	69	3	1,140
Subtotal Task 11	13	0	13	139	6	145	154	9	158	6	164	19	3,355
Task 12 - TSP Communications Support													
1201 Tech Planning/Control/Rep	0	4	4	20	8	28	23	-5	17	7	24	-4	446
1202 TSP Public Outreach Support	0	0	0	1	3	4	4	0	20	-16	4	0	69
1203 Comm Assessment Research	1	-44	-43 (g)	5	-44	-39	11	50	12	0	12	51	135
1204 TSP Meeting/Material Sup	1	0	1	11	12	23	25	2	30	-2	28	5	253
Subtotal - Task 12	2	-40	-38	37	-21	16	63	47	79	-11	68	52	903
Subtotal, HEDR Project Tasks	**379**	**-1**	**378**	**3,113**	**388**	**3,501**	**3,764**	**263**	**4,246**	**-123**	**4,123**	**622**	**44,842**

Table A.1. Cost Summary (Dollars in Thousands) (contd)

	August 1992			FY 1992 to Date (October 1991 - September 1992)									
	Labor $	Non-Labor $ (a)	Total $	Labor $	Non-Labor $ (a)	Total $	Cum Planned (b)	Cum Variance	TSP Approved FY Budget (c)	CDC/TSP/Battelle Negotiated Budget Adjustments (d)	Current Negotiated FY Budget (e)	Funds Remaining	Budgeted FY Labor Hours
Technical Steering Panel (h)	0	167	167	0	561	561	840	279	1,003	-139 (i)	864 (j)	303	0
Native American Research	0	14	14	0	23	23	241	218	356	-115 (i)	241 (j)	218	0
TOTAL	379	180	559	3,113	972	4,085	4,845	760	5,605	-377	5,228	1,143	44,842

A.8

(a) Non-labor dollars include expenses such as travel, publication production, procurements, and subcontracts.
(b) The monthly planned amounts are given in the cost section of Figures 2, A.2, and A.3, pages xi, A.9, and A.10, respectively.
(c) "TSP approved FY Budget" is the FY 1992 budget approved following the April 1992 TSP meeting.
(d) Adjustments made to the TSP-approved budget, as negotiated by CDC for the contract with Battelle. The adjustments also include the redistribution of TSP and Native American budget to Battelle HEDR subtasks for TSP-approved work that was previously not funded due to a funding shortfall. Additionally, funds have been reallocated within the Battelle subtasks to fund critical items.
(e) "Current Negotiated FY Budget" is the scope and budget negotiated with CDC, TSP, and Battelle, reflecting the adjustments in footnote (d).
(f) Project management includes activities such as project control and administration, project communications, subcontract administration, records control, and peer review.
(g) The credit of cost is the result of an accrual reversal (reversal of a booking of estimated costs) for the WSU survey work performed last fiscal year. The accrual will be rebooked to offset this credit until an invoice is received.
(h) TSP costs are administered through subcontracts which are reflected as non-labor costs. Actual TSP expenses include both labor and non-labor.
(i) Funding reductions to the TSP and Native American budget were approved in a letter from J. E. Till dated August 10, 1992 and also in a letter from B. Shleien dated August 17, 1992.
(j) FY budget provides funding through September 30, 1992. See Figures A.2 and A.3 for additional information.

1. ID (Contract) Number:	2. Program/Project Title:	3. Reporting Period:
200-92-0503 (CDC) 18620 (BNW)	HANFORD ENVIRONMENTAL DOSE RECONSTRUCTION - TSP	AUGUST 1992

4a. Participant Name and Adress	4b. Client Name and Address	5. Start Date
Pacific Northwest Laboratory P.O. Box 999 Richland, WA 99352	RL Richland, Washington 99352	OCTOBER 1991 6. Completion Date SEPTEMBER 1992

7. FY 92 | 8. Months

9. Cost Status

a. $ Expressed in: Thousands

b. B&R No./ Subaccount No.
12578
HR0120

c. FIN No.

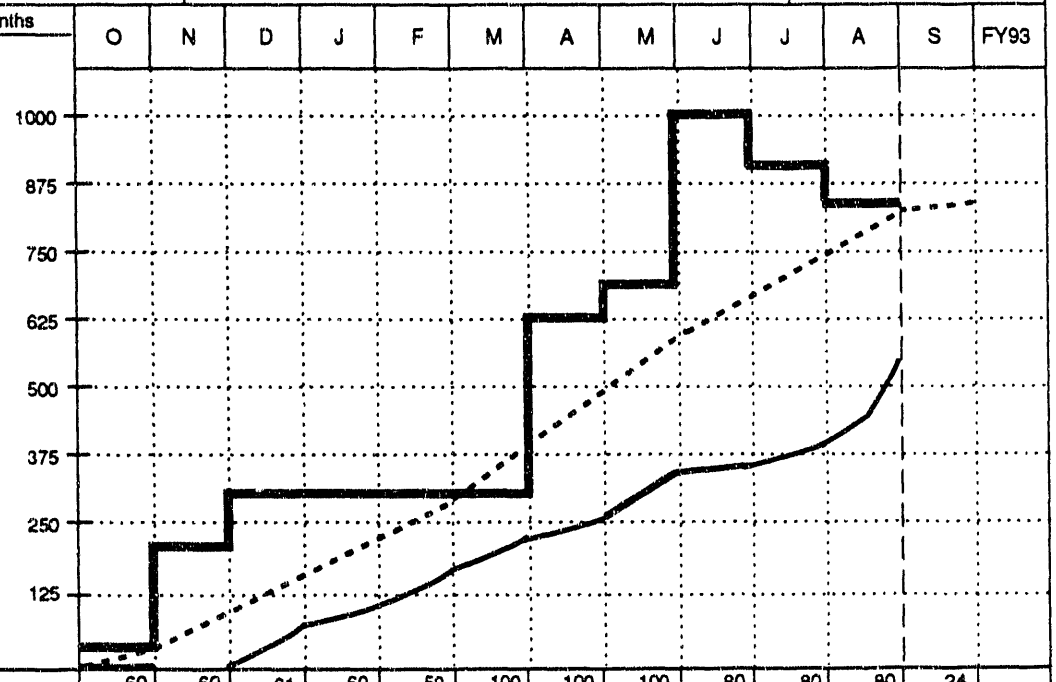
d. Actual Costs Prior Years
2,251

e. FY Budget
864 (a)

f. Total Budget

g. FY Funds Auth.
864 (b)

h. Total Funds Auth.
3,115 (c)



Costs	O	N	D	J	F	M	A	M	J	J	A	S	FY93
i. Planned	60	60	61	60	59	100	100	100	80	80	80	24	
j. Actual (d)	2	45	2	8	117	46	30	92	23	29	167		
k. Variance	58	15	59	52	-58	54	70	8	57	51	-87		
l. Cum Planned	60	120	181	241	300	400	500	600	680	760	840	864	
m. Cum Actual (d)	2	47	49	57	174	220	250	342	365	394	561		
n. Cum Variance	58	73	132	184	126	180	250	258	315	366	279		

10. Legend: Planned ..... Actual ——— Funds Auth. ▬▬ 90% Funds Spent ⚑ Time Now

(a) Reduction in TSP budget to cover funding shortfall for TSP approved work per letter from John Till. (b) Includes carryover and TSP's share of current fiscal year funding that has been received. (c) FY 88-92. (d) Actual costs are recorded after invoices are received and processed. Therefore, current month costs may not reflect actual work performed.

11. Name/Signature of Participants Prog/Proj Manager & Date

D. B. SHIPLER

Figure A.2. Technical Steering Panel Budget Status

1. ID (Contract) Number:	2. Program/Project Title:	3. Reporting Period:
200-92-0503 (CDC) 18620 (BNW)	HANFORD ENVIRONMENTAL DOSE RECONSTRUCTION - TRIBES	AUGUST 1992

4a. Participant Name and Adress	4b. Client Name and Address	5. Start Date
Pacific Northwest Laboratory P.O. Box 999 Richland, WA 99352	RL Richland, Washington 99352	OCTOBER 1991 6. Completion Date SEPTEMBER 1992

7. FY 92 | 8. Months

9. Cost Status

a. $ Expressed in: Thousands

b. B&R No./ Subaccount No.
12578
HR0120

c. FIN No.

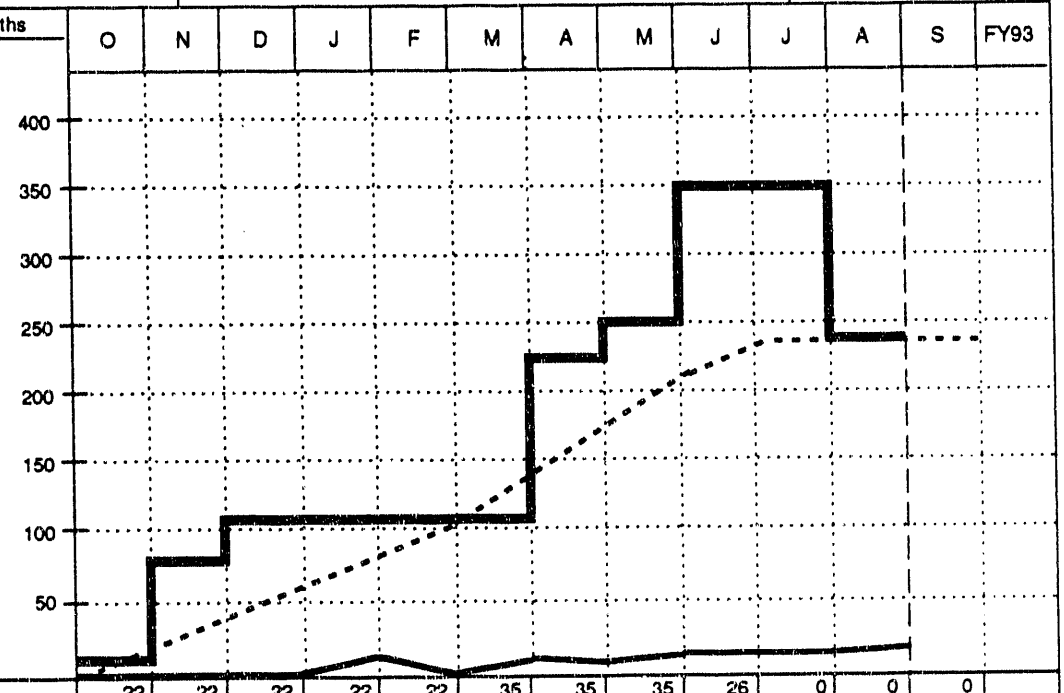
d. Actual Costs Prior Years (a)

e. FY Budget 241K (b)

f. Total Budget

g. FY Funds Auth. 241 (c)

h. Total Funds Auth. 241 (d)



Costs	O	N	D	J	F	M	A	M	J	J	A	S	FY93
i. Planned	22	22	22	22	22	35	35	35	26	0	0	0	
j. Actual (e)	0	0	0	12	-14	7	-1	5	0	0	14		
k. Variance	22	22	22	10	36	28	36	30	26	0	-14		
l. Cum Planned	22	44	66	88	110	145	180	215	241	241	241	241	
m. Cum Actual (e)	0	0	0	12	-2	5	4	9	9	9	23		
n. Cum Variance	22	44	66	76	112	140	176	206	232	232	218		

10. Legend: Planned - - - - - Actual ——— Funds Auth. ▬▬ 90% Funds Spent ▷ Time Now

(a) Actual costs for prior fiscal years are part of the costs shown in Figure 2, HEDR Project Budget Status. At the direction of the TSP, Battelle is tracking Native American research costs separately, beginning in FY 92. (b) Reduction in Native American budget to cover BNW funding shortfall for TSP approved work per letter from John Till. (c) Includes carryover and Native American's share of current fiscal year funding that has been received. (d) FY 91 carryover plus FY 92 funds. (e) Actual costs are recorded after invoices are received and processed. Therefore, current month costs may not reflect actual work performed.

11. Name/Signature of Participants Prog/Proj Manager & Date

D. B. SHIPLER

Figure A.3. Native American Research Budget Status

Appendix B

Hanford-Site-Originated Documents of Potential Interest/Use in the HEDR Project - Placed in the RL Public Reading Room During August 1992

Appendix B

Hanford Site-Originated Documents of Potential Interest/Use in the HEDR Project - Placed in the RL Public Reading Room During August 1992

BNWL-0433	Nuclear Safety Quarterly Report January, February, March 1967. 40p.	07/07/67
BNWL-SA-3967	Plutonium In Surface Soil in the Hanford Plant Environs. 10p.	08/12/72
BNWL-SA-4676	Analysis of an Analytical Technique for Distributing Air Sampling Locations Around Nuclear Facilities. 6p.	05/01/73
BNWL-SA-4839	Environmental Monitoring at the Pacific Northwest Laboratory by Battelle-Northwest. 15p.	10/13/73
BNWL-SA-5355	Interpretation of Near-Background Environmental Surveillance Data By Distribution Analysis. 21p.	10/24/75
DUN-7038-RD	Reactor Operations Daily Reports 7-1-70 Through 06/30/71. 212p.	07/01/70
GEH-18818	Dissolver-Silver Reactor Temperature Requirements. 1p.	08/29/51
HW-7-0283	Deaeration of Process Water in the F Area. 3p.	07/13/44
HW-19499	Activity of Pile Gas. 3p.	11/15/50
HW-21220	Water Requirements for the Cooling System of the Hanford Reactors. 140p.	05/25/51
HW-29125	Interim Report Production Test 105-440-P Measurement of Neutron Fluxes in Graphite Reflector. 18p.	09/01/53
HW-38375-DEL	Hanford Atomic Products Operation Monthly Report for July 1955. 362p.	08/26/55
HW-41205-DEL	Hanford Atomic Products Operation Monthly Report for January 1956. 442p.	02/24/56
HW-42219-DEL	Hanford Atomic Products Operation Monthly Report for March 1956. 440p.	04/20/56

HW-43938-DEL	Hanford Atomic Products Operation Monthly Report for June 1956. 405p.	07/23/56
HW-49205-DEL	IPD Monthly Record Report for March 1957. 169p.	04/19/57
HW-49503-DEL	Chemical Processing Department Monthly Report for March 1957. 101p.	04/22/57
HW-50368-DEL	IPD Monthly Record Report for May 1957. 139p.	06/21/57
HW-51211-DEL	Chemical Processing Department Monthly Report for June 1957. 103p.	07/22/57
HW-51703	IPD Record Report for July 1957. 139p.	08/20/57
HW-51802-DEL	Chemical Processing Department Monthly Report for July 1957. 106p.	08/22/57
HW-52053	IPD Monthly Record Report for August 1957. 144p.	09/20/57
HW-52353-DEL	Chemical Processing Department Monthly Report for August 1957. 108p.	09/23/57
HW-52809-DEL	IPD Monthly Record Report for September 1957. 143p.	10/21/57
HW-52864-DEL	Chemical Processing Department Monthly Report for September 1957. 106p.	10/22/57
HW-53719-DEL	IPD Monthly Record Report for November 1957. 147p.	11/20/57
HW-54319-DEL	Chemical Processing Department Monthly Report for December 1957. 94p.	01/21/58
HW-54821-DEL	Chemical Processing Department Monthly Report for January 1958. 95p.	02/21/58
HW-55162-DEL	Hanford Laboratories Operation Monthly Activities Report for February 1958. 161p.	03/15/58
HW-55905	Hanford Laboratories Operation Monthly Activities Report for April 1958. 148p.	05/15/58
HW-60491	Thermal Neutron Flux in the "Quickie" Facility. 3p.	05/28/59
HW-61366-DEL	Chemical Processing Department Monthly Report for July 1959. 70p.	08/21/59
HW-61374	Hanford Laboratories Operation Monthly Activities Report for July 1959. 170p.	08/15/59

HW-61399	IPD Monthly Record Report for July 1959. 118p.	08/21/59
HW-61702	Hanford Laboratories Operation Monthly Activities Report for August 1959. 169p.	09/15/59
HW-61789	IPD Monthly Record Report for August 1959. 118p.	09/21/59
HW-62179-DEL	Chemical Processing Department Monthly Report for September 1959. 68p.	10/21/59
HW-63753-DEL	IPD Monthly Record Report for January 1960. 121p.	02/19/60
HW-64122-DEL	IPD Monthly Record Report for February 1960. 122p.	03/22/60
HW-65924	IPD Monthly Record Report for June 1960. 84p.	07/15/60
HW-66646-DEL	Chemical Processing Department Monthly Report for August 1960. 54p.	09/21/60
HW-66685	IPD Monthly Record Report for August 1960. 88p.	09/12/60
HW-69583	Test Results for Supplement A to Production Test IP 358 AC. 9P.	05/19/61
HW-73304	Calibration of Gas Monitoring Instrumentation to Measure the Amount of Oxygen in a Reactor. 11p.	04/06/62
PNL-2471	Movement and Habitat Studies of Chinook Salmon and White Sturgeon. 65p.	09/10/78
PNL-SA-10930	Problems in Evaluating Radiation Dose for Effective Environmental Assessment. 40p.	11/02/82

Appendix C

HEDR Documents to the TSP - August 1992

Appendix C

HEDR Documents to the TSP - August 1992

Title	Author	Date Issued	Publication No	Additional Information	Status
Ground-Water Contribution to Dose from Past Hanford Operations	MD Freshley PD Thorne	8/92	PNWD-1974 HEDR	Milestone 0403A	Published final. A replacement page iii is being mailed to those on the distribution list to correct a citation error.
Recommendations to the Technical Steering Panel Regarding Approach for Estimating Individual Radiation Doses Resulting from Releases of Radionuclides to the Columbia River	AJ Brothers BA Napier	8/92	PNWD-1977 HEDR Vol. 2	Milestone 0204B	Published final
QA Plan OHE-3, Revision 5	DL Stewart	8/92	PNWD-2001 HEDR		

Appendix D

HEDR Presentation Handouts to the TSP - August 1992

(NOTE: No presentation handouts were generated in August)

Appendix E

HEDR Open-Literature Publications and Presentations - August 1992

This appendix lists publications (new this month) that present aspects of dose reconstruction in the open scientific literature; TSP approval is not required. A complete listing for FY 1992 will be included in the September 1992 report.

Appendix E

HEDR Open-Literature Publications and Presentations - August 1992

Title	Author	Date Issued	Publication No	Audience	Status
Uncertainty Issues of the Hanford Environmental Dose Reconstruction (HEDR) Project	RO Gilbert JC Simpson	7/92	BN-SA-3576 HEDR	National Meeting of American Chemical and American Statistical Association, Washington, D.C.	Presented August 26, 1992
Uncertainty and Sensitivity Analysis of Historical Measurements of Iodine-131 for Vegetation in 1945-1947	RO Gilbert	7/92	BN-SA-3564S HEDR	1992 Joint Statistical Meetings, Boston, MA	Presented August 13, 1992

Appendix F

Communications Log - August 1992

Appendix F

Communications Log - August 1992

Initiated By/ Affiliation	Contact/ Affiliation	Type	Subject
B Aripa/Colville Tribe	EB Liebow/BNW	Phone	Status of Colville work order and plans for 9/3 meeting
J Avila/Center for Investigative Reporting	BA Napier/BNW	Phone	Follow-up article on news reports of contamination of Columbia River
WA Bishop/TSP	SM Finch/BNW	Phone	BNW contracts staff
WA Bishop/TSP	TA Ikenberry/BNW	Phone	Status of Native American contract
WA Bishop/TSP	EB Liebow/BNW	Phone	Status of tribal work orders and budget for period through 12/92; status of protocol development and distribution to Native American Working Group (NAWG)
ML Blazek/TSP	GL Harvey/BNW	Phone	Request to forward 1987 Hanford Environmental Monitoring Report to W Cummins, Portland State University; clearance badge and updating for another year; planning September visit to review documents
ML Blazek/TSP	BA Napier/BNW	Phone	Current extent of atmospheric transport modeling grid
WA Bishop/TSP	DB Shipler/BNW	Phone	Status of Native American subcontracts
ML Blazek/TSP	DB Shipler/BNW	Phone	Iodine document release plan; concerns of Idaho citizens
K CharLee/TSP Staff	SM Finch/BNW	Phone	Status of all HEDR documents; October TSP meeting agenda items; NAWG meeting; environmental transport meeting; upcoming visits to Battelle by TSP members
K CharLee/TSP Staff	GL Harvey/BNW	Phone	Arrangements for TSP visit to review classified and unclassified documents in September; updating clearance for ML Blazek and other TSP members before October TSP meeting in Pasco
MR Donnelly/CDC	SM Finch/BNW	Phone	Adding BG Brooks to the distribution of all HEDR reports

Initiated By/ Affiliation	Contact/ Affiliation	Type	Subject
MR Donnelly/CDC	DB Shipler/BNW	Phone	CDC meeting; request for proposals (RFPs) for tribes; cancel meeting in Seattle; reconciliation of funding and budget; Atlanta meeting; iodine report schedule; NAWG meeting costs; subcontracts; OMB review of questionaire; Colville costs; CDC, TSP, and BNW meeting rescheduled
D Ernst/Spokane Tribe	EB Liebow/BNW	Phone	Clarification of statement of work (SOW) from BNW
KL Garlid/Consultant	CM Heeb/BNW	Phone	Questions about iodine-131 document
J Gates/TSP Staff	GL Harvey/BNW	Phone	Salmon photo for newsletter and sharing of news clippings
NJ Germond/TSP	GL Harvey/BNW	Phone	Arranging TSP visits to review documents
HA Haerer/ Golder Associates	DB Shipler/BNW	Phone	Decision tools
W Hanson/Yakima Indian Nation (YIN) Consultant	TA Ikenberry/BNW	Phone	Status of the YIN work order agreement
GL Harvey/BNW	ML Blazek/TSP	Phone	Times and dates to review classified documents
CM Heeb/BNW	MA Robkin/TSP	Phone	River release spreadsheet files
P Houck/CDC	EB Liebow/BNW	Phone, Fax	Primary data needed for "% time outdoors"; protocol development issue; draft outline for standard protocol
TA Ikenberry/BNW	WA Bishop/TSP	Phone	Status of Native American contracts and content of Coeur d'Alene work proposal
TA Ikenberry/BNW	A Peters/YIN	Phone	Current questions in cost-price analysis on work order
TA Ikenberry/BNW	D Powaukee/ Nez Perce Tribe	Phone	Status of Nez Perce work
TA Ikenberry/BNW	J Thomas/HEAL	Phone	Information on use of cisterns for drinking water in eastern Washington
TA Ikenberry/BNW	JR Wilkinson/ Confederated Tribes of the Umatilla Indian Reservation (CTUIR)	Fax	Example of fruit and vegetables in various modeling categories

Initiated By/ Affiliation	Contact/ Affiliation	Type	Subject
KJ Kopecky/TSP	BA Napier/BNW	Phone	Final scheduling of data interface meeting
EB Liebow/BNW	WA Bishop/TSP	Phone	Status of tribal work orders and budget for period through 12/92; status of work orders and plans for 9/3 meeting
EB Liebow/BNW	D Ernst/Spokane Tribe	Phone	Clarification of SOW from BNW; guidance on SOW development
EB Liebow/BNW	DE Walker/TSP	Phone	Status of protocol development and distribution to NAWG
EB Liebow/BNW TA Ikenberry/BNW	JR Wilkinson/ CTUIR	Fax, Phone	Process for completing preliminary investigations; clarification of statement of work from BNW
TL Marsh/BNW	AH Harrington/WSU	Phone	Distribution estimates
T McNally/KING TV	GL Harvey/BNW	Phone	Interview on HEDR Project
AH Murphy/TSP	JV Ramsdell/BNW	Phone	Visit to discuss model
BA Napier/BNW	B Shleien/TSP	Phone	Discussion of PNWD-1977 HEDR, *Recommendations to the Technical Steering Panel Regarding Approach for Estimating Individual Radiation Doses Resulting from Releases of Radionuclides to the Columbia River, Volume 1: Recommendations*
BA Napier/BNW	ML Blazek/TSP	Phone	Availability of PNWD-1977 HEDR, *Recommendations to the Technical Steering Panel Regarding Approach for Estimating Individual Radiation Doses Resulting from Releases of Radionuclides to the Columbia River, Volume 2: VOI Supporting Information*, for public meeting
BA Napier/BNW	P Adams-Meyers/ Fred Hutchinson Cancer Research Center (FHCRC)	Phone	Preliminary scheduling of data interface meeting
K Niles/TSP Staff	GL Harvey/BNW	Phone	Financial information regarding development of the HEDR video
MS Power/TSP Staff	EB Liebow/BNW	Phone	Plans for next day's meeting
MS Power/TSP Staff	SM Finch/BNW	Phone	Form sent for his badge/dosimeter
J Richards/CTUIR	TA Ikenberry/BNW	Phone	Battelle comments on contractual portions of CTUIR statement of work and proposal

Initiated By/ Affiliation	Contact/ Affiliation	Type	Subject
MA Robkin/TSP	CM Heeb/BNW	Phone	Press conference
MJ Sage/CDC MR Donnelly/CDC	DB Shipler/BNW	Phone	Native American subcontract options
J Scheidler/ JK Associates	BA Napier/BNW	Phone	News reports on Columbia River contamination
K Scott/NUS	GL Harvey/BNW	Phone	Copy of surface-water pathway report
MD Sequeochs/YIN	TA Ikenberry/BNW	Phone	Status of the YIN work order agreement
LE Sewell/CDC	DB Shipler/BNW	Phone	Native American Subcontracts; uncommitted funds; draft budget letter
DB Shipler/BNW	RF Brich/RL	Phone	Iodine report release; TSP funding letters
DB Shipler/BNW	BG Brooks/DOE	Phone	Native American subcontracts
DB Shipler/BNW	MR Donnelly/CDC	Phone	Native American tribal visits and subcontracts; iodine document
DB Shipler/BNW	LE Sewell/CDC	Phone	Potential carryover funds vs. needs
DB Shipler/BNW	JE Till/TSP	Phone	Agricultural survey; letter report comments; document tracking; TSP work plan; Budget needs for BNW-approved work ; slipped milestones; integrated task plans; recovery of dose code; sensitivity/ uncertainty analysis workshop; release of iodine report; meeting in Atlanta
B Shleien/TSP	SM Finch/BNW	Phone, Fax	Contract funding vs. TSP-approved budget; funding for air model review
B Shleien/TSP	DB Shipler/BNW	Phone	Budget memo; TSP invoices; funding reconciliation
JP Thomas/Hanford Education Action League (HEAL)	SM Finch/BNW	Phone	Extra copy of the monthly report
JE Till/TSP	SM Finch/BNW	Phone	Funding reallocations of DOE money
JE Till/TSP	DB Shipler/BNW	Phone	Budget transfers; Iodine report; Native American subcontracts
WH Walters/BNW	P Klingeman/TSP	Phone	Seattle meeting

Initiated By/ Affiliation	Contact/ Affiliation	Type	Subject
GL Wilfert/BNW	P Adams-Myers/ FHCRC	Phone	OMB survey instrument clearance procedures
GL Wilfert/BNW	J McCall/State of Washington Agricultural Statistics	Phone	OMB clearance
JR Wilkinson/CTUIR	TA Ikenberry/BNW EB Liebow/BNW	Phone, Fax	Draft of Umatilla statement of work; honoria for interviewees; schedule for completion of work under new work order and continuation under CDC contract; CTUIR proposal and SOW

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