To: Joe Bunting/Nancy Still MS 623SS

Bunting / See Pocket 1 ('87) for encl.

4/ Still
RLs.
give copy to Linehan

BERRY BEATTY RINIKER
Director

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Mail Stop PV-11 • Olympia, Washington 98504-8711 • (206) 459-6000

NUCLEAR WASTE BOARD

Regular Meeting

February 20, 1987
1:30 p.m.
EFSEC Hearing Room
Rowesix, Building 1
4224 - 6th Ave. S.E.
Lacey, Washington

AGENDA

1.	Introductory Remarks	Warren Bishop
2.	Approval of December 19, 1986 and January 16, 1987 Minutes	
3.	Correspondence	Terry Husseman
4.	Testimony of Governor Gardner before the Senate Energy & Natural Resources Committee.	Curtis Eschels
5.	Report on the States/Tribes/USDOE Meetings	Warren Bishop
6.	Mission Plan Amendments Review Process	
7.	Report on the February 19 Joint Board and Council Meeting on Resource Potential in the Pasco Basin	Terry Husseman
8.	DSHS Report on "Lost" Waste Sites at Hanford	Nancy Kirner
9.	Committee Reports (transportation)	Committee Chairs
10.	State Legislation	Linda Steinmann
11.	Litigation Status	Narda Pierce
12.	Federal Legislation	Charlie Roe
13.	Richland USDOE Report	Max Powell
14.	Washington Institute for Public Policy	Max Power
15.	Other Business	
16.	Public Comment	
17.	Adjourn	

The Nuclear Waste Board welcomes and encourages public participation during the monthly meetings. The Chairman will invite public comment at various points during the meeting. In addition, if there are specific agenda items which you wish to comment upon please sign the sheet on the back table and you will be invited to comment when the Board reaches that agenda item.

encl. to Nuclear Waste Board Mtg. of 2/20/87 rec'd 2/25/87

STATE OF WASHINGTON
OFFICE OF THE GOVERNOR

OLYMPIA
98504-0413

BOOTH GARDNER
GOVERNOR

January 27, 1987

Ben C. Rusche, Director
Office of Civilian Radioactive
Waste Management
U.S. Department of Energy
1000 Independence Avenue
Washington, D.C. 20585

Dear Mr. Rusche:

Enclosed is the state of Washington report to Congress concerning consultation and cooperation negotiations with the U.S. Department of Energy. I understand you will soon be transmitting this report to Congress along with your report.

Please contact Curt Eschels or Terry Husseman if you have any questions about this report.

Sincerely,

Booth Gardner
Governor

Enclosure

Legislative Building AS-13 • Olympia, Washington 98504 • (206) 753-6780 • (Scan) 234-6780

STATE OF WASHINGTON

Report to Congress
Concerning Consultation and Cooperation Negotiations with the
U.S. Department of Energy

January 1987

The state of Washington report to Congress Concerning Consultation and Cooperation Negotiations with the U.S. Department of Energy (USDOE) will review past actions, assess the current situation, and summarize the reasons why agreements have not been concluded.

PAST ACTIONS: From July 1983 until December 1984, the state of Washington and USDOE made a good faith effort to negotiate. In spite of many long negotiating sessions, the parties were unable to resolve many serious issues such as federal liability, defense waste, water rights, foreign waste, transportation, work suspension, emergency response planning and other issues. The state became convinced that the C&C process was not effective when two Section 117(b) Governor's letters obtained positive results in the areas of defense waste and water rights, even though the subjects had been subjects of intense negotiations for eighteen months.

From December 1984 until May 1986, the state of Washington and USDOE were heavily involved int he Environmental Assessment process. Governor Gardner asked that USDOE do a credible comparative analysis with input from states, tribes and independent experts. The May 28 decision to include Hanford as one of the three sites selected for characterization even though it ranked lowest of all sites under consideration, and the illegal decision to indefinitely postpone the search for a second repository led litigation and the overwhelming ratification of Referendum 40 which directs state officials to continue challenges to the federal site selection process.

CURRENT SITUATION: The site selection process to date was a flawed, politically-based program that has destroyed USDOE credibility. Past actions and continuing litigation have created a situation where C&C negotiations at this time, are not a reasonable option.

WHY AGREEMENTS HAVE NOT BEEN CONCLUDED: Agreements have not been concluded because past negotiations were not effective and because the May 28th decisions have destroyed USDOE's credibility. C&C negotiations cannot be successful until credibility is restored. USDOE must take the lead in bring the program back on track. Governor Gardner's conflict resolution process is a reasonable, attainable proposal which could lead to a mid-course correction consistent with the Nuclear Waste Policy Act.

STATE OF WASHINGTON

Consultation and Cooperation (C&C) Chronology

July 1983: Negotiations began because construction of the exploratory shaft appeared imminent. From July 1983 to July 1984 there were twelve negotiating sessions with USDOE and twenty-one state negotiating team meetings.

December 1983: An early draft document was prepared and forwarded to the Nuclear Waste Board and the Legislature for review and comment. The Legislature passed Concurrent Resolution 142 which directed the negotiating team to place more emphasis on issues relating to foreign waste, work suspension, injunctive relief, federal liability, commingling defense wastes, emergency response planning. The Legislature passed a bill which provides specific procedures for negotiating, reviewing, approving and modifying agreements.

July 1984: Another preliminary draft document was forwarded to the Nuclear Waste Board. The Board considered using the document for public hearings, but many unresolved issues and the December 1984 release of draft Environmental Assessments put an indefinite hold on further review.

March 1985: Governor Gardner wrote Section 117 30-day letters to Secretary Herrington concerning defense waste and state water right laws and permit requirements for site characterization activities. Although the C&C teams had been unable to resolve these issues after nearly two years of negotiations, the Secretary's responses to Governor Gardner documented significant changes to earlier USDOE negotiating positions.

May 1986: USDOE announced its decision to include Hanford as one of three sites selected for characterization even though USDOE scientists and their consultants had ranked Hanford lowest of all sites considered for pre-closure factors, for post-closure factors, and composite overall ranking.

July 1986: Detloff von Winterfeldt, a nationally respected decision analyst who had been a consultant to the National Academy of Sciences (NAS) Board on Radioactive Waste Management, expressed serious concerns about the value judgments used by USDOE to make its decisions.

August 1986: Lee Olson, Richland Operations Office, wrote to Terry Husseman, Program Director, asked for a joint C&C meeting with other states and the tribes. Mr. Husseman's response questioned the need for joint meetings and suggested USDOE decision making be the first issue to be discussed.

October 1986: Congressional subcommittees reported conclusive evidence which lead to the conclusion that USDOE distorted and disregarded its own scientific analysis in order to support selection of Hanford.

November 1986: Ralph L. Keeney, a nationally respected decision analyst who had been a USDOE consultant during EA negotiations, issued a report which confirmed that Hanford is the least desirable site because of its enormously greater costs and its greater health effects are not compensated for its relatively slight advantage in environmental and socioeconomic impacts.

November 1986: Washington State citizens, in unprecedented numbers, support Referendum 40, which directs state officials to continue challenges to the site selection process.

December 1986: Eco Northwest, a consultant to the Nuclear Waste Board, concluded that the Recommendation Report fails to document its assumptions or its conclusions, and is a travesty of nearly everything that decision-aiding methods stands for.

December 1986: USDOE, in a letter to Governor Gardner, renewed the offer to negotiate. Governor Gardner and Ben Rusche met on December 18 to discuss C&C negotiations. In a December 30 response to the Office, Governor Gardner indicated that past actions and continuing litigation have created a situation where C&C negotiations, at this time, are not a reasonable option. He pointed out that negotiations cannot be successful until program credibility is restored, and that USDOE must take the lead in bringing the program back on track. He enclosed his proposal for a conflict resolution process which could restore credibility to the program. He asked Secretary Herrington to review and seriously consider the proposal.

WARREN A. BISHOP
Chair

STATE OF WASHINGTON
NUCLEAR WASTE BOARD
Mail Stop PV-11 • Olympia, Washington 98504 • (206) 459-6670

January 26, 1987

Mr. Samuel Rousso, Associate Director
Resource Management
Office of Civilian Radioactive Waste Management
U.S. Department of Energy
1000 Independence Ave S.W., Room GB-270
Washington, D.C. 20585

Dear Mr. Rousso:

The Nuclear Waste Board appreciates the opportunity to comment on "Calculating Nuclear Waste Fund Disposal Fees for DOE Defense Waste", Docket No. OCRWM/NOI/86-101. Our position was adopted at the regular Board meeting of January 16, 1987

Three options are described in your Federal Register notice of December 2, 1986. As long as the repository capacity limits established in the Nuclear Waste Policy Act are observed, we generally support Option I, which is USDOE's preference as well. Options II and II are deficient in their failure to consider "piece count" as a major factor in the operating costs of a repository and are inequitable in other ways.

However, we observe that there are still many unknowns in the application of Option I at Hanford, so that the specific formulas and parameters to be used must not be considered in anything like their final form. In addition, there are procedural questions not addressed in the Notice of Inquiry which require resolution before implementation begins. Following are our specific comments.

1. Range of Options Considered, Public Input, Negotiated Rulemaking. Credibility of the USDOE position will be enhanced by showing the range of options that were considered, in addition to those described. Similarly, there has to be evidence that the positions of ratepayers and organizations are being recognized throughout the process. The preferred means of accomplishing the latter is through agreement to a negotiated rulemaking, as urged by the National Association of Regulatory Utility Commissioners and as supported by resolution of the Nuclear Waste Board.

2. Influence of Hanford Geology. Costs for disposal of waste canisters of either civilian or defense origin will be very similar, and are specific to a site, not just a rock type. At Hanford, specifically, there may well be local geologic conditions which increase unit costs as a repository is enlarged to accommodate 16,000 or more defense waste canisters, in which case the Nuclear Waste Fund would be effectively subsidizing the USDOE defense programs.

On May 16, Battelle Pacific Northwest Laboratory reported that "there are no obvious size limitations based on what is known at this time regarding the Cohassett basalt flow formation selected for the repository". Unfortunately, there is no technical support for this statement, and in fact several indirect lines of evidence suggest that the Hanford site may be vertically and laterally constrained by such features as faults, shears, vesicular zones, breccia and other groundwater pathways. The fee allocation model used at Hanford must provide flexibility to change formulas and parameters based not only on site characterization but later, during mining development. Continual technical reviews should include outside expert opinions to ensure equity and credibility in fee allocations.

3. Defense HLW in Single Shell Tanks. It is misleading to issue even preliminary cost estimates of DHLW disposal at Hanford that ignore the single shell tank wastes. The redefinition of HLW now underway should be integrated with the inventory of volumes and activities of these wastes, and their impact on costs and rock volume requirements should be stated. The Defense Waste DEIS does not provide a basis for confidence that "stabilization in place" of the tanks and their radioactive and hazardous chemicals is possible, and the state is committed to ensuring that both NWPA and RCRA provisions are applied fully and consistently to all recoverable wastes at Hanford.

4. Costs Associated with DHLW Transportation and Socioeconomic Impacts. The fee allocation formulas should include a proportionate payment for route-specific and local community impacts, including those that depend on piece count such as emergency response to transportation accidents and inspection of road and rail shipments. In the case of rail transportation, the renovation, upgrading and superior maintenance of railbeds, signals and crossings will be a significant expense and should be apportioned between the two user classes based on piece count. Transportation of DHLW to Hanford may create route segments and local impacts due solely to defense requirements, in which case all costs should be borne by that user class.

With these concerns fully addressed, we believe Option I can be a good first step toward an equitable system. We emphasize remaining technical uncertainties at Hanford, which require some years of additional work, so that flexibility is critical to success.

Sincerely,

Warren A. Bishop, Chair
Nuclear Waste Board

WAB:hlt

WASHINGTON STATE LEGISLATURE

Senate • House of Representatives • Legislative Building • Olympia, Washington 98504

January 27, 1987

TO: Warren Bishop, Chair
Nuclear Waste Board

FROM: Representative Dick Nelson
Senator Al Williams

SUBJECT: USDOE's Proposed Approach to Cost Sharing for Defense Wastes

USDOE published a "notice of inquiry and request for public comment" December 2, 1986, dealing with calculation of fees to be paid into the Nuclear Waste Fund for disposal of defense wastes in geologic repositories. The Nuclear Waste Board acted on comments Friday, January 16.

Subsequent to the Board's discussion, we have further reviewed the USDOE notice and drafted the following additional comments. We believe they support and strengthen those already approved in draft by the Board. Please include these comments in your letter conveying the final version of the Board's action.

cc. Terry Husseman

WASHINGTON STATE LEGISLATURE

Senate ● House of Representatives ● Legislative Building ● Olympia, Washington 98504

January 25, 1987

Samuel Rousso
Associate Director for Resource Management
Office of Civilian Radioactive Waste Management
Docket No.:OCRWM-NOI-86-101
Department of Energy
1000 Independence Avenue SW
Room GB-270
Washington, D.C. 20585

Dear Mr. Rousso:

The Washington State Nuclear Waste Board has submitted comments on USDOE's notice of inquiry for dealing with the calculation of fees to be paid into the Nuclear Waste Fund for disposal of defense wastes in geologic repositories. These comments address two areas:

1) The process by which the fee-sharing policy is developed;

2) Choice among the three optional methods presented for calculating defense waste share of costs.

We support those comments.

We also offer additional comments in these three areas:

a) Exclusion or inclusion of certain specific costs;

b) Timing of payments; and

c) Assumptions used in the appended "sample calculations".

Costs Included or Excluded

The costs covered in the sharing formula under the preferred option appear to be fairly comprehensive. The assumption is made that defense waste will be delivered for disposal already sealed in canisters, ready for disposal. Therefore costs associated with packaging, handling, and consolidating wastes are not included, but would be borne entirely by the defense waste program. Evaluation and siting, engineering and construction, operations, closure and decommissioning are all covered.

There are two areas of possible concern.

Fee credit: The proposal includes a provision that defense programs may be given credit against the fee for activities that directly reduce the costs of the civilian waste management program. This excludes generic research on waste disposal; but what it might include is not stated.

As written, this policy is too wide open. USDOE should provide illustrations for the credit it has in mind, and seek public comment on those illustrations.

Transportation: The proposal incorporates transportation of defense waste as a direct, lump-sum cost. The basis for the lump-sum calculation is not clear. The proposal does not calculate overall transportation costs and then apportion shares of that cost.

Defense wastes and commercial wastes should be transported under the same rules, consistent with the requirements of the Nuclear Waste Policy Act. Direct cost calculation should include a defense waste share for developing overall transportation systems, regulations, operations, emergency response capability and other necessary costs.

Timing of Payments

Utility and utility commission spokespeople have voiced concern about the timing of defense fee payments. More than $2.4 billion have already been paid into the Nuclear Waste Fund by utilities, who have collected the money from rate payers. These moneys have "fronted" work done up to now on waste disposal, and a hefty balance is drawing interest. There have been no defense fee payments.

The proposal states that "time value of money" will be taken into account. Specifically, "present discounted value of fee revenues . . . must equal the present discounted value of the costs of disposing of these wastes." This is the same rule used to calculate the adequacy of civilian fees going to the Nuclear Waste Fund. Interest rates paid on loans from the US Treasury or investment income to the Nuclear Waste Fund will be used to calculate these values.

The proposed policy should specify when the actual appropriation will be sought as well as the principle by which it will be scheduled. Even if the "time value of money" approach is deemed adequate to adjust the real value of relative contributions, this proposal misses the symbolic importance of a commitment to set aside necessary funds for defense waste disposal.

Illustrative Assumptions

In order to complete sample calculations to compare the alternative approaches, USDOE made a number of assumptions. Two of these assumptions warrant comment:

Two repositories: The analysis assumes two repositories, with half the defense waste going to each. This appears somewhat divergent from the "indefinite postponement" of work to locate a second repository. This is particularly so when one realizes that, in contrast to commercial wastes, a majority of the defense wastes considered in the analysis already exist, so that putting off disposal of half of it means putting off dealing with an existing, not a projected, problem. The pairs used for analysis are salt/tuff and salt/basalt, suggesting that a second repository is likely to come from among "first-round" sites. Crystalline rock isn't included. There is an unsupported claim that the pairings were chosen to bracket costs.

16,000 canisters: The analysis assumes 16,000 canisters of defense wastes. This would not include single-shell wastes from Hanford; nor would it include wastes from possible increased production of fissile weapons materials in the future. There is some reason to believe that at least some additional Hanford wastes should and will go to repositories. There is also considerable speculation that fissile materials production may increase.

We object to these assumptions, for they have policy implications even as illustrations. It is not acceptable to us that USDOE is assuming that both repositories would come from the three sites currently nominated for site characterization. It is not acceptable to us that USDOE is assuming that defense wastes will be disposed of in a way which will not affect the repository program. To the extent to which USDOE is relying on these assumptions in its policy making, it is developing an inadequate policy.

We appreciate the opportunity to comment on these matters.

Sincerely,

Dick Nelson
Washington State
House of Representatives

Al Williams
Washington State Senate

cc. Nuclear Waste Board

January 23, 1987

Mr. Warren Bishop
E. 541 Pointes Dr. W.
Harstene Island
Shelton, WA 98584

Dear Mr. Bishop:

The Spokane City Council has been concerned for several years about the transportation of hazardous and nuclear waste through our community. We sit atop a major aquifer, our sole source of drinking water, and the freeway passes through the center of our downtown district in front of three hospitals. If you are familiar with the geography of our area, I am sure you recognize our concern.

Accordingly, the City Council recently passed the attached resolution in support of various legislative and administrative initiatives. We urge your attention to this resolution and hope to be of assistance to you in providing further details on our position.

For additional information, please call Terry Novak, City Manager's office, (509) 456-2612.

Sincerely,

Terry L. Novak
City Manager

pl.3

Resolution

City of Spokane

WHEREAS, the data from the Department of Social and Health Services 1984 report on transportation of low-level nuclear waste indicates that 12% of the vehicles carrying such material inspected at the Spokane inspection station had equipment violations of a serious nature; and,

WHEREAS, 40% of these vehicles received warnings or were detained; and,

WHEREAS, projection of these same statistics from the previous years indicates a growing problem with these vehicles; and,

WHEREAS, the State's interdepartmental study of nuclear waste transportation which attempted to reach agreement with the United States Department of Energy on principles of understanding on such transportation lead to naught, with no further negotiations scheduled; and,

WHEREAS, the distinction between low-level and high-level radioactive waste is unscientific and much of the low-level waste is actually dangerous; and,

WHEREAS, according to knowledgeable people in the law enforcement field, there is substantial concern about trucks which bypass the inspection stations or otherwise avoid inspection through mislabeling and other devices; and,

WHEREAS, the information collected by Professor Kelley of Eastern Washington University on our behalf in 1984 and 1985 indicates a growing concern about such transportation is appropriate;

NOW THEREFORE, in guidance to the City staff and Councilmembers involved in this issue, the City Council hereby expresses its support for the following basic concepts:

1. The bill in the 1986 session of the Legislature to control and inspect radioactive waste material transportation should once again be supported in the Legislature and, if possible, expanded to include other hazardous materials.

2. We indicate our support for the hazardous material transportation act of 1987, especially its provisions which would reduce the restrictions on controls being placed by individual states and communities.

3. The Council requests the legal department to consider local ordinance restrictions such as those adopted in Umatilla and, for port traffic, by Seattle and Tacoma to the degree to which such restrictions can be made legal in the City of Spokane.

4. The City Council supports and encourages the activities of the Commercial Vehicle Safety Alliance, and especially the Washington delegates from the Washington State Patrol, in pursuit of a uniform national series of regulations on nuclear waste transportation as preferable to a patchwork of individual ordinances which might otherwise result.

5. Given the USDOE's intention of transporting Transuranic defense waste from Hanford to New Mexico for purposes of final storage, we urge the State Nuclear Waste Advisory Council, Nuclear Waste Board, and State government in general to insist that this material leaves the State of Washington by only one port, that being the Plymouth route south of Hanford.

6. The Council supports congressional approval of revisions to the Price-Anderson Act, dramatically lifting the liability limits on nuclear plant accidents.

7. We reaffirm the elements of our resolution of November, 1985, regarding hazardous materials transport which have not been accomplished or are not cited above.

ADOPTED by the City Council on December 22, 1986

Marilyn J. Montgomery
City Clerk

Approved as to form:

Pat Nalty
Assistant City Attorney

WARREN A. BISHOP
Chair

STATE OF WASHINGTON
NUCLEAR WASTE BOARD
Mail Stop PV-11 • Olympia, Washington 98504 • (206) 459-6670

January 23, 1987

John Herrington, Secretary
U.S. Department of Energy
1000 Independence Avenue
Washington, D.C. 20585

Dear Secretary Herrington:

This letter is a follow up to your December 17 letter to Governor Gardner concerning information about ongoing and planned activities related to the candidate repository site at Hanford. The information you provided is neither detailed enough nor complete enough to provide adequate information regarding determinations or plans made with respect to site activities. This is a formal request for additional specific information for each activity in your report.

The additional information for each activity should include, as a minimum, a copy of your statement of work, a copy of any environmental evaluations of the proposed work, copies of environmental check lists, a copy of the work authorization which allowed work to begin, the date work began, the costs associated with each activity, plus the name of the Program Manager and Project Manager.

The information requested above is a critical element in our review of ongoing and planned activities at the Hanford site. We plan to conduct an environmental and cost assessment for each activity in your report. It is unfortunate that we must now conduct retrospective assessments. If we had been provided timely and complete information regarding determinations or plans with respect to these activities as called for in the Nuclear Waste Policy Act, we could have coordinated our assessments with project personnel. At a recent meeting, we were informed that BWIP project personnel have been conducting environmental assessments and completing environmental check lists for site activities, but BWIP personnel made no effort to consult with state or tribal representatives concerning these important matters. Now, our only course of action is to conduct less desirable retrospective assessments. I ask your assistance in this matter so that, in the future, we receive timely and complete information.

I suggest that a meeting be scheduled for about two weeks after the receipt of the specific information so we can get immediate answers to any remaining questions.

Sincerely,

Warren A. Bishop, Chair
Nuclear Waste Board

WAB/DP:hlt

N-waste delays could cut power, says aide

Shutdown of plants cited as possibility

by Eric Pryne
Times staff reporter

WASHINGTON — More delays in the Department of Energy's plan to open a nuclear-waste burial ground in the West could mean commercial nuclear-power plants will be forced to close down someday, says a key Senate committee aide.

That prospect, in turn, could make Eastern congressmen more receptive to Western concerns about the nuclear-waste program, said James Curtiss, Republican counsel to the Senate subcommittee on nuclear regulation.

Nuclear power produces a much higher percentage of the electricity consumed in the East.

In 1984, after opponents of a proposed nuclear plant argued in court that the plant shouldn't be built because of uncertainties about waste disposal, the Nuclear Regulatory Commission issued a "waste confidence" decision refuting that contention.

NRC spokesman Bob Newlin said the commission concluded that at least one underground repository would be available by 2007 to 2009 for disposal of spent fuel rods and other high-level radioactive leftovers from nuclear-power plants.

The Nuclear Waste Policy Act, which Congress had passed in 1982, called for the first national nuclear-waste dump to open in 1998.

But Curtiss told a crowd of utility officials here yesterday that some of the premises on which the NRC's ruling is based now are "in substantial doubt."

Another congressional aide who spoke yesterday, Sam Fowler of the House subcommittee on energy and the environment, said budget cuts last year put the DOE's site selection two years behind schedule.

Congress, angry at DOE's handling of the program, also prohibited DOE from drilling exploratory shafts for detailed studies in 1987 at two of the Western finalists for the nation's first nuclear cemetery — Hanford in Eastern Washington and Yucca Mountain, Nev. It is unclear whether Congress will extend that ban, Fowler said.

Both the funding cut and the drilling ban were engineered by Western congressmen angry at DOE's move last May to suspend the search for a site for a second, Eastern repository.

"DOE may not have any (nuclear waste) facilities operating by 1998," Fowler added.

NRC spokesman Newlin said the commission will review its "waste confidence" decision by 1989. He declined to speculate on what impact further delays in construction of an underground nuclear dump might have on the commission's thinking.

The NRC licenses and regulates all commercial nuclear-power plants.

In a panel discussion before the utility officials yesterday Fowler, Curtiss and other key House and Senate committee staff agreed Congress has lost confidence in the Department of Energy.

"This (nuclear-waste) program is in big trouble," said Ben Cooper, a Democratic staff member on the Senate Energy and Natural Resources Committee.

DOE's dropping of its search last May "has sent the program into a tailspin," Curtiss added.

Power companies with nuclear plants finance DOE's nuclear-waste efforts. "You're paying money into a rat hole," Curtiss told the industry audience.

He, Cooper, Fowler and other staff members said the second, Eastern dump was a key element in the compromise that allowed Congress to pass nuclear-waste legislation in 1982.

DOE's decision to halt work on the search for a second site "gave everybody the excuse to stop being statesmanlike," said Cooper, who works for Sen. J. Bennett Johnston, D-La., chairman of the Energy Committee.

The staff people agreed there's much concern DOE's decisions are motivated by politics, not science. But Curtiss and others said it's unlikely Congress will either restart the search for a second repository or stop the selection of the first one. And Fowler, counsel to the House subcommittee on energy and the environment, said it's equally unacceptable to move forward as DOE proposes.

OCRWM Newsclippings

Office of Civilian Radioactive Waste Management, U.S. Department of Energy

Salt Repository Project Office, 505 King Avenue, Columbus, Ohio 43201-2693

January 7, 1987

Issues in Science and Technology,

Washington, D.C. Winter 1987

NUCLEAR IMPERATIVES AND PUBLIC TRUST: Dealing with Radioactive Waste

Luther J. Carter

PROLOGUE: *For nearly 30 years the federal government has been struggling to find a way to dispose of the highly radioactive wastes from commercial nuclear reactors. In 1982 a solution appeared to be at hand: Congress passed and the president signed the Nuclear Waste Policy Act.*

But as Luther Carter describes here, the national program prescribed by the act is in deep legal and political trouble. By failing to avoid sites presenting land-use and environmental conflicts, the Department of Energy (DOE) has time after time selected sites that the states find unacceptable, Carter contends. Moreover, the act, which reflected a fragile political consensus to share the burden of nuclear waste disposal between the East and the West, is now jeopardized by a welter of lawsuits. Given the current uproar, DOE will not come close to meeting the 1998 deadline for opening the first repository, Carter warns; indeed, the very concept of underground disposal of nuclear waste may be discredited.

Here Carter analyzes where the siting effort has gone astray and proposes a way out of the current impasse. He argues that seeking a distribution of repository sites over several regions is more likely to spread the misery than promote the intended sense of equity. He recommends that Congress redirect this effort to focus on a single site that is both technically promising and relatively free of land-use and environmental conflicts. Carter believes that there is such a site at Yucca Mountain in Nevada. But if Nevada is to agree to accept a repository, DOE will have to change the way it does business, Carter says. First, because no site will be free of technical uncertainties, there must be a greatly increased reliance on engineered barriers to contain the nuclear waste. In addition, there must be an increased role for independent critics and, equally important, generous incentives to reward the state for housing the nation's radioactive wastes.

In January 1987 it will be four years since President Reagan hailed passage of the Nuclear Waste Policy Act as the long-awaited answer to the nation's radioactive waste problem. But the act is not proving to be the answer. As now pursued the effort to select a site for the first geologic repository, a maze of tunnels mined deep underground to contain the canisters of irradiated reactor fuel, appears to be headed into a political cul-de-sac and will not come close to the act's goal of establishing the first geologic repository by 1998. Indeed, the very concept of geologic disposal might even be discredited and lost as a practical political possibility.

What is needed is a new strategy to deal with the repository siting problem and, equally important, a broad-based coalition to see that the strategy is adopted and carried out. But before coming to this strategy, consider what is at stake and why the current repository siting effort appears to be failing.

Nuclear power is subject to two indisputable imperatives. One is to contain radioactivity in reactor and nuclear fuel cycle operations. The other is to safeguard and prevent the abuse of plutonium, an inevitable by-product of atomic fission that can be made into nuclear bombs. Geologic disposal of spent fuel would help satisfy these two imperatives.

The irradiated, or spent, fuel contains all of the plutonium and nearly all of the fission products created in the fission process. In its unseparated form in the spent fuel, plutonium cannot be used as an explosive. In addition, because of the intense gamma radiation associated with the fission products, theft or forcible seizure of spent fuel for the plutonium it contains is exceedingly unlikely. Thus, to seal spent fuel in a repository in a properly selected deep geologic formation approaches the ultimate solution to containing the residual radioactivity from atomic fission and preventing abuse of plutonium.

But because the unconsumed plutonium can be reused as fuel as well as fashioned into nuclear explosives, recovering it from the spent fuel has always represented a dilemma. Reprocessing, the chemical process that separates unconsumed plutonium from the fission products, is still officially sanctioned and encouraged in the United States. But because it has been denied government subsidies, reprocessing has not been done commercially since the early 1970s and will not be revived in the foreseeable future. In a number of European countries and Japan, however, the commitment to reprocessing and recycling is strong.

But the economics of reprocessing and recycling are poor, and the elaborate security measures necessary to reduce the risks of plutonium thefts and seizures by terrorists or others can only make the economics worse.[1] If the United States, as the nation with still the largest number of nuclear reactors in operation or under construction, were confidently moving to a demonstration of direct geologic isolation of spent fuel—an alternative that is simpler, safer, more economic, and almost certainly less susceptible to political trouble and controversy—the force of the American example might be influential indeed. The example might be especially persuasive if the spent fuel could later be retrieved, leaving open the possibility of future reprocessing and recycling if fuel cycle economics and world political conditions should ever favor such a course. But unfortunately, the repository siting effort is failing. Unless the political resistance of potential host states to a repository is overcome, the siting effort will remain stymied and may have to be abandoned.

On May 28, 1986, the Department of Energy (DOE), after close consultation with the White House and with the president's approval, announced that the list of candidate sites for the first repository had been narrowed to three in the states of Texas, Nevada, and Washington. Each site would undergo "characterization"—a detailed study of the geohydrology of the rock mass in which the repository would be built. This process would include exploration and testing from deep shafts; at each site total costs could run as high as $1 billion. The disclosure of this decision, a key step toward the selection of one of these western sites for the first repository in 1991, would have caused controversy enough in the affected states in any case. But it was accompanied by another decision that deepened the states' anger and resentment: DOE announced that the site screening for a second repository, which had been going on in the upper Midwest and in the East, was being suspended.

In passing the nuclear waste act in 1982, Congress required DOE to prepare plans for two permanent waste repositories. The search for a site for the second repository in the eastern half of the country was intended to satisfy a concern for regional equity as much as to meet a need for increased disposal capacity. According to the act, three sites for a second repository are to be recommended to the president by mid-1989. But now, largely in response to political pressures, this undertaking, known as the Second Round siting effort, has been essentially abandoned. As for the First Round siting effort centered in the West, it is now in deep legal and political trouble, not the least because shutting down the Second Round search in the Midwest and East upsets the balance Congress sought to write into the waste act to satisfy the West.

Remarkably, the two rounds moved toward political failure by paths that were very different, except that in each case DOE was insensitive to land-use and environmental conflicts that greatly alarm the public, intensify host-state resistance, and make site evaluations enormously difficult.

The search for the repository sites in the existing First Round inventory began in the mid-1970s. By the time Congress passed the waste act in 1982, DOE had identified nine potential sites, seven in salt, and one each in tuff and in basalt, two distinct rock types of volcanic origin.

An essential quality in a site is strong evidence of predictability. In particular, this means evidence that the repository "block"—the rock mass that would contain the maze of repository tunnels extending over as much as 2,000 acres—is fairly homogeneous throughout, having few or no major discontinuities (such as faults). Equally important, because groundwater flow could transport radionuclides to the surface, the groundwater regime in and around the site must be well understood in terms of where the water is coming from, where it is going, and the speed at which it is moving. In addition, the geochemical characteristics of groundwater and host rock must be understood, for these characteristics can have a definite, if not easily determined, effect on radionuclide retention or mobility.

When the siting efforts began, salt was seen as a particularly promising geologic medium for nuclear waste isolation because it is easily mined and dry (except for tiny inclusions of brine). Salt also tends to "creep," or flow, under pressure; thus, the mined openings would eventually seal themselves. In the search for suitable salt formations, the emphasis was almost entirely on technical considerations; political feasibility was essentially ignored. But all of the salt sites eventually selected presented major land-use or environmental conflicts, real or perceived. For instance, the salt dome at Richton, Mississippi, deemed by DOE to be the best of the domes investigated, was next to a town. The best of the salt sites in Utah was next to Canyonlands National Park. The Texas salt formation of interest was beneath the Ogallala aquifer, on which the farmers of the west Texas panhandle region depend for irrigation water.

Politics was definitely a major consideration in looking for sites on the Nevada Test Site and on the federally owned Hanford reservation in Washington state. The prospect of siting a repository on these large, remote, desertlike reservations where the neighboring populations were accustomed to nuclear activities had seemed politically convenient. But whether the sites found there would be technically suitable and free of conflicts was somewhat a matter of chance. The basalt site at Hanford turned out to present major technical difficulties and large conflicts, especially those arising from a complex geohydrologic regime and the site's proximity to the Columbia River. By contrast, the tuff site in Nevada at Yucca Mountain turned out to have probably the greatest technical promise of any site. And although not free of conflicts, the conflicts there are quite different than those at the other sites and potentially easier to resolve.

The tight siting schedule mandated by the nuclear waste act gave DOE no choice but to confine its siting activities, for better or for worse, to these nine sites, at least for the First Round. Thus, while the waste act called for "consultation and cooperation" between DOE and the potential host states, the candidate sites had essentially been selected before the act was passed. The states were consulted during the preparation of the siting guidelines, but as finally issued in November 1984, the guidelines eliminated none of the existing sites. The guidelines could serve only to help the department pick and choose among sites that the host states regarded as unsuitable. The states brought suit to have the guidelines invalidated.[2]

When DOE issued its draft environmental assessments in late 1984 evaluating and ranking all nine sites and tentatively designating three

characterization—the Hanford site, the Nevada site, and the salt site in Texas in Deaf Smith County—officials and citizens in the host states responded with an outpouring of critical, and often angry, comments. A particularly telling complaint came from Booth Gardner, the governor of Washington. He testified before a congressional subcommittee that state analysts had found that the methodology DOE used to rank the sites was seriously flawed.[3]

In a subsequent review requested by DOE, the National Academy of Sciences Board on Radioactive Waste Management found the site-ranking methodology, which by that time had been revised, to be appropriate. The board cautioned, however, that DOE's sole reliance on in-house experts in applying the methodology could introduce bias and mask uncertainty.[4]

Public opposition intensified in May 1986 when DOE announced its final selection of the same three sites. There had been speculation that the basalt site at Hanford, especially because of the great difficulty of characterizing its hydrogeologic regime, might be eliminated in favor of either the Mississippi or the Utah salt site, DOE's fourth and fifth choices. But the department stuck with the Hanford site, even though it placed last among the five sites according to DOE's own site-ranking methodology.

All five of the principal candidate sites were ranked with respect to their advantages and disadvantages for both the preclosure phase, when the repository would be built and operated, and the postclosure phase, after the repository was closed and sealed. Both preclosure and postclosure, Hanford came in last. DOE defended its decision by arguing that preclosure, Hanford had actually ranked highest among the sites if the cost of repository construction and operation and of spent fuel transportation were not taken into account.[5] DOE noted that the siting guidelines "place cost among the least important category of considerations." Postclosure, DOE said, the expected performance of the Hanford site in containing radioactivity for more than 10,000 years could be expected to be 500 times better than the Environmental Protection Agency standard. Finally, the department said that in favoring the Hanford site over the Mississippi and Utah sites, it was giving substantial weight to the greater geologic diversity that a basalt site would provide.

But these arguments were not convincing. First, there were large differences in costs for repository construction and operation. These costs were nearly $4 billion more for the Hanford site than for the Mississippi site (in 1985 dollars), and they were $5.4 billion more for Hanford than for the Nevada site. The total estimated cost at Hanford was $12 billion, with the cost uncertainty for this and the other sites put at 35 percent, either way. Second, to build a repository there might prove impossible at any price. Seven 15-foot-diameter shafts would have to be drilled to a depth greater than 3,000 feet in the hard Hanford basalt, a feat that is beyond the demonstrated state of the art. Third, DOE's assertion that a Hanford repository would far exceed the EPA performance standard is not supported by available data, which, according to the U.S. Geological Survey, are "insufficient to conclude much of anything with regard to groundwater travel time or direction."[6]

Politically, however, the alternatives to Hanford were distinctly uninviting. For DOE to have dropped Hanford in favor of the Utah site next to Canyonlands National Park would have meant a battle not merely with the state of Utah but also with the National Park Service and the national environmental community. The Mississippi salt dome site would also have presented political difficulties. Mississippi is a Deep South state that is supersensitive to federal intervention. In resisting the exploration of a site for a nuclear waste repository next to a small town, Mississippi officials would have held strong political cards. In sum, by sticking with Hanford, DOE chose badly, but there was no way for it to have chosen well.

Immediately after the sites were announced, Washington, Nevada, and Texas filed lawsuits challenging the administration's decisions and the way they were reached. The litigation on First Round issues was accompanied by suits disputing DOE's authority to suspend the search for Second Round sites. The legal attacks will delay the siting effort and might derail it. In Texas DOE also faces the problem of obtaining the shaft-excavation permit required by state law to protect aquifers. But the greatest obstacle to the First Round siting effort could arise in Congress. Disturbed by DOE's decision to suspend the Second Round siting effort, Congress reduced the fiscal year 1987 appropriation from the Nuclear Waste Fund by almost half of what was requested. Part of the funds may be restored in March, but only after a congressional review. As an aide to a key senator explained, "This is a message to DOE that we are discouraged, that the program is in jeopardy and that confidence must be restored."[7] There will in any case be at least a one-year moratorium on exploration of the three First Round sites.

For the second repository, with site nominations not due under the waste act until 1989, DOE had time to undertake a new search and to give potential host states a voice in the site screening from the start. Yet despite DOE's efforts to involve them, the host states were to find the results of the site screening unacceptable.

DOE was looking for a second repository site in granite or other crystalline rocks. Crystalline rocks occur in all major regions of the United States, but the search was limited to a 17-state area that included the Precambrian shield region of northern Minnesota, Wisconsin, and Michigan, plus most of the states along the Atlantic seaboard from Maine to Georgia. Through a survey of the geologic literature, DOE initially identified some 235 rock formations. Then, using an elaborate methodology developed with state representatives, the department screened out all but 12 rock bodies as candidates for further field investigations.

The intent of the screening methodology was to apply DOE siting guidelines in an explicit, systematic, quantitative, and objective manner that was above suspicion of bias. Each rock body was mapped on 1-square-mile grid cells. Each grid cell was reviewed against a short list of disqualifiers such as the presence of deep mines or encroachment on highly populated areas or protected federal and state lands. It was then reviewed against some 16 regional variables such as proximity to exploitable mineral resources or points of groundwater discharge.

Geologic data for the 17-state region were limited, so at this stage land-use and environmental concerns were necessarily given an important place in the screening. Moreover, DOE gave state representatives a role in the development and weighting of screening variables intended to reflect public concerns.

Nonetheless, the department's January 1986 announcement of its tentative screening choices provoked a thunderous protest from the seven states where the 12 preferred rock bodies were located: Minnesota, Wisconsin, Maine, New Hampshire, Virginia, North Carolina, and Georgia. Nowhere was the protest louder than in Maine. While the states found all the choices to be provocative, the choice of the Sebago Lake batholith, only six miles north of Portland and not far west of the Lewiston-Auburn metropolitan area, was seen to be provocative in the extreme. Not only was the site near the two largest communities in Maine, but above the rock body were numerous sizable lakes and immediately adjoining it was Sebago Lake itself, the second largest lake in Maine and the source of Portland's drinking water. When DOE officials went to Maine to brief the public on how the screening had been done, some 3,000 worried, upset, and angry people showed up—including the governor and both U.S. senators. The meeting lasted until 3.30 in the morning.

How could the Sebago Lake batholith have been chosen? The answer seems to lie in the nature of the weighting process: federal and state technocrats had pondered the relative importance of different screening variables and had come up with weighted sets which, as it turned out, allowed the site's positive features to offset the negative ones that the public later found emotionally and politically salient. For DOE the Sebago Lake batholith presented a number of advantages, including its large size and the presumed absence of earthquake or other tectonic phenomena that might impair waste isolation. But what mattered to the people in Portland was their fear that their drinking water might be poisoned with radioactivity. Across the border in New Hampshire, the overriding concern of the people of Hillsboro, a scattered rural town of about 3,000 residents sitting atop another potential site, was that their whole community and way of life was threatened. A repository project, if it came, would result in the government's purchase of thousands of acres of their land.

Immediately following the announcement, citizens, governors, and members of Congress from all three affected regions—the Midwest, New England, and the Southeast—began pleading with DOE and White House officials to stop the Second Round. Their protests came at a time when the Reagan administration was already concerned about maintaining Republican control of the U.S. Senate. Four Republican-held Senate seats were at stake in the 1986 elections in the Second Round states of Wisconsin, New Hampshire, Georgia, and North Carolina. In all of these states the Republi-

can incumbents or candidates could be hurt by the nuclear waste issue: after all, it was their party that was running things in Washington. Rep. James T. Broyhill (R.-N.C.), running for the Senate, was particularly embarrassed by the selection of two candidate sites in his state because he had been one of the principal sponsors of the nuclear waste act.

When DOE Secretary John S. Herrington suspended the Second Round effort in May 1986, he justified it principally on the grounds that Broyhill and others were arguing—that the decline in spent fuel generation meant that the siting of the second repository could be deferred until the mid-1990s or even later. "To go ahead and spend hundreds of millions of dollars on site identification now would be both premature and unsound fiscal management," the secretary said.

Herrington dismissed suggestions that the Second Round was suspended in response to political pressures, as did Ben Rusche, director of the Office of Civilian Radioactive Waste Management at DOE.[8] But certainly Rusche and Herrington knew that the First Round, their first priority, was going nowhere unless the president approved the selection of sites recommended to him for characterization. They also surely knew that he might not approve them unless a way was found to quiet the political turbulence in the Second Round states. Internal DOE policy option papers are quite explicit in recognizing the "immediate political relief" that would come from terminating the Second Round search.[9]

The projected decline in spent fuel generation, while significant, had not been so great as to make a second repository clearly unnecessary. Indeed, on April 23, 1986, little more than a month before the Second Round was suspended, Rusche told a congressional subcommittee that it appeared that a second repository would be needed.

While stopping the Second Round was probably inevitable politically, this decision made the already bad problems of the First Round even worse. Several key sponsors of the waste act and all the First Round host-state senators from Texas, Nevada, and Washington immediately denounced the suspension.[10] They called it a clear violation of the act's explicit requirements for a Second Round siting process, a judgment with which the comptroller general of the United States later concurred in a formal ruling.[11]

Sen. Slade Gorton (R.-Wash.) had been a prime mover behind efforts in 1981 and 1982 to have the waste act provide for a second repository and limit the spent fuel accepted by the first repository until the second is in operation. Now, in testifying before a Senate energy subcommittee, Gorton emphasized that the various elements of the act were "inseparable" and that "the siting of a second repository is a key element that cannot be removed without jeopardizing the entire act."[12] He insisted that if DOE were going to disregard the requirement for the Second Round, then the First Round site selection process should be reopened too. "The department should conduct a nationwide search which culminates with the selection of a single site," Gorton said. Governor Gardner of Washington, appearing before the same committee, warned: "If the federal government won't play by the rules, we will see you in court. The future of a repository will be tangled in the nation's court system for years to come."

An important lesson from the First and Second Round siting experience is that insuperable difficulties have been created by not excluding areas where a repository project would present major land-use and environmental conflicts. Time after time DOE's choice of sites for study has created such conflicts, from the worries in Texas over the Ogallala aquifer to those in Maine over Lake Sebago. In some cases the conflicts have been indisputably real, as at Hillsboro, New Hampshire, where many citizens would face the loss of their homes. In other cases the conflicts are arguably not real but are merely strongly perceived. The fact that a repository would be close to a town or beneath an aquifer does not necessarily mean that it would be unsafe. But perceived risks pose real problems.

Where siting choices present major conflicts, close questions about containment, or technical feasibility, are also present (or certainly appear to many people to be present). For instance, at Hanford, where the volume, velocity, and direction of groundwater flow is a major technical issue, experts argue endlessly over whether there is a threat of contaminating the Columbia River. A sure way to avoid such questions is never to propose a site anywhere near any major river. At the Deaf Smith County site in Texas, DOE must show that a repository beneath the Ogallala aquifer would not present the unacceptable risk of having water rush through or around the shaft to flood the mined openings. It also must show that there is no credible way that the aquifer could ever be contaminated. However confident DOE may be that fully satisfactory answers are in hand, these questions would never arise if the policy were to stay away from sites beneath prolific aquifers.

Another lesson is that seeking a distribution of potential repository sites over several regions is more likely to spread the misery than to promote the intended sense of equity and fairness. The elaborate, drawn-out screening process that the waste act prescribes amounts to a cruelly demanding political marathon. For instance, the several stages of the Second Round—regional screening, nomination and selection of sites for characterization, then selection of one site for licensing—would each require voluminous documentation, information briefings and public hearings in the host states, and responses to state comments and lawsuits. And as controversy heightened in the host states, the potential for trouble would be sure to increase back in Washington, where DOE is dependent on the White House for steady political support and on Congress for annual appropriations from the Nuclear Waste Fund.

In sum, any attempt to screen for sites over very large areas, looking at all rock formations that might conceivably be suitable, is almost sure to fail. In the effort to weigh evenhandedly the pluses and minuses of the multitude of sites, issues sure to be emotionally and politically salient become obscured—but only to DOE decisionmakers, not to the host-state politicians. Also, much of the information most relevant to the merits of the sites is not available on a regional scale. Another cause of trouble, now becoming clear in the First Round, is that even when only a half-dozen or fewer candidate sites remain, the task of comparing them is formidable and controversial. To be sure, the First Round site evaluations, comparative rankings, and ultimate choices could have been done better. But whether they could have been done well enough to promote a technical consensus on the fairness and soundness of the choices is quite another question. One difficulty lies in the paradoxical nature of the problem: sites deemed promising enough for characterization must be chosen in the absence of the geohydrologic data that only characterization can provide. The mistrust engendered by such an exercise means that attempts at "consultation and cooperation" between DOE and the host states are doomed to frustration.

Not to be forgotten here is public distrust of the government's ability to cope competently and fairly with radioactive wastes and other hazards of nuclear technology. This distrust is understandable in light of the often troubled history and flawed performance of the nuclear enterprise in this country. Nuclear power has gotten into deep political trouble because some major problems such as disposal of nuclear waste were not solved before it was introduced on a commercial scale. Distrust of DOE comes, too, from the still remembered record of waste mismanagement, including leaks from high-level waste tanks at the Hanford reservation and a foolishly premature plan of more than a decade ago by the Atomic Energy Commission to establish the first repository at a Kansas salt mine site that presented major technical uncertainties.

Furthermore, assurances of safety will not be widely believed so long as DOE persists in the choice of sites as ridden by conflict and uncertainty as the one at Hanford. Trust will be gained by building a record of sure, competent, open performance that gets good marks from independent technical peer reviewers and that shows a decent respect for the public's sensibilities and common sense. This will not be accomplished by an overly ambitious effort to screen and investigate widely scattered sites. Nor will it be accomplished without letting independent experts express their criticisms prior to key decisions rather than afterward when the bureaucracy has become entrenched in its positions.

A positive lesson from past repository siting efforts is that NIMBY, or "not in my backyard," does not always apply. When local communities perceive significant net benefits and no major conflicts, they are willing to look for something other than the dark side of repository siting. To establish a local base of cooperation and support is not a sufficient condition for host-state support, but it is surely a necessary condition.

In some instances, as at Hanford, there can be willing hosts in the absence of a defensible site. But there have been instances where the local host community has been willing and the site has been adequate for the limited project proposed. One is the Waste Isolation Pilot Project (WIPP) near Carlsbad, New Mexico, a separate project now under way to construct an underground repository for nuclear wastes from military program-

Another is the proposed Monitored Retrievable Storage (MRS) facility site at Oak Ridge, Tennessee. In the New Mexico case, local support clearly helped to keep the project alive. The WIPP facility, which is being built in a remote, semiarid area of little or no value for farming or ranching, promises to bring jobs to a community suffering from the decline of the potash industry.[11] In Tennessee, where the state has promised a veto, the project may not survive, but this case is nonetheless instructive. Local leaders at Oak Ridge found two incentives for supporting the project.[12] The first was the possibility of economic benefits such as substantial in-lieu-of-tax payments, land for a new industrial park, and commitments for the development of such project-related activities as centers for spent fuel transportation management and research. The second was a chance to gain commitments necessary not only to ensure a safe MRS operation but also to effect an earlier and more complete cleanup of environmental problems from past Atomic Energy Commission and DOE operations.

The foregoing lessons from past nuclear waste facility siting in the United States illuminate the possibilities for new policy choices.

After nearly 30 years of fits and starts by DOE and its predecessors in grappling with the nuclear waste problem, a way out of the present impasse must be found with some urgency. Unless a confident show of progress is made soon, the geologic disposal effort will take on the appearance, if indeed it has not done so already, of an interminable trek toward an ever-receding mirage.

To undertake a new national search for sites now, as officials of some First Round states have suggested, would try everyone's patience and be a thoroughly impractical endeavor. A far more promising approach is to focus the search on a few areas and, indeed, to place the emphasis on one primary candidate site. The search for the second repository should in fact be postponed; the problem of siting the *first one is quite enough for now.* The insistence by First Round states on continuing the search for a second repository site reflects a strong concern for regional equity, but there are better ways of addressing that concern than by lighting political fires over much of the eastern half of the United States.

Leaving aside for the moment the political and equity questions and considering only the need to find a technically excellent site, several points should be made. One is that the current U.S. strategy of identifying several primary candidate sites and then exploring each of them in billion-dollar characterization projects is something no other country plans to do—or would feel that it could afford to do. The aim of the U.S. strategy is to lend redundancy and an important element of technical robustness to the program of geologic isolation. But while the thorough exploration of multiple sites should in principle permit the selection of the best of those studied, doing this confidently and convincingly is highly problematic, as the First Round experience has shown. Upon characterization, no site will be found to be free of technical uncertainties.

Conscious of this, Sweden is planning literally to overwhelm the uncertainty by placing the spent fuel elements in four-inch-thick copper canisters that are expected to last hundreds of thousands of years.[13] (By contrast, under current regulatory requirements U.S. canisters might not last more than 300 years.) Sweden's plans for site screening and characterization, on the other hand, are simplicity itself compared with those afoot in this country. For the United States, given the geologic siting program's present predicament, something akin to the Swedish approach seems very much indicated. The appropriate strategy would appear to be one that greatly increases the emphasis on creating a multibarrier system that can contain the wastes far longer than would be possible for a repository that relies principally on geologic barriers.

This systems concept was at the heart of the recommendations of President Carter's Interagency Review Group on Radioactive Waste Management in 1979, and it contributes to the broad consensus among U.S. earth scientists and engineering geologists that geologic isolation of nuclear waste is feasible.[14] Yet as the U.S. geologic disposal effort has proceeded, engineered or artificial barriers have assumed nothing like the significance they have in the Swedish program and have in fact been accorded distinctly secondary importance.

When Congress revisits the Nuclear Waste Policy Act, as it surely will have to do, the multibarrier systems approach to geologic isolation should be emphasized as a key to simplifying and improving the effectiveness of repository siting. The policy should aim for early identification of a site that is technically suitable and relatively free of conflicts, and it should avoid vain and far-flung site-screening attempts that commit DOE (or possibly a new waste agency, as has been suggested) to a punishing procedural marathon that goes nowhere. Further, the policy should offer a way to overcome distrust by emphasizing a new openness, including a voice for independent experts before decisions are reached. Also, as I shall be emphasizing later, state and local officials and citizens should be assured that hosting a repository will offer significant benefits, thus giving them the incentive (and political room) to examine what is proposed on its merits.

If such a policy is to be instigated, one way to begin would be for Congress to commission an impartial study, which the National Academy of Sciences could be asked to conduct or orchestrate, addressing several key questions.[15] First, are there among the sites in DOE's First Round inventory any that are both technically promising and relatively free from land-use and environmental conflicts? Formal site rankings need not be contemplated. Enough is now known about the various sites to permit knowledgeable experts, simply by an exercise of careful judgment, to recommend one for immediate characterization. In essence, the task would be to see if there is not already at hand a site worthy of designation as the primary candidate for a repository, especially given the potential to develop a robust overall containment system as a hedge against uncertainty.

Second, what specific strategies and technologies can best be followed or applied in developing this robust containment system? In particular, what types of waste canisters or casks can be used as part of a strategy to greatly reduce, if not overwhelm, uncertainty? How might foreign and domestic waste packaging and other technologies be used in a test and evaluation facility at the site chosen for characterization?

Any hope of an early start on site characterization and development of a test and evaluation facility rests on identification of a primary candidate site from the existing First Round inventory. Technically, the Yucca Mountain site in Nevada seems by far the most promising. The key question, however, is whether it will be deemed promising enough to justify proceeding immediately with characterization at this one site alone. Yucca Mountain offers an important advantage in that much of it is high above the water table in a desert region of little rainfall. DOE and the U.S. Geological Survey believe, but must now confirm, that little or no water would infiltrate downward from the surface to the repository. If no water comes in contact with the waste canisters or casks, there would be no corrosion and no mechanism for radionuclide transport. Also, a repository there, about 1,000 feet beneath the top of Yucca Mountain, would permit easier access from the surface than would be possible at other sites. Access would be by two long, steep ramps tunneled in from the side of the mountain instead of by vertical shafts. Furthermore, alone among the sites in the First Round inventory, the underground openings in the welded tuff are expected to be stable enough to make backfilling with crushed rock unnecessary; this offers an enormous advantage in terms of maintaining a capability for waste retrieval.

A principal technical disadvantage and licensing problem associated with the Yucca Mountain site is the difficulty of predicting groundwater movement above the water table in the "unsaturated zone," a geologic environment that has been little studied by hydrologists. Another disadvantage is that the repos is seismically active. Natural earthquakes can be expected, not to mention the earthshaking from underground nuclear weapons tests conducted at Pahute Mesa and Yucca Flats, each some 30 miles from the Yucca Mountain site. But the nuclear waste repository would be at a depth ideal for attenuation of the effects of earthquakes.[16] The principal concern would be to design all surface facilities for spent fuel handling to resist groundshaking. The nearby E-MAD facility (Engine Maintenance Assembly and Disassembly), built in the 1960s for testing nuclear rocket engines, has experienced earthshaking from scores of underground weapons tests without damage.

As for land-use and environmental conflicts, a repository at Yucca Mountain would not threaten, nor be perceived as threatening, a town, a park, a farming region, or a major river. The one disturbing conflict that surely exists can be eliminated if the adjoining Nellis Air Force Base is made to stop routing its practice bombing runs over Yucca Mountain.

Nye County, which includes Yucca Mountain and the Nevada Test Site, basically supports the repository siting effort, seeing an opportunity for some growth and jobs for people in small communities like Beatty and Armagosa

Valley. Nevada's professional engineers, labor unions in southern Nevada, and many business people also support the siting effort.

But Governor Richard H. Bryan opposes the effort, warning that siting a repository at Yucca Mountain might label Nevada "the country's nuclear wasteland" and ruin tourism. The Las Vegas and Clark County commissioners also oppose the Yucca Mountain project. But the kind of deep, visceral public opposition that has been evident in places such as southern Mississippi and west Texas appears to be lacking in Nevada. In a survey made by a Las Vegas councilman, almost half of the 2,400 respondents "did not oppose establishing a high-level nuclear waste dump on Yucca Mountain."

The state legislature has dealt cautiously with the Yucca Mountain issue, having chosen to adopt no resolutions either favoring or condemning the project. Some key members believe that nuclear waste disposal could represent an important and advantageous new use of the Nevada Test Site. If a nuclear test ban treaty should ultimately come, southern Nevada could lose the test site as one of its economic mainstays. This facility is the state's largest single employer, providing some 6,800 jobs.

A great many Nevadans are concerned about what they perceive as a lack of fairness to the state, not only with respect to the present national nuclear waste policy but with respect to how their state is treated generally. They fear that any time there is something that no other state will tolerate, federal officials will want to put it in Nevada, whether it be nuclear weapons testing, MX missiles, supersonic operating areas, bombing ranges, low-level waste or, as now, high-level waste.

The *Las Vegas Review-Journal* expressed these sentiments in an editorial the day after DOE announced that the search for sites in the East was being suspended and that Nevada was one of the three sites selected in the West. It said the issue was not safety, and that it really was not a problem of frightening tourists either. "What is at issue is the lack of fairness to Nevada, the disregard in Washington for the wishes of the people and the tendency of the technocrats and political forces in Washington to exploit Nevada's relative lack of national political power." The same day the *Gazette-Journal* in Reno voiced the same complaint but took a different tack: "Nevadans must begin to devise a strategy to exact some benefits in return [for hosting a repository]. . . . At long last," the editorial concluded, "Nevada deserves a break."

The *Gazette-Journal* was no doubt speaking for many, and it is just this kind of sentiment to which Congress should respond in the event that Yucca Mountain is deemed to be a suitable primary candidate site. In principle, the government could impose a repository on Nevada and provide nothing beyond compensation for actual project impacts. All of the land is federally owned, and part of it is already dedicated to nuclear activities. Also, Nevada *is* relatively weak politically, its congressional delegation being among the smallest. But for the nuclear industry as well as the state of Nevada, it would be a much surer and better course for Congress to strike a deal that leaves the Nevadans believing that they are finally getting a fair shake.

What would it take to accomplish this? If there are experts available to deal with this sort of thing, they are perhaps as likely to be found in Congress as anywhere. An effort should be made to reach an understanding with Nevada's governor, its senators and representatives, and possibly its key state legislators. This would consist of a quid pro quo, with Nevada to acquiesce in the siting activities at Yucca Mountain in return for substantial benefits, perhaps cash bonuses and generous in-lieu-of-tax payments, plus assurances that the state would be allowed a strong voice in certain matters of public concern, such as the way in which spent fuel will be shipped into Nevada. Obtaining the funds to back up such an understanding should not be a problem. Many hundreds of millions would be saved by abandoning the Deaf Smith and Hanford characterization projects. Furthermore, even a 5 percent increase in the present fee of 0.1 cent per kilowatt hour that is imposed on nuclear electricity to support the Nuclear Waste Fund would yield about $25 million a year.

Some will call such dealings bribery, but the accusation is not easily sustained. Generally speaking, bribery is to induce a betrayal of trust by the offer of money or other favors. In the current context, bribery could take the form of inducing state and local leaders to accept short-term gains for their state at the expense of large, long-term risks to be borne by generations yet unborn. But the risks need not be large; at a properly chosen site, with a robust overall system of containment, the risks can be very low, both for now and for the many thousands of years that the waste remains dangerously radioactive. However, the assurance of safety must be credible—hence the importance of a study, under independent, technically credible auspices, to reexamine and reaffirm the potential that the multibarrier systems approach holds for geologic isolation and containment.

If Congress, with the help of the Nevadans, can succeed in designating Yucca Mountain as the primary candidate site, there will be yet one other important task to accomplish. Congress should authorize the search for a few additional sites to serve as backups in the event that the Nevada site should ultimately prove unlicensable. This search could take advantage of a recent study by the U.S. Geological Survey of the Basin and Range Province, which includes most of the largely undeveloped and unoccupied desert lands of the American Southwest.[9] In this study, completed in 1985, six large areas—the smallest of them larger than Massachusetts—were deemed promising for waste isolation. Because the study considered only geohydrology, the next step would be to reexamine, preferably with state help, the geologically promising areas that are relatively free of land-use or environmental conflicts. After candidate backup sites have been identified, a voluntary siting approach would seem to deserve a try. The affected state and county governments could be asked under what conditions and with what benefits they would agree to siting investigations.

For a new nuclear waste policy to be adopted and successfully implemented, the interests with a stake in the outcome must find common ground. They must all agree that the problem is urgent. Although variously motivated, they must also want early progress enough to agree on the few available practical strategies. Elegant but impractical national site-screening strategies must be seen as the prescription for political paralysis that they surely are.

But the struggle over nuclear waste policy has gone on so long that the mutual suspicions that divide the familiar players—the nuclear industry, the potential host states, and the environmental and antinuclear groups—run deep and are likely to persist. The consensus supposedly represented by the Nuclear Waste Policy Act of 1982 was illusory, and the environmentalists and antinuclear activists were never really a part of it anyway.

What is needed is a new, clearer, and broader consensus, with strong participation by certain importantly affected interests that were not much heard from in 1982. These new players would include individuals and groups who worry about the risks of nuclear weapons proliferation and nuclear terrorism (the Union of Concerned Scientists, the Federation of American Scientists, and the Natural Resources Defense Council, to name a few). They would also include the governors and members of Congress from states with growing accumulations of spent fuel and military high-level waste; the utility ratepayers who are footing the bill for the waste disposal effort, together with the utility regulatory commissioners who represent them; and certain important elements of the environmental community never previously directly involved with radioactive waste or other nuclear issues, such as the National Wildlife Federation and the National Audubon Society.

These important interests would bring their own political weight to the waste policy deliberations and something more besides. By the force of their example, they could perhaps draw the nuclear industry and the environmental and antinuclear lobbyists into the circle of agreement over strategy. Otherwise, the industry and antinuclear lobbyists might well lock themselves into positions that obstruct agreement. Any proposal to find a primary candidate site in Nevada and offer generous benefits to the state is one that the antinuclear lobbyists would be sorely tempted to denounce as a cynical attempt to follow the path of least political resistance and to bribe a politically weak western state into becoming the nation's nuclear waste dump. Similarly, utility lobbyists might dismiss any proposed new emphasis on artificial barriers as a ploy to load the nuclear industry with excessive and unnecessary costs.

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Just as nearly all of the interests mentioned above stand to gain if the problem is solved, all stand to lose if it is not. Hundreds of millions of dollars have already been spent in the wrong places, and if billions more are not spent in some of those same places, it will only be because DOE is deterred by the courts or by the shattering of the fragile congressional consensus represented by the Nuclear Waste Policy Act.

But the most serious consequence of not finally putting the repository siting effort on a more predictable and promising path will be the failure to come to grips with the nuclear imperatives of containment and safeguards. The dangerous residues of the fission process, all highly toxic and some having the potential to be made into nuclear explosives, are best contained and kept secure if left in the spent fuel and isolated in deep geologic formations. Of all nations the United States has the best chance to perfect and demonstrate by the end of this century a technically and politically robust system for meeting these imperatives—and meeting them with a waste retrieval option likely to be especially important to those countries that see reprocessing and breeders as ultimately critical to their energy security.

The most urgent consideration is to discourage the economically premature and politically foolhardy use of plutonium fuel abroad. For plutonium fuel to enter routine use and commercial traffic in a world in which political instability and terrorist activity are rife presents risks that are quite beyond our powers to assess. To go along complacently in the face of such developments recalls the Joseph Conrad story *Typhoon* and the stolid Captain MacWhirr, who lacked the wit to imagine the force and ferocity of cyclonic winds. Despite a falling barometer and other ominous portents of a typhoon that would all but sink his ship, MacWhirr kept steady to his course, occasionally muttering, "There's some dirty weather knocking about." There may or may not be typhoons ahead, and the risks should not be overstated. But neither should they be slighted or forgotten. ■

NOTES:

1. In a report issued in June 1986, an international task force on nuclear terrorism warned that the risk will increase as spent fuel is reprocessed and separated plutonium enters commercial traffic. The task force recommended spent fuel storage and disposal "until such time as the need for plutonium fuel is clearly established, the threat of terrorism has lessened, and the adequacy of safeguards and physical-protection systems has improved." The task force members included Stansfield Turner, former director of the Central Intelligence Agency, and several figures prominent in the nuclear enterprise, including Harold Agnew, former director of Los Alamos National Laboratory, and Bertram Wolfe, general manager of General Electric's nuclear fuel division. *Report of the International Task Force on Prevention of Nuclear Terrorism* (Washington, D.C.: Nuclear Control Institute, June 25, 1986).
2. At the time of this writing in late 1986 the guidelines litigation is pending.
3. Booth Gardner, testimony before the House Energy and Commerce Committee's Subcommittee on Energy and Power, Aug. 1, 1985.
4. Board on Radioactive Waste Management, letter to Ben C. Rusche (director, DOE Office of Civilian Radioactive Waste Management), Oct. 10, 1985.
5. U.S. Department of Energy, "Recommendation by the Secretary of Energy of Candidate Sites for Site Characterization for the First Radioactive Waste Repository" (DOE/S-0048), May 1986.
6. U.S. Geological Survey, memorandum on the draft environmental assessments, March 6, 1985. DOE's claims as to the adequacy of the Hanford site rest on standard sensitivity analyses using a wide range of assumptions regarding the critical variables of velocity and volume of groundwater flow.
7. Marilyn Mega, aide to Sen. James A. McClure, chairman of the Energy and Natural Resources Committee and a senior member of the Committee on Appropriations, interview with the author, Oct. 15, 1986.
8. Ben Rusche, interview with the author, July 3, 1986.
9. DOE Crystalline Rock Program Office (Chicago), "Crystalline Options," May 13, 1986.
10. Letter to Secretary of Energy John S. Herrington from the chairman of three of the responsible Senate and House committees: Sen. James A. McClure, Energy and Natural Resources; Sen. Alan K. Simpson, Environment and Public Works; Rep. Morris K. Udall, Interior and Insular Affairs, and other members, June 11, 1986.
11. Comptroller General of the United States, opinion issued in response to a request for a review of the suspension by Sen. Lloyd Bentsen, Sen. Alan K. Simpson, and Rep. Edward J. Markey, Sept. 12, 1986.
12. Sen. Slade Gorton, testimony before the Subcommittee on Energy Research and Development of the Senate Energy and Natural Resources Committee, June 16, 1986.
13. Because of the general decline of potash mining in the region, local leaders do not regard the presence of potash at the site as a significant conflict.
14. See Elizabeth Pastle, "Innovative Process and Inventive Solutions: A Case Study of Local Public Acceptance of a Proposed Nuclear Waste Packaging Facility" (paper prepared for the National Forum on Managing Land Use, René Dubos Center for Human Environment, New York, Apr. 3–4, 1986).
15. Swedish Nuclear Fuel Supply Co., Division KSB, *Final Storage of Spent Nuclear Fuel-KBS-3, Vol. III Barriers* (Stockholm: May 1983) p. 10: 15, table 10-3. A National Academy of Sciences (NAS) panel has concluded that the claims made for the durability of the proposed canister are warranted by the Swedish evidence. Frank Press, president of NAS, letter to Birgitta Dahl, Energy Ministry, Ministry of Industry, Stockholm, Mar. 1, 1984.
16. The congressional Office of Technology Assessment has also suggested using a fully redundant waste package with a design life exceeding regulatory requirements. See Office of Technology Assessment, *Managing the Nation's Commercial High-Level Waste* (Washington, D.C.: U.S. Congress, 1985).
17. Currently, DOE intends for NAS to establish panels to oversee various aspects of the planned site characterizations in Nevada, Texas, and Washington. (Ben C. Rusche, letter to Frank Press, July 23, 1986.) But the academy can give better advice if free from the constraints of a program that is demonstrably unworkable.
18. Data have been compiled and analyzed on how 80 different underground facilities were affected by some 70 major earthquakes in North and South America, Japan, India, and the Mediterranean. Damage was slight at depths down to 900 meters, and was least between 200 to 900 meters (a Yucca Mountain repository could be at a depth of between 300 and 400 meters). See H. R. Pratt, "Earthquake Damage to Underground Facilities and Earthquake Related Displacement Fields," *Proceedings of the Workshop on Seismic Performance of Underground Facilities* (Aiken, S.C.: Savannah River Laboratory, 1981), 74 and 370.
19. M. S. Bedinger, K. A. Sargent, and J. E. Reed, *Geologic and Hydrologic Characterization and Evaluation of the Basin and Range Province Relative to the Disposal of High Level Radioactive Waste*, U.S. Geological Survey Circular 904-A (Washington, D.C.: USGS, 1984).

Luther J. Carter received a B.A. in history from Duke University in 1951. He worked as a newspaper reporter before joining Science *magazine, where he covered energy and the environment from 1965 to 1980. His previous book,* The Florida Experience: Land and Water Policy in a Growth State, *was published by Johns Hopkins Press in 1975.*

This article is adapted from a book by the same title to be published in 1987 by Resources for the Future.

TESTIMONY OF GOVERNOR BOOTH GARDNER

STATE OF WASHINGTON

to

SENATE COMMITTEE ON

ENERGY AND NATURAL RESOURCES

February 4, 1987

STATEMENT OF GOVERNOR BOOTH GARDNER

Thank you Chairman Johnston and members of the committee. I appreciate the opportunity to present this testimony on behalf of the citizens of the state of Washington.

We have reached a critical juncture in the high-level nuclear waste repository program. The site selection process is on the brink of total collapse. USDOE credibility is at an all time low. Unless some bold action is taken soon, the program will be brought to an abrupt halt by the courts. When that happens, it will result in conditions which will make it very difficult to put the program back together. I believe it would be wise to address the problem now, rather than wait until we are in a crisis situation.

We were disappointed that in the recently released draft amended Mission Plan, USDOE did not face up to the real problems in the site selection process. The draft simply reiterates USDOE's position and rationale on the MRS and on the second round indefinite postponement, and acknowledges what we and most others involved in the process have been saying for two years--that USDOE cannot have the first repository operating by 1998. USDOE has its head down and is attempting to charge forward while ignoring the problems which have resulted from its past actions.

I do not pretend to have any guaranteed solutions to the complex problems with which we are faced, but I would like to discuss a proposed course of action which I believe could be the starting point toward developing a consensus among the many parties involved in the process.

Before I discuss the proposed course of action, it is important that you understand some of the reasons why we in the state of Washington are so adamant in our position that the site selection process must be brought to a halt, the May 28th decisions must be retracted, and the process must be restructured before this program goes forward.

We, along with almost everyone involved in this program, were shocked when on May 28th of last year, USDOE unilaterally and arbitrarily announced that the second round site selection process had been "indefinitely postponed". This action is clearly in direct violation of the Nuclear Waste Policy Act. Our position on this issue is supported by USDOE's own legal counsel. In documents which USDOE reluctantly released to

Congressman Markey's House Subcommittee, there is a memorandum prepared for the USDOE decision-makers in which the staff advised that a decision to indefinitely postpone the second round would be seen as "an obvious political ploy". This advice was right on target. Unfortunately, USDOE decision-makers chose to ignore the advice. USDOE is not above the law and we believe the courts will make that point very clear.

In selecting Hanford as one of the three sites to be characterized, USDOE has ignored the results of the ranking methodology which was reviewed and approved by the National Academy of Sciences. The Academy did not review, nor approve, the process by which USDOE utilized the results of the ranking methodology to select the three sites for characterization. The results of the ranking methodology indicate that the Hanford site is the most costly and the least safe site of the five sites under consideration. Hanford ranks dead last in both the pre-closure and the post-closure comparisons of the sites.

USDOE says Hanford was selected to meet diversity of rock type requirements. However, in a draft of the USDOE ranking methodology report prepared just six weeks prior to the May 28th announcement, it was stated that the Yucca Mountain, Richton Dome, and Deaf Smith sites "offer maximum diversity in geohydrologic settings", and that their selection would "meet the minimum requirement for [rock type] diversity of the Nuclear Regulatory Commission".

In a subsequent USDOE draft, it was stated as follows:

> *"The clear implication from the composite analysis is that Yucca Mountain, Richton Dome, and Deaf Smith are the preferred set of sites for characterization. There are no realistic assumptions about either pre-closure or post-closure expected performance, or about the values used to evaluate performance that can result in Hanford being anything but the last ranked site. And the significance of the performance differences between Hanford and all the other sites is substantial. . . Thus, it can be definitively stated that the results of the composite analysis strongly suggest characterization of the Yucca Mountain, Richton Dome, and Deaf Smith sites."*

Professor Ralph Keeney was a co-author of the ranking methodology utilized by USDOE. Dr. Keeney was retained by USDOE because of his experience in utilizing the methodology for similar or related problems. Prior to the May 28th decision, Professor Keeney recommended to USDOE that the appropriate means to identify the best suite of

three sites was to conduct a professional portfolio analysis. USDOE chose not to follow Professor Keeney's recommendation. Subsequent to the May 28th decision, Professor Keeney prepared and published such a portfolio analysis. This work was not funded by USDOE. Based on his portfolio analysis, Professor Keeney concluded that if three sites are to be characterized they should be Yucca Mountain, Richton Dome, and Deaf Smith.

Professor Detlof von Winterfeldt was retained by the National Academy of Sciences to assist them in their review of the USDOE ranking methodology. Professor von Winterfeldt is nationally known and respected in the field of decision analysis. Subsequent to the May 28th decisions, Professor von Winterfeldt wrote a letter to Mr. Rusche in which he commented, as an individual, on the USDOE ranking methodology report and on the USDOE recommendation report, in which USDOE described the rationale for its selection of the three sites for further study. Professor von Winterfeldt said that, in his opinion, the analysis in the ranking methodology report is sound, thorough, and state-of-the-art. However, as to the recommendation report, he stated the following:

> *"In brief, I believe that the conclusions drawn in the Recommendation Report are based on selective and misleading use of the analysis described in the Methodology Report. It is extremely hard to find in the Methodology Report any support for the selection of the specific set of three sites recommended for characterization. Instead, I find a convincing analysis that clearly rejects the Hanford site and, furthermore, supports the selection of the Richton Dome site over the Deaf Smith site. The way the Methodology Report was interpreted in the Recommendation Report, in my opinion, comes very close to a misuse of an otherwise excellent analysis."*

In his conclusion, Professor von Winterfeldt stated as follows:

> *". . .The most important conclusion that I draw from the Recommendation Report's inclusion of the Hanford and Deaf Smith sites is that DOE is apparently willing to accept more health effects and an additional cost of $3.360 billion in return for several minor advantages of the two sites. As a decision analyst, I find these implications inconsistent with the Methodology Report. As a concerned member of the public and a taxpayer, I find them irresponsible."*

Neither of these distinguished experts in the field of decision analysis has an ax to grind in this process. They are both from California, and neither was under contract to any of the states involved. They both had been involved in the decision-making process in different roles and when USDOE announced its decision on May 28th, they both felt compelled to go on the public record with their own analysis of the decision.

Subsequent to the May 28th decision, the Washington State Nuclear Waste Board retained the services of ECO Northwest, a consulting firm with expertise in decision analysis, to review the ranking methodology report and the recommendation report. Although ECO Northwest had some suggestions for improvement of the ranking methodology report, their general conclusion was that the analysis in USDOE's ranking methodology report was extremely well done. However, as to USDOE's recommendation report, ECO Northwest said the following:

> *"The recommendations report, in contrast, fails to document either its assumptions or its conclusions. It purports to have conducted analyses of all relevant combinations of the possible sets of sites, taken three at a time, but does not inform the reader as to how this was done; furthermore, it makes several assumptions regarding the importance of the various attributes of the analysis that cannot be supported by the data provided in the multiattribute utility study. Whereas, the* [ranking methodology] *report provides a sound basis on which to begin consideration of the Nuclear Waste Policy Act mandate, the recommendations report is a travesty of nearly everything that decision-aiding methods stand for."*

I hope this brief summary concerning USDOE's application of the ranking methodology helps to make clear why the citizens of the state of Washington are extremely upset about the site selection process. Let me say that this is not a comprehensive discussion of our concerns. We have identified numerous serious technical concerns. Many of these technical concerns are shared by the Nuclear Regulatory Commission. In a recently released report, the NRC staff indicated that many of the technical issues which they raised in their comments on the draft environmental assessments, were not addressed adequately by USDOE in the final environmental assessments.

In a recent election, 83% of the state's voters directed state officials to continue to take all possible steps to halt USDOE's unlawful implementation of the site selection process.

The state of Washington has filed five lawsuits in the 9th Circuit Court of Appeals, challenging USDOE's actions. We believe our lawsuits have an excellent chance of succeeding. But it is senseless to wait for the conclusion of what could be a very long process of litigation before taking action to get the site selection process onto the right track. I am certain that everyone in this room today agrees that an acceptable means must be developed to safely dispose of the nation's high-level nuclear waste.

Isn't it time that we consider a mid-course correction to the repository site selection process? USDOE's May 28th decisions must be retracted and a serious attempt must be made to reach a consensus among the interested parties on improvements to the process. We must develop an approach which provides for a timely solution to the nuclear utilities' short term problem and which establishes a site selection process designed to provide confidence that the search will be for the best site and that selection decisions will be based on credible scientific evidence.

We first need a forum in which we can begin to develop such a consensus. With this in mind I have requested USDOE to take the lead in organizing a non-binding conflict resolution process in which representatives of all of the interested parties would be invited to participate. The process would be conducted not by USDOE but by an independent, nationally known and respected conflict resolution consultant. USDOE would participate in the process on the same basis as the other interested parties.

As a prerequisite to their participation, each participant would acknowledge there is a need for a comprehensive review of the site selection process to consider and discuss changes which would increase the likelihood of success of the repository program. In addition, each participant would make a commitment to channel their energies toward development of an acceptable and workable solution, rather than spending time discussing who is to blame for where we are now.

If USDOE acknowledges that there is a need to consider changes to the site selection process, and enthusiastically supports and participates in consensus-building, their credibility would be enhanced and there is a good possibility that positive results can be achieved. If USDOE is not willing to take these steps, then I recommend that the remaining interested parties explore alternative means of establishing a forum to carry on a consensus-building process without USDOE.

The goal of the Nuclear Waste Policy Act is to site, construct and operate a repository which will contain high-level nuclear waste from the environment for the next 10,000 years. We are seeking to protect the next 400 generations of humans from the potential dangers of waste produced by three generations. If we can agree on an acceptable and workable solution to the nuclear utilities' short term problem, we should not be overly concerned that we have to back up in the repository site selection process in order to instill confidence in its ultimate success.

Thank you very much for this opportunity to give you our perspective on the repository program.

STATE OF WASHINGTON
OFFICE OF THE GOVERNOR

OLYMPIA
98504-0413

BOOTH GARDNER
GOVERNOR

December 30, 1986

John Herrington, Secretary
U.S. Department of Energy
1000 Independence Avenue
Washington, D.C. 20585

Dear Secretary Herrington:

On December 18, Ben Rusche and I met to discuss the U.S. Department of Energy's request that the state of Washington begin negotiations for a Consultation and Cooperation (C&C) Agreement. The purpose of this letter is to respond to your request concerning C&C negotiations and to recommend a course of action which, in my opinion, would substantially increase the likelihood of success for the repository program.

Past actions and continuing litigation have created a situation where C&C negotiations, at this time, are not a reasonable option. I am convinced that negotiations cannot be successful until program credibility is restored, and that USDOE must take the lead in bringing the program back on track.

Enclosed is my proposal for a conflict resolution process which could restore credibility to the program. Rather than wait for the courts to direct that the selection process start over, I recommend a parallel approach which takes advantage of the knowledge and experience of those who have been involved in the process and those interested parties having a stake in the outcome. My proposal could lead to a mid-course correction which would be consistent with the basic premises of the Act. I believe it makes sense to do this now rather than wait until the process is stopped by the courts.

This proposal has been reviewed in depth by the Washington State Nuclear Waste Board and Advisory Council, and they strongly endorse this approach. I ask that you also review and seriously consider my proposal. Please contact Curtis Eschels of my staff or Warren Bishop, Chair of the Nuclear Waste Board, for more detailed information.

Sincerely,

Booth Gardner
Governor

cc: Ben Rusche
Mike Lawrence
Warren Bishop

Legislative Building AS-13 • Olympia, Washington 98504 • (206) 753-6780 • (Scan) 234-6780

NATIONAL CONFLICT RESOLUTION PROCESS: A PROPOSED COURSE OF ACTION

We now have four years of experience implementing the repository site selection process contained in the Nuclear Waste Policy Act. The process is in disarray, subject to numerous well founded lawsuits, and unlikely to progress in the near future. It is time for a mid-course correction, similar to the action recently taken by Congress to put the low-level waste siting process back on the right track. We must take advantage of the knowledge and experience gained by the participants in the site selection process. We need a forum to define the parameters of the mid-course correction. With this in mind, we propose the following course of action:

1. We urge USDOE to take the lead in organizing and funding a national conflict resolution process aimed at developing a proposal for a mid-course correction to the high-level waste repository program.

2. Implementation of the process would be conducted, not by USDOE, but by a skilled, nationally known and respected conflict resolution consultant.

3. Participants in the process would be representatives of interested and affected parties, including:

   a. USDOE
   b. States (not limited to first round)
   c. Tribes
   d. Nuclear Utilities
   e. Environmental Groups
   f. NRC
   g. EPA
   h. Others, if appropriate

4. As a prerequisite to participation, each participant would acknowledge:

   a. A solution must be found to the nation's high-level waste disposal problem.

   b. There is a need for a comprehensive review of the site selection process to consider and discuss changes which would substantially increase the likelihood of the ultimate success of the repository program.

5. As a further prerequisite to participate, each participant would make a commitment:

   a. To channel their energies toward timely development of an acceptable and workable solution.

   b. Not to divert the intended direction of the process by spending time discussing who is to blame for where we are now.

6. Objectives of the process would be to develop the elements of a proposed course of action which would:

   a. Provide for a timely solution to the nuclear utilities' short-term problem.

   b. Establish a site selection process designed to provide confidence that the search will be for the best site, and that selection decisions will be based on credible scientific evidence.

If USDOE acknowledges the need for a consensus-building process and enthusiastically supports and participates in such a process, there is a strong likelihood that positive results can be obtained. It makes good sense to act now rather than wait until the site selection process is brought to a standstill under the weight of litigation and increasing adversary relationships.

Nez Perce

TRIBAL EXECUTIVE COMMITTEE

(208) 843-2253

February 03, 1987

The Honorable Booth Gardner
Governor, State of Washington
Legislative Building AS-13
Olympia, WA 98504

Re: Proposal for Conflict Resolution Process - DOE

Dear Governor Gardner:

The Nez Perce Tribal Executive Committee voted on January 23, 1987, to support your idea of establishing a process through which a resolution of the conflicts between the Department of Energy and the affected parties could be attained. The Nez Perce Tribe endorsed a conflict resolution meeting to discuss the State of Washington's proposal. However, it was suggested that the words "not limited to first round" also be included after the listing for Tribes.

Please keep us advised as to any word received from Secretary Herrington.

Sincerely,

NEZ PERCE TRIBE

J. HERMAN REUBEN, Chairman

JHR:RGM:ceg

cc: John Herrington, Secretary, DOE
Ronald T. Halfmoon
B. Kevin Gover
Terry Husseman, State of Washington
Russell Jim, YIN
William Burke, CTUIR
Ben Rusche, DOE-OCRWM

ISSUE PAPER
ON
THE JANUARY 1987 DRAFT AMENDMENT TO THE MISSION PLAN

Purpose: Section 301 of the Nuclear Waste Policy Act requires the Secretary of Energy to prepare a comprehensive report, known as the Mission Plan, which shall provide an informational basis sufficient to permit informed decisions to be made in carrying out the repository program and the research, development, and demonstration program required under the Act. The Secretary submitted a Mission Plan to Congress in July 1985. The draft amendment is being submitted because issues have emerged that warrant Congressional attention. In a recent letter to the General Accounting Office, a USDOE General Council stated that an amendment to the Mission Plan does not repeal requirements of the Nuclear Waste Policy Act.

Issues:

1. Section 112 of the NWPA requires USDOE to select sites for characterization for a second repository by July 1, 1989. In the amended Mission Plan, USDOE states it believes site-specific work should be reconsidered in the mid-1990s.
2. Section 302(5)(A) states that in return for payment of fees into the Nuclear Waste Fund by utilities, the Secretary, beginning not later than January 31, 1998, will dispose of spent nuclear fuel. The Mission Plan amendments call for a five year extension of the first repository program to 2003 to allow time to carry out the necessary high-quality technical program.
3. USDOE was unable to submit the Monitored Retrievable Storage (MRS) proposal to Congress as required by Section 141 of the Act, but the Department is prepared to submit the proposal when legal issues are resolved.
4. Section 113(b)(3)(C) restricts the USDOE to only those site characterization activities as the Secretary considers necessary to provide the data required for evaluation of the suitability of such candidate site. The July 1985 plan reported that Hanford would have two exploratory shafts, with both shafts having an inside finished diameter of six feet. The new plan calls for one shaft with an inside diameter of six feet and a second shaft with an inside diameter of ten to twelve feet. USDOE is evaluating the most cost effective use of the shafts in operating the repository.

State of Washington Positions:

1. USDOE's reiteration of its earlier position on the indefinite postponement of the second round is in direct violation of the NWPA. Abandoning schedules contained in the Act cannot be accomplished by an administrative decree such as the Mission Plan.
2. The stretch out of the first round process is a belated recognition by USDOE that the 1998 date is unrealistic.
3. The amended plan reiterates USDOE's position that a MRS facility should be constructed. This is consistent with the state's position that a solution must be found for the utilities' short-term problems.
4. The Department has not provided the design basis for justification of a larger exploratory shaft. USDOE must explain why a larger shaft is now needed and what additional cost is associated with a larger shaft.

Review Process: After a comment period of sixty days, USDOE will revise the draft document and formally submit the Mission Plan amendment to Congress. The NWPA states that the Secretary shall use the plan at the end of the first period of thirty calendar days following receipt of the plan by the Congress.

2/2/87

WARREN A. BISHOP
Chair

STATE OF WASHINGTON
NUCLEAR WASTE BOARD
Mail Stop PV-11 • Olympia, Washington 98504 • (206) 459-6670

February 6, 1987

Benard Rusche
U.S. Department of Energy
1000 Independence Avenue
Washington, D.C. 20585

Dear Mr. Rusche:

On January 28, 1987, you submitted a draft amendment to the Mission Plan to Governor Gardner and the state of Washington for review prior to formal transmittal to Congress. In your submittal letter you indicated we would be allowed a 60-day comment period. Because we have not had timely and complete information regarding determinations or plans with respect to design of the BWIP exploratory shaft, I now respectfully request such information so the state of Washington can make timely comments on the draft amendment to the Mission Plan.

I request specific information on the design basis for your decision to change the size of the second BWIP exploratory shaft from an inside finished diameter of 6 feet to an inside diameter of 10 to 12 feet. We need the specific reports and memos you and your managers used to make the decision that a larger shaft is needed. Specifically, we need to know if inputs to the design, such as the concentrations of dissolved gases, have changed. We also request the statements of work for all studies relating to the change in shaft size.

When we receive the information, we will review it to ensure your decision is consistent with provisions of the Nuclear Waste Policy Act (NWPA) which limits site characterization activities to those necessary to provide the data required for evaluation of the suitability of the site for an application for a construction authorization. The most cost effective use of the shafts in the operating repository is not consistent with that NWPA provision.

I look forward to a timely receipt of the information so the state of Washington can conduct an adequate review of the draft amendment to the Mission Plan.

Sincerely,

Warren A. Bishop, Chair

WAB/DP:hlt

cc: Mike Lawrence
John Anttonen

WASHINGTON STATE INSTITUTE FOR PUBLIC POLICY

The Evergreen State College Olympia, Washington 98505 Telephone (206) 866-6000, ext. 6380

February 4, 1987

TO: **All Legislators**

FROM: Max Power
Coordinator, Nuclear Waste Repository Project

SUBJECT: **US Department of Energy's Proposed Mission Plan Amendment Relating to Hanford Repository**

On January 28, the US Department of Energy (USDOE) released a draft amendment to its Mission Plan, dealing with radioactive waste disposal. The release received a great deal of media attention in Washington. This memo lists the key issues involved and reviews the meaning of the Mission Plan.

State comments are due by the end of March. The amended Mission Plan will then be sent to Congress. Washington's comments will be made through the Nuclear Waste Board. If you have suggestions or concerns, please contact the legislature's ex officio members on the Board (Senators Benitz, Newhouse, Stratton and Williams; Representatives Hankins, Miller, Nelson and Rust). If you wish more information or have questions, please feel free to call the Institute staff.

ITEMS OF INTEREST TO WASHINGTON

--Affirms the May 28, 1986 decisions of Energy Secretary Herrington that precipitated Referendum 40:

--Documents selection of Hanford, Yucca Mountain and Deaf Smith County sites as candidates for first repository.

--Decision to postpone indefinitely site-specific second repository work justified on basis of uncertainty, delay in need and fiscal prudence.

--Site characterization (first repository) is stretched nearly four years from present schedules. Selection of first site now set at end of 1994. (See attached timeline.)

--Proposes Monitored Retrievable Storage facility to be located in Tennessee, a proposal held up since the end of 1985 by Tennessee legal action.

--Proposes increase in diameter of Hanford exploratory shaft; shaft drilling at Hanford delayed to accommodate major hydrologic testing.

--A general commitment to improve institutional relations with states and tribes and to negotiate formal consultation and cooperation (C & C) agreements.

--A guarded acknowledgement that social and economic impacts of site characterization may be broader than originally contemplated, together with a suggestion that Congress may wish to consider expanding financial assistance available under the Act.

STATUS OF MISSION PLAN

The Mission Plan is required by the Nuclear Waste Policy Act. It is to provide affected states and Indian tribes, the Nuclear Regulatory Commission, other federal agencies, and the Congress "an informational basis sufficient to permit informed decisions to be made in carrying out the repository program. . ." The Secretary of Energy must solicit comments from the affected agencies, states and tribes, revise the plan and submit it to the relevant Congressional Committees. Thirty days after he has done so, he can begin to use the plan.

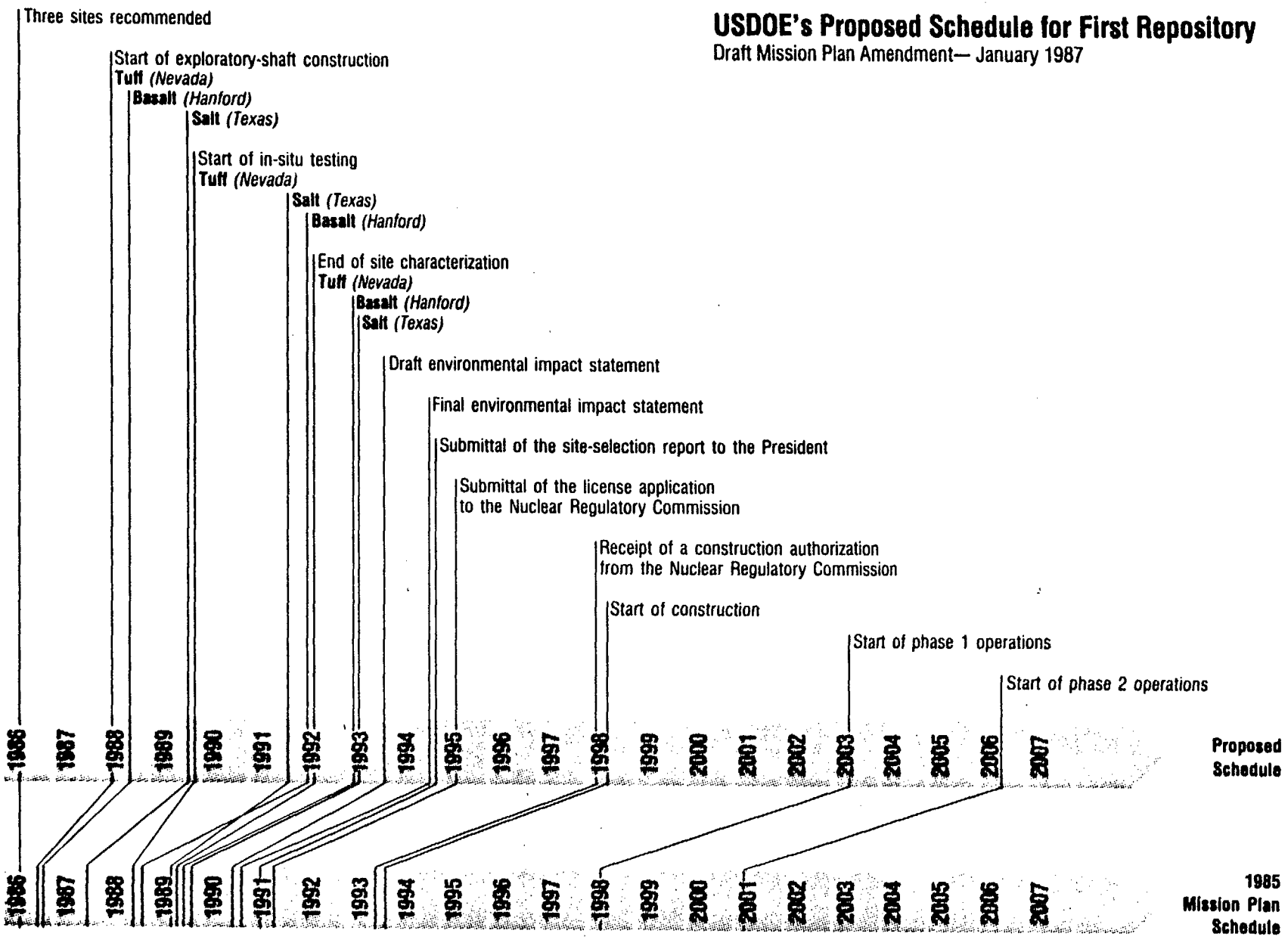
The original draft mission plan was provided to the states and others in April 1984 and submitted to Congress in June 1985. The Act sets no specific procedure or timetable for revising it. The current proposed amendments constitute the first revision, and USDOE is following a process similar to that for the original. States, tribes, other agencies and the public have sixty days to comment. The amendment will then be submitted to the Congress.

USDOE officials indicate that they will interpret lack of congressional action on the Mission Plan revisions as approval for their proposed actions. For example, unless Congress acts in some way to challenge the indefinite postponement of the second repository during the thirty days after submittal, department officials will assert that Congress has approved the decision.

Appropriation actions, Nuclear Waste Policy Act Amendments and floor resolutions are all possible mechanisms Congress might use to express disapproval of any or all of the proposed actions. The proposed Mission Plan amendment does say that its schedule for implementation depends upon Congress approving a $725 million appropriation for Fiscal 1988.

USDOE's Proposed Schedule for First Repository

Draft Mission Plan Amendment— January 1987



Hartman

STATE OF WASHINGTON

DEPARTMENT OF SOCIAL AND HEALTH SERVICES

Olympia, Washington 98504-0095

January 28, 1987

The Honorable Dick Nelson
Washington State Representative
House Office Building 307
Mail Stop AS-33
Olympia, Washington 98504

Dear Representative Nelson:

At the House Energy and Utilities Committee hearing on December 3, 1986, a question was raised concerning lost radioactive waste disposal sites on the Hanford Reservation. I asked Allen W. Conklin, a radiation health physicist on my staff, to respond to that question. He has prepared the attached report. He worked at Hanford for ten years, the latter five being involved directly with the issue in question, particularly concentrating on areas such as monitoring the environment to ensure that worker health would not be impacted by waste management activities, both past and present, or by other nuclear operations.

The attached report was prepared to define and document "lost" waste on the Hanford site. It is not intended as a critique of the Department of Energy staff or its contractors. A great deal of information is available on officially designated waste sites, including radionuclide inventories and service dates, etc. However, if difficulty is experienced in physically locating these sites in the field such that monitoring is impaired, then they are included in this report. "Lost" does not imply a lack of records, but does imply a lack of site maintenance over the years. The use of the term "lost" is explained in detail in the report.

This report concentrates on the 200 and 600 Areas, where most waste is located. Additional study is required in the 100 and 300 Areas to offer comprehensive information on the entire Hanford Reservation.

Improvements in waste management have been made since most of the problems discussed in the report occurred. Significant efforts are also ongoing to identify and characterize sites, as well as to correct errors made in the past. Much of this effort is documented in the report "Phase I Installation, Assessment of Inactive Waste Disposal Sites at Hanford," available in draft form from the Department of Energy.

This qualification, however, does not represent an endorsement of current waste management practices. Problems do continue to exist, although not to

the same extent as in the past. It is stressed that none of the remaining problems is serious enough from a radiological safety standpoint to warrant immediate remedial action. Public health is not threatened at this time.

This report does not represent an end point, but rather a part of our ongoing effort at Hanford. The report will be used as a resource in planning characterization work necessary not only as a baseline for the proposed high-level repository, but also as part of our mandate to ensure public health protection and environmental quality. With this in mind, we continue to pursue additional information on Hanford waste and waste practices, both past and present.

If there are any questions concerning this report or the subject matter, please contact me.

Sincerely,

Robert R. Mooney

Robert R. Mooney, Head
Environmental Protection Section
Office of Radition Protection

cc: T. R. Strong
Nancy Kirner
Howard Shuman
Curt Eschels
Terry Husseman

Attachment: Lost Waste Report

SPECIAL REPORT:

"LOST" WASTE SITES AT HANFORD (200 and 600 Areas)

January 28, 1987

Environmental Protection Section

Office of Radiation Protection

Division of Health

WASHINGTON STATE DEPARTMENT OF SOCIAL & HEALTH SERVICES

SPECIAL REPORT*

"LOST" RADIOACTIVE WASTE SITES AT HANFORD

Environmental Protection Section
Office of Radiation Protection
Department of Social and Health Services

I. INTRODUCTION

The Environmental Protection Section has the responsibility for statewide environmental monitoring of nuclear operations. One major activity involves the ever increasing role of the state on the Hanford Reservation. The state now samples and monitors around many key nuclear facilities on-site. However, waste management activities, both past and present, require greater scrutiny to continue to ensure the safety of the public. This report will be used as a resource in developing work plans for future environmental monitoring.

Radioactive waste has been a byproduct of nuclear operations at Hanford since 1944. Management of this waste did not always entail the care and expertise exercised by current operations. Early records are sometimes questionable, site boundaries are not always clearly identifiable, and, often, barriers over waste sites were not added until (in some cases) several years after disposal. There is extensive information available on waste disposal. Considerable effort has been expended by U.S. Department of Energy contractors in recent years to identify and characterize contaminated areas. However, many unknowns and questions remain, resulting in "lost" waste. This report offers information on the 200 and 600 Areas, where most waste is located. Further study of the 100 and 300 Areas is required to offer comprehensive information on the rest of the Hanford Reservation.

The issue of "lost" radioactive waste and waste sites is a simple question requiring a complex answer. A simple conclusion can be drawn from the documentation and knowledge available on the subject of waste disposal: all major waste disposal sites appear to be accounted for. Evidence suggests that only sites and areas containing relatively small amounts of low-level radioactivity are truly "lost". Exceptions are not expected, but cannot be ruled out completely.

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*Note: This report was prepared in response to a question raised at a December 3, 1986, House Energy and Utilities Committee hearing. It is intended as an objective review and documentation of radioactive waste in the Hanford 200 and 600 Areas defined in the hearing as "lost" as a result of past operations. It is not offered as a criticism of current practices. The state of Washington's critique of current practices is well documented in other reports.

Although 55 specific sites that are lost to one degree or other are discussed in this report, it should be stressed that lost waste sites represent little or no current impact on the health of the public. To ensure that the health of Hanford workers is not affected, the entire Separations Area (200 Area) where most sites are located, is assumed to be contaminated. Prior to any work involving soil disturbance, excavation, or drilling, a permit is required with multiple signatures, including those from radiological and environmental units who are knowledgeable of those areas. Additional assurance is offered by an extensive localized environmental monitoring program site specific to these waste sites. This program includes air, soil, and animal sampling, and radiological surveys to ensure the integrity of waste sites and to monitor for potential surface problems.

In addition to surface monitoring, an extensive series of ground water wells is present in the Separations Area to monitor potential subsurface problems. This program is documented in "Environmental Surveillance in the Separations Area -Calendar Year 1985", document number RHO-HS-SR-85-13P, which is available from the Department of Energy.

The assumption that the entire Separations Area is potentially contaminated is a valid one, based on the evidence offered by monitoring results, physical inspections, and documentation discovered over the years. This evidence forms the basis of this report.

II. DEFINITION OF "LOST"

To understand the complexity of this issue and for the purposes of this report, "lost" needs to be described:

- The inability to locate certain low-level waste disposal sites by physical inspection of the area such that monitoring and sample collection on the site surface are impaired, or that inadvertent excavation into waste is possible;

- The lack of documentation for areas where waste was spilled, deposited or buried and not immediately decontaminated, but rather covered with clean soil;

- The doubt concerning site boundaries. For example, locations of most sites are known; however, the size and extent of waste disposal within such sites are not always obvious;

- The lack of documentation or clear knowledge concerning waste in the form of underground transfer lines which may be known or suspected to have leaked into the soil;

- The loss of integrity of high-level tanks resulting in a contamination of the soil. (This topic is not discussed in this report, as it is covered in the Defense Waste Environmental Impact Statement);

- The questionable criteria used in earlier years for the release of contaminated areas and waste sites from radiological controls;

- Physical evidence of underground waste in the absence of accurate documentation; and

- The questionable auditibility of radioactive waste produced at Hanford and disposed of in the early years.

Note: It should be stressed that the vast majority of "losses" do not constitute a problem serious enough to warrant immediate corrective action. A discussion is offered on all losses, however, to provide documentation of the available information.

III. SOURCES OF INFORMATION

The information contained in this report comes from the following sources:

- Personal observation and monitoring results during staff's earlier employment at Hanford. Extensive time was spent inspecting the environment, records, maps, etc.

- A variety of drawings, particularly a detailed series of the 200 Areas (H-2-44501 and H-2-44511 series).

- Maxfield's "Handbook of the 200 Area Low-Level Waste Disposal Sites", RHO-CD-673.

- Draft report presented at Hanford Health Effects Panel meeting by Steve Wiegman of Rockwell.*

- Lundgren's "200 Area Waste Sites".

- Waste Information Data System files condensed in RCRA Part B Application, Appendix C-5*.

- Historical files, documents, letters, maps, and aerial photographs.

*Note: These documents are in the possession of the state. The above listed as sources are not classified.

IV. WASTE SITE DESIGNATIONS

Hanford contractors identify waste sites using a number and lettering system. For example: "216-A-1". The first number (2) identifies the area: -1 is the 100 area along the river; 2 is the 200 area or Separations Area; 3 is the 300 area; 6 is all the area outside of the fenced areas or not related to a specific area.

The next two numbers (16) indicate the type of site. For example, "16" means low-level liquid waste; "18" means dry waste disposal; "41" means tank farms, etc.

The letter (A) represents the associated area or facility: A is the Purex Plant; B is the B-Plant; C is the Semiworks; E is the 200E Area in general; N is the 200N Area; S is the Redox; T is the T-Plant; U is the U-Plant; W is the 200W Area in general; Z is the plutonium finishing plant.

The last number is a numerical sequence assigned as a facility constructed. 216-A-1, then, is a low-level liquid site in the 200 Area associated with Purex or a related facility. It is the first site designated as such. Another example: "218-E-12" is the 12th dry waste disposal site in 200 East Area.

V. RADIOLOGICAL CONTAMINANTS

Contaminants in waste are many if the waste is "fresh", i.e., from recent processing. However, the primary contaminants in the older waste sites discussed in this report are as follows:

Stontium-90; Half-life = 28 years
Cesium-137; Half-life = 30 years
Plutonium-239; Half-life = 24,000 years
Plutonium-240; Half-life = 6,600 years
Uranium-238; Half-life = 4,500,000,000 years

Other isotopes are present in lesser quantities, including Cobalt-60 (5 year half-life), Technitium-99 (21,000 year half-life), Plutonium-238 (86 year half-life), Uranium-234 (250,000 year half-life), Americium-241 (460 year half-life), and Iodine-129 (16,000,000 year half-life).

VI. OFFICIALLY DESIGNATED WASTE SITES THAT ARE "LOST"

The locations of these sites are generally known but in whole, or in part, cannot be accurately located by an inspection of the surface. Coordinates are available for most sites, but the accuracy of those coordinates is sometimes questionable and does not address all problems. The ability to accurately locate a site is not always helped by coordinates in the field if no visible markers are observed. Generally, enough information is available on the locations of these sites to establish whether a hazard exists or not, but if locations are questionable enough to inhibit accurate monitoring of the surface, or would interfere with excavations, they are put into the "lost" category.

Department of Energy Richland Operations Office has inititated investigations of all inactive waste disposal and unplanned release sites in accordance with EPA CERCLA (Superfund) regulations. The report titled "Draft Phase I Installation Assessment of Inactive Waste Disposal Sites at Hanford", which was provided to Washington's Departments of Ecology, Social and Health Services, and the U.S. Environmental Protection Agency in July 1986, assesses 337 known engineered waste disposal sites. Hanford is currently developing an addendum to the draft report which evaluates all known unplanned release sites.

The number of each of the following examples represents a map location on one of the attached figures. Figure 5 illustrates the relations of figures 1 through 4 to the Hanford Reservation.

1. 216-E-1, 2, 3, and 4 Unplanned Release Sites (Figure 1)

   These sites were caused by spills of radioactive material within the 241-B tank farm. The individual sites cannot be located due to the masking effect of other contamination within the tank farm. Since the entire farm is radiologically controlled, however, eventual remedial action can be accomplished concurrently with the entire surface area of the tank farm.

2. 216-E-7 Unplanned Release Site (Figure 1)

   The general location is known but all markers have been lost. Spotty contamination can still be detected on the surface. Other contamination may have been covered with clean soil or the area may have been decontaminated; in either case no records are available.

3. 216-B-7A, 7B, and 8 Cribs (Figure 1)

   These sites are located north of 241-B tank farm. All general locations are marked by concrete ID posts, but the exact location of the material and size of the site are not clear. These sites are located in a common radiologically controlled area along with three other sites. It is presumed that the entire area will eventually be dealt with as one site.

4. 216-B-4 and 6 Reverse Wells (Figure 1)

   The general locations are identified with concrete ID posts but again the exact locations are not clear. Both wells are within the old B-Plant exclusion area fence.

5. 216-E-13 Unplanned Release Site (Figure 1)

   This site is located somewhere along the south side of 271-B. It may have been decontaminated but records are not available.

6. 216-A-13 and 35 French Drains (Figure 1)

Both of these sites are located off the southwest corner of Purex. An ID post existed at one time but was not observed at an inspection performed in 1985. The exact location is not known.

7. 216-A-12 French Drain (Figure 1)

Maps indicate this site to be along the south side of Purex. There are no markers and its precise location is not known.

8. 216-A-11 and 14 French Drains (Figure 1)

Both of these sites are within the Purex exclusion area. The general locations are marked with ID posts but the exact locations are not clear.

9. 218-E-8 Burial Ground (Figure 1)

Recent contaminated tumbleweed growth indicates the presence of buried contamination outside and to the south of the boundary of this burial ground. The extent of contaminated burial, therefore, is not known.

10. 216-A-39 Crib (Figure 1)

This site is located inside the 241-AX tank farm area, but the exact location is not clear. Remedial action can, however, be accomplished with the high level tanks nearby.

11. 216-A-41 Crib (Figure 1)

Drawings indicate this site is located on the north of the 244-AR Building; however, it cannot be located.

12. 216-A-19 and 20 Cribs (Figure 1)

An ID post identifies these sites as being within the same posted area. However, maps indicate they are separate. It is suspected that 216-A-20 lies southeast of the posted area.

13. 216-C-1 Crib (Figure 1)

Located adjacent to Semiworks; a small area is posted. However, old photos indicate the crib is much larger than the posted area. This crib along with the Semiworks facility, is planned for decommissioning now in progress.

14. 216-C-3 and 5 Cribs (Figure 1)

ID posts indicate the location of these sites to be near the Semiworks, but the boundaries are not clear. The entire area can be decommissioned with 216-C-1.

15. 218-E-13 Burial Ground (Figure 1)

This site. containing only contaminated concrete blocks, is marked by two signs inside the Purex exclusion fence. No identification is present and the exact size of the area cannot be determined.

16. 216-E-26 Unplanned Release Site (Figure 1)

This site, located east of Semiworks, cannot be located, possibly due to undocumented cleanup or covering with clean soil. Spotty contamination can still be detected on the surface.

17. 216-E-31 Unplanned Release Site (Figures 1, 3)

Located to the northeast of 200 East Area and caused by extensive low-level radioactive tumbleweed migration, the extent of this site has not yet been determined. Estimates, however, approach 1,000 acres. Most of the sources of tumbleweed growth are now under control. Approximately one square mile has been posted as a Controlled Area to date. A portion has been decontaminated for the construction of a contingency pond.

18. 218-E-2A Burial Ground (Figure 1)

Drawings indicate that the area is much smaller than ID posts indicate in the field. The true size is not clear.

19. 216-E-11 Unplanned Release Site (Alias BC Controlled Area) (Figures 1, 3)

This site, located south of 200 East Area, originated in the 1950's when animals intruded into an old waste trench, and using the salty waste as a salt lick, ingested the material, leaving contamination in the form of urine and feces over an extensive area. Officially, this unplanned release site is listed as 2500 acres. However, the true extent of contamination has not been determined and is estimated to be up to twice the official size. The official size was determined following the construction of fire break roads in the area. Migration of the contamination is minimal.

20. 216-T-12 Trench (Figure 2)

Old drawings differ on the location of this site, which received contaminated sludge from the 207-T retention basin. It is either adjacent to the basin or located 100 feet to the east. There are no markers.

21. 216-T-29 Crib (Figure 2)

This crib is located somewhere near the T-Plant stack. It cannot be found.

22. 216-U-15 Trench (Figure 2)

This trench is located somewhere west of U-Plant. It is shown on maps and drawings, but cannot be located. It received low-level waste from a solvent tank in the U-Plant area.

23. 216-T-25 Trench (Figure 2)

Although this site is generally believed to be located to the north of four other trenches; old drawings indicate two other possible locations as well. An aerial photograph, however, does indicate the former location is probably correct. It was stabilized with the other four trenches.

24. 216-T-5 Crib (Figure 2)

The general location of this site is known to be west of 241-T tank farm. However, the exact location within a large radiologically controlled area is not clear. Efforts were recently made to locate the waste by drilling. The results of that effort are not known.

25. 216-Z-10 Reverse Well (Figure 2)

Official records indicate one pipe extending into the ground. Drawings exist, however, indicating that there may be two. The correct status is not clear by just visually inspecting the site.

26. 216-W-12 Unplanned Release Site (Figure 2)

The location of this site, adjacent to 224-T, was known, but the signs disappeared in 1982. It may have been decontaminated, but the records are not clear.

27. 216-U-4A French Drain (Figure 2)

Official documentation indicates this site is southwest of 222-U Building. If so, it is lost. However, a riser similar to another nearby French Drain is located on the north side of 222-U. This may be the lost site.

28. 216-W-18 Unplanned Release Site (Figure 2)

This site, according to drawings, is located on the south end of 216-S-9 Crib. It cannot be located, however.

29. 216-A-24 Crib (Figure 1)

While excavating next to this crib for alleged clean soil for a project elsewhere, contaminated soil was encountered illustrating a problem as far as knowledge of the extent of contamination beyond the surface boundaries of waste sites. Because of this problem, extreme care must be taken when excavating anywhere in the vicinity of liquid waste disposal sites.

600 Areas

These sites are discussed separately due to their physical location far from the Separations Area and adjacent to the 300 Area. The problems discovered at these sites are sufficient to create suspicion of the borders of all waste disposal sites in the vicinity. These sites were active in the 1950's but fences were not put up until the 1970's. Some were placed wrong, therefore, all are suspect.

30. 618-2/3 (Figure 4)

The fence originally placed around this site was later extended to the north due to the discovery of additional contamination. Still more (though minor) contamination has been identified on the surface in 1981 and 1982, creating additional doubt as to the boundary of this site.

31. 618-4 (Figure 4)

In 1980, unirradiated fuel rods were found buried just under the surface outside the fence of this site. Although the rods were removed, this created doubt about the boundary of this site.

32. 618-8 Burial Ground (Figure 4)

This site is located underneath a parking lot north of the 300 Area. In 1980, while excavating adjacent to this site for power poles, waste was encountered. Further characterization revealed that waste extended to the northwest and northeast of the designated boundary of this site.

33. 618-9 Burial Ground (Figure 4)

This site was a very narrow but relatively long trench used for disposal of Hexone contaminated uranium filled drums. The waste was originally disposed of in the 1950's and the fence constructed in about 1970. However, it was discovered in 1984 that the fence was placed incorrectly, (at 90 degree angles to the actual waste site) resulting in most of the waste not being enclosed within the fence. A fence encompassing the entire area has now been put in place.

The above examples of boundary problems in the 600 Areas result in doubt being extended to all 600 Area waste sites. These areas are particularly significant due to their proximity to town and availability for inadvertent intrusion by the public.

VII. WASTE LOCATIONS (KNOWN AND SUSPECTED) NOT OFFICIALLY DESIGNATED AS WASTE SITES

Note: Known waste sites without official designation are administratively "lost" in that they don't fall on survey or remedial action schedules. Many sites have been located in recent years and assigned unplanned release site numbers to ensure that documentation, routine monitoring, and eventual (or immediate) corrective action occurs. Those sites are now officially documented as waste sites, so are not discussed in this report. It should be noted, however, that considerable progress has been made in identifying the major contaminated areas.

34. Adjacent to 216-S-10 Ditch (Figure 2, 3)

The 216-S-10 Ditch was dredged of contaminated materials in the past. The contaminated sediment was buried "somewhere" along the ditch. The location has not been found.

35. Overflow From 216-S-5 Crib (Figure 3)

Contaminated liquid was allowed to overflow this site during its operation in the 1950's. The extent of the overflow was never documented. It was rediscovered during stabilization of the nearby retired 216-S-17 pond. The overflow area was stabilized along with the pond. This, can therefore, be considered "found".

36. French Drain by Redox Stack (Figure 2)

Drawings indicate the presence of a French Drain to receive stack runoff. No waste site number was assigned. Its exact location is not known.

37. French Drains by the Decommissioned 204-S Waste Unloading Station (Figure 2)

Drawings indicate the presence of two French Drains that received runoff from this site. Although they never received "216" numbers, they were included in the decommissioning of 204-S, which is monitored regularly.

38. Suspected Burials East of Redox (Figure 2)

There are two suspected burials of decontamination waste east of Redox that followed stack releases in the 1950's. One is located outside the 200 Area fence. The other, consisting of barrels of waste, is inside the fence. Fortunately, the waste consists primarily of Ruthenium-106 with a half-life of only one year. Other radionuclides may have been present, however. The latter site is believed to be marked by a lone "underground radioactive material" sign.

39. Burial Ground East of U-Plant (Figure 2)

A specified burial ground is (or was) located east of U-Plant but received no "218" number. This site was apparently released from radiological controls, but documentation is lacking.

40. Leaking Pipeline South of U-Plant (Figure 2)

A pipeline carrying waste to two cribs was discovered to have leaked. The extent is not known and the area is not marked.

41. Unspecified Suspected Burial by Redox (Figure 2)

An old aerial photo shows an open pit east of the Redox sand filter with a box in the middle. Drawings indicate no permanent structure in that location. Therefore, it may be an undocumented burial.

42. Underground Radioactive Materials Signs Around the Plutonium Finishing Plant (Figure 2)

Two lone "underground radioactive materials" signs are located around the Plutonium Finishing Plant; one to the south and one to the north. The reason is not clear. Either an undocumented pipeline, spill or burial is possible. The extent of the underground material marked is not clear.

43. Burial Next to 218-W-2A Burial Ground (Figure 2)

A small radiologically controlled area is located to the east of this burial ground. Contaminated railroad ties are believed buried there.

44. T-Plant Waste Unloading Station (Figure 2)

This station was used to unload radioactive liquids. A pipe leading into the ground from this facility is marked by an old "radiation" sticker implying that waste went to some subsurface location. Pipelines are identified on maps going to the 216-T-34 and T-35 cribs, but are not posted in the environment. Information available concerning this facility is lacking.

45. Contaminated Area West of 224-T Building (Figure 2)

An area west of this building is identified by old radiation area signs. The reason or extent of contamination is not clear, although it appears associated with a nearby catch tank and diversion box to the north.

46. French Drain at Vent Station (Figure 3)

This site is located on the cross-country transfer line between 200 West and 200 East Areas. It is active and receives runoff from the station, but has no waste site number. It is routinely monitored as part of the vent station survey routine.

47. Suspected Trench in the BC Crib Area (Figure 1)

There is suspicion that decontamination waste is located in an undocumented trench alongside the BC cribs and trenches, sites active in the 1950's. The location is not clear, but it may have already been stabilized with the rest of the trenches.

48. Injection Wells Adjacent to 216-A-38 (Figure 1)

Short-lived radionuclides were injected into shallow wells to test migration in soils. Although most of the radioactivity has decayed, enough remains to exercise care when digging in this area.

49. Buried Fission Product Settling Tanks (Figure 1)

After burrowing, intrusion and uncovering of contamination by harvestor ants, it was discovered that an old mixed fission products settling tank that leaked was located in this area, an area originally thought clean.

50. Contaminated Tile Field (Figure 1)

This site, located adjacent to the northeast corner of B-Plant, has been contaminated by radioactive effluents from the plant but has no waste site designation. It is monitored, however, as part of the B-Plant Outdoor Radiation Areas.

51. Contamination East of 241-B Tank Farm (Figure 1)

Information indicates that a release of radioactivity contaminated an area directly east of this tank farm. The area was covered by soil and windrows to prevent migration. The windrows are still visible. The radiological status is unknown, however, a few hot spots can still be detected on the surface.

52. Underground Burial Along Fence (Figure 1)

Maps indicate the presence of buried contaminated material along the north fence, originating from old contaminated tumbleweeds deposited there by the wind. Verbal information indicates that the area may have been exhumed but written documentation has not been located.

53. Potential Underground Radioactive Material East of B-Plant (Figure 1)

A lone "underground radioactive material" sign east of B-Plant used to indicate the presence of buried material that is not documented. The sign has disappeared. The nature and extent of that burial, if it exists, is not known.

54. Suspected Burial South of 241-C Tank Farm (Figure 1)

The discovery of contaminated animal feces in this area led to a suspicion of an unauthorized burial somewhere in the vicinity. The source may have been a nearby lift station or the tank farm but has never been positively identified, resulting in a continued suspicion of other buried material or leaks in near subsurface pipelines.

55. Purex Exclusion Area (Figure 1)

Underground radioactive material signs along the old exclusion fence south of Purex indicate the presence of undocumented buried material. The extent and nature are not known.

VIII. OTHER

A number of releases have occurred since the beginning of operations that have resulted in significant environmental contamination. These have included stack and liquid releases, biological transport (plants and animals) and the wind blown spread of particulates from surface contaminated areas. Many have been cleaned, some have not. A common practice in the 1940's and 1950's was to cover contaminated areas with a foot or two of clean soil rather than decontaminating, making discovery difficult.

Evidence of these old releases and resultant lack of corrective action is the presence in several locations of very old "contamination area" signs that were never removed, indicating that no effort was made at that time to decontaminate the areas. These signs have fallen and are hard to see, requiring a concerted effort to locate them.

Efforts to identify and document these old releases are underway. An examination of documentation can lead to one to assume the entire Separations Area could be considered contaminated unless proven otherwise. Documentation of this concern was presented at the Hanford Health Effects Panel in September 1986.

The potentially contaminated areas include official waste sites which have been released after using an obsolete method, using only portable instruments to survey. This is a fairly effective method for gross beta and gamma emitting radionuclides, but not for plutonium and alpha emitting radionuclides, nor for other low-level but potentially environmentally significant radioactivity. The soil masks much of such

activity, and laboratory analysis for accurate determination of contamination levels is required. The premise that the entire Separations Area is contaminated can account for most of these areas; however, one location north of Gable Mountain and outside of the Separations Area is the former site of the P-11 Laboratory where plutonium work took place. This site, although formerly released after surveys using portable instruments, may remain significantly contaminated due to the exclusive presence of plutonium. No off-site migration is detected. Sampling is planned.

Another category of lost waste involves underground transfer lines (not identified on the surface) to cribs and tank farms. Up to 50 percent of all such pipelines are not appropriately identified. They are too numerous to identify on the attached figures. It is understood that there are plans to locate and identify these pipelines.

Still another category of potentially lost waste involves known waste sites with inadequate records of radionuclide inventory. Many older sites' radionuclide inventory are not available today, constituting "lost" waste. As with other lost sites, these do not appear, however, to constitute a hazard, though eventual characterization, prior to remedial action, may be necessary.

IX. CONCLUSIONS

The 55 sites discussed in this report appear to present a large problem. However, when considering the tremendous quantities of waste and number of sites (approximately 400 low-level waste disposal sites which include both engineered sites as well as documented unplanned sites), and the variety of waste management activities and decontamination and decommissioning activities which are ongoing, one's perspective on the problems changes. In terms of public health or offsite environmental quality, these problems are quite small.

As stated previously, there is no indication of any current or future harm to the public resulting from these problems. Progress towards identification, location and clean-up of the sites is such that these problems will gradually disappear, and the environment will be better protected from future problems. This will be due not only to better waste management, now being exercised, but by the increasing role of the state of Washington and the U.S. Congress in on-site environmental protection activities.

This role will include increased soil characterization (surface and core sampling, and radiological surveys) in areas of known or suspected contamination, coordination of an aerial radiological survey, increased gamma measurements using thermoluminescent dosimeters (TLDs), and air and ground water sampling. Plans for this effort are underway.

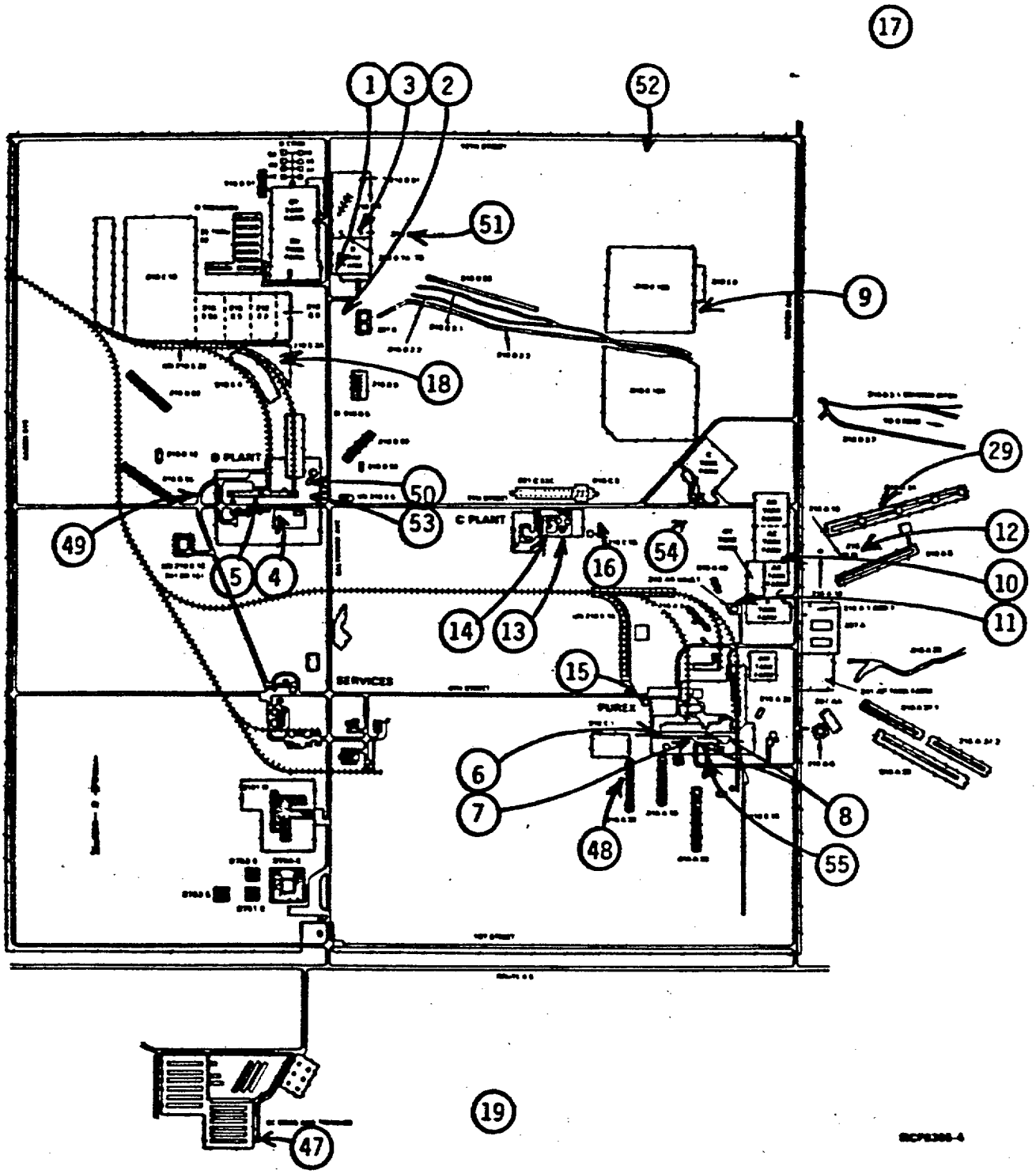


Figure 1 . The 200 East Area.

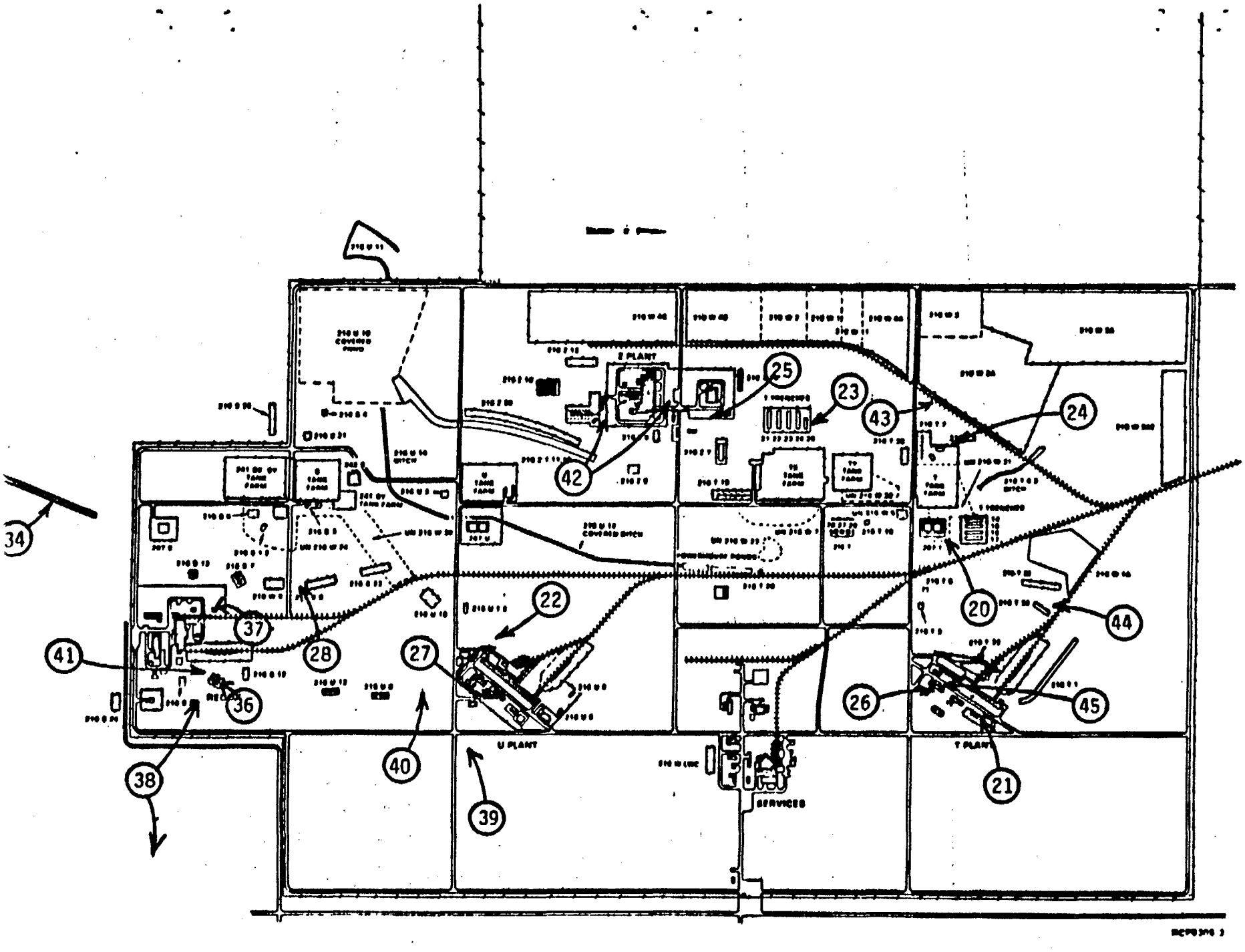


Figure 2 The 200 West Area.

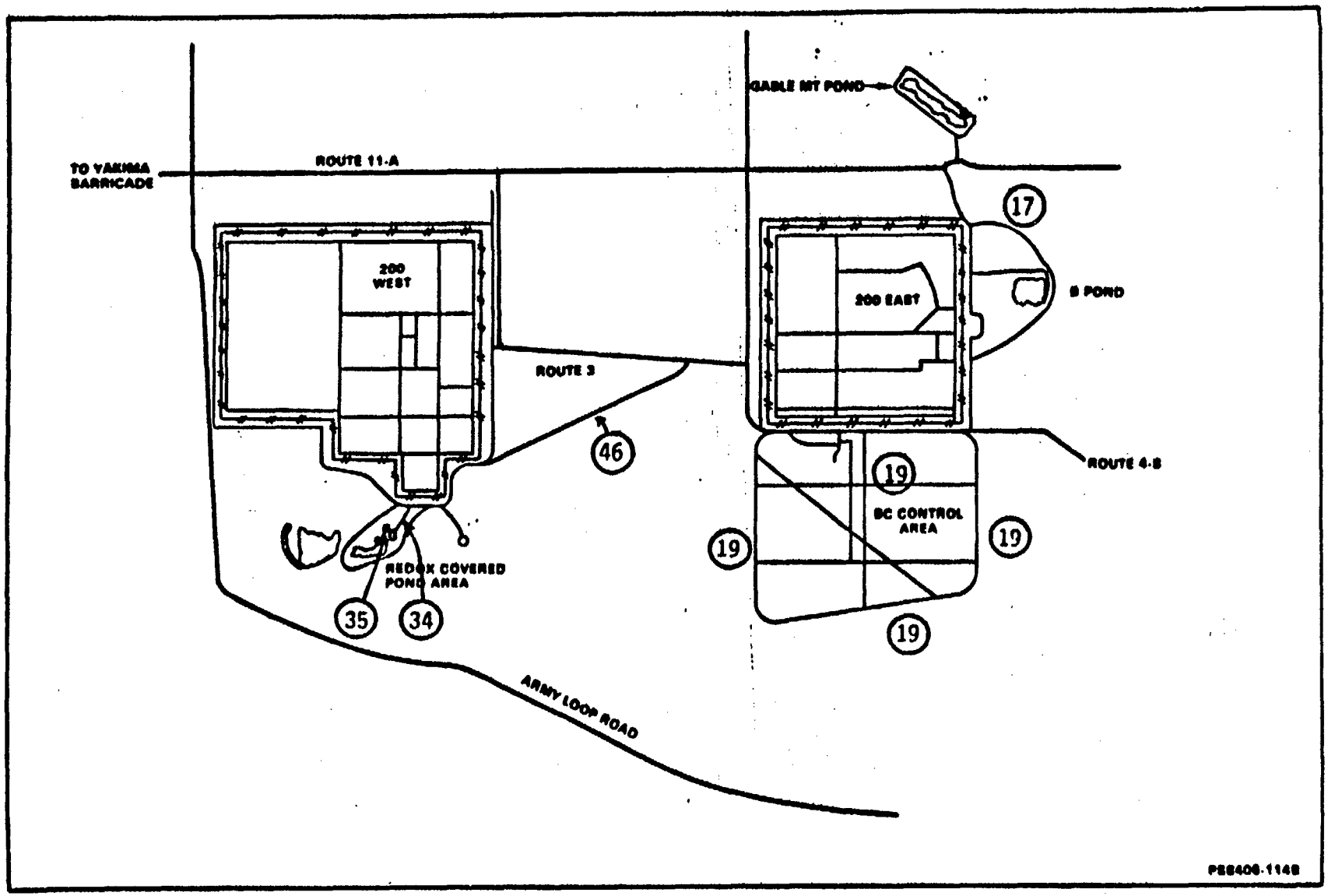


Figure 3. The Separations Area

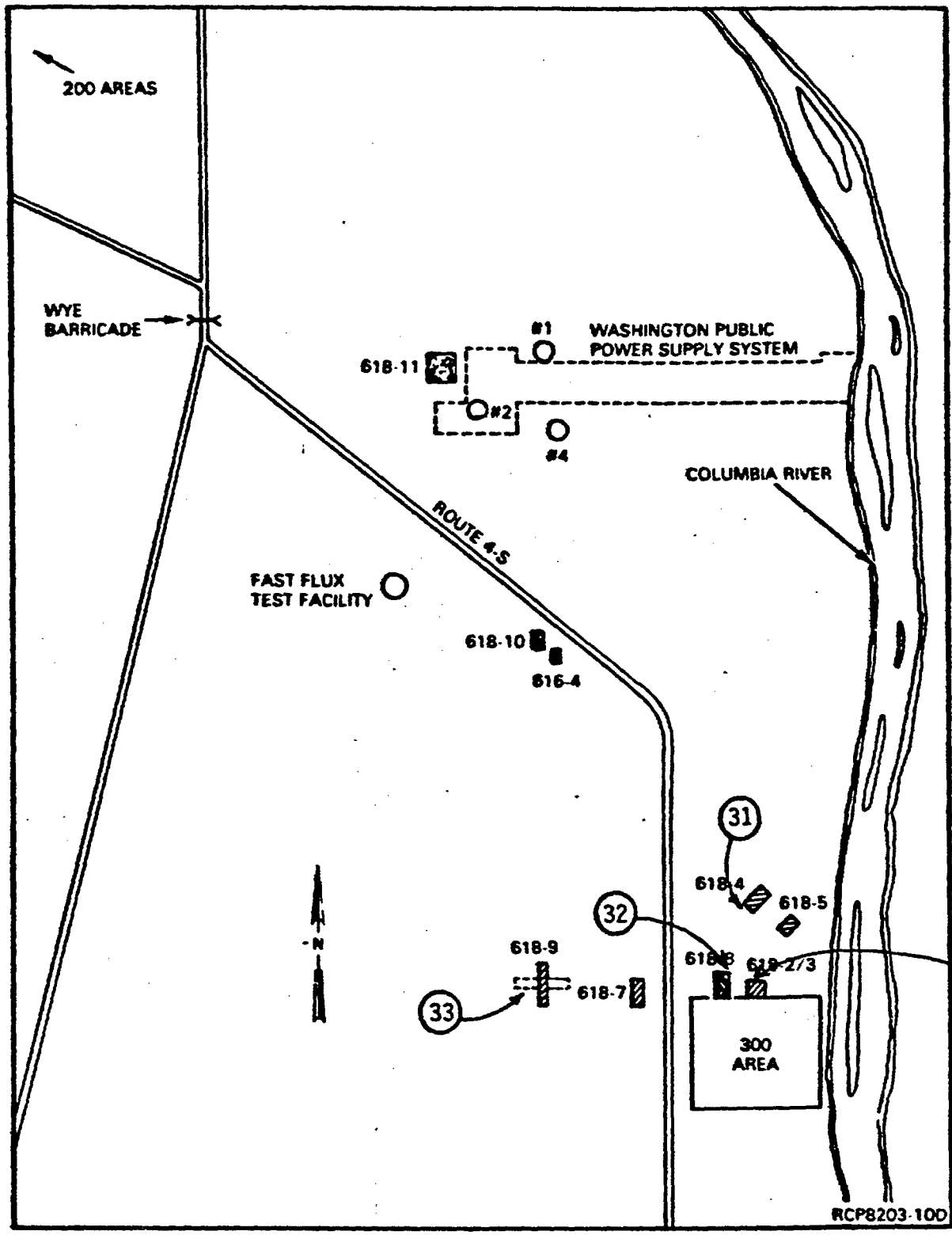


Figure 4. The 600 Area

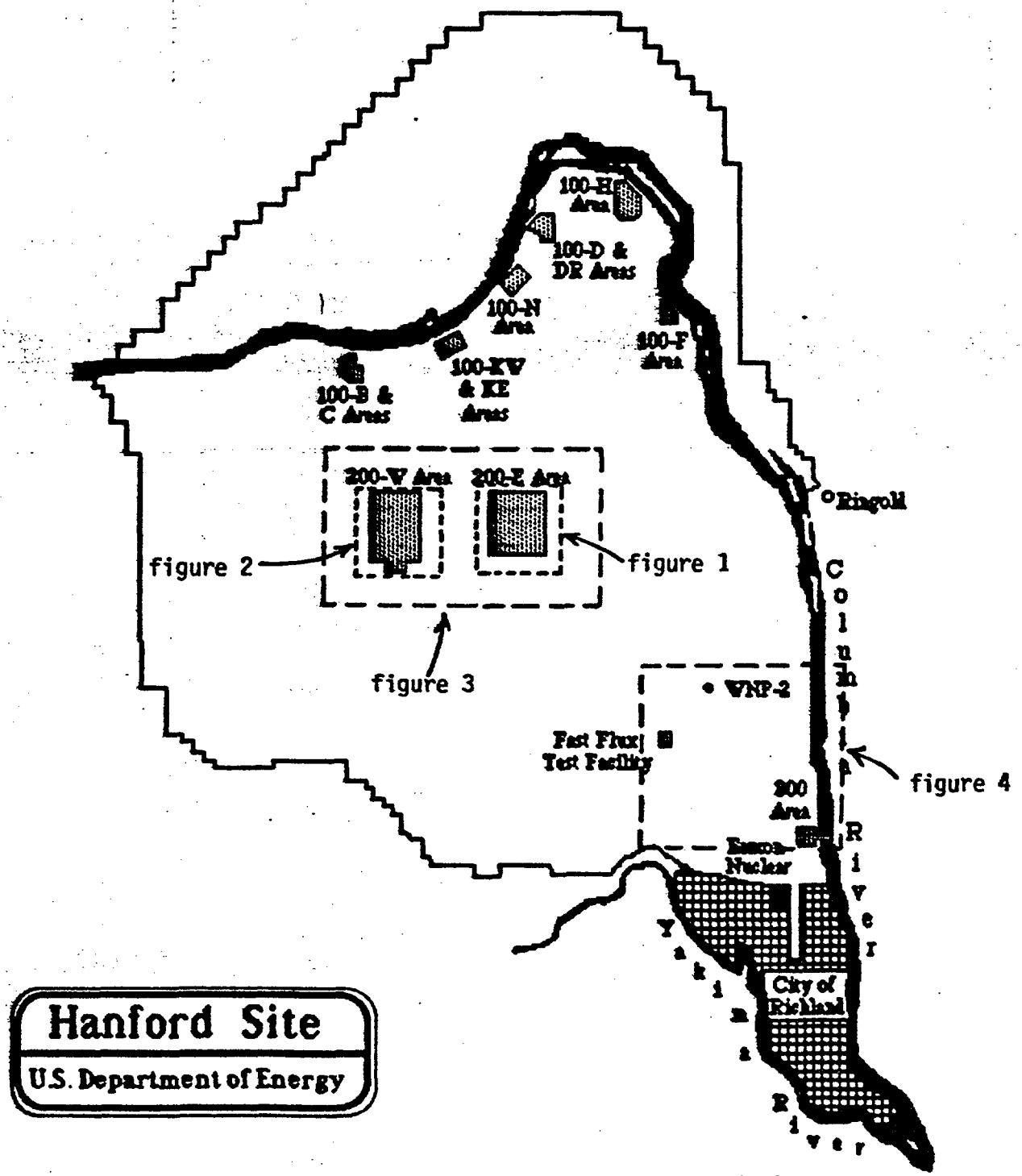
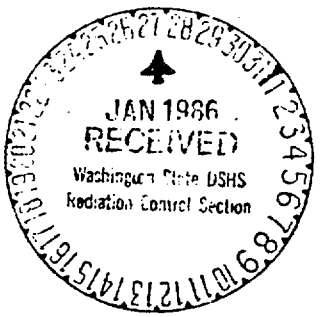


Figure 5. Relation of Figures 1 through 4 to Hanford Site.



January 23, 1987

Memo to: Reviewers of the HHERP Final Report

From: Jim Ruttenber, Centers for Disease Control

Enclosed is a draft of the HHERP final report. Please review this doucment carefully and return comments to me as soon as possible. Please pay particular attention to the Additional Issues and Implementation sections, as I have made recommendations in the name of the HHERP "sponsors," and should therefore have your concurrence on these. I have a new address and telephone number: Division of Environmental Hazards and Health Effects, Center for Environmental Health, Koger Center, Centers for Disease Control, Atlanta, GA 30333; 404-454-4682. Thanks.

Jim Ruttenber

DRAFT 1/23/87 J.R.

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I. INTRODUCTION

A. History

In November 1984, the State of Washington Department of Social and Health Services (DSHS) began discussions with the Center for Environmental Health, Centers for Disease Control (CDC) and the Department of Energy (DOE) Richland Operations Office about a review of the possible human health effects associated with past, current, and future operations of the DOE Hanford Facility. These discussions resulted from concern expressed by the public and governmental agencies regarding health and safety issues and, specifically, the question of the need for epidemiologic studies in the population surrounding Hanford.

On December 20, 1985, the State of Washington Nuclear Waste Board (WNWB) passed Resolution 85-7, requesting DOE cooperation in arranging for the CDC to assess the feasibility and usefulness of conduction further epidemiologic studies of delayed health effects in the population surrounding Hanford. In January 1986 the WNWB formally requested CDC assistance in evaluating the relationship between disease and the potential radiation exposure from Hanford.

During this same time period, the Portland Area Indian Health Service (IHS) also contacted CDC regarding health issues that had been raised through a resolution of the Northwest Portland Area Indian Health Board. This group, consisting of 38 tribes, directed IHS to examine the present and potential risks of radiation hazards from Hanford. The Indian Health Service, in turn, requested CDC assistance in December 1985. The three tribes with lands near Hanford, the Yakima, Nez Perce, and Umatilla also supported the request made by IHS. After being informed of efforts to organize a review of these issues, the States of Oregon and Idaho

expressed support and interest in participating in a review of health effects conducted by the CDC.

The CDC agreed to coordinate this review and planning began in February 1986. Representatives of Washington, Oregon, IHS, and CDC agreed to have CDC select a panel of experts to meet, discuss relavant environmental and public health issues, and make recommendations. The CDC, in turn, requested that the sponsors canvass state agencies, environmental groups, Indian Tribes and other interested parties for recommendations for issues to be discussed and recommendations for panel participants. The meeting of the Hanford Health Effects Review Panel (HHERP) was tentatively scheduled for late summer or early fall, 1986 and funding was secured from the DOE and the State of Washington.

Staff from the DSHS and the CDC agreed to provide panelists with appropriate background information. In February 1986, the DOE made available to the public several hundred previously classified or unavailable documents on radiation releases and environmental monitoring during the early operational years of Hanford. After learning of the availability of these data, it was agreed that a summary of this material would be useful to the panel. Scientists from DSHS and the CDC therefore undertook and extensive review of the documents and abstracted and summarized data on atmospheric releases and environmental concentrations of radionuclides.

The Governor of Washington, upon release of the DOE documents, established the Historical Documents Review Committee to independently assess these data and to be responsible for reviewing and implementing the deliberations and recommendations of the Hanford Health Effects Review Panel..

STATE OF WASHINGTON

DEPARTMENT OF SOCIAL AND HEALTH SERVICES

Olympia, Washington 98504-0045

HANFORD HEALTH EFFECTS PANEL MEETING

SEPTEMBER 22-26, 1986

RIVERSHORE MOTOR INN - RICHLAND, WASHINGTON

A G E N D A *

Sunday 9/21	6:00 p.m.	Registration and Social	
Monday 9/22	8:00 a.m.	Welcome	Nancy P. Kirner
	8:05	Introduction	Curt Eschels representing Governor Gardner
	8:15	Overview and Procedural Rules	Dr. Glyn Caldwell, Chair
	8:45	State of Oregon	Oregon Division of Health
	9:00	State of Idaho	Idaho Division of Health
	9:15	Confederated Tribes of the Umatilla Indian Reservation	Bill Burke or Designee
	9:30	Nez Perce Tribe	Ron Halfmoon or Designee
	9:45	Yakima Indian Nation	Russell Jim or Designee
	10:00	Break	
	10:15	History and Current and Future Status of Hanford Operations	U.S. Department of Energy
	10:30	Environmental Monitoring at Hanford	U.S. Department of Energy
	11:00	Public Comment	
	12:00 p.m.	Lunch	

	1:30	Survey of Health Concerns	Advisory Council
	1:45	Hanford Effluent Monitoring and Controls	U.S. Department of Energy
	2:15	DSHS Environmental Monitoring	John Erickson, DSHS
	2:30	Regional Monitoring and Quality Assurance Task Force	Robert R. Mooney, DSHS
	2:45	Hanford Monitoring Needs	Tim Conner, HEAL
	3:00	Break	
	3:15	Review of Historical Documents and Dose Assessment	Allen W. Conklin, DSHS; and Dr. Jim Ruttenber, CDC
	4:00	Hanford Historical Document Review Committee Goals	Dr. Royston Filby
	4:15	Public Comment	
	7:00	Public Comment Session	
Tuesday 9/21	8:00 a.m.	Introduction and Summary of Monday's Activities	Dr. Glyn Caldwell
	8:30	Hanford Worker Study	U.S. Department of Energy
	9:15	Mancuso's Worker Study	Dr. Alice Stewart
	10:00	Break	
	10:15	DSHS Epidemiological Work	Dr. Sam Milham
	11:00	Public Comment	
	12:00 p.m.	Lunch	
	1:00	Panel to Begin to Address or Prioritize Specific Questions and Answers	
	3:00	Aerial Tour of Hanford for Panel (two trips - up to one hour each)	
	7:00	Evening Session - Yakima Room	

Wednesday 9/24	All Day	Deliberations by Panel - Yakima Room
Thursday 9/25	All Day	Deliberations by Panel - Yakima Room
Friday 9/26	9:00 a.m.	Summary Report of Deliberations Results to Public - Ballroom 1

* *All sessions, unless otherwise noted, are in Ballroom 1.*

B. HHERP Agenda-- to be added

C. Biographical Sketches of Members of the Hanford Health Effects Review Panel

Robert Alvarez	Director of the Radiation and Health Project for the Environmental Policy Institute, Washington, D.C. He has conducted and sponsored studies of the environmental and health impacts of DOE facilities and has been an advocate for stricter regulation of the nuclear power and weapons industries.
Henry Anderson, M.D	Chief, Section of Environmental and Chronic Disease Epidemiology, State of Wisconsin Division of Health. He is board-certified in occupational mecicine and has conducted numerous epidemiologic studies of occupationally-related diseases.
Allen Benson, Ph.D.	Instructor of Chemistry, Spokane Falls Community College. He has studied the environmental effects of the Hanford facility and has provided technical consultation to the Hanford Education Action League.
Steven Blum, Ph.D.	Assistant Director, Division of Environmental Epidemiology, New York City Department of Health. He is trained in environmental and occupational epidemiology and has conducted research on the health effects of ionizing radiation at the Oak Ridge Associated Universities.

Glyn Caldwell, M.D.	Assistant Director, Arizona Department of Health Services. He is a cancer epidemiologist who has conducted research on health effects of nuclear weapons testing and was formerly with the Centers for Disease Control.
Donald Hendricks	Private health physics consultant to such agencies as the State of Washington and the Council of Energy Resource Tribes. He is the former director of the Environmental Protection Agency Office of Radiation Programs Las Vegas Facility.
Vilma Hunt, B.D.S.	An anthropologist and epidemiologist who has studied the effects of occupational hazards upon women. She was Professor of Environmental Health at Pennsylvania State University and Deputy Assistant Administrator for Health Research, Office of Research and Development, Environmental Protection Agency.
Vietchau Nguyen, Ph.D.	President of Environment and Water Resource Management, Minneapolis, MN. He is a civil engineer with extensive consulting and research experience in the field of hazardous and nuclear waste management. He serves as a consultant to the Yakima Nation for their Columbia River environmental monitoring project.

David Willis, Ph.D. — Professor of Radiation Biology, Oregon State University. He conducts research and is a consultant in the field of radiation biology and radioecology.

Harold Wyckoff, Ph.D. — Radiation physicist and Chairman of the International Commission on Radiation Units and Measurements. He was formerly with the National Bureau of Standards, the Armed Forces Radiobiology Research Institute and the Bureau of Radiological Health.

II. Major Topics of Discussion

A summary of issues for discussion was prepared from recommendations made by state and federal governmental agencies, environmental advocacy groups, and other interested parties. A list of these issues was distributed to panelists prior to their deliberations and served as the basis for their discussions and recommendations. The issues are summarized below:

A. Dose Reconstruction

Were estimated doses significant enough to cause health effects? If so, what effects could be expected?

Are we aware of all plutonuim releases? Is there a need for analysis of environmental plutonium concentrations in areas surrounding Hanford to differentiate between atmospheric fallout and Hanford sources?

Should a program be established to obtain autopsy tissue for long-lived radionuclide analysis?

Should a cumulative population dose be calculated for the combination of all Hanford radionuclide releases?

Is there, practically speaking, a data gathering technique that could be used today to confirm projected releases and effects from past I-131 releases? What would be the cost of such an effort?

Can we predict consistent biases or errors in the early monitoring data that could now be used to correct previously reported I-131 atmospheric cocentrations?

Can we come to some agreement of pathways of human exposure that were/are insignificant, so that our time can be concentrated on pathways of the highest exposure?

With research, can we determine exactly what was released from the old stacks besides I-131 (i.e., Cs-137, noble gases, or other radionuclides)?

Should a regional canvass be started to locate old, forgotten home-canned fruits and vegetables that may provide us with a link to past ingestion doses?

Can the DOE declassify further environmental release data without jeopardizing security interests? Can environmental releases of classified radionuclides with potential for significant human exposure be estimated and reported as cumulative estimates in lieu of declassification?

Fission products released to air were cited in the documents as insignificant compared to I-131. Can we identify the quantities of all products released and whether they were really insignificant?

Which exposure pathways and dose reconstruction techniques should be employed to further clarify human exposure?

Can we determine and agree on assumptions necessary to make a worst-case dose assessment with existing data?

Would current techniques of computer modeling be useful in predicting doses from environmental releases in the 1940's and 1950's?

Should classified document HW-17381 be reviewd for values of measured and calculated releases and the amount of Xenon-133 released during the 1949 Green Run.

Were bioassays performed after the 1949 Green Run experiment and, if so, how accurate were they?

How well do current computer models predict what we know to be measured deposition from the early days of Hanford operations?

B. Community Epidemiology

Are health outcome and exposure data associated with radiation in populations around Hanford adequate enough to detemine health effects. If not, could the necessary data be obtained? Define the limitations of available data.

Do existing data indicate a relatively high cancer rate in Idaho? Could an excess be due to Hanford releases?

Do Indians, due to their unique lifestyles, have a greater risk for health effects from Hanford releases? Does the high rate of fish consumption by Indians place them at a higher risk for radiation exposure than the general public?

Were any experiments done on human exposure to the 1952 Ru-103 releases?

The panel should evaluate the April 29, 1986 document "A Preliminary Estimate of Health Effects Due to Radioactive Releases at the Hanford Nuclear Weapons Plant," by Franke and Alvarez for correct assumptions and population dose estimates.

Did past radionuclide releases from Hanford cause public health risks that can be quantified? Are epidemiologic studies needed and if so, which studies should be performed? Can persons at high risk for radiation exposure be identified and studied? What are the available sources of health data and how reliable are they?

Is a regional or statewide tumor registry justified? If so, what would it cost and what benefits could be expected?

What types of epidemiologic studies could be used to detect the health effects of I-131? Would studies of hypothyroidism, cretinign or thyroxine usage in local communities be of value?

If epidemiologic studies are not scientifically feasible, are there other methods that could establish health risks to persons exposed from Hanford?

Should public health researchers prepare risk estimates for use in litigation by persons with diseases potentially caused by Hanford radionuclide releases ?

Define methods and organization of future environmental health effects monitoring.

Has adequate epidemiologic work been done on detecting health effects that would be expected from radionuclide ingestion as opposed to whole body, low LET exposures?

Can regional "folklore" be of use in documenting past family illnesses? Should a survey be done to determine whether deaths reportedly due to "natural causes" were perhaps radiation associated. Such a study might focus on behavioral clues noted by children about their parents or siblings prior to their deaths. This type of data, albeit of questionable accuracy, will not be available from future generations.

Could farmers' and ranchers' recollections of the health of their stock be useful? These animal populations, if downwind from Hanford and fed by foraging desert grasses or pasture grass are probably the most highly exposed.

C. Current Envrironmental Control, Monitoring, and Health Effects

Is there a need for a more realistic evaluation of transportation risks due to onsite, regional, and statewide transport of radioactive wastes?

Are current environmental controls sufficient to preclude future significant releases from Hanford facilities?

Is the alleged Sr-90 and tritium contamination in springs at the Columbia River's edge significant? Should additional efforts be made to stop or reduce these releases?

The magnitude of the plutonium production waste problem and the resultant environmental and health effects are now beginning to be understood. Has a technically viable, environmentally sound method for handling plutonium production waste been developed? Should halting plutonium production be considered as a first step towards a solution?

A specific example of the dangers posed to the environment by plutonium production is illustrated by the increased concentrations of Strontium-90 in Spring 28-2. (Hanford Reach Project, "Technical Basis of the Channel Theory," July 29, 1986, pg. 8) These elevated levels of Sr-90 suggest that plutonium production waste is migrating in the groundwater from the 200 Areas to the Columbia River. This is in direct conflict with the DOE's description of Sr-90 sorption

(retention) in the soils of the 200 Areas. High levels of Technetium-99 have also been found in Spring-28-2. This is another indication that radionuclides, claimed by DOE to be retained by the soil, are migrating from the 200 Areas into the groundwater. Will groundwater contamination by currently buried wastes pose significant human health risks?

Does the Hanford facility have an adequate program for accident notification and evaluation of potentially affected populations?

Is the current on- and off- site environmental monitoring performed by the states of Washington and Oregon adequate to provide an independent assessment of the effects of the Hanford facility?

Should an independent monitoring agency be established to assure the public that the environment and their health are being protected?

Is the Pacific Northwest Laboratory Hanford environmental monitoring program independent enough to ensure objectivity?

Is the quality assurance program for Pacific Northwest Laboratory Hanford environmental monitoring adequate?

D. Occupational Epidemiology

Determine the adequacy of previously conducted occupational epidemiologic studies. Should other studies and analyses be performed?

Can non-radiation worker populations (construction crews, surveyers, drivers, laundry workers, and families of workers who lived on or adjacent to Hanford) be included in epidemiolgic studies?

Evaluate the need for Hanford worker data to be made available to independent health agencies or research groups for research purposes. If these data should be made avaliable, what precautions should be taken?.

Does DOE have a sound scientific basis for concluding that Hanford workers have experienced no observable adverse health effects?

Do the researchers contracted by DOE have adequate scientific freedom? Is the peer review process adequate to ensure pursuit of potentially incriminating or embarassing research and the production of work with higher scientific quality?

Does the DOE collect adequate personal identifying information on its current workforce to facilitate future morbidity studies? If not, should this be done?

Have potential adverse pregnancy outcomes been adequately evaluated?

III. RECOMMENDATIONS OF HANFORD HEALTH EFFECTS REVIEW PANEL

A. Dose Reconstruction

In February 1986, the DOE released for public inspection 19,000 pages of historical documents describing environmental monitoring results and programs at Hanford. Although these documents were available to the Panel during its deliberations, the Panel did not have time to examine these data in detail. A detailed dose reconstruction and assessment is a major effort that could require a number of person-years. The feasibility of such an effort is being separately evaluated by the Historical Documents Review Committee.

Recognizing these issues, the State of Washington DSHS staff prepared for presentation to the Panel an overview of the data contained in the historical documents together with a preliminary dose assessment. The Panel, after review of this information, concludes that substantial quantities of radionuclides, particularly Iodine-1b1, had been released between 1946 and 1956 and that off-site radiation exposures, particularly to the thyroid, were probably high enough to warrant further dose assessment and study of health effects.

1. The Panel recommends that dose estimates be developed for community population groups possibly affected by past releases from Hanford. These estimates will be useful in feasibility and epidemiologic studies.

2. The Panel recognizes that important factors affecting doses include: geographic area (defined by distance, meteorology, hydrology and food source), age, sex, specific radionuclides, season, and exposure pathway (inhalation, diet, drinking water, skin absorption, etc.) The assessment of the interaction of these factors is a complex endeavor. The combination of these factors represents a very large number of categories. Therefore, the Panel recommends that doses be calculated first for population groups with higher risks such a children living close to Hanford and exposed to I-131 through consumption of milk.

3. Dose reconstruction will require a thorough cataloging of releases, including: isotopes involved, quantity, date, location, and medium into which released (soil, air, river). If possible, prevailing meteorologic conditions during releases should also be noted. The Panel recommends that such a database be developed.

4. The Panel recongnizes that both monitoring results and mathematical modeling may be useful in estimating dose. The Panel recommends that a range of possible exposures be calculated based on alternative assumptions.

5. The Panel recommends that the dose be expressed in standard units which will allow comaprison of doses from various radionuclides.

B. Community Epidemiology

The Panel recommends that additional studies of the possible effects of all past radiological exposures be considered. We recognize that uncertainty exists in the precise radiation dose, populations exposed, and whether or not adverse health effects have occurred as a result of releases from Hanford.

The Panel further recommends that the highest priority be given to the determination of morbidity of thyroid conditions known or suspected to be associated with radiation exposure. We recommend this because of releases reported in the historical documents, the high degree of concern about illnesses suspected to have resulted from these releases, and the potential to gain new scientific knowledge. Then, an appropriate analytic study should be conducted to determine whether or not these conditions are associated with the reported releases. The involved regional organizations (States and Tribes) should cooperatively select an investigator to develop a study protocol and secure adequate funding for these studies.

The Panel has identified as a high priority the establishement of an integrated prospective health surveillance system which would allow monitoring of specific health outcomes of concern. The states of Washington, Oregon, Idaho, and the Indian Tribes should first catalog and evaluate the feasibility of utilizing existing data systems such as hospital discharge databases, tumor registries, health insurance records, and laboratory and pathology reports to establish a disease surveillance

program before considering the establishment of a new and separate data collection system. Registries of reproductive outcomes in all three states to include all Native American Tribes would be beneficial for future surveillance but not useful to assess past exposures.

Studies of other diseases/conditions or registry development should be considered as more exposure and health information become available. Some illnesses of concern reported by the public may not be associated with radiation but may need to be followed up for other reasons. The Panel recognizes that other reviews and studies will be proposed and urges that each proposal be required to carefully delineate in a protocol the purpose, methods, exposure concerns and statistical power. These protocols should receive both peer and public review before implementation.

C. Environmental Monitoring

1. The Panel has identified some differences among reports relating to the release of radioactive materials. Other inconsistencies probably also exist. There are also "gaps" in the data. The inconsistencies are particulary evident for data from 1944 to 1956 and require further investigation and clarification.

2. The Panel recommends specifically that for assessment purposes, DOE, in collaboration with the states of Idaho, Washington, Oregon and the Indian Tribes, establish a publicly accessible, historical and ongoing data bank of all available data which on radionuclide and chemical which may have resulted in environmental contamination and exposure to persons, including those for unusual occurrences, planned and unplanned releases.

3. State and local agencies do not participate in some radiological emergency drills. The Panel recommends that funds be found to permit these regional agencies to participate in these drills.

4. The Panel is of the opinion that some areas of Hanford are nuclear and hazardous waste sites. We therefore urge to make the Indian tribes and the appropriate federal, state, and local agencies a concerted remedial investigation and feasibility study of the sites. The Panel recognizes that the DOE is involved in remedial actions in compliance with the DOE/Resource Conservation and Recovery Act (RCRA) and Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and supports the efforts.

5. The states of Oregon and Washington conduct off-site radiological environmental monitoring programs in their respective states to evaluate then consent off-site releases from Hanford. The state of Washington is also performing radiological monitoring at selected locations on the Hanford Site and in the early stages of implementing a monitoring and enforcement program for atmospheric radioactive effluents. The state of Idaho and the affected Indian Tribes are not presently conducting environmental radiological surveillance programs although such programs are proposed by the Indian Tribes for the near future.

   The Panel understands that Oregon and Washington and the three Tribes are planning to coordinate their radiological monitoring programs on a regional basis. The Panel endorses this coordinated effort to provide an independent assessment of the radiological impact of Hanford operations on the off-site environment.

6. Although no data on the subject were presented, the Panel understands that some soil profile sampling has been performed on the Hanford Site. The Panel encourages the expansion of this program as a means of estimating the amount of radionuclides deposited on the Hanford Site since the beginning of operations. A sufficient number of samples should be collected to obtain statistically valid data. Radionuclides to be evaluated should include (but not be limited to) isotopes of plutonium, americium, iodine, strontium, and cesium. An adequate number of additional samples should also be collected in the off-site areas at appropriate locations for use as controls.

Off-site soil sampling data should also be collected to evaluate the amounts of long-lived radionuclides released during past operations.

This sampling and evaluation should be coordinated with similar work onsite, and with monitoring programs evaluating current releases.

7. The Panel is concerned about the advisability of continued soil disposal of chemical and nuclear waste on the Hanford Site. Insufficient information was available to allow the Panel to assess the environmental impact of continuation of such disposal practices. Such an assessment should be a priority.

8. A complete database of individual environmental sample results should be made readily available following publication of the DOE annual report.

9. An independent assessment of the radiological monitoring programs of Washington and Oregon should be implemented to assure their quality, efficiency, and utility in facilitating a coordinated program.

Each exisiting environmental monitoring program conducted by either the states, Indian Tribes, or DOE should have a clear statement of its purpose, goals and objectives so that their effectiveness can be adequately assessed and if necessary, improved.

D. Occupational Epidemiology

We understand that some of these recommendations are already being pursued by the researchers at Hanford. The comments presented are intended to support these efforts and to encourage an expansion of the exisiting database, and to make possible additional types of studies, especially those involving morbidity, adverse reproductive outcome, and adverse health effects of hazardous chemical exposures.

1. The current epidmiologic studies of Hanford workers should be expanded to include morbidity and adverse reproductive outcomes of workers and their spouses.

2. A mortality study should be undertaken on other personnel who have worked at Hanford, including:

   a) military personnel assigned to the Hanford Reservation (for example, the personnel exposed to ruthenium in early years),

   b) construction workers,

   c) other subcontractor workers if enough of their group can be identified.

3. External radiation doses should be determined as accurately as possible for all groups studied and an attempt should be made to expand the assessment of internal doses from radionuclides.

4. Hazardous chemical exposures should be determined for each job or department. These data should be included in the database, for retrospective and prospective epidemiologic studies of possible health effects associated with these exposures.

5. A system should be developed for routine entry of all diagnosis from health insurance claims in the database. These data should be frequently analyzed so that epidemiologic investigations can be initiated quickly for possibly new health problems.

6. Protocols for new studies should include statistical power calculations so that a statement can be made regarding the probability of detecting a true association. For completed studies, confidence intervals should be calculated for risk estimates.

7. The issue of possible statistical control or adjustment for the "healthy worker effect" should be fully investigated.

8. A mechanism should be developed, at least prospectively, to track workers after they leave the Hanford workforce so that the occurrence of illnesses of interest can be monitored.

9. The Committee recommends that state health officials and Indian Tribes continue to be kept informed about any DOE health studies that involve their citizens.

E. Recommended Policy on Release of DOE Research and Data*

We recommend that DOE continue to pursue their policy development on the release of DOE-sponsored research data. Our suggestions are:

1. The source data should be available no later than three years following the latest report published in the scientific literature of findings by DOE-sponsored researchers so that the rights of the principal investigator are protected.

2. In studies involving on-going follow-up of cohorts, source data up to the era of follow-up reflected in the report or publication should be made available.

3. The data released should have sufficient detail to allow replications of published analyses.

4. Access to raw data to verify accuracy, consistency and completeness will be made within the limits of the restrictions imposed on DOE by data providers.

*Dr. Smith of the National Institute of Occupational Safety and Health abstained in order to avoid any possible conflict of interest.

F. Response to Public Testimony

Having heard the public testimony, the Panel recommends that a response from the Washington State Department of Social and Health Services (DSHS) and Indian Health Service be developed to provide information and services to the public. Information on disease causation, degree of medical certainty, and availability of medical services should be available on request to individuals and representative organizations including the Indian Tribes. In addition, the DSHS should maintain an accurate record of inquiries in order to ensure adequate recognition of concerned citizens and to provide some input to surveillance and epidemiology efforts.

The letter from the DSHS to the citizens who testified should include the above excerpt or all of the Panel Report. In addition, the name, address. and telephone number of a representative of DSHS should be included as a point of entry for inquireies by the public. Thanks should be expressed for their written comments or appearance before the panel, and a copy of letters should be sent to the Tribes and community organizations.

IV. ADDITIONAL ISSUES

After a week of presentations and deliberations, the Panel was faced with the reality that all proposed issues for discussion had not been addressed. After reaching consensus on a substantial number of issues, the Panel chose not to respond to the remaining problems through balloting or other mechanisms to solicit their responses. They felt that the development of additional recommendations without face-to-face dialog might produce misleading results and that recommendations obtained in this manner would detract from the strength of the consensus conclusions.

The sponsors of the HHERP therefore decided to catalog the important unanswered issues and to provide information and recommendations where possible. The specific issues with responses are listed below. These responses are <u>not</u> those of the Panel and should be considered separately from the consensus recommendations.

A. <u>Dose Reconstruction</u>

1. How will additional DOE documents on environmental releases and unusual occurrences be made available for public scrutiny? What efforts will be made to obtain additional data on releases of plutonium, noble gases, and strontium-90? How will currently classified data be made available to researchers so that accurate dose reconstructions can be performed?

The DOE has indicated that any researcher with a" Q" clearance can

arrange to have access to these classified data. It is possible that an appropriately-cleared researcher can abstract and summarize data in such a way as to prepare dose estimates without violating classification regulations. Some staff members of the Washington DSHS have "Q" clearances and could review these data. Alternatively, interested governmental and public agencies could attempt to have relevant documents declassified. Regardless of whether these data are made public or available only to cleared persons, substantial dose reconstruction efforts will be required to translate these raw data into more meaningful dose estimates. The issue of dose reconstruction is one that is now the responsibility of the Historical Documents Review Committee.

2. Considering dietary habits, culture, lifestyle, and economic conditions, do Indians have unique exposures which warrant further investigation?

The answer to this question requires one to view exposure in the context of specific time periods. For the years between 1944 and 1956, radionuclide releases to the atmosphere and the Columbia River were highest, and have declined considerably since this time. Preliminary dose calculations for these early years, performed by the staff of the Washington DSHS, indicate that the highest radiation doses to the public were from iodine-131 in communities around Richland and Pasco, Washington. The exposure sources that led to

the highest doses for residents in these areas during this period were leafy vegetables, milk, and meat, with milk resulting in doses many times higher than the other foods. If Indians consumed more milk from local dairys than other cultural groups, then they would have received higher doses to the thyroid. Additionally, if Indians ate leafy vegetables grown in areas close to the Hanford Reservation more frequently than others, they probably received higher radiation doses.

In the early opperational years, doses from other radionuclides were much lower than those from iodine-131. The exposure route that probably resulted in the highest dose from radionuclides other than iodine-131 was external exposure (gamma ray exposure coming from radionuclides in the air and on the ground). Persons living closest to the Hanford Reservation, particularly those living in areas downwind from Hanford, would have received the highest doses from this route. The dosimetry for the early operational years must be considered tentative, and these estimates should be confirmed after obtaining data on releases of noble gases, strontium-90, and plutonium and after confirming the assumptions in the initial dosimetry models.

For the years between 1957 and 1984, doses to the general public from Hanford operations have been summarized in the document "Offsite Radiation Doses Summarized from Hanford Environmental Monitoring Reports for the Years 1957-1984 by J.K. Soldat, K.R. Price, and W.D.

McCormack (Pacific Northwest Laboratory document PNL-5795). This report indicates that between 1957 and 1970, estimated doses to the maximum individual were much lower than those for the early operational years, but substantially higher than doses estimated for subsequent years.

Whereas preliminary estimates of offsite doses to the public during the early years (1944-1956) exceeded current dose limits by large margins, the doses reported for 1957 to 1970 were all within current dose limits for public exposure. However, these doses sometimes approached current dose limits. Additionally, annual whole body doses for this period often approached 100 mrem for the maximally exposed individual-- a level that is considered by some to be more appropriate than the current 500 mrem whole body limit for annual exposure to the public, and one that exceeds the annual 25 mrem whole body limit for doses from the nuclear fuel cycle. Doses reported for years after 1970 are low compared to earlier years and are substantially lower than current radiation safety regulations.

The report by Soldat et al. provides only scant information on the pathways that result in the doses they reported. For the years 1957 to 1959, fish and waterfowl were the largest contributors to bone dose and also contributed significantly to the dose to the gastrointestinal tract. Presumably, these sources have continued to be major contributors to these organ doses. Based on these data, it

appears that fishing and hunting in areas receiving Hanford radioactive releases may provide higher doses to certain organs than other environmental pathways. However, the current doses from these pathways are quite low and do not pose a risk to public health based on existing knowledge of the health effects of radiation.

It is important to note that current annual environmental monitoring reports for Hanford, as exemplified by the report entitled "Environmental Monitoring at Hanford for 1984" by K.R. Price et al. (Pacific Northwest Laboratory document PNL-5407) do not specifically identify doses from fish, fowl, or other food sources unique to Indian diets. Furthermore, when radionuclide concentrations for these foods are reported, the number of samples comprising the average concentration are not reported, nor are the standard errors of these measurements. Reporting of these data would enhance the information content of these reports at little expense to the researchers. Additionally, the computation of doses from foods unique to the Indian diet on an annual basis would provide answers to the important question of exposures to Indians with unique diets. The sponsors recommended that such doses be computed by either DOE or IHS.

3. The HHERP concluded that radiation doses to the thyroid from Hanford iodine-131 releases were probably large enough to cause adverse health effects in persons living nearby. Are any Indian reservations

located in areas where people are suspected to have received high doses?

The highest estimated thyroid doses are for infants and children who consumed iodine-131-contaminated milk from local dairies--particularly those dairies whose cows foraged in pastures downwind from Hanford. Initial estimates indicate that the highest atmospheric and vegetation iodine-131 concentrations occurred in areas to the east of the Hanford reservation. Indians who consumed milk or fresh leafy vegetables imported from this area could have received high thyroid doses between 1944 and 1950.

The Umatilla and Nez Perce Reservations are both in areas that frequently are in the path of wind blowing across the Hanford Reservation and would be expected to have been at risk for iodine-131 exposure between the years 1944 and 1950. The Coleville and Yakima reservations, on the other hand, are downwind from Hanford less frequently and would be expected to have received less contamination from iodine-131. These initial findings must be regarded with caution, as significant releases could have occurred during periods when winds were blowing from less common directions. Only a thorough dosimetric analysis can clarify these issues.

4. What is the cumulative population dose from all Hanford releases?

A cumulative population dose can only be computed after source terms for all radionuclides of importance are known and after thorough dosimetric estimates have been made. It is important to realize that a cumulative population dose has only limited utility. Such a dose is usually only used to estimate the number of cases of different diseases that could be expected to be associated with radiation exposure. This type of estimate does not identify groups at highest risk for disease and is not a substitute for epidemiologic studies. Population doses are useful for making comparisons between different radiation accidents or chronic releases and also for helping to determine the feasibility of epidemiologic studies.

B. COMMUNITY EPIDEMIOLOGY

1. Can there be more State involvement in the review of protocols and results for DOE-conducted epidemiologic studies?

** Talk with Sam Milham and others in Washington and Oregon about this.

2. Given the fact that source-term and environmental monitoring data for the early operational years of Hanford are incomplete and of questionable accuracy, can dosimetry reconstruction provide an adequate assessment for purposes of epidemiologic studies?

Dose reconstruction is always difficult, time consuming, and

expensive. The quality of results is a direct function of the quality of source-term and environmental data and the time and money that one is willing to spend. Such an undertaking is possible, however, and can be approached both from computations utilizing environmental monitoring data and from computer simulations based on detailed source-term and meterologic data. Error estimates can also be prepared for reconstructed doses and these doses can be used to predict potential health effects based on the current understanding of health risks associated with radiation exposure.

In the case of the Hanford early operational years, the Panel determined that the estimated magnitude of exposure and the summaries of original data provided were sufficient to warrant dosimetry reconstruction. The panel further recommended that reconstruction efforts focus first on the pathways and populations with potential for highest exposure. This recommendation implies a step-wise approach to dose reconstruction that would base work beyond the dosimetry for highest exposure pathways upon the results of the first phase. Inherrent in this recommendation is the belief that reasonable dosimetery can be obtained for this first phase. If this belief proves incorrect, then it would be unlikely that further dose reconstruction would be justifiable.

Meetings on this issue have been held between the HDRC and DOE subsequent to the HHERP review in September 1987. At these meetings,

DOE has indicated they will be performing a thorough dose reconstruction for early operational years. Preliminary plans for this effort include all exposure pathways and cost estimates are in the millions of dollars. These proposed efforts appear to be consistent with Panel recommendations, though they may not involve prioritization of exposure pathways. Implicit in the recommendations of the Panel is the importance of coordinating credible dose reconstruction with epidemiologic studies on the health effects associated with such exposures. It is therefore important to insure that the DOE effort is planned in coordination with epidemiologic studies and that the DOE dosimetry reconstruction have adequate input and peer review from independent scientists.

3. Should baseline health data be collected now in order to scientifically evaluate the health effects of future Hanford operations?

Though estimates of the magnitude of environmental releases associated with Hanford operations both now and in the future suggest that exposures will never approach those of the early operational years, the possibility of unforseen problems with environmental control and major radiation accidents must always be considered. Traditionally, studies of causes of death have been used to evaluate such problems, and sources of these data are available from the states of Washington, Oregon, and Idaho. Since these data have been collected continuously for many years, baseline data are already

available. Studies that utilize mortality data may miss certain important radiation-related diseases, both fatal and nonfatal. Furthermore, they cannot assess reproductive effects and identify cases of diseases such as cancer that may not result in death for many years after initial diagnosis.

Recognizing these issues, the Panel recommended that an integrated health surveillance system be established to assure consistent collection and analysis of health data to assess not only possible effects of radiation exposure, but also other effects such as toxic exposures, major preventable illnesses; and for health planning purposes. The Panel also recommended that such a system employ existing sources of data to the greatest extent possible in order to be cost effective. They also cautioned the public that even well-managed surveillance systems may not be able to detect the effects of radiation exposure because of statistical problems in studying rare diseases in small populations.

C. Environmental Control and Monitoring

1. Is there a need for more independent monitoring of environmental releases from Hanford? If so, should such monitoring be done by the states of Oregon and Washington?

In their recommendations, the Panel endorsed coordinated efforts in regional radiological monitoring between the states of Oregon and Washington and the three affected tribes. Though the issue of the adequacey and independence of environmental monitoring efforts was discussed, the Panel could not assess the quality of current and planned efforts because of the limited time for processing information on this matter. However, the Panel did feel this was an important issue and recommended that an independent assessment of the radiological monitoring programs of Washington and Oregon be implemented to address these issues.

A report prepared by the DOE-funded Pacific Northwest Laboratories (PNL) Peer Review Panel on Surveillance and Monitoring, which met August 12-14, 1985, made many recommendations regarding improvement in efficiency and quality of offsite monitoring. This report consistently supported the critical evaluation of existing monitoring efforts for the purpose of identifying unnecessary sample collection that could be discontinued in favor of more important monitoring. Likewise, the report stressed the need for integrating monitoring programs and developing of written quality assurance guidelines and programs for their implementation.

This report also acknowledged the "adversarial" relationship between PNL and the State of Washington Department of Ecology and possibly between PNL and the State of Oregon. This review panel stressed that

offsite surveillance and monitoring activities should be a "joint responsibility of PNL (DOE) and the states," and that the states have responsibilities to their citizens to provide independent offsite monitoring.

The sponsors concur with these assessments and maintain that independent monitoring efforts by states and tribes are important and need to be improved. Additionally, the sponsors believe that independent monitoring does not imply unncessary duplication of efforts and that concerted efforts to integrate the environmental monitoring of PNL, the states, and the tribes can improve environmental quality and public health. A concerted effort to implement such a program should receive a high priority.

2. Are existing environmental and effluent monitoring and dose assessment efforts adequate to discern potential health impacts?

The forementioned panel convened by PNL also addressed this issue and concluded that although current PNL environmental surveillance and monitoring programs are effective and that radiation doses to the public are "so low that no measurable health impacts would be anticipated," improvement is warranted in many areas. They specifically cited a need for: 1) additional funding for PNL

monitoring efforts, 2) improvement of environmental monitoring strategies, 3) improvement of sediment sampling in the Columbia River, 4) the need to integrate computer simulations of plume dipersal with environmental monitoring data and sample collection strategies, 5) the need to expand groundwater modeling and monitoring programs, 6) additional monitoring of milk from dairies near Hanford, and 7) exploration of ways to improve environmental monitoring in accident situations.

The sponsors feel these recommendations are thoughtful and should be implemented. Although the techniques for monitoring radionuclides in the environment have improved considerably over the past 20 years, the operators of nuclear facilities and state monitoring agencies often find it difficult to critically evaluate monitoring programs and to have the flexibility to change practices that cannot be scientifically justified. Likewise, both groups find it difficult to involve the public, independent scientists, and environmental advocacy groups in the process of determining what constitutes an adequate environmental monitoring program. Often federal and state regulations seem to impede these efforts.

The sponsors recognize that determining the adequacy of environmental monitoring programs should be an ongoing process and that periodic independent review of all programs be implemented.

V. Implementation of Panel Recommendations

The States of Washington and Oregon and the Indian Health Service have the responsibility of addressing and implementing the recommendations made by the HHERP. The Governors of Washington and Oregon have given the Hanford Historical Documents Review Committee the responsibility for developing specific plans for the implementation of dosimetry and epidemiologic studies on the effects of releases during the early operational years of Hanford. This group has representatives from both states and the three Affected Tribes. The states and the Indian Health Service have jurisdiction over the other areas for which recommendations were made.

The charge of the HHERP did not include a prioritization of recommendations, nor did it include an assessment of feasibility or costs and benefits of the recommendations. The sponsors of the HHERP feel these are important issues and therefore have attempted to address them briefly.

A. Activities of the Historical Documents Review Committee

Since the September 1986 meeting of the HHERP, the Historical Documents Review Committee has met three times. Members of the committee discussed dose reconstruction and health studies. They have tentatively concluded that dosimetry reconstruction for the early operational years and an epidemiologic study of thyroid disease in communities near Hanford should receive the highest priority. The Committee has also discussed dosimetry reconstruction with the DOE and has learned that DOE plans an extensive dose reconstruction effort. The Committee is attempting to

negotiate with DOE in order to assure that this review is independent and that it will be acceptable to the citizens of Washington and Oregon. Furthermore, the Committee has discussed the need for funding the proposed epidemiologic studies with the DOE.

B. Prioritization of HHERP Recommendations

Many of the Panel recommendations do not require extensive efforts or funds to be expended. The sponsors recommend that such recommendations be identified and addressed expeditiously. In the area of health studies, the sponsors agree with the priorities established by the Historical Documents Review Committee and suggest that these be undertaken before others are considered. The sponsors recommend that a high priority be given to the establishment of the recommended integrated prospective health surveillance system and that a committee be established to develop this program and obtain necessary funding.

In the area of environmental monitoring, the sponsors support the recommendation that a data bank be established to make available to the public data on all environmental releases of toxic chemicals and radionuclides. The sponsors urge the Historical Documents Review Committee to make DOE dose reconstruction data available through such a program. The sponsors feel that an independent review should be conducted of current state programs for monitoring the environmental releases from Hanford. Such a review should also address ways through which state, tribal, and DOE monitoring programs can be integrated to improve efficiency and quality of data.

cc: Warren
Jerry
Joe

HOUSE OF REPRESENTATIVES

Olympia, Washington

BILL ANALYSIS

Cancer Registry
Brief Title

Bill No. HB 265

Date 1-22-87

Rust, Nelson, Braddock
Sponsor

Staff Bill Hagens (786-7131)

Committee on Health Care

SUMMARY OF MAJOR PROVISIONS:

This proposal requires that the Department of Social and Health Services (DSHS) establish, by contract with a recognized regional cancer research institution (Fred Hutchinson Cancer Research Center), a statewide cancer registry program. The purpose of the registry is to monitor the incidence of cancer in the state of Washington for the purpose of understanding, controlling, and reducing its occurrence.

All cases of cancer, as defined by the department, must be reported. This information is to be kept confidential, but allows for statistical, scientific and medical research, under safeguards.

The proposal contains a $600,000 state appropriation for the 1987-1989 biennium.

SECTION ANALYSIS:

Section 1

Establishes legislative intent.

Section 2

Requires DSHS to contract with a recognized regional cancer research institution for a statewide cancer registry program.

Section 3

Specifies what information should be included for each cancer case reported, and requires that health care providers report these cases.

Section 4

Permits data collected to be used for statistical, scientific and medical research purposes, but certain information is to be kept

confidential.

Section 5

Requires the contractor to sign an oath of confidentiality.

Section 6

Requires DSHS to adopt rules.

Section 7

Places provisions in RCW 70.54. (Public health and safety.)

Section 8

Appropriates $600,000 state funds to DSHS for the 1987-1989 biennium.

Hearing held 4/23/87.

Testified in favor: · Mike Ryherd, Fred Hutchinson/WSMA

Testified in opposition: · Larry Mulkey in Blue Mountain Oncology Program
· Kay Hicks, Washington State Tumor Registrars Assn.

FISCAL NOTE

Revised 3-11-85

REQUEST NUMBER 85-76A

Department of Social and Health Services 300
Responding Agency Code No.

Bill No. SSB 3447

March 11, 1985
Date Submitted

Description

SSB 3447 requires DSHS to establish by contract with a recognized regional cancer research institution a statewide cancer registry program. The purpose of the registry is to monitor the incidence of cancer in the State of Washington for the purpose of understanding, controlling and reducing its occurrence.

Under Section 3, DSHS or its designee is required to approve and supply the cancer reporting forms for the registry. Specific items of information are required which are to be reported by every health care facility, independent clinical laboratory and those physicians who diagnose and treat any patient with cancer who is not hospitalized as part of the patient's initial course of treatment. Data obtained is to be used for statistical, scientific and medical research purposes. The names of persons, physicians and institutions are to be held confidential, except that medical researchers may use the names of persons, physicians and institutions when requesting additional information for research studies approved by the institutional review board of the contractee.

Section 5 requires the contractee to sign an oath of confidentiality upon receiving information from providers. This oath states that as a condition of conducting research concerning persons who have received services from providers the contractee will not divulge, publish, or otherwise make known to unauthorized persons or the public any information which could lead to the identification of those persons. States that the contractee is subject to civil liability if such unauthorized release of information is made.

DSHS is to adopt rules for implementation, including definitions.

SSB 3447 includes a $48,000 appropriation to DSHS for the fiscal year ending June 30, 1986 to contract for establishment of the cancer registry.

Fiscal Impact

The information required to be collected by the act is currently being collected in 13 counties which cover approximately 80 percent of the state's population. This activity is being performed by the Fred Hutchinson Cancer Center and they estimate that it would cost $267,500 annually for the department to contract with them to perform this service statewide.

As an alternative, the Fred Hutchinson Cancer Center estimates that they could continue to collect information in the 13 counties covered by their current system and provide this information to the state under a contract for $48,000 a year.

FISCAL NOTE

Revised 3-11-85

REQUEST NO. 85-76A

BILL NO. SSB 3447	RESPONDING AGENCY Department of Social and Health Services
TITLE Cancer Research	PREPARED BY Pamela J. Campbell / DATE 3/11/85
	TITLE Budget Director / SCAN 3-7114
	REVIEWED BY OFM / DATE

Fiscal impact of the above legislation on Washington State government is estimated to be: ☐ NONE ☒ AS SHOWN BELOW

Figures in parentheses represent reductions. Detail supporting these estimates is contained in Form FN-2.

First Biennium 19 85 — 19 87

REVENUE TO:

FUND	CODE	SOURCE TITLE	CODE	1ST YEAR	2ND YEAR	TOTAL	FIRST SIX YEARS
GENERAL FUND — STATE	001						
GENERAL FUND — FEDERAL	001						
OTHER *							
TOTALS							

EXPENDITURES FROM:

FUND	CODE				
GENERAL FUND — STATE	001	267,500	267,500	535,000	1,605,000
GENERAL FUND — FEDERAL	001				
OTHER *					
TOTALS		267,500	267,500	535,000	1,605,000

* Itemize all other, including non-appropriated funds and/or accounts within the General Fund.

EXPENDITURES BY OBJECT OR PURPOSE:

FTE STAFF YEARS				
SALARIES AND WAGES				
PERSONAL SERVICE CONTRACTS				
GOODS AND SERVICES				
TRAVEL				
EQUIPMENT				
EMPLOYEE BENEFITS	267,500	267,500	535,000	1,605,000
GRANTS AND SUBSIDIES				
INTERAGENCY REIMBURSEMENT				
DEBT SERVICE				
CAPITAL OUTLAYS				
TOTALS	267,500	267,500	535,000	1,605,000

Check this box if the above legislation has cash flow impact per instructions: ☐
Show cash flow impact on FN-2.

Check this box if the above legislation has fiscal impact on local governments: ☐
Do not include local government impact on FN-1.

Form FN-1 (Rev 12-82) 530

OFFICE OF THE ATTORNEY GENERAL

February 9, 1987

TO: Warren A. Bishop, Chairman
Nuclear Waste Board

FROM: Charles B. Roe, Jr., Senior Assistant Attorney General, and
Narda Pierce, Assistant Attorney General NP

SUBJECT: Litigation Status Report

This memorandum sets forth the general status of various litigation or potential litigation areas pertaining to the Nuclear Waste Policy Act (NWPA).

I. Pending Litigation

A. Litigation Initiated Pertaining to Decisions of, May 28, 1986 Taken by Officials of the United States.

1. (a) Nominations, (b) Recommendations, (c) Environmental Assessments (EAs), (d) Presidential Approvals, (e) Preliminary Determinations of Suitability (PDS), and (f) Second-Round Repository Suspension - the "comprehensive" case.

Eikenberry v. Herrington, No. 86-7325 (9th Cir.), filed on June 4, 1986, embodies a challenge by the State of Washington and the Nuclear Waste Board to all of the subject actions ((a) through (f)) of the federal officials of May 28, 1986 as set forth above. Texas has initiated litigation involving federal official actions (a) through (d) in Texas v. USDOE, No. 86-7372 (9th Cir.), (e) in No. 86-7659, and (f) in No. 86-7661. Nevada has also initiated a similar action, involving (a) through (c) and (e) in Nevada v. Herrington, Nos. 86-7307, 7309 and 7310 (9th Cir.). In addition, as reported earlier, several private organizations have initiated similar litigation. See Sierra Club v. Herrington, No. 86-7338 (9th Cir.); Nuclear Waste Task Force, Inc. v. Herrington, No. 86-7372 (9th Cir.); and National Parks and Conservation Association v. Herrington, No. 86-7373 (9th Cir.). Oregon and Idaho have also challenged the May 28 actions in Oregon v. Herrington, No. 86-7500 (9th Cir.), and Idaho v. Herrington, No. 86-7474 (9th Cir.). Utah v. USDOE, No. 86-7667 (9th Cir.), challenges the

nomination and issuance of an environmental assessment for the Davis Canyon site.

Clark County Public Utility District No. 2 v. Herrington, No. 86-7681 (9th Cir.), challenges (a) through (f) described above.

People Against Nuclear Dumping at Hanford v. USDOE, No. 86-7702 (9th Cir.), challenges (a) through (f) described above.

Yakima Indian Nation v. Herrington, No. 86-7700 (9th Cir., challenges (a) through (f) described above.

Mississippi v. Herrington, No. 86-7721 (D.C. Cir.), challenges the environmental assessment for and nomination of Richton Dome site (it is expected this case will be transferred to the 9th Circuit).

Environmental Defense Fund v. Herrington, No. 86- 7682 (9th Cir.), challenges (a) through (f) above and specifically challenges nomination of the Davis Canyon, Utah site.

International Union of Agricultural and Industrial Workers v. Herrington, No. _____ (9th Cir.), challenges selection of the Deaf Smith, Texas site.

In an order issued October 29, 1986, the Ninth Circuit (1) denied the United States Department of Energy's (USDOE) motion to transfer the nuclear waste cases to the District of Columbia Circuit; (2) granted motions to intervene in the second repository cases by Maine, Virginia, New Hampshire, North Carolina, Minnesota, and Wisconsin; (3) granted the utilities' motions to intervene; and (4) consolidated all 1986 nuclear waste cases for "purposes of filing and docketing."

On November 6, 1986, we filed a "Motion for Entry of Case Management Order" which would group claims involving common issues of fact or law and appoint a special master to oversee requested discovery and fact-finding. All other states and environmental groups which are petitioners in these cases joined in the motion.

New Developments in this Reporting Period

The federal government filed a response to our case management and discovery motions on January 14, 1987. In that response USDOE indicates it will be offering petitioners access to all "internal deliberative documents," then argues that the motions for discovery, admission of extra-record evidence and a special master are moot. We filed a reply on February 6, 1987 on behalf

of five states, the Yakima Indian Nation, Clark Co. PUD No. 1, and several environmental and public interest organizations. In the reply petitioners state they are encouraged by USDOE's reversal of its previous position that it would release documents only after discovery proceedings. However, we maintain our request for a special master to oversee document review and any additional discovery and to receive extra-record evidence.

2. Preliminary Determination of Suitability (PDS) Litigation.

Nuclear Waste Board v. USDOE, No. 86-7326 (9th Cir.), filed June 4, 1986, embodies a challenge by the State of Washington and its Nuclear Waste Board to USDOE's PDS determination. The federal court of appeals in San Francisco has not, as yet, begun active processing of this case.

Two cases challenging USDOE's PDS determination were transferred to the Ninth Circuit. These include Nuclear Waste Task Force v. Herrington, No. 86-7662 (9th Cir.), and Texas v. USDOE, No. 86-7659 (9th Cir.).

3. Second-Round Repository Suspension Litigation.

State of Washington v. USDOE, No. 86-7327 (9th Cir.), embodies a challenge by the State of Washington and its Nuclear Waste Board to USDOE's determination to indefinitely suspend a site-specific search for a "second-round" repository. Since that action, Idaho and Oregon have initiated similar litigation. See subsection I.A. of this memo. See also National Parks and Conservation Association, et al. v. Herrington, et al., No. 86-7373 (9th Cir.) transferred from the District of Columbia Court of Appeals, Docket No. 86-1341. Likewise, the Coalition for Safe Power, an Oregon group, has initiated a similar proceeding. Coalition For Safe Power v. Herrington, No. 86-7416 (9th Cir.). Texas's "second-round" case was recently transferred to the Ninth Circuit. Texas v. Herrington, No. 86-7661 (9th Cir.). The following states have been granted intervention in State of Washington v. USDOE, supra, and National Parks and Conservation Association, supra:

a) New Hampshire
b) Maine
c) Virginia
d) North Carolina
e) Wisconsin, and
f) Minnesota

In addition, approximately twenty nuclear power utility organizations (lead by Arkansas Power and Light Company) have intervened in this case (as well as the other two cases we initiated on June 4, 1986).

On September 19, 1986, this office filed, in No. 86-7327, a motion in the nature of a summary judgment, which was discussed in detail at a previous Nuclear Waste Board meeting. Idaho and Senator Slade Gorton have filed briefs amicus curiae with the Court of Appeals in support of our motion. The State of Montana recently joined with Idaho in supporting our motion. The United States has filed a response in opposition to our motion, requesting that the court decline to consider the motion, but not addressing the legal issues presented. On October 23, 1986, we filed a motion for an order requiring USDOE to respond to the merits of the issues. To date, the Court has taken no action on these motions.

The suspension of the second-repository search has been challenged in several cases recently filed in the Ninth Circuit, including Clark County P.U.D. v. Herrington; Yakima Indian Nation v. Herrington; Environmental Defense Fund v. Herrington; People Against Nuclear Dumping at Hanford (PANDAH), et al. v. USDOE; and Nuclear Waste Task Force, et al. v. USDOE.

The National Parks and Conservation Association has filed a "Motion for Declaration of Invalidity of Continued DOE Siting Activities for a First High-Level Nuclear Waste Repository" which asks the Court to declare that no further site selection for a first repository may be lawfully undertaken so long as siting activities for selection of a second repository remain suspended. USDOE has asked the Court to decline to consider the motion.

B. Siting Guidelines Litigation

Environmental Policy Institute v. Herrington, Consolidated Cases Nos. 84-7854, etc., including State of Washington, Nuclear Waste Board v. USDOE, Nos 85-7128 and 86-7253 (9th Cir.).

USDOE moved, in 1985, to dismiss the Nuclear Waste Board's case on the grounds that the guidelines are not "ripe" for review. All briefing on the motion by the parties was completed in the summer of 1985. On April 24, 1986, the court issued an Order stating "the motion is hereby referred to the merits panel." This action means that the three-judge panel will consider the United States' motion to dismiss at the same time the hearing on the merits of the litigation takes place.

The Ninth Circuit Court of Appeals, in June, issued an order consolidating all of the siting guidelines cases initiated by the various states and private groups. The latest states to be granted party "intervenor" status in this litigation are Oregon and Idaho.

On October 29, 1986, the Ninth Circuit denied USDOE's motion to transfer these siting guidelines cases, along with other nuclear waste cases, to the District of Columbia Circuit.

On November 6, 1986, we filed a motion for the appointment of a special master to oversee discovery and supplementation of the record in these cases. Most other petitioners joined in the motion. USDOE has opposed the motion, but in a January 14, 1987 response stated it will allow petitioners to review "internal deliberative documents."

The USDOE has moved to consolidate the siting guidelines cases with the 1986 cases. We have opposed such consolidation. The Court has not ruled on these motions.

On November 24, 1986, we filed a cautionary Petition for Review of the siting guidelines "for the purpose of preserving claims filed by these Petitioners in Ninth Circuit No. 85-7128 and Ninth Circuit No. 86-7253 in light of the unresolved 'Motion to Dismiss' those cases filed by Respondents." The petition simply repeats our challenge to the siting guidelines to preclude any argument by USDOE that a challenge had to be filed after implementation of the guidelines in order to be timely.

C. "Monitored Retrievable Storage" (MRS)

Tennessee v. Herrington, No. 385-0959, D. Ct. Tenn., relates to section 141 of the NWPA. That section directs USDOE to report to Congress its recommendations relating to the establishment of a monitored retrievable storage (MRS) facility for the disposal of high-level nuclear waste. In July 1985, USDOE recommended the location of such a facility in Tennessee. On August 20, 1986, Tennessee challenged USDOE's processing of the MRS provisions of the NWPA contending that USDOE's actions were in conflict with "cooperation and consultation" requirements of the NWPA, and that the NWPA, itself, conflicts with the United States Constitution, Article I, Sec. 7.

The United States moved to dismiss the case on jurisdictional grounds. That motion was denied by the district court on November 26, 1985, and on December 5, 1985, USDOE appealed the

district court's action to the Sixth Circuit Court of Appeals. On February 5, 1986, the United States District Court also ruled that USDOE failed to "consult and cooperate" with the State of Tennessee as required by the NWPA in relation to USDOE's MRS siting activity. In light thereof, the court has enjoined USDOE from presenting a MRS recommendation to Congress containing studies prepared in violation of the NWPA.

In a decision issued November 25, 1986, the Sixth Circuit Court of Appeals held: (1) the courts of appeals have original and exclusive jurisdiction over actions regarding the compliance with the consultation and cooperation requirements with respect to MRS facilities; and (2) the Nuclear Waste Policy Act does not require the Secretary of Energy to consult with a state before submitting proposals to Congress regarding the location and construction of MRS facilities. The Sixth Circuit Court of Appeals, therefore, reversed the District Court's ruling that it had jurisdiction over the case and dismissed the State of Tennessee's petition for review. The State of Tennessee petitioned for a rehearing en banc (i.e., a hearing before all of the judges of the Sixth Circuit as opposed to a three-judge panel). Tennessee also requested orders (a stay of the mandate or an injunction) which would prevent USDOE from submitting the MRS proposal to Congress until the case is finally determined. USDOE asked that the mandate be issued immediately so the proposal may be submitted to Congress.

New Developments in this Reporting Period

The Sixth Circuit denied the motion for rehearing but stayed the issuance of the mandate until February 7 to allow Tennessee to file a petition for certiorari with the United States Supreme Court.

D. EPA Standards Litigation

The Natural Resources Defense Council (NRDC) and several other environmental groups, along with the states of Minnesota, Maine, Texas, and Vermont, on December 2, 1985, filed petitions to review the standards adopted by the United States Environmental Protection Agency relating to radioactive releases from high-level nuclear waste repositories. Natural Resources Defense Council v. EPA, No. 85-1915 (1st Cir., filed November 1985). The challenges were based on "invalidity" contentions pertaining primarily to ground water standards and procedures used in adopting the standards. The cases were filed in various circuits of the United States Court of Appeals, namely, the First (NRDC, Maine, and Vermont), Fifth (Texas), and Eighth (Minnesota)

circuits. The briefing phase of the case is now complete. Oral argument was heard on September 10, 1986 in Boston.

E. Litigation Funding Litigation

On May 28, 1986, Nevada initiated litigation in the Ninth Circuit Court of Appeals challenging USDOE's refusal to provide Nevada with monies from the Nuclear Waste Fund of NWPA to finance litigation challenging the validity of USDOE's implementation of the NWPA's repository siting program. Nevada v. Herrington, No. 86-7311 (9th Cir.). Utah, Mississippi and Wisconsin intervened in that case.

Thereafter, on July 28, 1986, this office filed similar litigation in the same court. The case, Department of Ecology of the State of Washington, et al. v. USDOE, et al., No. 86-7456 (9th Cir.), centers on the United States Department of Energy's denial on June 17, 1986 of a Department of Ecology request for funds to finance litigation. Active processing of this case has begun in combination with a related case, Nevada v. Herrington, No. 86-7311 (9th Cir.). This office filed a brief on the merits on October 6, 1986. The USDOE filed its responding brief on October 24, 1986. On November 14, 1986, we filed a joint reply brief with Nevada, Wisconsin, Utah and Mississippi. Oral argument will be heard before a three-judge panel on February 12, 1987.

The Yakima Indian Nation has also challenged the USDOE's denial of funding litigation in its recently filed petition.

We trust this will assist you in the conduct of your Board's meeting.

CBR/NP:gb

cc: Terry Husseman
Jeff Goltz

OFFICE OF THE ATTORNEY GENERAL

February 10, 1987

TO: Warren A. Bishop, Chairman, Nuclear Waste Board

FROM: Charles B. Roe, Jr., Senior Assistant Attorney General CBR

SUBJECT: Federal Legislative Report

This is the first report for the current session of Congress on bills pending in Congress relating to the Nuclear Waste Policy Act and "Price-Anderson" area.

I. Nuclear Waste Policy Act Bills.

A. H.R. 266 (by Rep. Vucanovich) relates to the repository site selection process by suspending the process. The bill also calls for Congress to hold hearings on the process issue as well as to issue revised "guidelines" for siting repositories.

B. H.R. 509 (by Rep. Neal) removes the requirement of the Secretary of USDOE to pursue a "second-round" repository.

From recent discussions with legislative contacts in Washington, D.C., it appears that bills of this nature are not likely to be enacted this year.

II. "Price-Anderson" Bills.

Only one bill has been introduced at this time.

S. 44 (by Senator Moynihan) is Senator Stafford's S. 1761 of the last session, with minor modifications. It appears that the Senate Environment and Public Works Committee, chaired by Senator Burdick, will center considerable attention on this bill.

It appears that the "compromise" version, developed in the last days of the last session, will be introduced shortly.

III. Nuclear Bills--Other.

A. **H.R. 895** (by Rep. Gonzalez) amends the Hazardous Materials Transportation Act which covers the transport of radioactive wastes.

b. **H.R. 783** (by Rep. Wyden and others) mandates that USDOE comply with various environmental protection standards in the operation of various federal nuclear facilities under the agency's jurisdiction.

I will have copies of the above bills available for distribution at the next meeting.

CBR:gb

cc: Terry Husseman

STATEMENT BY

JOHN S. HERRINGTON
SECRETARY OF ENERGY

before the

COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

JANUARY 29, 1987

Mr. Chairman and Members of the Committee:

I appreciate the opportunity to appear before you today to review policy issues of interest to the Committee regarding the program being carried out under the Nuclear Waste Policy Act of 1982 (the NWPA). With me is Ben C. Rusche, my Director of the Office of Civilian Radioactive Waste Management.

We have prepared a draft amendment to the Mission Plan for the Civilian Radioactive Waste Management Program. In that document, which we are sending to States and affected Indian Tribes, the Nuclear Regulatory Commission and other Federal agencies for comment -- and will make available for public inspection -- we discuss significant developments and new information in the waste program.

The Mission Plan is intended to keep Congress fully informed on progress in the program and the amendment will ensure that the Plan reflects current program status. After a 60-day comment period, DOE will revise the amendment in response to the comments

as appropriate and will submit it formally to Congress for information and direction. We would expect this to occur in about 120 days from now. With your permission, Mr. Chairman, I would like at this time to submit a copy of the draft amendment for the record.

Today, I would like to give a brief status of the waste program and then focus on the substantive issues which I believe are of main interest to the Committee and which are addressed in the Mission Plan amendment.

Last May, I nominated five sites in Mississippi, Nevada, Texas, Utah and Washington as suitable for characterization and recommended to the President three of those sites for characterization as candidates for the first repository. The three sites are: the Yucca Mountain site in Nevada, the Deaf Smith County site in Texas and the Hanford site in Washington. The President approved my recommendation.

With the President's approval of the three sites to characterize, we have finally passed beyond the crucial decision of where to focus our repository siting efforts and that action formally marked the beginning of site characterization.

Site characterization will take five-to-seven years, depending on the site.

Although we had planned to begin exploratory shaft construction at one or two of the sites this fiscal year, Congress, in the appropriation for the waste program for Fiscal Year 1987, specified that no funds are to be used for drilling any exploratory shaft at any site in FY 1987. However, Congress did allow for site-specific work, other than exploratory shaft drilling, to be conducted at reduced funding levels; and we are proceeding with other allowable characterization activities.

Following the announcement of the President's approval of three sites for characterization as candidates for the first repository, I announced that based on the progress in selecting the first repository and other factors, DOE had reassessed the timing of the Department's activities toward identification of candidates for a second repository. I announced that DOE had decided to postpone indefinitely plans for any site-specific work related to a second repository.

We have not abandoned a second repository; we are continuing studies for a second repository, as required by the NWPA. Those studies are focusing on generic technical issues and analyses and a continuation of the current program of international cooperation.

We continue to believe that a Monitored Retrievable Storage (MRS) Facility should be an integral part of the waste management system. Although legally enjoined from submitting the proposal to Congress, we stand ready to submit it for consideration as soon as permitted.

As stated more than a year ago in review copies of a proposal we made available, we believe that an MRS centrally located to the majority of the spent fuel generated would enhance the disposal system by receiving and consolidating the spent fuel prior to shipping to the repository. DOE's intent regarding MRS is to fulfill its statutory obligations under the NWPA and to submit the proposal on MRS to Congress at the earliest date practicable.

Significant progress has been made regarding transportation -- another integral part of the waste disposal system. DOE has issued both a Transportation Business Plan and a Transportation Institutional Plan. The Business Plan presents strategies for procuring shipping casks and support services, and the Institutional Plan lays the foundation for interactions among interested parties for resolution of transportation issues. In addition, we have issued a request for proposals for design and engineering of shipping casks and fabrication of prototypes.

There have been many other achievements to date in the program, but instead of further discussion of those, I would like now to focus on the main points discussed in the draft Mission Plan amendment and which I believe are the principal policy issues of interest to the Committee:

1. Indefinite postponement of site-specific work for a second repository.
2. Extension of the date contemplated for start-up

operation of the first repository from January 31, 1998, to 2003 to allow time to carry out the necessary high-quality technical program.

3. Inability to submit the Monitored Retrievable Storage (MRS) proposal to Congress required by Section 141 of the NWPA because of litigation. And,
4. Interactions with States, affected Indian Tribes, and the public.

The experience gained in achieving the important milestone of approval of sites for characterization, and advances in the technical planning of the program, have led us to reassess the program and schedule for the first repository. The new schedule -- as presented in the draft Mission Plan amendment -- shows a 5-year extension of the date for the waste acceptance at the first repository, from 1998 to 2003. The table attached to my statement shows the current schedule as compared to the schedule contained in the 1985 Mission Plan.

There are several reasons for the near-term extension. Among them are:

- o The recognition that more time should be provided in the future for consultation and interaction with the States, affected Indian Tribes, and other parties; and,

- The recognition that more technical information is needed.

Since passage of the NWPA, many parties have insisted that, given the controversial nature of the program, the schedule specified in the Act was not realistic and not achievable. It has been pointed out on many occasions that the schedule and the siting process are not reconcilable -- that to achieve one, it would be necessary to sacrifice the other.

DOE has attempted to meet both objectives and developed an aggressive schedule that would have permitted the first repository to begin accepting waste in January 1998. At the same time, Mr. Rusche and I have insisted that the schedule would not be allowed to prevail at the expense of technical excellence and public participation.

We now recognize that more information, more consultation and more time is required in the near-term to ensure public confidence in and development of the first repository for long-term (permanent) disposal. We will remain optimistic in our planning, but realize that for many early actions, we underestimated the time required. Furthermore, DOE recognizes the potential for contingencies that are yet to appear.

The 5-year extension for start-up operations at the first repository, therefore, requires a reevaluation of the waste acceptance

strategy. Based on a reevaluation, we believe that the most advantageous course is the development of an MRS. And as presented in the draft amendment, DOE believes it can meet the 1998 commitment through the development of an MRS facility.

With an MRS capable of receiving waste in 1998, we can meet the contractual obligation with nuclear-generating utilities to begin receiving waste in 1998.

We are, therefore, hopeful that the legal impediment will be removed shortly and that we will be permitted to submit the MRS proposal to Congress for consideration.

With regard to the indefinite postponement of site-specific activities for a second repository, my decision last May was based on a number of factors, including declining projections of the rates at which spent fuel will be discharged from commercial nuclear powerplants; progress in siting the first repository and confidence in finding suitable sites among the three sites approved by the President for characterization; the advantages to be gained from the experience of the first repository; the expectation of Congressional approval for the MRS facility; and, responsible fiscal management.

I would like to point out, again, that we have not abandoned a second repository. In fact, even the lowest current projections of spent fuel generation indicate that the second repository will be needed. DOE, therefore, remains fully committed to a two-repository system.

The specific requirement related to the second repository is stated in the NWPA in terms of the maximum amount of spent fuel that the Nuclear Regulatory Commission can allow to be emplaced in the first repository until a second repository is in operation. The NWPA sets this figure at 70,000 metric tons of uranium.

Under the revised schedule for the first repository, this limit would be reached sometime after the year 2025 if the annual rate of waste emplacement is 3,000 metric tons. The actual schedule for the second repository, however, is yet to be determined; it will depend on more-refined estimates of spent fuel generation rates, the time needed for the first repository to reach the limit of 70,000 metric tons and the time needed to develop the second repository.

The experience of siting the first repository suggests that site-specific screening leading to the identification of potentially acceptable sites should start about 25 years before the start of waste acceptance for disposal. Therefore, to have the second repository available by about 2025, site specific studies need not start until the middle to late 1990s.

Another important issue is interaction with States and affected Indian Tribes and the public. The NWPA requires DOE to seek to enter into and negotiate written Consultation and Cooperation (C&C) agreements with States and affected Indian Tribes after approval of candidate sites for characterization, or

earlier, if an eligible State or Indian Tribe requests. Some formal as well as informal negotiations have occurred, but as yet no formal C&C agreements have been concluded.

Given the nature of the program and the reality that the perspectives of the States and affected Indian Tribes often differ from DOE's, we recognize that formal agreements may not be easy to reach. But we also recognize that the success of the waste-management program may depend largely on the success of institutional relations as well as interactions with the public.

We plan to increase our efforts to improve productive institutional relations and to negotiate formal C&C agreements. In this regard, we are considering a number of new initiatives to encourage these negotiations. For example, preliminary or partial agreements or memoranda of understanding might be useful.

Conclusion

In conclusion, DOE has adopted the principle that its schedule would not be pursued at the expense of consultation and interaction with affected States and Indian Tribes and the public.

The revised schedule for both the first repository and site specific activities for a second repository allows more time for interactions with affected and interested parties and for acquiring additional information necessary to successfully develop the waste disposal system.

Furthermore, we sincerely hope that the amendment to the Mission Plan will provide a suitable vehicle for Congress to provide any statutory direction it believes is needed for our conduct of the program.

Mr. Chairman, this concludes my remarks. I would be happy to respond to any questions you may have and, with your permission, I may call on Mr. Rusche for more details.

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Schedule for the first repository [a,b]

Milestone	Current schedule	1985 Mission Plan schedule
Start of exploratory-shaft construction		
Tuff	Second quarter 1988	Third quarter 1986
Basalt	Third quarter 1988	Third quarter 1986
Salt	Fourth quarter 1989	Third quarter 1987
Start of in-situ testing		
Tuff	Fourth quarter 1989	Third quarter 1988
Basalt	First quarter 1992	Fourth quarter 1988
Salt	Fourth quarter 1991	Second quarter 1989
End of site characterization[c]		
Tuff	First quarter 1992	Third quarter 1989
Basalt	First quarter 1993	Third quarter 1989
Salt	First quarter 1993	Third quarter 1989
Draft environmental impact statement	Fourth quarter 1993	Third quarter 1990
Final environmental impact statement	Fourth quarter 1994	Fourth quarter 1990
Submittal of the site-selection report to the President	Fourth quarter 1994	First quarter 1991
Submittal of the license application to the Nuclear Regulatory Commission	First quarter 1995	Second quarter 1991
Receipt of a construction authorization from the Nuclear Regulatory Commission	First quarter 1998	Third quarter 1993
Start of construction	First quarter 1998	Third quarter 1993
Start of phase 1 operations	First quarter 2003	First quarter 1998
Start of phase 2 operations	Second quarter 2006	First quarter 2001

[a]The schedule is given in calendar-year quarters.

[b]This schedule is based on a budget requirement of $725 million for fiscal year 1988.

[c]End of the testing necessary for the selection of the repository site and the preparation of the draft environmental impact statement.

UNITED STATES SENATE
COMMITTEE ON ENERGY AND NATURAL RESOURCES

Hearing on the Status of the
High-Level Radioactive Waste Disposal Program

February 4, 1987

STATEMENT OF MELVIN R. SAMPSON
TRIBAL COUNCIL CHAIRMAN
ON BEHALF OF THE YAKIMA INDIAN NATION

Mr. Chairman, members of the Committee--

My name is Melvin Sampson. I am Chairman of the Tribal Council and Chairman of the Nuclear and Hazardous Waste Committee of the Yakima Indian Nation. I have also served on former Energy Secretary Donald Hodel's Advisory Panel on Alternative Means of Financing and Managing Radioactive Waste Disposal pursuant to section 303 of the Nuclear Waste Policy Act, and on the State of Washington Nuclear Waste Advisory Council, a citizens' panel that advises the State Nuclear Waste Board and the governor on nuclear waste issues. On behalf of the Yakima Nation, I wish to thank you for this opportunity to address the Committee once again about the status of the federal high-level nuclear waste disposal program.

The Yakima Nation is an affected Indian tribe with respect to the proposed Hanford repository site in Washington State. The Yakima Indian Reservation is thirteen miles from the Hanford Site at the closest point, and most of the Hanford Site is on Yakima Ceded Lands. Under the Treaty of 1855 the Yakimas retain hunting, grazing, and food gathering rights on those Ceded Lands and fishing rights at usual and accustomed places on the rivers and streams which pass through them, including the Columbia and Yakima Rivers. It is on the basis of these treaty rights that the Secretary of Interior determined in March of 1983 that the Yakima Nation is an affected Indian tribe under the Nuclear Waste Policy Act, and found that these treaty rights would be affected by the location of a nuclear repository at Hanford.

When Congress went through the arduous process of fashioning a comprehensive plan for resolution of the nation's long-standing nuclear waste problem, it explicitly recognized that past federal efforts in this area had been inadequate. Congress also recognized that the primary reasons for the failure of earlier federal efforts was failure on the part of the federal government to seriously deal with very real technical questions about the geologic adequacy of prospective repository sites, and failure to address the concerns of state, tribal, and local governments in the repository selection and development process.

Congress addressed both of these historic failings in federal nuclear waste management efforts when it passed the Nuclear Waste Policy Act in 1982. The question of site suitability was addressed by the requirement that sites for potential repositories be selected on the basis of technically-grounded siting guidelines, and that the primary criteria for the selection of sites must be "detailed geologic considerations." The issue of state and tribal government involvement was addressed by one of the most elaborate participation schemes ever devised by federal statute.

Congress required extensive consultation and cooperation between the federal agencies and the affected tribes and states, and required those agencies to take the concerns and views of the states and tribes into account to the maximum feasible extent. The explicit purpose of these requirements was to promote public confidence in the integrity and competence of the program. Congress wisely acknowledged that it was essential to enable the states and tribes to be involved meaningfully in the implementation process from the beginning, in the hopes that their concerns would be addressed in a meaningful way, thus reducing the likelihood the program would be thwarted by political opposition and desperate litigation on the part of frustrated and ignored state and tribal governments.

From the implementation of the Act to the present, however, DOE has constantly chipped away at the Act's mandate for meaningful dialogue between DOE and the affected states and tribes in order to instill confidence in the nuclear waste disposal program. Today, there can be no question but that the Department has utterly failed to inspire confidence in its program. How can there possibly be any public confidence after revelations of internal DOE documents clearly revealing the baldly political basis for the postponement of the second repository siting process? The Department obviously decided that it was worth engaging in an "obvious political ploy", and "demonstrating the success mode of resistance", in order to obtain "immediate political relief" from eastern and midwestern states.

How can there possibly be any public confidence in the integrity of DOE's program after the revelations that showed the crass manipulation of the site selection process for the first repository in order to keep the worst site--Hanford--in the running? Even DOE's analysis shows the marked inferiority of the Hanford site compared to the others. The Department's final documents acknowledge the last-place showing by the Hanford site, but casually brush it off as insignificant. But earlier internal drafts of the Decision Aiding Methodology and the Recommendation Decision--found in DOE's files by the Weaver-Markey investigation after DOE repeatedly denied to Congressional committees that such

materials existed--show that Hanford's inferiority was not deemed insignificant by the technical experts who actually did the assessments. Those earlier drafts repeatedly concluded that the Hanford Site comes in last place under all reasonable circumstances, an assessment that has long been held by virtually all independent earth scientists, as well as many who have worked under contract to DOE. Such strong negative conclusions about Hanford were systematically deleted from the agency's final documents, the Weaver-Markey report reveals.

There can be no confidence in the integrity of DOE's decisions when the very decision analysis expert who assisted DOE in doing its comparative assessment publishes a paper absolutely refuting DOE's contention that the inferiority of the Hanford site is insignificant. That expert, Dr. Ralph Keeney, demonstrates that the value of the information derived from characterizing the Hanford site can only amount to a tiny fraction of the cost of characterization, even under the most favorable assumptions.

Another expert in decision science who was a consultant to the NAS Board on Radioactive Waste Management in their partial review of DOE's Decision Aiding Methodology, Dr. Detlof von Winterfeldt, also felt that the results of the analysis were badly abused by DOE in reaching the decision to include the Hanford site. He wrote a strongly worded letter of protest to Waste Management Director Ben Rusche about it. DOE apparently sent an emissary to California to try to talk Dr. von Winterfeldt out of his embarrassing (to DOE) stance, but to no avail. He sent yet another letter reaffirming his view that the analysis clearly showed that the Hanford Site should not have been recommended for characterization.

DOE is asking us to ignore the results of its comparative analysis, which indicate Hanford is the worst site under consideration, and to accept instead the agency's premature determination that the site is "suitable" in an absolute sense. This is precisely the opposite of a conservative approach.

The potential confidence of the Yakima Indian Nation in DOE's claims of suitability of the Hanford Site must be considered in context. We who retain rights in the land that is now called Hanford cannot consider the Department's actions in the civilian radioactive waste program in isolation. Our reservation is too close to Hanford and our rights are too important for us not to examine the past practices of DOE. The agency that assures us today of the suitability of Hanford for a high-level waste repository is the same agency that has assured us for 43 years that its operations at Hanford have not been environmentally damaging.

Yet we have learned in the past year of over 40 years of both accidental and intentional releases of large quantities of radioactivity to the earth, the atmosphere, and the waters that are sacred to the Yakimas. This is the same agency that for nearly three decades used the Columbia River for once-through cooling of its reactors, and that to this day still releases highly radioactive primary coolant water from the N-reactor to surface ponds right next to the river.

This is the same agency that for 30 years put liquid, high-level wastes in single-shell tanks just below the surface of the ground, and assured us that the practice was safe, only to have many of those tanks leak their deadly contents into the soil. Even worse, this is the agency that has made known its desire to leave the remains of those single-shell tank wastes right where they are--a permanent high-level waste repository just a few feet below the surface of the ground, and just a few miles from the Columbia.

This is the same agency that has told us repeatedly that its N-reactor posed no threat to our environment. Yet when consultants hired by DOE to review N-reactor operations in light of the Chernobyl accident recently recommended either drastic safety improvements or immediate shutdown of the N-reactor, DOE decided to disregard the most important of those consultants' recommendations and implement only very limited repairs, which do not address serious safety concerns about hydrogen gas generation and radionuclide containment raised by their own consultants.

This is the same agency that permits enforcement of safety measures at its PUREX plant at Hanford to become so lax that vital criticality prevention regulations have been violated almost as a matter of course, and the facility has been repeatedly shut down because of accidents and safety problems. This is the agency that temporarily removed signs warning of contamination when the Governor came through for a visit. This is the agency that has come under close congressional scrutiny this year through an endless series of GAO reports harshly critical of the environmental practices at its facilities all over the country, and particularly at Hanford. This is the agency that has vigorously fought against the application of federal and state environmental protection laws to its facilities, and that continues to resist EPA and state enforcement of the Resource Conservation and Recovery Act with respect to those facilities.

In short, this agency has unfortunately been shown to ignore the environment, with a recklessly cavalier attitude about its assumed privilege to abuse the Hanford environment. DOE acts as if Hanford were a permanent national sacrifice area, to be despoiled as the agency sees fit or finds convenient.

Under these circumstances, after this history of decades of

hollow reassurances and regular environmental depredations at Hanford, how can the Yakimas, who hold that land and that river to be sacred, regardless of past and present contamination, take any comfort in DOE's empty assertion--against the weight of available evidence--that Hanford is "suitable" for a repository? Much more convincing--and meaningful--is the agency's weak acknowledgment that Hanford is the worst site of those considered. We must ask, did Congress go through the years of turmoil that were required to pass the NWPA just to have DOE squander its resources and its chances for success on the worst site?

Last week DOE issued a Draft Mission Plan Amendment, and announced that it was extending the deadline for waste acceptance at a first repository from 1998 to 2003. As a policy matter we support this change as a necessary acknowledgment of the inevitable. We hasten to emphasize, however, that this latest ajustment is in no way analogous to the Department's illegal postponement of the second repository siting process. A five year relaxation of the deadline for first repository operation is within the range that Congress has historically allowed the Department from the beginning of NWPA implementation. Moreover, it represents an improvement in the balance between the Act's deadlines on the one hand, and the need for technical excellence and meaningful consultation and cooperation with tribes and states on the other. In sharp contrast, the postponement of second repository siting activities is a complete and illegal cessation of the Congressionally-mandated progress toward finding a second repository site.

The Department has failed to satisfy the consultation and cooperation requirements of the NWPA, and thus has utterly failed in the Act's objectives of inspiring confidence and dealing early and meaningfully with the concerns of states and Indian tribes. The recently announced five-year extension for first repository development makes the possibility of meaningful consultation and cooperation somewhat less remote, but that step is far from sufficient. Secretary Herrington, when he testified before this Committee last week, acknowledged that the Department needs to do better in its C & C efforts. This concession is less meaningful than it should be, however, because DOE representatives have been saying the same thing to Congress and to us for four years, with no signs of improvement.

Yes, DOE has awarded millions of dollars to states and tribes to cover the costs of their participation in this program, as required by the Act. The states and tribes have used those funds for serious, good faith reviews by qualified technical, policy, and legal experts of the DOE's studies, plans, and other documents.

At the same time, DOE has spawned an impossible proliferation of meetings at which the state and tribal representatives

are told a small portion of what the Department and its contractors are doing, and treated to endless slide shows and viewgraphs. Millions have been spent on travel to these ceaseless meetings, and DOE will undoubtedly present you with an impressive looking list of meetings and comments which it will represent as consultation and cooperation with the states and tribes.

But the Department has not dealt meaningfully with the concerns of the states and tribes, as required by the NWPA. The Department has never been willing to discuss its plans with the states and tribes before it reaches decisions. Indeed, the Department has largely ignored what anybody else has had to say substantively about its conduct of this program.

Moreover, this tendency by DOE not to heed the recommendations of others has not been limited to the views of states and tribes. DOE has also by and large ignored the advice and comments of other federal agencies and Congress. When the Nuclear Regulatory Commission submitted comments on the final Environmental Assessments to DOE recently, the prevalent message was that most of its draft EA comments still applied. In other words, most of NRC's comments on the draft EAs were not heeded by DOE in preparing the final EAs. When the National Academy of Sciences Board on Radioactive Waste Management, in reviewing DOE's so-called Decision Aiding Methodology, recommended twice that the Department should involve outside experts in the process, DOE refused to implement that suggestion.

Your hearing last week with Secretary Herrington offers another excellent example of DOE's willful deafness. After a couple hours of being told by every single Senator present that the Department did not have legal authority to postpone second repository siting, the Secretary and Mr. Rusche still insisted to the contrary. Congress reaffirmed its desire to see C & C agreements concluded between DOE and states and tribes in its appropriations actions last fall. Last week's testimony by Secretary Herrington demonstrated the same DOE stubbornness and refusal to hear crystal clear messages which causes feelings of frustration and anger by Indian tribes and states. Needless to say, such feelings, which characterize most of our dealings with the Department, are not conducive to productive negotiations.

Perhaps the best indication of the level of public confidence in DOE's actions in the nuclear waste program is the fact that practically nobody has passed up the opportunity to seek judicial review of those actions. The decision to file suit was a difficult one for the Yakima Nation. Funds to get involved in litigation are not high on the list of economic priorities for our tribe, which suffers a 70 percent unemployment rate. In the end, our Tribal Council, the executive governing body, nonetheless concluded that the Yakima Indian Nation had no choice but to challenge DOE's illegal actions in court. The agency has largely

ignored our concerns with impunity for four years. They have violated the NWPA, as well as the federal government's trust responsibility to our tribe, in many fundamental respects. We simply could not let these violations pass without asserting our rights, and we have no doubt that those rights will be upheld in court.

What Should Be Done?

This program has been so fundamentally compromised by DOE that it is now dead in its tracks. Futile attempts to continue on the present course will only result in much more time and money being unnecessarily wasted. Congress has been largely unwilling to rethink the NWPA up to this point, but its appropriations actions last fall indicate a healthy new skepticism has developed.

We feel the NWPA itself already offers a mechanism for the necessary rethinking. Section 303 of the Act required the Secretary to undertake a study of alternative approaches to finance and manage civilian radioactive waste facilities. Unfortunately, then Secretary Hodel waited nearly a year, until the deadline for the study had passed, before appointing an advisory panel to do the study. The panel, of which I was a member, published its final report in December 1984. Needless to say, by that time the program already was so far advanced that recommendations for fundamental change had little prospect of implementation. On the other hand, the late timing of the so-called AMFM Panel's deliberations gave it the advantage of having a couple years of DOE management to look at.

The AMFM panel--which was not notable for a preponderance of nuclear industry or DOE critics--concluded even two years ago that the Department of Energy's credibility and organizational flexibility and stability problems in this program were probably insurmountable. Rather than sacrifice the program to those problems, the panel concluded that "the site selection process could be enhanced and made more credible by the use of a special advisory siting council comprised of representatives of all legitimate stakeholders."

It is no surprise that the Department of Energy did not exactly herald this report when it was completed, and as far as we are aware, it was never given much attention in Congress. We feel Congress could do much worse now than to retrieve that report from its dust on the shelf and seriously consider what the panel had to say two years ago. The ensuing two years have only affirmed the AMFM panel's conclusion that DOE does not have what it takes to implement this program successfully. While the specific recommendations probably need to be updated, there is still much to be gained from the report's analysis and conclusions.

Following are the Yakima Indian Nation's detailed comments on DOE's manipulation of the first repository site selection process, and on the Department's postponement of the second repository program.

DOE's First Repository Site Recommendation Decision is Fatally Flawed

When Congress enacted the NWPA, it had reason to expect that, if not the very best, certainly one of the best sites in the nation from the standpoint of geologic considerations would be chosen for the first nuclear waste repository. How has it happened that Hanford, which would be on no objective geologist's or hydrologist's short list of possible sites, is one of DOE's three chosen locations? In our view, the objectives of Congress have been corrupted because, rather than attempting to select the best site, DOE, aided by contractors who have a huge economic interest in having their site stay in the running, is bent on proving all the first-round sites acceptable so that the agency's maximum "flexibility" can be maintained.

One of the best examples of the failure of DOE's conduct of the repository siting program is the absurd contortions the agency goes through in order to keep the Hanford Site among those recommended for characterization. The suitability of Hanford for a repository has long been questioned by most knowledgeable observers and most earth scientists. The National Academy of Science Board on Radioactive Waste Management, DOE's own BWIP Hydrology/Geology Overview Committee, the U.S. Geological Survey, and many highly-respected individual scientists from those organizations and the Nuclear Regulatory Commission have all at various times expressed their serious technical misgivings about the suitability of a site in totally saturated, highly fractured, highly-stressed basalt rock just a few miles from the nation's second largest river, the Columbia. Hanford is the only site where the repository would become totally saturated in groundwater within a very short time after repository closure.

Even DOE's much-touted "Decision Aiding Methodology" could not avoid ranking Hanford dead last among the nominated sites for both postclosure and preclosure guidelines. DOE's analysis shows that:

-- Hanford has the worst expected postclosure performance by orders of magnitude (at least a factor of 50).

-- Hanford has by far the greatest uncertainty associated with its projected postclosure performance.

-- Hanford ranks fifth (last) in overall pre-closure con-

siderations, far behind the other four sites.

-- Hanford is expected to be by far the most costly site (by over $5 billion) in terms of both repository and transportation costs.

-- The Hanford site would have the greatest occupational risks to repository workers by far.

DOE is able to recommend Hanford for characterization in spite of its distant last-place showing in the comparative analysis only by engaging in three serious and illegal distortions of the site selection process:

1) DOE brushes off Hanford's vast inferiority in projected post-closure performance in violation of the NWPA requirement that detailed geologic considerations should be the primary selection criteria;

2) DOE totally discounts cost and transportation considerations in flagrant violation of the NWPA; and

3) DOE elevates "diversity" of rock types to the primary selection criterion, totally overwhelming consideration of technical merit, also in violation of the NWPA.

Hanford Postclosure Inferiority

DOE's post-closure performance analysis yields the significant result that radioactivity releases from the Hanford Site to the accessible environment are projected to be higher by at least a factor of 50 than all the other sites. The Yakima Nation's technical consultants advise us that the actual difference is even greater than DOE admits. But DOE dismisses the significant inferiority of the Hanford Site because supposedly even Hanford radioactive releases will be orders of magnitude below the EPA standards. In other words, DOE dismisses this large comparative difference on the basis of its projection of absolute excellence for all the sites. (DOE gives all the sites scores above 99.7 on a scale of 1 to 100. The contention alone that all the sites are so close to perfection and so close together should be sufficient to reveal the absurdity of this analysis.)

DOE acknowledges that there is great uncertainty in its preliminary projections of postclosure performance at the sites. If, as we believe, DOE is greatly over-optimistic about releases at all the sites (that is, if all the sites are worse than DOE thinks by the same factor, a distinct possibility according to USGS and NRC), then the actual Hanford releases could be at or above the EPA standards, while the other sites would still be orders of magnitude below them. It does not require a scientific

background to realize that the margin for error and, thus, the margin of safety, is much, much less for the Hanford Site than for the other sites. Beyond this, DOE acknowledges that the uncertainty about performance at the Hanford Site is actually much greater than at all other sites, because of the complex geologic and hydrologic environment at Hanford. Therefore, the possibility that they are way off in their performance projections is the greatest at Hanford.

Obviously, it is grossly non-conservative from a geologic perspective to dismiss this large difference in the margin of safety among the sites. Since section 112(a) of the NWPA requires that detailed geologic considerations should be the primary criteria for the selection of sites, DOE's decision is clearly inconsistent with the NWPA.

Hanford Preclosure Inferiority

In order to justify its selection of Hanford, DOE simply ignores relative costs, which are much higher for Hanford than for the other sites. (DOE has admitted in a letter to the Chairman of the House Energy and Commerce Subcommittee on Energy Conservation and Power that the excess cost of developing a repository at Hanford is actually over $5 billion, rather than $4 billion as reported in the Decision Aiding Methodology. DOE was unable to satisfactorily account for the discrepancy.) While DOE's siting guidelines call for cost considerations to be given the least weight among pre-closure guidelines, DOE is able to get Hanford to rank in the top three in pre-closure considerations only by ignoring costs completely.

This is not permissible under the NWPA. Section 112(a) requires the siting guidelines to "take into consideration the proximity to sites where high-level radioactive waste and spent nuclear fuel is generated or temporarily stored and the transportation and safety factors involved in moving such waste to a repository." This section also requires the Secretary "to consider the cost and impact of transporting to the repository site the solidified high-level radioactive waste and spent fuel to be disposed of in the repository and the advantages of regional distribution in the siting of repositories." Clearly DOE may not ignore cost considerations under the Act, but that is precisely what the agency had to do in order to rationalize its recommendation of the Hanford Site for characterization for a repository.

It is interesting to note that the Department takes exactly the opposite approach to cost considerations in the Draft Environmental Impact Statement for Disposal of its Hanford Defense High-Level Wastes. In that context, where the agency seeks to justify its desire to exempt most of that waste from the repository disposal requirement, DOE seems to feel that cost considerations are extremely important. It would be valuable to

hear the Department explain why costs are so overwhelmingly important when it comes to selecting alternatives for defense waste disposal, but not important at all (a $5 billion difference is dismissed) when it comes to selecting among alternative repository sites. Nuclear utilities might do well to question whether the Department is applying less rigorous cost-justification standards where the Nuclear Waste Trust Fund is concerned than where Treasury funds are concerned.

Moreover, in order to rank Hanford first in pre-closure considerations after ignoring costs in violation of the Act, DOE unjustifiably underestimates environmental and socioeconomic effects at Hanford relative to the other sites. For example, DOE virtually ignores the tribal issues of greatest concern to the Yakimas such as loss of access to and desecration of Indian religious sites, damage to archaeological resources, effects on Indian subsistence lifestyle, and the tribe's extraordinary cultural risk-aversion with respect to environmental threats to the land, the fish, and other natural resources that are central to their religion and their way of life. These are issues we have raised repeatedly in every possible forum to DOE. It is insulting and, we believe, unlawful, for these issues to be so cavalierly brushed aside.

Undue Emphasis on Rock Diversity

The NWPA calls for the recommendation of sites in diverse geologic media only to the extent practicable. Diversity can be a useful consideration in distinguishing among comparable sites, but should not be used as an excuse for the selection of inferior sites. If fractured, stressed, saturated basalt adjacent to a major river were comparable to the other site types in terms of geologic performance measures, diversity might be an adequate basis for its selection. In fact, even DOE's analysis shows that the basalt site is significantly inferior to the other sites in both post-closure and pre-closure considerations. Even giving due weight to the advantages of diverse media, the "suite" of sites for characterization is manifestly not improved by including in it the site which has by far the greatest uncertainty associated with it (in spite of the vastly greater study that has occurred there relative to the other sites), and which is obviously by far the least likely to prove suitable of all those considered.

Well before Congress spoke on the subject in comprehensive legislation, DOE had decided that it would be convenient to put a repository at Hanford, since DOE already controls the land, and employs a large number of persons in the area. Geologic considerations had next to nothing to do with the choice. It is beyond serious dispute that, were the geologic suitability of the site the main criterion, Hanford would be on no-one's list of top choices for a repository.

In the draft EA's, DOE attempted to justify selection of Hanford on the absurd argument that Hanford is one of the three best sites. Reality has intervened at least to the extent that the agency has now dropped that rationale. Now, in the Final EA and its accompanying documents, DOE still recommends Hanford, in spite of a newfound admission that it is the worst site considered. This time around, the Hanford Site is a winner on the basis of an arguably more plausible but legally improper overemphasis on rock "diversity." That the rationale keeps changing while the decisions remain the same is a good indication of the kind of science that undergirds decision-making in this program.

Second Repository Postponement

DOE's announced "indefinite postponement" of the second repository siting program is not within the agency's discretion under the NWPA. The NWPA sets a non-discretionary deadline for DOE to nominate and recommend sites for characterization for the second repository. It also sets a non-discretionary deadline for the President to recommend a site for a second repository to Congress.

DOE has announced that if and when it does resume the second repository siting process, it will start the site screening process from scratch. Why throw away all the considerable work that has been done and money that has been spent to date on second repository siting, unless political motivations were behind the postponement? The administration desperately wanted the candidate areas for the second repository to feel, at least temporarily, that they are completely off the hook.

DOE is telling us that its second repository siting efforts, which, in contrast to the first round, were based at least nominally on a comprehensive national screening using the Department's siting guidelines, are not worth saving. We have not specifically reviewed those efforts, and given the inadequate guidelines, we cannot argue with that conclusion. Indeed, if they are no better than the first repository siting program has been, then clearly they are not worth saving.

On the on hand, DOE is foreclosing valuable options by stopping the second repository program, and tossing out all the work that has been done. At the same time, the agency is arguing that the success of the entire waste management program should depend on the sufficiency of its first repository siting effort together with an MRS. That effort started without any kind of valid national screening, with two of the three sites initially chosen on geologically irrelevant grounds, without the benefit of siting guidelines prescribed by the NWPA. Indeed, the essence of this charade is illustrated by the fact that, under DOE's current plan for administration of this program, the siting guidelines,

which took nearly two years to develop, will probably never be used at all. In sum, the first repository siting process has been as political and unscientific as it could possibly be. We must ask, is that the basket where Congress really wants to put all of its nuclear waste management eggs?

From a political standpoint, calling DOE's action a "postponement" rather than a "cancellation" is mere semantic sleight-of-hand. Even if the agency is being truthful when it claims it does not wish to do so, destroying the NWPA-mandated ongoing momentum toward construction of a second repository now makes the eventual complete cancellation of the second repository virtually inevitable. To resume the second repository siting program in the 1990's after ten or more years of inactivity would require much the same political capital that went into initial passage of the NWPA. It was possible to initiate momentum toward the siting of two repositories as part of the grand compromise that is the NWPA; it will be much harder--if not impossible--to separately resume progress toward a second repository once the first is an accomplished fact.

The possible elimination of a second repository also has major implications for the Department's ultimate disposal of its defense wastes. The pressure on repository size limitations that would result from the construction of only one repository could cause untoward pressure on DOE to seek to implement inadequate disposal options for its defense wastes (such as leaving them in place just below the ground surface in spite of their comparable risks to other wastes slated for deep geologic disposal). The defense waste management decisions should be free of such pressures.

In conclusion, the Yakima Indian Nation is gravely concerned about DOE's implementation of the NWPA. Through political maneuvering, DOE has mangled the Act's objective to locate two safe and suitable places in which to bury this nation's waste. We trust that you will use the testimony presented today to get the whole program back on track.

OPENING STATEMENT OF

SENATOR JAMES A. McCLURE

FEBRUARY 5, 1987, HEARING ON DOE'S NUCLEAR WASTE PROGRAM

I WELCOME MR. RUSCHE BACK TO THE COMMITTEE FOR WHAT IS OUR THIRD AND FINAL LEG IN A SERIES OF LENGTHY HEARINGS ON THE CURRENT STATUS OF THE NUCLEAR WASTE DISPOSAL PROGRAM.

I HOPE THAT THE TIME THAT THE MEMBERS, THE STATES, AND THE ADMINISTRATION HAVE DEVOTED TO THIS EFFORT HAS NOT BEEN IN VAIN. IT IS NOT OUR INTENT TO BRING ALL THESE PARTIES FORWARD JUST FOR THE PURPOSE OF BUILDING A RECORD. WHAT WE <u>WANT</u> TO BUILD IS A NUCLEAR WASTE REPOSITORY FACILITY.

BUT BASED ON WHAT I'VE HEARD SO FAR IN THESE HEARINGS, I'M NOT SURE WE'RE GOING TO GET THAT TASK ACCOMPLISHED. NOT, AT LEAST, IF THINGS CONTINUE ON THE COURSE THEY ARE NOW HEADED.

THIS PROSPECT GIVES ME GREAT CAUSE FOR CONCERN. FOR I STILL BELIEVE, AS MOST EVERYONE HERE BELIEVES, THAT THE NUCLEAR WASTE POLICY ACT IS STILL A REASONABLE AND WELL-BALANCED PIECE OF LEGISLATION. BUT SOMEHOW, IN ITS TRANSLATION INTO REALITY, SOMETHING HAS GONE AMISS.

I WOULD LIKE TO BELIEVE THAT THE PROBLEMS MERELY REFLECT THE POLITICAL PLOYS THAT WRECK HAVOC ON PROGRAMS AS UNPOPULAR AS THIS ONE IS.

BUT THE SIGNALS I'M RECEIVING GO BEYOND THE MORE THAN 40 LAWSUITS, BEYOND THE UNMITIGATED RHETORIC, AND BEYOND THE STATE VETO THREATS THAT ARE "A GIVEN" IN THIS PROGRAM.

THE SIGNALS I'M RECEIVING GO TO THE VERY HEART OF THE PROGRAM. ON THE ONE HAND, I GET VERY CLEAR SIGNALS FROM THE DEPARTMENT THAT THEY DO NOT INTEND TO FOLLOW THE PROVISIONS LAID

OUT IN THE STATUTE IN THE MANNER THAT CONGRESS ORIGINALLY INTENDED.

AND ON THE OTHER HAND, I AM HEARING SOME VERY COMPELLING ARGUMENTS FROM THE STATES THAT LEAD ME TO BELIEVE THAT THEIR LACK OF CONFIDENCE IN THE PROGRAM IS PERHAPS WELL FOUNDED.

NOT THE LEAST OF THESE ARGUMENTS IS THE FACT THAT STATES HAVE BEEN FRUSTRATED AND THWARTED IN THEIR EFFORTS TO PROVIDE MEANINGFUL INPUT INTO THE SITE SELECTION PROCESS, AND THAT, IN FACT, THE POSSIBILITY OF NEGOTIATING CONSULTATION AND COOPERATION AGREEMENTS IS SO REMOTE AS TO BE TOTALLY OFF THE HORIZON.

BUT EVEN SOME OF THE TECHNICAL ASPECTS OF THE PROGRAM APPEAR TO BE IN JEOPARDY, AND DESERVE SOME CAREFUL SCRUTINY. FOR, WHEN SOME OF THE VERY PEOPLE WHO WERE INVOLVED IN FORMULATING THE SELECTION PROCESS BEGIN TO CRITICIZE THE RESULTS, AND WHEN THE BODY ULTIMATELY RESPONSIBLE FOR LICENSING THE DISPOSAL FACILITY RAISES SERIOUS QUESTIONS ABOUT THE DEPARTMENT'S INTERPRETATIONS OF VARIOUS FACTS, THEN I REALLY START TO WORRY.

MR. RUSCHE, FOR SOMEONE AS DEDICATED, HARD-WORKING, AND OPTIMISTIC AS YOU ARE, I HATE TO PAINT SUCH A BLEAK PICTURE FOR YOU. BUT I CANNOT DENY THE FACT THAT WE ARE ALL VERY CONCERNED. AND WE ARE ALL VERY ANXIOUS TO HAVE YOU PRESENT YOUR <u>OWN</u> ASSESSMENT OF THE SITUATION. AND WE ARE HOPEFUL THAT YOU WILL GIVE US REASON TO RENEW OUR FAITH IN THE PROCESS.

I WISH AGAIN TO OFFER YOU, AS I DID SECRETARY HERRINGTON LAST WEEK, MY SINCEREST PLEDGE OF ASSISTANCE TO SEE THAT THIS PROGRAM GETS BACK ON THE RIGHT COURSE.

WARREN A. BISHOP
Chair

STATE OF WASHINGTON
NUCLEAR WASTE BOARD
Mail Stop PV-11 • Olympia, Washington 98504 • (206) 459-6670

February 13, 1987

Secretary, United States
Nuclear Regulatory Commission
Attention: Docketing and Service Branch
Washington, D.C. 20555

Re: Federal Register of December 18, 1986, Vol. 51, No. 243 at page 45338--Nuclear Regulatory Commission--10 CFR Part 2--Rules on the Submission and Management of Records and Documents Related to the Licensing of a Geologic Repository for the Disposal of High-Level Radioactive Waste; Intent to Form an Advisory Committee for Negotiated Rulemaking

Dear Mr. Secretary:

The following comments are submitted by the undersigned, as Chairman of the Washington State Nuclear Waste Board, in response to the notice and invitation contained in the above-entitled subject.

These comments relate to the proposed formation by the Nuclear Regulatory Commission (NRC) of an advisory committee under the Federal Advisory Committee Act. The proposed committee's primary assignment would be to attempt to develop a consensus on proposed revisions to the NRC's rules on discovery pertaining to the processing of an adjudicatory licensing proceeding as it applies to geologic repositories for the disposal of high-level waste. Closely associated with these proposed revisions is the use of electronic data collection equipment.

At the outset, this is to advise that the State of Washington, acting through its Nuclear Waste Board, requests membership on the advisory committee if it is established by the NRC. As one of the three states with a "first-round"

repository site subjected to "characterization" by the United States Department of Energy (USDOE) under the Nuclear Waste Policy Act (NWPA), Washington State has a direct, immediate and substantial stake in the outcome of any rulemaking relating to licensing of a geologic repository. With this high degree of interest, such a role of participation by Washington State is essential to any successful negotiation effort by the committee. Washington must speak for itself with regard to negotiations as critical as those being addressed by such a committee.

There are certain conditions that must be satisfied at the outset of the committee's activities if Washington State is to participate in a good faith manner. They are now set forth.

First, it is essential that the NRC-USDOE "Interagency Coordination Committee," now in existence, be terminated. All efforts on the subject at hand should be centered in one entity.

Second, full funding of our state's participation in all phases of the committee's activities must be provided by the federal government. A likely source of funding for a state in the posture of Washington is the Nuclear Waste Fund established in the Nuclear Waste Policy Act.

Third, any recommended rule developed by the advisory committee shall be submitted to the NRC for its further consideration. If the NRC determines to promulgate rule-modification recommendations submitted by an advisory committee, the NRC would follow the normal public notice and opportunity for hearing and comment procedures associated with formal rulemaking.

Fourth, if a complete agreement on a proposed rule by all members of an advisory committee is <u>not</u> achieved within a discrete time period established by the NRC: (1) no recommendation shall be submitted by the committee to the NRC, and (2) the committee would be terminated.

In closing, note is made of several concerns of a general nature that we have with regard to the proposed modification of normal processing of licensing cases. These would, we assume, be addressed in detail by an advisory committee if it is established.

1. The basic premise of the proposed activity is that an electronic computerized system will, in the long run, expedite the completion of the NWPA's licensing phase. A careful

evaluation should be made as to whether this premise is well founded. The NRC should take great pains to ensure it is not creating a "white elephant." Closely associated with this concern is, of course, the apparent very high cost of establishing such a system. In sum, measured against long-established, proven procedures and approaches used in complex licensing proceedings, such as those involving hydroelectric and nuclear power facilities, the benefits derived from any innovative changes in discovery procedures and other record-developing and recordkeeping approaches should be carefully weighed as to their worthiness.

2. There is a serious problem with the primary controller of the proposed evidentiary system, sometimes referred to as the "Licensing Support System," as it is now designed. As we understand it, the electronic data mechanism will be operated by the United States Department of Energy (USDOE). This is clearly undesirable. Indeed, it is an inappropriate role for USDOE because that agency is mandated by the NWPA to appear as a party-applicant before the NRC seeking a license to operate a repository. The bedrock mechanism leading to the establishment of the record to be relied upon by the NRC, in determining whether a repository license should issue, should not be dominated by the applicant for a license. The NRC, or perhaps some other entity, should be prime developer and controller of the system, if, indeed, one is to be developed.

3. Discovery tools are primary instruments relied upon by attorneys to obtain information in preparation for trial-type licensing proceedings. The proposed approach to developing and use of the record before the NRC should not limit in any way the various discovery tools utilized in adversary proceedings, such as repository licensing hearings.

4. Finally, we note a wide range of concerns relating to the operation of an electronic data system. An initial inquiry is to determine how, and under what circumstances, data should be allowed into the system. Other issues relate to the security of the system, including protection of privileged documents, and who has access to what data entered into the system and under what circumstances. The issues of concern in this general area appear to be so wide ranging as to be limited only by the imagination and experiences of persons who have participated in complex licensing proceedings in the past.

In conclusion, while the proposed activity of the NRC poses concerns, the State of Washington, acting through its

Nuclear Waste Board, desires to participate, in a good faith spirit, as a full party in any negotiated rule development program of the NRC if such a program is pursued.

Thank you for the opportunity to submit these comments.

Sincerely,

Warren A. Bishop
Chairman

WAB:gb

cc: Terry Husseman, Office of Nuclear
Waste Management, Washington State
Charles B. Roe, Jr., Washington State
Senior Assistant Attorney General