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United States
Environmental Protection
Agency

Region 10
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EPA

September 9, 1992

Steven H. Wisness
Tri-Party Agreement Manager
U.S. Department of Energy
P.O. Box 550, A5-15
Richland, WA 99352

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David B. Jansen
Hanford Project Manager
Washington State Department of Ecology
PV-11
Olympia, WA 98504-7600

RE: Accelerated Remedial Action for 200-BP-1 Operable Unit.

Dear Mr. Wisness:

The U.S. Environmental Protection Agency (EPA) is proposing an expedited process for cleanup of the 200-BP-1 Operable Unit (OU). This process includes an accelerated schedule for the record of decision (ROD) and final cleanup. By moving the Phase III Feasibility Study and Phase II Remedial Investigation milestones. The proposal also includes the use of a Hanford Barrier Prototype to be used as a treatability study over a portion of the 200-BP-1 OU. The barrier would later be expanded to serve as a final remedy for a final ROD.

This proposal demonstrates the EPA's desire to accelerate the cleanup process. Staff from EPA, Washington State Department of Ecology, U.S. Department of Energy (USDOE), and Westinghouse Hanford Company have met three times recently to discuss this approach to Remedial Action for 200-BP-1 OU. All of the attending members have expressed interest. However, not all parties are in agreement on the best site of the Hanford Barrier Prototype. EPA prefers that the treatability study be performed on an actual waste site, the 216-B-57 crib.

If this proposal is to succeed, we will need a commitment from all parties involved to provide support wherever necessary. All parties involved have several tasks to accomplish and any delays will jeopardize the success of this proposal.

The next step in this process is for all parties to meet to discuss details. We would ask that this meeting take place as soon as possible and include the appropriate managers from DOE and its contractors. Please contact Paul Beaver of my staff at (509)376-8665, by September 15, 1992, to set up a meeting to discuss this proposal.

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If you have any further questions on the above, please contact Paul Beaver or me at (509)376-6623.

Sincerely,

Paul T. Day
Hanford Project Manager

Enclosure

cc: Julie Erickson, USDOE
Dave Nylander/Darci Teel, Ecology
George Hofer, USEPA
Ron Izatt, USDOE
Hank McGuire, WHC
Admin. Record (200-BP-1 OU)

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PROPOSAL FOR
ACCELERATED RECORD OF DECISION/REMEDIATION
AT THE 200-BP-1 OPERABLE UNIT

BACKGROUND

The 200-BP-1 OU is located in the North central section of the 200 East Area and consists of 10 cribs. This unit includes cribs 216-B-43 through 216-B-50, 216-B-57, and 216-B-61. The 216-B-43 through 216-B-50 Cribs are collectively known as the 241-BY Cribs and located adjacent to the northern boundary of the 241-BY Tank Farm. The 216-B-57 crib is located adjacent to the northwest corner of the 241-BY Tank Farm. The 216-B-61 crib is located approximately 150 m northwest of the 241-BY Tank Farm. (Note: map attached)

Waste that has been disposed to these units has contaminated the soil as well as the groundwater beneath the cribs. The depth to groundwater from the ground surface is approximately 230 feet throughout 200-BP-1 OU.

Cribs 216-B-43 through 216-B-49 received waste from November 1954 to December 1955. During this time, tributyl phosphate supernatant was disposed to these cribs and all but one (216-B-43) exceeded its specific retention volume of the soils underlying the cribs. The past discharge of wastes to these cribs resulted in contamination that has migrated through the soil column to the ground water. After eight to nine years of monitoring that showed contaminants in the groundwater beneath 200-BP-1 and wells in the surrounding area were decreasing, the decision was made to utilize crib 216-B-50 which took place from January 1965 to January 1974. The 216-B-50 and 216-B-57 crib both received waste storage tank condensate from the in-tank solidification unit (ITS) in the 241-BY Tank Farm. The 216-B-57 crib received waste from February 1968 to June 1973. The 216-B-61 crib was designed to receive waste storage tank condensate, but was never used.

In summary, waste has not been added to the BY cribs and trenches since at least 1974, while most of the cribs have not received waste since 1955. The amount of liquids still contained within the soil column is not expected to be a significant source of contaminant migration unless liquids are again introduced to the system via surface water recharge, and available data support this belief.

CURRENT INFORMATION

RI/FS field work on 200-BP-1 OU began in 1990 and is ongoing. The data presented in this paper are field data as well as validated lab analyses. Three boreholes were drilled through each facility (crib area), except for crib 216-B-61 which has only one. Three deep boreholes (approx. 220-240 ft) were drilled to groundwater in order to gather data on the extent of vertical contaminant migration. These three boreholes are in the 216-B-43, 216-B-49, and 216-B-57 cribs. Several groundwater monitoring wells have also been drilled in the 600 Area. The 600 Area is adjacent to the northern boundary of 200-BP-1 Operable Unit and is defined by a groundwater plume to the North of B Plant Aggregate Area. A summary of the data from the boreholes located in 200-BP-1 OU is located in an appendix at the end of this enclosure.

Currently, all data available indicate that the majority of the contaminants that are contained in the soil column are located within the first 30 to 33 feet from the ground surface. Also, the soil moisture content below the cribs is at or near background levels. This indicates that the moisture that is currently contained within the soil column is not sufficient to cause further contaminant migration unless significant recharge from the ground surface should occur.

The distribution of contaminants in the soil column beneath the cribs in the 200-BP-1 OU suggests a remedial alternative utilizing a barrier or a cover. The barrier would be required to minimize the infiltration of precipitation and provide a protective barrier against biological intrusion.

Discussions have been held between EPA, Ecology, DOE, and the Hanford Barrier Design Team to discuss alternatives for construction of the Hanford Prototype Barrier within the 200-BP-1 OU. The Hanford Barrier Design Team has recently recommended that the Hanford Prototype Barrier construction site remain at the currently identified site near the Hanford Meteorological (MET) Station.

PROPOSAL

EPA is proposing a streamlined approach for achieving an accelerated Record Of Decision (ROD) for the 200-BP-1 OU. The first part of the proposal consists of implementing a treatability study. The treatability study will consist of placing the Hanford Barrier Prototype over the 216-B-57 crib. The second part of the proposal consists of renegotiating two milestones which will combine Phase I,II, and III Feasibility studies as well as moving the Phase II Remedial Investigation milestone in order to reach an earlier ROD. Be aware that the

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requirements of these documents may also be changed, and will need to be negotiated. It is anticipated that the ROD will be written to specify the use of the Hanford Barrier over all of the contaminated cribs throughout the 200-BP-1 OU.

Once the Hanford Barrier Prototype is constructed, a ROD would be issued so the Barrier Program staff can initiate design and construction of a new barrier over the entire 200-BP-1 OU. The Barrier Program will be able to employ construction knowledge gained during construction of the Prototype.

The concept of a barrier or cover is not new to Hanford. The U.S. Department of Energy and its contractors have been working on barrier development for nearly ten years. Recently, an effort has been undertaken by the Hanford Barrier Design Team to design and construct a prototype barrier for use at Hanford. The goal of the prototype design, construction, and testing is to evaluate its performance and ultimately transfer the technology for use on remedial projects.

The "Hanford Past Practice Investigation Strategy" allows us to make cleanup decisions as early in the process as can be supported by data and information about the waste site and available technologies for remedial action. The national Superfund program is looking at the concept of "presumptive remedies." This concept is based on the experience that for a given type of site, the universe of potential remedies is relatively small and each has been tried at other sites. A remedy is presumed, initiated, and then either continued or altered based upon performance.

ALTERNATIVES/OPTIONS

Risks of exposure to workers associated with excavation (and treatment) of the contaminated soil are recognized by EPA. Technologies such as ex-situ vitrification, soil washing, and electrolysis all depend upon excavation and therefore pose a potential risk of exposure to workers and airborne spread of contamination. Such methods should still be evaluated as part of the FS and compared to a barrier in terms of exposure risks as well as potential contaminant migration.

Due to the close proximity of other sites to the 241-BY cribs as well as conditions at the OU (i.e., [1]risks due to excavation [2]technical limitations as a result of depth and types of contaminants), treatment methods are limited. The majority of the waste now in the vadose zone is contained near the bottom of the cribs from approximately 15 to 33 feet from the ground surface. The depth of the contaminants is presently beyond the capabilities of insitu vitrification.

The complexity of the waste (i.e., different types of wastes) limits the use of other forms of insitu treatment such as bio-remediation except grouting and the use of polymers for stabilization purposes. In addition to a barrier, it should also be noted that insitu grouting or the use of polymers may also be used to stabilize the contaminants within the soil column as well as reduce or eliminate the effects of subsidence.

Currently, the only realistic mechanism which could cause significant migration of the contaminants towards the groundwater is infiltration of surface water that percolates down through the contaminated soil. Based on available data, the most logical and feasible alternative for source term remediation at this time is containment to effectively eliminate surface infiltration of water. In this case, capping will provide the containment necessary to eliminate surface water infiltration thus minimizing the potential of further contaminant migration.

SUMMARY

EPA believes that a source control remedy is needed to minimize further migration of the contaminants through the soil and into the groundwater. EPA believes that Capping is not only feasible, but may be the best available and proven alternative. EPA also believes that this Operable Unit is an excellent choice for the placement of the Hanford Barrier Prototype. This location affords us the opportunity to link one of the technology programs with field application at an actual waste site.

At the present time, approximately 75 percent of the RI data has been received from the labs, and validated. According to this data, it is apparent that the majority of the significant contaminants contained within the soil column are very near the bottom of the cribs.

The remaining data from the RI/FS activities in 200-BP-1 is expected back from the labs by October. If this data continues to support the presumption that contaminants are contained in the upper layers of the vadose zone, separating out the groundwater in 200-BP-1 into its own operable unit may prove advantageous. If a separate groundwater unit is created, a ROD for 200-BP-1 may be reached much sooner, through the installation of a barrier for all the waste sites. We are proposing that the treatability test of constructing a barrier over the initial waste site be completed in 1993. A barrier for the remainder of the OU would be constructed as soon as possible, thereafter. This would likely occur in the 1994 construction season.

Since this is an actual site and not a simulated one, the construction personnel should learn more about potential problems which may arise from constructing the barrier over an actual site

constructed for waste disposal. Crib B-57 will offer a realistic site for monitoring the effectiveness of the Hanford Barrier.

EVALUATION OF PROPOSAL

Obviously there are advantages and disadvantages to this proposal. EPA believes that the advantages far out weigh the disadvantages and that all of the disadvantages can be satisfactorily addressed.

Advantages

* Cost saving - FY93 budget for barrier technology development can be combined with budget for 200-BP-1 remediation. This could translate into a $1.5 million savings. Placing a barrier over existing contaminated site and placing a prototype barrier in same vicinity is cost effective.

* Attainment of an early ROD, resulting in earlier remedial action and further cost savings

* The main waste constituents that are present in the soil column are radionuclides and the only means of rendering them nonradioactive is time. A barrier will allow for the radionuclides to decay to a significant extent.

* A barrier can be removed relatively easily if future technology provides a more suitable method of remediation. The waste form remains unchanged and accessible with the use of a barrier.

* Ongoing groundwater monitoring will be able to validate the effectiveness of the barrier by tracking contaminant levels in the future.

* Early application of this technology will provide valuable information and lessons learned for future application at other sites (e.g.,BX and BC cribs).

* The placement of barriers over existing waste sites will enable construction as well as design personel to gain valuable experience. This experience will be extremely valuable in the creation of a future mixed waste disposal unit.

Disadvantages

* Subsidence of site due to fines filtering down into gravel layer over many years has not been fully evaluated. A

conservative barrier design may be necessary to address this potential problem.

* Close proximity to the 241BY Tank Farm or other waste management operations could result in surface radiation contamination of the installed barrier. Barrier design would have to take this into account.

* Certain types of research/testing of the installed barrier may be restricted for the portion of the barrier which covers the actual waste site.

* The parties may be subject to some criticism if the public believes we are short cutting the Superfund process.

APPENDIX

Borehole 216-B-43A

The bulk of the contamination is within 15 to 30 feet below grade. The major contaminants at this depth are SR-90, CS-137, PU, and U.

Borehole 216-B-49A

The bulk of the contamination is between 18 to 20 feet below grade. From 20 to 220 feet, alpha and beta activity remains constant with a range of 4.2 to 13 pCi/g and 54 to 120 Pci/g respectively. According to lab data, TC-99 is the most likely candidate for high beta counts beyond 30 feet while the majority of SR-90, CS-137, PU, and U is contained in the vicinity of 18-20 feet below grade.

Borehole 216-B-57A

The majority of beta activity is located in the vicinity of 30-33 feet below grade with the most likely candidate being CS-137. Alpha activity is constant with a range from 3.1 at grade to 11 PCi/g at a depth of 235 feet.

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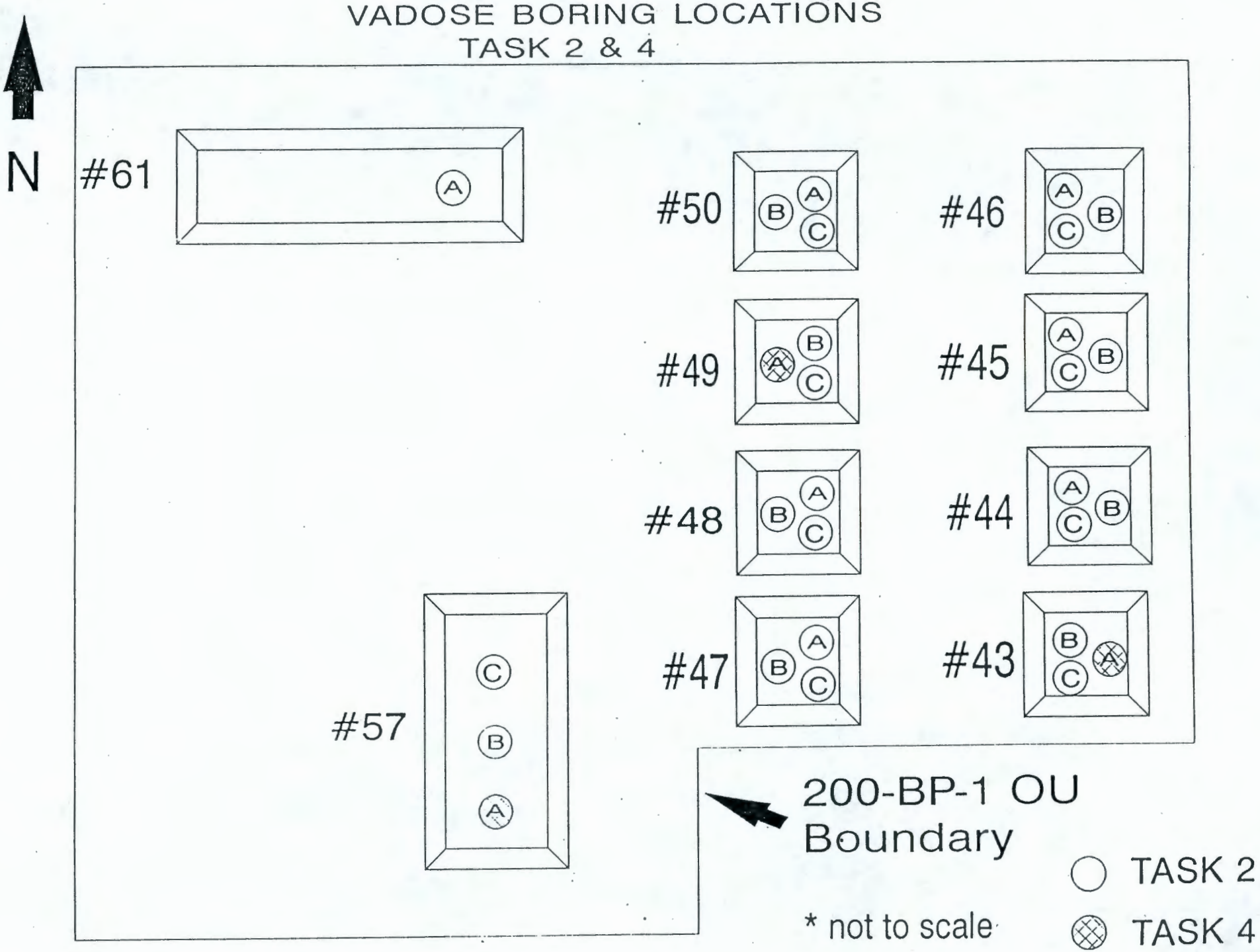

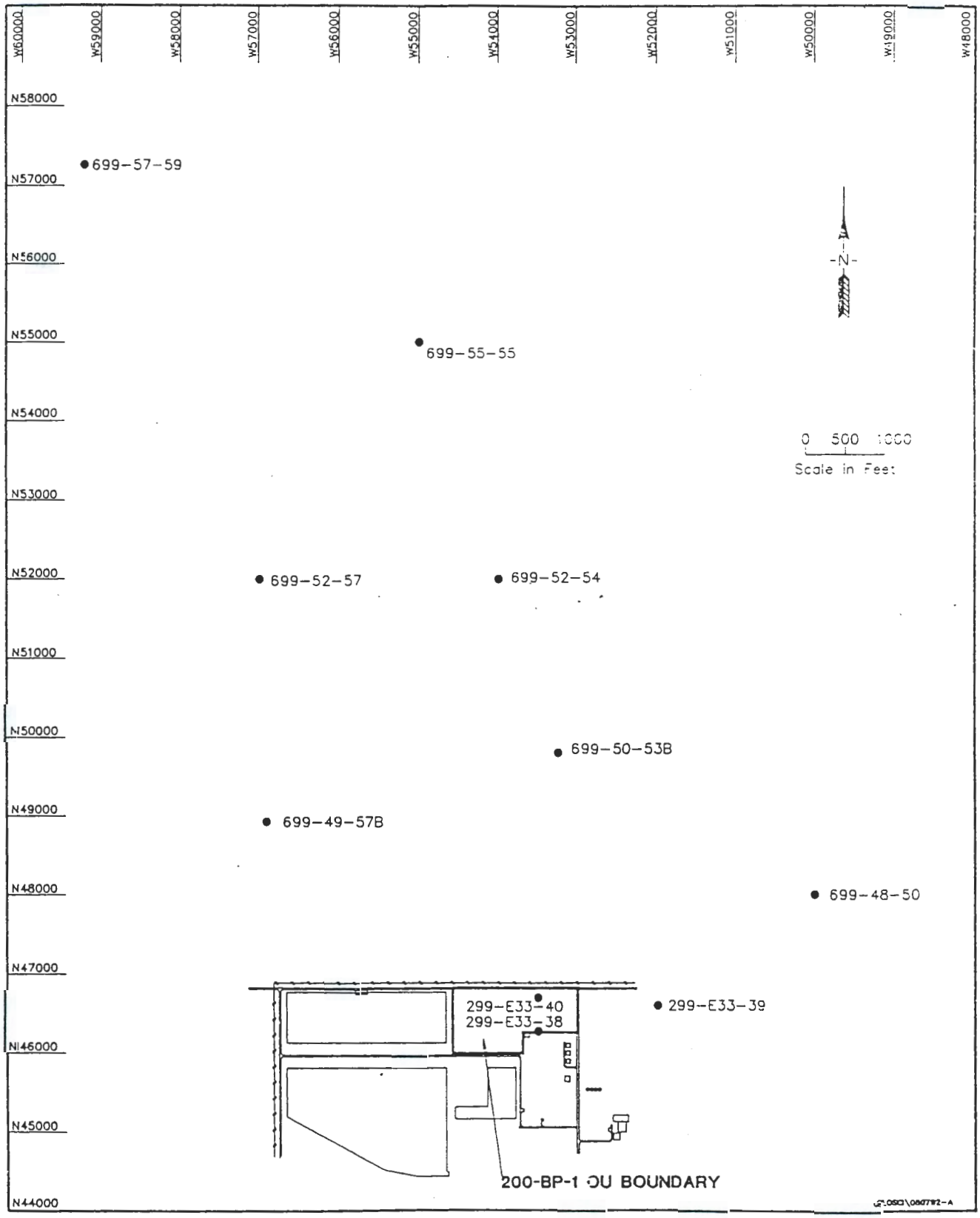
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Subject: ACCELERATED REMEDIAL ACTION FOR 200-BP-1 OPERABLE UNIT

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