United States
Environmental Protection
Agency

Region 10
Hanford Project Office
712 Swift Boulevard, Suite 5
Richland WA 99352

Washington

START

0032621

15

EPA

October 5, 1990

DEC 1993
RECEIVED
EDMC

MEMORANDUM

SUBJECT: Streamlining the RI/FS Process at Hanford

FROM: Paul T. Day
Hanford Project Manager, Region 10

TO: Christian R. Holmes
National Program Manager for Federal Facilities

9413148.0488

I appreciated the opportunity to discuss Hanford Superfund issues with you and your staff on September 27 and in our subsequent telephone call on October 1. During those sessions, you asked that several actions be taken in the way of follow-up. The following items are attached, in accordance with those requests.

1. Meeting minutes -- Both DOE-Richland and DOE-HQ staff were taking notes during the September 27 meeting and have provided them as reference material.

2. Advantages of Streamlining Strategy -- DOE-Richland took the lead to identify several bullet items as to the need for this strategy at Hanford.

3. Examples of Possible Expedited Response Projects -- EPA and DOE-Richland have selected six separate projects which are feasible and would meet EPA's criteria for expedited response actions. A short write-up is provided for each of these candidate projects. Due to the short turnaround time and logistics, we were only able to brief the Washington State Department of Ecology on this issue. Therefore, we need to be aware that they may have other candidate projects or may not be in full concurrence with those that we have proposed. These projects do not include cost estimates at this time. Even preliminary cost estimates will require more planning than we were able to accomplish in this short time. We will proceed with development of cost estimates to supplement the proposals over the next few weeks.

We will keep you informed through the Federal Facilities staff as we proceed in implementing the streamlining strategy.

cc: M. Barger (OS-530)
R. Smith (Region 10)
~~M. Thompson (DOE-RL)~~
L. Goldstein (Ecology)

RECEIVED
OCT 0 5 1990
DOE-RL/CCC

Meeting Minutes
Hanford Site Past Practice Investigation Strategy
EPA Headquarters, Washington, D.C.
September 27, 1990

PURPOSE

At the request of Paul Day, EPA's Hanford Project Manager, a meeting was held at EPA Headquarters to discuss the Hanford Site Past Practice Investigation Strategy. The purpose of the meeting was to brief EPA-HQ personnel on the proposed concepts contained in the strategy paper under development (Past Practice Work Plan Strategy, Draft, September 1990) and to solicit their comments for support to Mr. Day's review and evaluation of the strategy.

ATTENDEES

EPA - HQ: Christian R. Holmes, Deputy Assistant Administrator, National Program Manager for Federal Facilities, Office of Enforcement; Gordon Davidson; Melanie Barger; Nick Morgan.

EPA - Region 10: Paul Day

DOE - HQ: Mary Harmon, Glenn Hardcastle, Mel Leiffer, Lyle Harris

DOE - RL: Mike Thompson, Jerry Chiaramonte (IT Corp.)

MEETING SUMMARY

Mike Thompson opened the meeting with a brief viewgraph presentation to explain the status of the existing Hanford Environmental Restoration Program and the key elements of the strategy under development. The meeting was conducted informally, primarily as a question and answer session, with the majority of the discussion being led by Mr. Holmes. The concepts of the proposed strategy were warmly received by the EPA. Statements were made by Mr. Holmes indicating that the concepts are consistent with EPA's national program goals for federal facilities, especially early response actions which demonstrate to the public that cleanup is underway. EPA is interested in promoting the strategy within EPA and DOE, and starting implementation as soon as possible. Mr. Holmes stated that within the agency there is a belief that Hanford is the most important facility in the country with regard to the need for action.

Several questions and issues were raised in the discussion regarding implementation and funding. Action items were identified for follow-up. Discussion highlights and action items are discussed briefly below.

HIGHLIGHTS

1. Mr. Holmes questioned the status and accomplishments of the existing programs and the resources (people and funding) which would be needed to continue the program through 1992. EPA wants to project what will and what won't be accomplished by 1992, with regard to public protection, because of funding limitations. This information will be used to

9413148.0489

identify the most critical elements which must then be given priority in program planning.

Action: DOE-RL will provide EPA with a summary status table of accomplishments to date on the past practice operable units and TSD units (permits).

2. A question was raised regarding NEPA integration. It was discussed that the CERCLA/RCRA process may provide sufficient documentation at operable unit scale to meet NEPA evaluation requirements, but early assessment of cumulative impacts was not achievable at the operable unit level. It was recommended that EPA discuss the issue with DOE-Headquarters since they have the lead on NEPA issues. Mr. Holmes indicated that EPA would take the lead in initiating such discussions.

3. EPA is interested in obtaining overlay maps of the entire Hanford Site which indicate water level contours, contaminant plumes, major waste areas, population distribution, and sensitive environmental areas. This information would be very useful for evaluating and implementing the proposed strategy, especially for qualitative assessment of potential risks and defining threats to human health and the environment.

Action: DOE-RL will provide Hanford Site map overlays which indicate the features described above.

4. Mr. Holmes asked several questions regarding implementation and funding of expedited response actions (ERAs), a key element of the strategy.

   - Regarding funding for ERAs, DOE-HQ stated that reasonable funding could be placed as budget line items without identification of specific sites or actions. EPA would like to initiate discussions with DOE-HQ regarding ERA funding issues as soon as possible.

   - EPA is interested in seeing a specific list of potential Hanford ERAs. There is a keen interest to seeing ERAs implemented at the earliest possible date.

Action: DOE-RL will generate a list of potential Hanford ERAs.

5. Mr. Holmes stated that it was his intention to see that the proposed strategy is strongly promoted within his agency and within DOE. He requested a ten bullet summary of key elements to use for presentations and other communications. Public acceptance could likely be achieved provided that changes to schedules could be viewed positively.

Action: DOE-RL will generate a ten bullet summary of the strategy for use in further information exchanges.

6. EPA desires to form a working group of representatives from EPA Headquarters and Region 10 and DOE Headquarters and RL to pursue further development and implementation of the proposed Hanford strategy. Mr. Holmes suggested that the working group meet frequently, e.g. monthly. Details will be worked out in future discussions among the meeting attendees.

9413148.0490

HANFORD PAST PRACTICE INVESTIGATION STRATEGY

o Existing, approved RI/FS work plans take 3.5 to 7 years to perform the RI/FS and achieve the ROD. Remedial actions are planned after the ROD. The objectives of the new strategy are to provide for clean-up activities as soon as data indicates the action is justified and to streamline the investigation process to achieve an earlier ROD.

o The strategy provides for mandatory, continual evaluation of the need for "expedited response actions" (ERA's) throughout the site investigation process. ERA's can be in the form of CERCLA removal or remedial actions or RCRA interim measures, depending if EPA or Ecology is Lead Regulatory Agency.

o The strategy provides for integration of RCRA Treatment, Storage or Disposal (TSD) activities with Past Practice activities to assure efficient use of resources while managing the two processes for the protection of health, safety and the environment.

o The strategy defines and uses one process for CERCLA RI/FS and RCRA RFI/CMS investigations, while maintaining the appropriate authorities as defined in the Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement).

o The wealth of existing data at Hanford will be evaluated and utilized, to make decisions concerning the need for ERA's and to focus site investigations on what is needed to provide for abatement measures.

O As soon as data are sufficient to support the process, remedial technologies will be screened and limited, and feasibility studies will be initiated, perhaps as soon as existing data are evaluated. In a similar manner the opportunity to move up treatability studies into the RI/FS field investigation phase will be evaluated. These actions streamline the process to choose the ultimate abatement technology and reduce the time to achieve the "Record of Decision" (ROD).

o Evaluation of the existing data base and providing the opportunity for limited preliminary field investigations prior to writing an RI/FS work plan will focus the new field investigations to that data necessary to choose the abatement measure to meet performance requirements.

o Operable Units can be redefined as needed to write ROD's so that final abatement measures can be performed and clean-up achieved.

O The strategy provides an opportunity to manage the clean-up activities at Hanford to achieve the most good for the dollars available. This is especially timely in light of the FY 1991 budget. Progress can be made in all of the approved operable units by using the "aggregate area approach" and initiating "aggregate area management studies" to evaluate existing data and perform some site investigations. More efficient, focused, less costly and shorted RI/FS field investigations should be the result.

9413148.0491

CANDIDATE PROJECT FOR EXPEDITED ACTION -- HANFORD SITE
October 4, 1990

100-H/D CHROMIUM POCKETS

Description: During the investigation of groundwater contamination originating from the 183-H Solar Evaporation Basins, it was determined that the basins were not the only source of chromium +6 contamination. It appears that several distinct zones or "pockets" of contamination are present upgradient of the 183-H plume. This contamination is believed to be due to past reactor operations, whereby sodium dichromate was used to prevent fouling of reactor piping and was subsequently discharged to the soil column. These pockets of contamination are included within in the 100-HR-3 Operable Unit.

Benefit of an Expedited Action: The 100-H area is located about 35 miles upstream of the City of Richland water intake. The city obtains its water directly from the Columbia River. The dilution that occurs in the river is significant, and the public has not been exposed to constituents above health based levels from this source. However, any reduction in contaminant loading to the river will have a positive benefit. The environmental effect on aquatic life in the river (this reach is the prime salmon spawning habitat on the river) has not yet been determined. It is reasonable to assume that any decrease in contaminant discharge to the river will provide a positive impact on aquatic life. Remediation of these pockets of contamination would supplement any effort undertaken to remediate the 183-H groundwater plume.

Concept of Expedited Action: The pockets of chromium contamination are known to exist although the exact locations are not known. A focused site investigation would need to be conducted to delineate the location and extent of the individual sources. Once the sites were defined sufficiently, soil and groundwater samples would be taken to ascertain whether the soils act as a continuing source of contaminants or whether the contaminants reside primarily in the groundwater. A pump and treat system is envisioned as the probable means of remediating the groundwater. If properly timed, a single treatment system for the 183-H and the chromium pockets could be used, resulting in potential cost savings.

Net Result of Expedited Action: This action would ultimately result in a reduction of contaminants reaching the Columbia River. Removal of chromium from soils and groundwater could potentially remove these sites from further consideration under the ongoing RFI/CMS.

Goal Quantity / Volume Red.

Unit effectiveness lbs of material / gallons ~~treated~~

Level of Effort: This expedited response would require that a substantial effort, e.g. 15-20 monitoring wells, to delineate the boundaries of the several distinct pockets of contamination. Although the general bounds of contamination have been estimated through the RCRA closure activities at 183-H, much remains to be done to enable effective removal. This effort could be initiated at any time. With proper timing, the actual response action could be combined with the 183-H groundwater plume cleanup.

The following major categories of activity would have to be considered in order to develop a cost estimate for this project:

Planning

9413148.0492

Administration/Management
Public Involvement
Site Exploration (Well Drilling/Soil and Groundwater Sampling)
Materials and Equipment (Design and Procurement)
Decontamination and Disposition of Soils and Contaminant Concentrates

9413148.0493

CANDIDATE PROJECT FOR EXPEDITED ACTION -- HANFORD SITE
October 4, 1990

183-H GROUNDWATER PLUME

Description: A plume of contaminated groundwater exists in the vicinity of the 183-H Solar Evaporation Basins. The source of the contaminants are 300 Area fuel fabrication wastes previously placed in the basins. The 183-H facility is currently being closed under RCRA. No wastes are currently being disposed to this facility.

The facility was originally built as part of the supply water treatment process for the 100-H reactor. In the early 1970's a portion of the facility was put into service for evaporating 300 Area fuel fabrication wastes. Liquid wastes were transported from the 300 Area and placed in the unlined concrete storage basins. In 1974 a monitoring well was installed immediately adjacent to the one active basin. This monitoring well detected significant concentrations of nitrate, chromium +6 and uranium in the groundwater. Use of the unlined basin was discontinued and the other basins were subsequently lined and used for waste evaporation. Use of these basins was discontinued in 1986. An active RCRA closure is currently underway to remove contaminated materials from the basins. It is believed that contaminated soil exists below the basins. Contaminated groundwater resulting from the past basin leaks continues to flow to the nearby Columbia River.

Benefit of Expedited Action: The 100-H area is located about 35 miles upstream of the City of Richland water intake. The city obtains its water directly from the Columbia River. The dilution that occurs in the river is significant, and the public has not been exposed to constituents above health based levels from this source. However, any reduction in contaminant loading to the river will have a positive benefit. The environmental effect on aquatic life in the river (this reach is the prime salmon spawning habitat on the river) has not yet been determined. It is reasonable to assume that any decrease in contaminant discharge to the river will provide a positive impact on aquatic life.

Reduction of contaminants

Concept of Expedited Action: Contamination levels in the groundwater appear to fluctuate with the level of the Columbia River. Chromium concentrations increase shortly after a rise in river stage causes a rise in the groundwater elevations. This indicates a high probability that some of the contaminants are held in the soil column. The expedited response action would likely consist of a pump and treat system with recycle of the treated water to flush the contaminants from the soil. The depth to groundwater (50-75 feet) makes removal of the soil impractical.

Net Result of Expedited Action: This action would have the net result of reducing the contaminant load in the groundwater system and subsequent reduction of contaminants reaching the Columbia River. The primary contaminants removed would be heavy metal ions, including uranium. Anionic species such as nitrate, which are present in high concentrations (up to 4000 ppm), may also require removal.

Level of Effort: The expedited response would include on-site treatment of the groundwater. Disposal of the removed contaminants would likely occur on

9413148.0494

the Hanford Site due to the presence of uranium. Costs of the effort for removal, treatment and disposal have not been projected. Recycling of treated groundwater to further flush contaminants would be subject to Washington State water use regulations. Work could be initiated under any climatic conditions that would be encountered at Hanford.

The following major categories of activity would have to be considered in developing a cost estimate for this project:

Planning
Administration/Management
Public Involvement
Definition of Preferred Remedial Alternative
Installation of Withdrawal/Infiltration Systems
Procurement of Treatment System(s)
Decontamination, and
Disposition of Wastes Generated.

9413148.0495

CANDIDATE PROJECT FOR EXPEDITED ACTION -- HANFORD SITE
October 4, 1990

100-N SPRINGS

Description: Environmental studies conducted at Hanford have concluded that discharges of groundwater to the Columbia River at the 100-N Area contribute a significant portion of the total radiological exposure due to Hanford Operations. This contribution is currently being reduced as a result of N-Reactor shutdown in 1988, but the contribution remains substantial because the constituents remain in the soil and the groundwater. Contaminants reaching the river through the N-Springs (seeps along the rivershore) were introduced to the groundwater primarily through discharge of reactor effluent water to the 1301-N and 1325-N cribs. The soil column underlying these cribs provided for adsorption and retardation of radionuclides contained in the effluent water. The volume of water discharged was sufficient to create a mounding effect and alter the normal groundwater flow pattern in that portion of the Hanford Site. The groundwater travel time from the cribs to the Columbia River was sufficient to allow decay of short-lived radionuclides. Longer-lived radionuclides and other non-retarded components of these wastewaters reach the river.

Benefit of an Expedited Action: The 100-N Springs discharge directly into the Columbia River approximately 40 miles upstream of the City of Richland water supply intake. Calculations of radiological dose for the Hanford Site indicate that up to 80% of the water-borne dose due to Hanford activities can be attributed to releases from the N-Springs. The dilution that occurs due to the Columbia River is significant. However, any reduction in contaminant discharge to the river will have a positive impact.

Concept of Expedited Action: The probable action would be a hydrologic control, e.g barrier, combined with selective pump-and-treat for strontium and other relatively mobile yet removable radionuclides thus reducing the discharge of contaminants to the river.

Net Result of Expedited Action: A reduction in the water-borne dose due to Hanford could occur within a relatively short timeframe (1.5 to 3 years). Tritium is a major radioactive component of the groundwater discharging to the river. At this time there are no viable technologies for removing tritium from waste streams, therefore, discharges of tritium would probably continue despite the proposed expedited response action.

Level of Effort: Treatment of the groundwater and disposal of the concentrated radioactive contaminants would occur on the Hanford Site. Necessary field activities and analyses could be implemented rapidly. Treatment capability for the amount of water to be processed is not currently available on the Hanford Site.

The following major categories of activity would have to be considered in implementing this effort:

Planning
Administration/Management
Public Involvement

9413148.0496

Field Activities (for hydrologic analysis)
Focused Feasibility Study
Material and Equipment Design/Procurement
Installation/Operation

9413148.0497

CANDIDATE PROJECT FOR EXPEDITED ACTION -- HANFORD SITE
OCTOBER 5, 1990

300-AREA PROCESS TRENCHES--SEDIMENT REMOVAL

Description: Two parallel unlined trenches (ditches), approximately 1500 feet long have received mixed waste over the past 15 years. The primary RCRA constituents consist of various laboratory wastes, heavy metals, and solvents. The primary radioactive constituent from past discharges has been uranium. The wastestream currently discharges about 1200 gpm and the composition has changed significantly over the years. Presently, the stream contains only trace amounts of mixed waste constituents. The trenches are regulated as TSD units, based on receipt of hazardous waste after 1980. The trenches are used on an alternating basis for receipt of liquids, which percolate into the soil column and into the shallow (approximately 50 feet deep) groundwater. The trenches are part of the 300-FF-1 CERCLA operable unit, located adjacent to the Columbia River. The trenches are thought to be the major continuing source of contamination in the operable unit, based on past discharges. The contaminated groundwater plume is known to be entering the river.

Benefit of an Expedited Action: The 300-Area is located approximately 5 miles upstream from the City of Richland's public water supply intake. The city obtains its water directly from the Columbia River. The dilution that occurs in the river is significant, and the public has not been exposed to constituents above health based levels from this source. However, any reduction in contaminant loading to the river would have a positive benefit, particularly for those constituents which do not have a threshhold effect (carcinogens). The environmental effect on aquatic life in the river has not yet been calculated, but it is reasonable to assume that a decrease in loading to the river would provide a positive impact to aquatic life.

Concept of Expedited Action: This would be a removal action, under 40 CFR 300.415, with a planning period of greater than six months prior to onsite activity. Heavily contaminated sediments from the process trenches would be removed to a specified depth, based on soil analyses results. The waste would be managed as a mixed waste under RCRA, and might be subject to land disposal restrictions. Clean backfill would be provided in the trenches. It is unlikely that the entire length of each trench would be removed, but sediment analyses would dictate the volume to be removed. It is expected that the most significant contamination will be located around the outfall to each trench. The removal action will be facilitated by the practice of discharging to the trenches on an alternating basis (one trench is always dry).

9413148.0498

Net Result of Expedited Action: This action would not impact the flow of the waste stream into the trenches, but would impact the contaminant transport as the effluent discharges downward through the trenches and into the groundwater. By eliminating the most significant contamination (sediments), the concentration of mixed waste constituents migrating through the soil column and into the groundwater and river would be reduced. Depending on the amount of reduction, documented by the groundwater monitoring program, this action could have an impact on the overall remedial alternative selected for this operable unit and the closure plan for the process trenches. Such an action would be consistent with EPA's and the State of Washington's policies of minimizing the potential future impact of closed RCRA disposal units, by removing the heaviest areas of contamination.

Level of Effort: Treatment and disposal of the sediments would likely occur on the Hanford Site, due to the issue of radioactivity. Land disposal issues, as applicable, would have to be resolved. The costs of treatment and disposal activities are difficult to estimate at this time, due to the various options ranging from long-term storage (bulk or containerized), to disposal in existing trenches onsite, to treatment to achieve treatment standards required by the land disposal restrictions regulations. Field activity would be best achieved during the dry season. Presently, treatment capability for these sediments does not exist at Hanford.

The following major categories of activity would have to be considered in constructing a cost estimate for this project. The three parties would work together to define the schedule, scope and cost of the project before approval to proceed.

Planning,
Administration / Management,
Public Involvement,
Field Activity (excavation),
Materials & Equipment,
Decontamination, and
Disposition of Sediments.
(Transportation)
(Long-term Storage of Sediments)
(Treatment of Sediments)
(Disposal of Sediments)

9413148.0499

CANDIDATE PROJECT FOR EXPEDITED ACTION -- HANFORD SITE
OCTOBER 5, 1990

200 WEST AREA CARBON TETRACHLORIDE--VAPOR EXTRACTION

Description: An estimated 260 metric tons of carbon tetrachloride (CCl_4) was disposed within the 200-ZP-1 operable unit. The volume of CCl_4, about 4,000,000 liters, was considered insufficient to reach the groundwater, but the volatile nature of CCl_4 enabled it to migrate in the vapor phase and dissolve into the aquifer. This migration and deposition transport mechanism allows the CCl_4 to move independent of groundwater flow direction. The extent of CCl_4 contaminated groundwater currently stands in excess of 7 square miles.

Carbon tetrachloride concentrations over 100 times the maximum contaminant level (MCL) have been detected more than one-half mile upgradient of the disposal site and within 5 miles of the Hanford Site boundary. It is likely that CCl_4 concentrations in groundwater exceed the MCL at locations much nearer the site boundary. Left unchecked, CCl_4 contamination in excess of the MCL could extend off-site before the year 2000.

The presence of CCl_4 vapors in the soil mandates the use of Level A personnel protective equipment (fully-encapsulating suits) when drilling and sampling in portions of the 200 West Area. The continued spread of CCl_4 vapors will require the use of Level A protective equipment in nearly all 200 West area clean-ups, dramatically increasing the cost and schedule of remedial activities.

Benefit of an Expedited Action: The off-site migration of hazardous substances from the 200 West Area (previously considered to be the location of least near-term threat from downgradient contaminant migration) would set a precedent. As yet, Hanford activities have not contributed to off-site groundwater contamination and thus have not threatened any currently used groundwater resources. Under the current Hanford Federal Facility Agreement and Consent Order schedule, the 200-ZP-1 operable unit work plan will be submitted in February 1992. With the current work plan approval process and an estimated RI/FS duration of 5 years, a record of decision would likely not be received until after CCl_4 had migrated off site. Efforts taken in the near term could stabilize the plume and limit the spread of CCl_4 both on and off site. Carbon tetrachloride contamination currently exists in 7 of 10 200 West Area operable units at concentrations 100 times the MCL. Prompt action would limit the impact of this contamination on other clean-ups and reduce the exposure of site workers to a known carcinogen.

Concept of Expedited Action: The recovery of CCl_4 from the soil column would require vapor/liquid extraction for the purpose of mass reduction. Recovery wells would be installed around the perimeter of the primary CCl_4 disposal site. Carbon tetrachloride-laden vapors and any recoverable liquids would be pumped from wells in the unsaturated zone. The recovery action would continue until the existing plume was stabilized. The treatment technology for recovery of volatile organics is commercially available.

9413148.0900

Net result of Expedited Action: This mass reduction would limit the amount of CCl_4 entering the groundwater and decrease the groundwater requiring future treatment. Groundwater treatment would be a much more complicated process than the vapor extraction. An expedited action would reduce the near-term potential for off-site migration of CCl_4. Recovery of CCl_4 from the vapor phase would produce a waste form that would likely not be radioactive and therefore disposed of as a hazardous waste rather than a mixed waste.

Level of Effort: Vapor extraction of CCl_4 could utilize commercially available equipment and produce a waste that may not be radioactive. Solvent recycling facilities could accept the non-radioactive CCl_4. The cost of unsaturated zone recovery of CCl_4 would depend on the efficiency of vapor extraction equipment, but the sandy soils at Hanford represent nearly optimal conditions for this technique. Public involvement would be required for this remedial action. Procurement of commercially available equipment would limit the design period and cost.

9413148.0501

CANDIDATE PROJECT FOR EXPEDITED ACTION -- HANFORD SITE
OCTOBER 5, 1990

300-AREA GROUNDWATER--PUMP AND TREAT

Description: A plume of contaminated groundwater exists beneath the Hanford 300-Area. The groundwater became contaminated due to the discharge of process effluents to unlined surface impoundments in the 300-Area. The major contaminant of concern is uranium, with maximum concentrations of 120 pCi/l. Other contaminants include copper, nitrate, and solvents. A CERCLA operable unit (300-FF-5) has been defined to address the plume. The plume discharges to the Columbia River.

Benefit of an Expedited Action: The 300-Area is directly upriver of the City of Richland, Washington. The city obtains its water from the river. The southernmost known extent of groundwater contamination is about 3 miles upriver from the Richland water intake. Although the public has not been exposed to constituents above health-based levels, any reduction in contaminant loading to the river would be beneficial, particularly for contaminants that do not have threshold effects (carcinogens). The effects on aquatic life in the river have not been evaluated but it is reasonable to assume that the decrease in contaminant loading to the river would have benefit the river ecosystem.

Concept of Expedited Action: This pump-and-treat system would be an interim remedial action. A combination of existing and new wells would be used for extraction and the effluent from the treatment system would be discharged to the active surface impoundment in the 300-Area (the process trenches). The process trenches may have undergone an earlier response action. The result of the extraction and reinjection would be a flushing of the aquifer. The project would be complete when clean-up levels were reached.

Net Result of Expedited Action: The concentration of contaminants reaching the river would be substantially reduced and the aquifer sediments will be cleaned by the treated effluent as it heads back toward the extraction wells. This action would be consistent with the final remedy at the 300-FF-5 operable unit, and may in fact be the final remedy.

Level of Effort: The treatment system to remove the contaminants of interest should be commercially available. Designing the extraction system will require substantial effort. Much is known of the groundwater flow system, but it is not definitive. The three parties would work together to define the schedule, scope, and cost of the project before approval to proceed. The following factors must be considered:

Planning, administration, management;
Public Involvement;
Clean-up levels (ARAR's);
Hydrogeology; and,
Field Activities.

9413148.0502