FEB 0 5 1982

DOCKET NO. 27-39

PDR

Return to NSTill
697-55

DOCKET 27-39

MEMORANDUM FOR: Edward F. Hawkins, Section Leader
Low-Level Waste Licensing Branch

FROM: David L. Siefken
Low-Level Waste Licensing Branch

SUBJECT: SITE VISIT NOTES

Attached please find my site visit notes for my visit to Sheffield and Champaign, Illinois on January 27 and 28, 1982. Please contact me if you have any questions concerning these notes.

Original Signed By

David L. Siefken
Low-Level Waste Licensing Branch

cc:
Keros Cartwright, ISGS
James Foster, USGS

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OFFICE	WMLL							
SURNAME	DLSiefken:dp							
DATE	2/5/82							

SUBJECT: Notes of visit to Sheffield and Champaign, Illinois on January 27 and 28, 1982.

THOSE PRESENT: David Siefken, WMLL

Russell Moore, US Ecology
Andy Armbrust, US Ecology

James Foster, U.S. Geological Survey (USGS)
Rick Healy, U.S. Geological Survey (USGS)
Gary Mackey, U.S. Geological Survey (USGS)

Keros Cartwright, Illinois State Geological Survey (ISGS)
Tom Johnson, Illinois State Geological Survey (ISGS)
Beverly Herzog, Illinois State Geological Survey (ISGS)
Henry Harris, Illinois State Geological Survey (ISGS)
Chris Stohr, Illinois State Geological Survey (ISGS)

PURPOSE:

The purpose of this visit was three-fold, namely to (1) observe USGS testing in wells recently drilled to the east of the Sheffield site and in the tunnel under trenches 11, 1, 2, and 3; (2) discuss progress on selecting a field study area and observe laboratory testing at the ISGS; and (3) observe remedial actions taken by US Ecology to stabilize surface drainage near the west end of trench 11 and along the drainageway feeding the culvert near the west end of trench 23.

OBSERVATIONS:

USGS: All borings to the east of the Sheffield site were completed in December (see Exhibit 1). The USGS has been attempting to develop the wells; and, core samples from the wells are under analysis by the Geology Department at the University of Illinois and by the ISGS. As illustrated on the exhibit, no wells were installed to the south of the drainageway from the southeast corner of the Sheffield site due to access problems. The USGS indicated they would drill several additional wells there this spring.

Apparently the field immediately east of the site will be under cultivation this year, so wells 575 and 576 will be capped below plow depth this spring. Attempts were made to test wells 563 and 565 on January 27, 1982; however, the wells had not been sufficiently developed nor did they have an adequate depth of water to permit testing. Access to other wells penetrating the sand unit was severely restricted due to drifting snow and bitter weather conditions.

The USGS provided a preliminary water table map (Exhibit 2). I requested that two additional maps or data sets be provided, namely (1) the elevation of the top of the sand unit and (2) the thickness of the sand unit. The USGS will also mail copies of the recently completed topographic map for the area east of the Sheffield site.

The USGS will provide a letter report on the borings and stratigraphy in mid-April after they complete descriptions of the cores and the two laboratories complete testing of selected cores. Given the adverse weather conditions and wind-drifted snow cover, I doubt that well testing can begin in earnest until spring. Even then access will be severely limited due to the properties of the loessal soil. I would expect that it will be late April - early May before proper testing can be accomplished. In the meantime, the letter report will be prepared and the physical model of the site expanded based on the new boring data. This will necessitate an extension of the contract if all tasks are to be performed.

Work at the USGS-funded tunnel under trenches 11, 1, 2 and 3 is also proceeding slowly since only one person is available to perform the work. Tensiometers and suction lysimeters are being installed up to 75 inches outward from the walls of the tunnel. Given the current frozen nature of the site surface, soil moisture content at each location has remained nearly constant, indicating no passage of wetting fronts this winter. Instrumentation has been installed in both the till and the sand, including several tensiometers immediately above and below the contact between the two units. Thermocouples to measure the movement of heat are yet to be installed.

One additional notable USGS study is the recent installation of a hydrometeorological station atop trench 2. This facility measures air temperature and wind speed at 0.5 and 2 meters, rainfall, incoming long-wave and short-wave radiation, outgoing short-wave radiation, and soil temperature at 3 depths to 100 centimeters. Psychrometers will be installed at the same locations as the air thermometers. The facility provides nearly continuous records on discs for analysis.

ISGS: The ISGS personnel, with the exception of Henry Harris, visited the Sheffield site on January 27, 1982 to evaluate the proposed study areas for the trench cap study and to discuss the availability of these study areas with US Ecology personnel.

There are limitations with both of the proposed study areas which US Ecology has offered near the Sheffield site. The study area to the south of the road south of the site has only one suitable knoll of very limited area and access. The study area to the southwest of the site has potential problems with sheetwash and a shallow water table which could interfere with both construction and testing. Both sites suffer from inavailability of suitable construction materials for the trench caps.

Based on these limitations, I recommended that the ISGS consider finalizing arrangements as early as possible for an alternate study area, such as they have investigated at the Illinois State Water Survey study area near Champaign, Illinois. At the site, a hydrometeorological station and soil-moisture instrumentation have already been installed. I emphasized that the NRC has granted a contract extension stating our intention that construction begin this spring. At whatever site is selected, appropriate instrumentation as may be needed to establish a baseline should be installed as soon as snow cover and weather conditions permit.

A meeting was held with ISGS personnel, with the exception of Beverly Herzog and Chris Stohr, in Champaign on January 28, 1982. The results of this meeting have been summarized in the attached letter responding to the December progress report.

US Ecology: The visit to the Sheffield site included (1) the USGS hydrometeorological station recently installed on trench 2, (2) the USGS tunnel extending under trenches 11, 1, 2, and 3 and (3) areas of recent surface drainage improvements near the west end of trench 11 and along the drainageway leading to the culvert near the west end of trench 23. The first two items have been mentioned previously.

The area to the west of trench 11 has been re-graded down the slope to provide a suitable base for re-vegetation. A porous woven plastic mat has been used on the soil surface to prevent erosion and to hold a blend of black topsoil, fertilizer, and seed. The edges of the plastic mat were buried in shallow trenches to prevent undermining. Although the area was largely snow-covered, US Ecology was able to show slides of the installation of the system prior to snow cover. Some early-sprouting grasses had appeared shortly after installation. US Ecology anticipates some minor amount of additional work this spring, particularly away from the edges of the installed mat.

The side slopes and bottom of the drainageway leading to the culvert near the west end of trench 23 were sodded in late fall. The ground was smoothed and seeded prior to placing the sod. In the event the sod doesn't take hold, the dead sod would provide protection against erosion during the period of snowmelt and spring rains. The seeding would then have the opportunity to root and take hold. US Ecology also showed slides of this installation.

CONCLUSIONS:

Except as noted in the preceeding text, the visits to Sheffield and Champaign, Illinois did not lend themselves to conclusions.

EXHIBIT 1: FINISHED WELL LOCATIONS ON PROPERTIES EAST AND NORTH OF THE U.S. ECOLOGY SITE

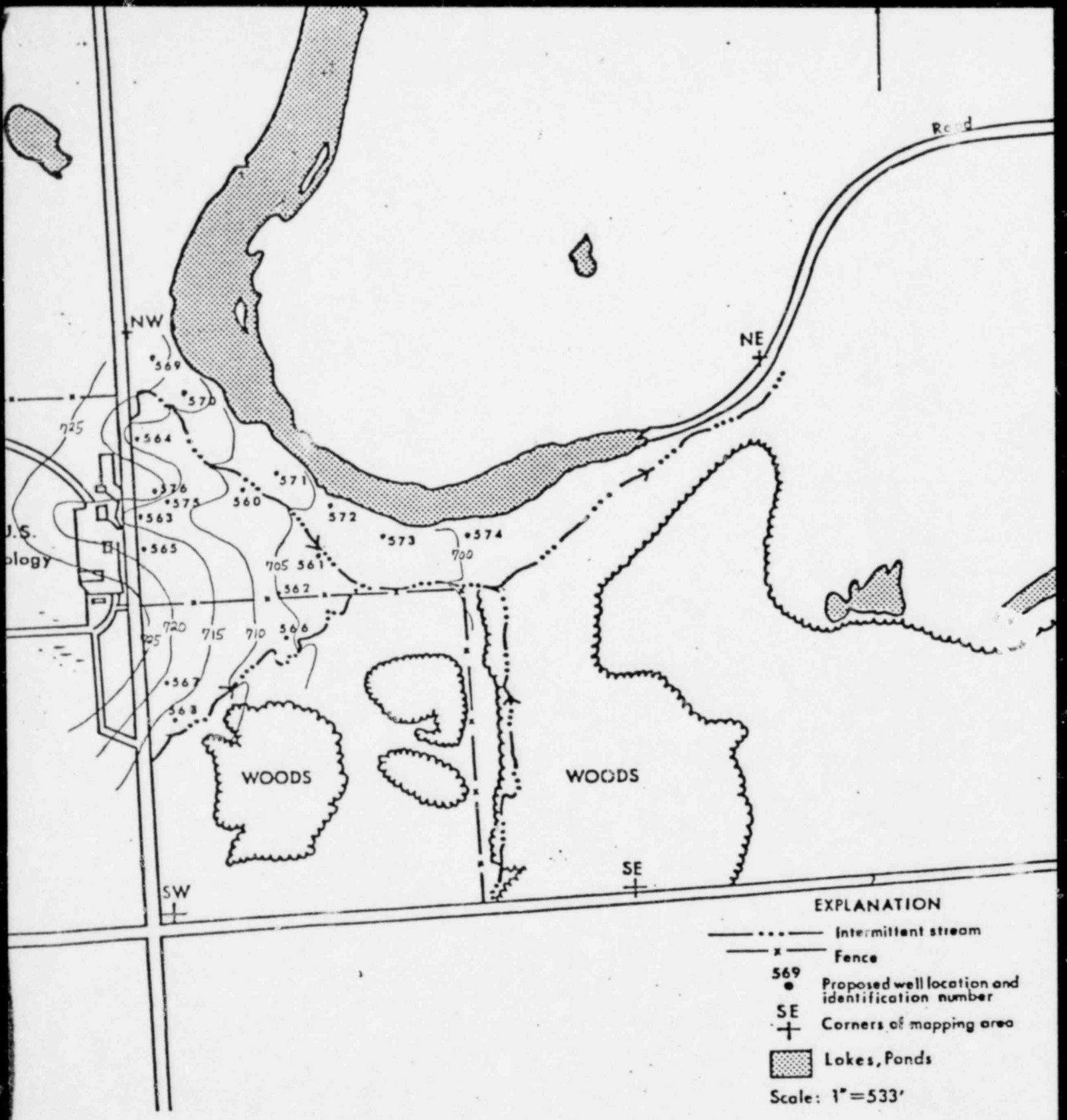

EXHIBIT 2: FINISHED WELL LOCATIONS ON PROPERTIES EAST AND NORTH OF THE U.S. ECOLOGY SITE

PRELIMINARY WATER TABLE MAP

BASED ON WATER LEVELS OF 1/20/82

2/2/82

Distribution:WM-82-027
NMSS r/f
WM r/f
WMLL r/f
WMLL s/f
JBMartin
REBrowning
DLSiefken
EFHawkins
RDSmith
JGresham/PSB
MJMattia/DC

WMLL: 426.2
B6965

Dr. Keros Cartwright, Head
Hydrogeology and Geophysics Section
Illinois State Geological Survey
Natural Resources Bldg.
615 East Peabody Drive
Champaign, IL 61820

Dear Dr. Cartwright:

I have reviewed your progress report of December activities and appreciated the opportunity to discuss the same during our meeting in your office on Thursday, January 28, 1982. The following comments will summarize discussions.

For Task 1, I understand that the camera-ready copy of the final task report is being used for printing copies at the ISGS. I would greatly appreciate your attention at expediting this printing such that the camera-ready copy can be sent to me for publication as a NUREG report. Please contact me with a firm date when I can expect the camera-ready copy.

For Task 2, I was impressed with completed dual gamma-ray attenuation unit and the capability to control the experiments by mini-computer. Although substantially delayed due to availability of equipment, the column testing just starting should provide substantive results in the immediate future. I would greatly appreciate a short outline or description of the specific testing, concentrating on what specific soil columns will be tested, what is being tested in the specific columns, and how these soil columns relate to trench caps. As I noted in our meeting, I recommend that you contact Dr. Donald Banks, U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, Mississippi (601-634-2630) for guidance on compaction of the soil columns.

For Task 3, I agree that your efforts are better directed at this time in performing the laboratory testing and completing the arrangements for construction of trench caps under Task 4. As discussed with you, I agree there are severe restrictions with both of the proposed study areas which US Ecology has offered near the Sheffield site. The study area to the south of the site has only one suitable knoll of very limited area and access. The study area to the southwest has potential problems with sheetwash and a shallow water table which could interfere with both construction and testing. Both sites suffer from an inavailability of construction materials for the trench caps.

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I think you should consider finalizing arrangements as early as possible for an alternate study area, such as you have investigated at the Illinois State Water Survey study area where a hydrometeorological station and soil-moisture instrumentation are already installed. I emphasize that the NRC has granted a cont act extension stating our intention that construction begin this spring.

Please contact me as to when you will complete selection of a study area. At whatever site is selected, additional instrumentation as may be needed to establish a baseline should be installed as soon as snow cover and weather conditions permit.

As discussed, the major impediments to the Task 4 schedule appear to be selection of a study area and the contractual arrangements through the University to acquire the services of an engineering firm and contractor for the design and field construction of trench caps, respectively. Hopefully, as you indicated, the University can award a contract for the design work which will also include the field construction as a subcontract. In this manner, the process of a request for proposal and contract award will only have to be completed once.

Since this subject is the critical item in the schedule for this task, I would appreciate being kept abreast of the progress on the contractual matters. Based on that progress, we can mutually agree on a revised data for the Task 3 letter report.

The action taken by this letter is considered to be within the scope of the current Contract NRC-50-10-02, B6965. No changes to costs or delivery of contracted products are authorized. Please notify me immediately if you believe this letter would result in changes to costs or delivery of contract products.

Sincerely,

David L. Siefken
Low-Level Waste Licensing Branch
Division of Waste Management

OFFICE	WMLL	WMLL					
SURNAME	DLSiefken:	EFHawkins					
DATE	2/ /82 dp	2/ /82					

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