WM Record File

WM Project
Docket No. 27-39
PDR ✓
LPDR ✓

Distribution:

27-39/JAS/84/12/27/2

- 1 -

DEC 27 1984

(Return to WM, 623-SS)

MEMORANDUM FOR: Leo B. Higginbotham, Chief
Low-Level Waste and Uranium
Recovery Projects Branch
Division of Waste Management

FROM: James A. Shaffner
Low-Level Waste and Uranium
Recovery Projects Branch
Division of Waste Management

SUBJECT: TRIP REPORT

DISTRIBUTION
WM sf 27-39
KJackson
LHigginbotham
MBell
NMSS rf
JShaffner
DMartin
JBunting
RBrowning
PDR
LPDR

Enclosed is a trip report documenting a visit by James A. Shaffner to Springfield Illinois on December 18, 1984.

/S/

James A. Shaffner
Low-Level Waste and Uranium
Recovery Projects Branch
Division of Waste Management

Enclosure:
As stated

OFC	:WMLU	kj	:	:	:	:	:	:
NAME	:JShaffner		:	:	:	:	:	:
DATE	:84/12/27		:	:	:	:	:	:

Trip Report

Travel of: James A. Shaffner To: Springfield Illinois
December 18, 1984

Purpose: Attend and participate in a meeting of the Sheffield Tritium Migration Steering Committee at Illinois Department of Nuclear Safety Headquarters, Springfield, Illinois

NRC Participant: James Shaffner, Project Manager, WMLU
Persons Contacted: Terry Lash, Director, IDNS
David Ed, IDNS
David Flynn, IDNS
Melanie Hamil, IDNS
Dan Williams, IDNS
Howard Chinn, Envt. Control, Ill. Attorney General's Office
George Garklavs, USGS, Champaign
Keros Cartwright, Ill. St. Geological Survey
Thomas Johnson, Ill. St. Geological Survey
Ronald Gaynor, US Ecology Inc.
James Grant, representing US Ecology

Summary: The purpose of the meeting was to discuss results of technical studies which have been completed since January 1984 and to decide whether or not enough technical data is available upon which to prepare a final committee report.

George Garklavs summarized three reports prepared by the USGS.

1) Measurement of Groundwater Velocity using Rhodamine WT Dye near Sheffield, Illinois.

2) Hydrogeologic Setting East of Low-Level Radioactive Waste site near Sheffield Illinois.

3) Hydrogeology of a Low-Level Radioactive Waste Disposal Site near Sheffield, Illinois.

Mr. Garklavs stated that the major conclusions were as follows:

1) There is a very narrow preferential pathway for migration from the northeast corner of the radioactive waste site to a strip mine spoil pond. Flow within the preferential pathway accounts for at least

50-60% of the groundwater migration from the site. Tracer studies indicate that flow rates within at least a portion of this pathway are approximately 2100-2500 feet a year.

2) There are no other significant migration pathways from the site. There are, however, several sinks within the till material which act as discontinuous collectors of ground water from the site.

3) Model studies done by USGS have been successful in duplicating the physical behavior of the ground water at the site and support the conclusion that the preferential pathway discussed above is the major pathway from the site.

Copies of the reports discussed by Mr. Garklavs here made available to meeting participants.

Keros Cartwright, ISGS, summarized a report entitled "Geophysical Studies at the Sheffield Low-Level Radioactive Waste Disposal Facility to evaluate Potential Pathways for the Escape of Contaminants". ISGS used temperature and electrical resistivity studies to determine whether or not the potential for a major migration pathway, similar to the tritium migration plume, existed on the north, south or west boundaries of the radioactive waste site.

The study concluded that one area of concern existed other than the one characterized during the tritium study. That was an area of bedrock depression coincident with a surface stream north of the tritium migration plume. Cartwright was careful to note that the geophysical studies did not demonstrate that a pathway existed in this area. Rather the data has such that a pathway could not be ruled out without further investigation.

The committee concluded that while further characterization of this area would be important for post closure monitoring, that work was beyond the purview of this committee.

David Ed then asked the committee if a summary of conclusions, related to the original charter of the steering committee, could be drawn up and supported with a final report.

Conclusions were drafted and discussed by committee members. They are summarized as follows:

1) The committee has been successful in delineating the extent of the tritium migration plume.

2) Tritium concentration within the plume varies from less than 0.3 n Ci/liter to 150 nCi/liter. Variations in the concentration have been sporadic and no specific trend has been established.

3) Tracer studies indicate that within a small portion of the pathway, ground water velocities are approximately 2500 ft./ year.

4) Committee members concluded that the tritium plume does not constitute a one time release from a specific point in the site. Rather it represents a chronic release to which all areas of the site north of the ground water divide may contribute. Evidence suggests that tritium levels within the plume have been and will continue to be fairly constant.

The meeting resulted in no agreements Committments or conclusions other than those explicit above.