

**From:** [REDACTED]  
[REDACTED]  
[REDACTED]  
**Subject:** Fw: Niagara Falls Storage Site News from the Corps (UNCLASSIFIED)  
**Date:** Sunday, April 29, 2012 8:42:13 AM  
**Attachments:** [REDACTED]

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Input from [REDACTED] re tech memos.

**From:** [REDACTED]  
**Sent:** Saturday, April 28, 2012 08:56 PM  
[REDACTED]  
**Subject:** Re: Niagara Falls Storage Site News from the Corps (UNCLASSIFIED)

[REDACTED]

Reference the three FS technical memoranda, issued between December 2011 and February 2012, please find the attached comments.

Thank you,  
[REDACTED]

In a message dated 2/28/2012 11:04:58 A.M. Central Standard Time, fusrap@usace.army.mil writes:

Classification: UNCLASSIFIED  
Caveats: NONE

Hello from the U.S. Army Corps of Engineers Buffalo District,

The "Preliminary Evaluation of Health Effects for Hypothetical Exposures to Contaminants from the Interim Waste Containment Structure Technical Memorandum" is now available for your review and comment at:

<http://www.lrb.usace.army.mil/fusrap/nfss/index.htm#Documents>

This document is the third in a series of technical memoranda (TM) to be released during the development of the Feasibility Study (FS) Report for the Niagara Falls Storage Site (NFSS) Interim Waste Containment Structure (IWCS) Operable Unit (OU). This TM was prepared as part of the Corps' environmental response project conducted under the Formerly Utilized Sites Remedial Action Program.

The "Preliminary Evaluation of Health Effects for Hypothetical Exposures to Contaminants from the Interim Waste Containment Structure TM" supports the FS evaluations of short-term effectiveness, long-term effectiveness, and overall protection of human health and the environment for the different remedial alternatives being considered for the IWCS OU.

The TM accomplishes the following:

- a. Summarizes previous risk estimates for the IWCS, including estimates from the 1980s and 1990s.
- b. Provides radiological doses and cancer risks for the radon emissions estimated in the earlier Radon Assessment TM.

c. Offers a preliminary conceptual model for the IWCS that indicates mechanisms by which contaminants could be released to air and the potential for on-site and off-site exposures.

d. Provides preliminary estimates of doses, cancer risks, and the potential for non-carcinogenic health effects from various hypothetical exposures, to help frame the development and detailed evaluation of remedial alternatives in the FS, which also supports practical planning for source and exposure control measures to assure appropriate protection of workers, the public and the environment.

A workshop is being held on Wednesday, March 28, 2012, beginning at 6 p.m. in the Lewiston Senior Center, 4361 Lower River Road, Youngstown, NY 14174, to discuss the "Radon Assessment TM", the "Evaluation of Meteorological Data and Modeling Approaches to Assess the Dispersion of Airborne Releases from the NFSS Technical Report", and the "Preliminary Evaluation of Health Effects for Hypothetical Exposures to Contaminants from the IWCS TM".

Please submit your written comments in regard to these documents to us by April 28, 2012. Your comments may be sent to the attention of the U.S. Army Corps of Engineers, Buffalo District, FUSRAP Team, 1776 Niagara Street, Buffalo, NY 14207.

Sincerely,

[REDACTED]

Outreach Program Specialist  
Special Projects Branch, Environmental Team  
U. S. Army Corps of Engineers  
1776 Niagara Street  
Buffalo, NY 14207

[REDACTED]

Classification: UNCLASSIFIED  
Caveats: NONE

[REDACTED]

April 28, 2012

Attn. US Army Corps of Engineers,  
Buffalo District FUSRAP Team,  
1776 Niagara Street,  
Buffalo NY 14207

Dear FUSRAP Team:

Re: Technical Memoranda in support of the Niagara Falls Storage Site Feasibility Study

Between December 2011 and February 2012 the following technical memoranda were released to the public for review:

“Evaluation of Meteorological Data and Modeling Approaches to Assess Dispersion of Airborne Releases From the Niagara Falls Storage Site” dated December 2011

“Radon Assessment Technical Memorandum” dated January 2012

“Preliminary Evaluation of Health Effects for Hypothetical Exposures to Contaminants from the Interim Waste Containment Structure” dated February 2012

The technical memoranda released in December 2011 and January 2012 were reviewed in conjunction with the February 2012 technical memorandum, “Preliminary Evaluation of the Health Effects for Hypothetical Exposures to Contaminants from the Interim Waste Containment Structure”, since they support the Technical Memorandum evaluating health effects. The radon assessment and meteorological technical memoranda are well presented and the proposal to use on site meteorological data, rather than meteorological data from Niagara Falls Airport, several miles away, is welcome. It addresses community concern about the validity of using data obtained above the Niagara Escarpment to describe conditions at the NFSS, which is situated well below the escarpment, close to Lake Ontario.

In reviewing the technical memorandum, “Preliminary Evaluation of Health Effects for Hypothetical Exposures to Contaminants from the Interim Waste Containment Structure”, I find the limited scope of the evaluation to be concerning.

The technical memorandum (TM) is limited to direct exposure at the Interim Waste Containment Structure (IWCS) and airborne releases that impact soil and water both onsite and offsite. Migration of contaminants to groundwater is not included in the scope, on the basis that it has been evaluated separately.

While it is true that the migration of contaminants to groundwater has been evaluated separately, the evaluation of migration of IWCS contaminants to groundwater is fundamentally flawed.

The subsurface integrity of the Interim Waste Containment Structure (IWCS) is in doubt. The groundwater south and east of the IWCS is highly contaminated with uranium. The levels of uranium detected in these areas are not typical of that associated with past radioactive waste storage spills. Groundwater monitoring for the NFSS environmental surveillance program confirms a steady upward trend in uranium levels east of the IWCS, consistent with leakage.<sup>1</sup> Until the source of the uranium contamination is determined, the integrity of the IWCS is suspect.

The fate and transport model for groundwater on the NFSS predicts groundwater contaminated with uranium will take a thousand years to move off site. In reality, the network of abandoned pipe lines from the original Lake Ontario Ordnance Works have been found to allow for rapid movement of contaminants in groundwater across the site. The fate and transport model is unable to predict groundwater movement along abandoned pipelines or accurately model the discharge of groundwater to the major ditches on the NFSS.

Given that IWCS leakage may be occurring, the scope of the TM should be expanded or an additional TM created to address hypothetical exposures arising from contaminants in groundwater.

Historical documentation serves as the main source of information for the technical memorandum (TM).

Therefore the TM is only as good as the review of historical documentation. Any incorrect assumptions or data gaps in the historical documentation are reflected in the TM.

For example, the contents of the IWCS are not included in the 2007 baseline risk assessment (BRA) which accompanied the Remedial Investigation because institutional controls were assumed to remain in place and be functioning satisfactorily. The increasing levels of uranium around the IWCS suggest this is not the case.

Similarly, in determining key radionuclides for the IWCS, the TM states that some radioactive materials stored at the NFSS contained additional contaminants such as fission products, including strontium-90 and cesium-137 and transuranic (TRU) radionuclides (including isotopes of plutonium). According to the TM these materials were sent off site and little residual contamination has been identified.

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<sup>1</sup> NFSS Environmental Surveillance Report for 2010

Review of historical records shows that not all of these materials were sent off site. Some of these materials remained on the NFSS after 1958, when the last shipment to Oak Ridge occurred. The 1995 NFSS environmental surveillance report states, “Residues stored in the WCS originated from sites other than NFSS. The WCS also contains contaminated rubble, uranium metal billets, combustibles stored in wooden crates, processing wastes stored in drums and contaminated soils and wastes excavated from onsite and offsite areas.”

The description of combustibles stored in wooden crates corresponds with that of wastes contaminated with fission products and plutonium from the Knolls Atomic Power Laboratory Separations Process Research Unit (SPRU) at Schenectady.

The Remedial Investigation reports low levels ( $< 5\text{pCi/g}$ ) of fission product cesium-137 on the NFSS, but strontium-90 and plutonium analyses appear to have been introduced during phase II of the RI in response to significantly higher levels of cesium-137 contamination was detected on the NFSS.<sup>2</sup>

The TM refers to a specific recommendation of the 1995 NRC assessment, “Safety of the High Level Uranium Ore Residues at The Niagara Falls Storage Site, New York”, which states that the adequacy of site monitoring and maintenance activities necessary to ensure the safety of the public and integrity of the NFSS should be assured. The assessment also calls for an alternative NFSS monitoring strategy to be developed to measure and track the transport of radiological and chemical contaminants from the NFSS waste containment structure, as well as those reaching the NFSS from contiguous waste disposal areas off site, both prior to and following removal of the residues.

The current groundwater monitoring program around the IWCS is potentially compromised by the network of abandoned pipelines left in place. The effects and associated risks of neighboring landfill operations on the IWCS have not been evaluated. Historical pumping at the neighboring landfill has caused dramatic changes in the groundwater around the IWCS.

Sincerely,



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■ Maxim, NFSS RI Field Sampling Plan, Addendum 1, Revision 1, Phase II Edition, August 2000. Appendix C, SAIC Radiological Sampling Recommendations, Request 5.