

New York State Department of Environmental Conservation
Division of Solid and Hazardous Materials
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September 17, 2007

[REDACTED]
U.S. Army Corps of Engineers, Buffalo District
1776 Niagara St.
Buffalo, New York 14207-3199

Dear [REDACTED]

Re: Proposed Plan for the Tonawanda Landfill Vicinity Property

The Department of Environmental Conservation has reviewed the Proposed Plan for the Tonawanda Landfill Vicinity Property Site, issued by the US Army Corps of Engineers on February 5, 2007. This letter transmits our comments on the document.

As you know, the Town of Tonawanda Landfill is regulated by the Department of Environmental Conservation (DEC), and the Town is preparing to close the landfill in accordance with DEC's regulations. Since the Remedial Investigation Report was issued in 2005, planning for final closure of the landfill has progressed, and it is now evident that most of the uranium ore processing wastes in the landfill will have to be moved. The Corps of Engineers original risk assessment, which this proposed plan is based upon, failed to account for the needed waste relocation scenario. Therefore, the Remedial Investigation Report must be supplemented to include this scenario, and the Proposed Plan revised accordingly.

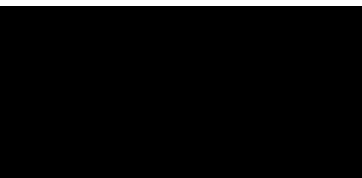
Regarding the federal government's responsibility for the uranium ore processing waste in the landfill, this Department strongly disagrees with the denials being made by the Corps of Engineers as contained in the Proposed Plan. In 1992, the US Department of Energy concluded that this radioactive waste originated on the Linde site from the operations of the Manhattan Engineer District, and that the site should be remediated under the Formerly Utilized Sites Remedial Action Program (FUSRAP). There is no evidence known to this Department, nor is any such evidence presented in the Proposed Plan, that disputes that conclusion. Therefore, the federal government remains responsible for the proper handling and disposal of this waste. The direct costs associated with the provision of the additional risk assessment including preparation of the necessary soil management plan, the related costs for monitoring for radiological waste during the waste removal process, the associated handling and the ultimate disposal of the radiological contaminated waste are all the responsibility of the federal government and must not be passed on to the Town.

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Under the National Contingency Plan, the Corps is required to consider State acceptance in selecting a remedy (40 CFR 300.430). In view of the above comments and the detailed comments enclosed, the Department of Environmental Conservation does not, at this time, find the Proposed Remedy acceptable.




Thank you for the opportunity to review this plan. Our detailed comments are enclosed. Department staff look forward to working with the Corps to resolve these issues. If there are any questions regarding this letter or on the enclosed comments, please contact either myself or

Sincerely,



Acting Director
Bureau of Hazardous Waste & Radiation Management

Enclosure

cc: Congress Member Louise Slaughter
State Assemblyman Robin Schimminger
State Senator Antoine Thompson
State Senator Mary Lou Rath
Senator Hillary Clinton
Senator Charles Schumer
Erie County Legislator Michelle Ianello
R. Pillozzi Mayor, City of Tonawanda
R. Moline, Supervisor, Town of Tonawanda
Town of Tonawanda Councilman Joe Emminger
City of Tonawanda Councilman Rick Davis
USACE, FUSRAP Public Information Center
 NYSDOH
 USEPA
 Erie County Dept. of Environment & Planning

New York State Department of Environmental Conservation
Division of Solid & Hazardous Materials
Bureau of Hazardous Waste & Radiation Management

Comments on the Proposed Plan for the
Tonawanda Landfill Vicinity Property Site
Tonawanda, New York (January 2007)

September 17, 2007

General Comments

1. The Department does not concur with the assertion in the Proposed Plan that the federal government has no responsibility for the uranium ore processing wastes in the Town of Tonawanda Landfill. Based on historical information and the radionuclide composition of the wastes, it is clear that the waste originated at the Linde Plant, as a result of work done for the Manhattan Engineer District (MED) during World War II. As described in the Department's specific comments (below), because this material is in the landfill, closure of the landfill will be more difficult and costly. The federal government is responsible for those additional costs.

In any event, the Department observes that the responsibility or nonresponsibility of the federal government is irrelevant at this juncture: even in the case of nonresponsibility, as a matter of law the federal government may properly undertake to provide remedial action at a site by designating it therefor under the FUSRAP, and any such designation is not per se an admission of responsibility:

[Defendant]'s description of FUSRAP as a program "to identify, investigate, clean-up or control sites where contamination above federal guidelines was attributable to the nation's atomic energy program" conveniently omits an entire class of non-energy (and non-government-related) sites which have been included in the program. The proper description of FUSRAP, culled from a source [defendant] purports to rely on, states that "[t]he primary objective of FUSRAP is to identify and decontaminate sites where radioactive contamination remains from the early years of the nation's atomic energy program or from commercial operations causing conditions that Congress has mandated DOE to remediate." [citations] Indeed, several other public documents confirm that the [subject] site was assigned to FUSRAP, not because it was a former government site, but because (1) the radiological contaminants found at the [subject] site were similar to those at FUSRAP sites, (2) DOE had acquired extensive experience cleaning up such contaminants through its oversight of FUSRAP, and (3) FUSRAP was operational at the time. [citations]
Gilberg v. Stepan Co., 24 F.Supp.2d 325, at 352-353 (D.New Jersey, 1998)

And we note that the foregoing principle has been recognized in the *Technical Memorandum: Radiological Human Health Assessment for the Town of Tonawanda Landfill* (February 1999) as equally applicable to the Tonawanda Landfill Vicinity Property Site. In the Technical Memorandum, section 1, page 1 it is stated,

FUSRAP was transferred from DOE to the U.S. Army Corps of Engineers in 1997. This program was created to identify and remediate or control sites where residual radioactivity exceeding current guidelines remains from the early years of the nation's atomic energy program, or from commercial operations causing conditions that Congress has authorized FUSRAP to remedy.

The Tonawanda Landfill Site was in FUSRAP when Congress transferred the program to the Corps of Engineers. The Corps has not presented any evidence to support removing the site from FUSRAP, nor did Congress authorize the Corps to remove sites from FUSRAP. Therefore, the Town of Tonawanda Landfill is in the FUSRAP program.

2. During the landfill closure, much, if not all, of the radioactive waste will need to be relocated. This will require that appropriate radiation control measures be implemented. It is the federal government's responsibility to do this.

3. As the MED material is excavated, it can be fully characterized. The federal government should take possession of the waste and dispose of it in an appropriate disposal facility.

Specific Comments

4. In Section 1.0, Introduction, this Department takes exception to the text in the last paragraph on page 1, which carries over onto page 2. This paragraph states,

Although the Tonawanda Landfill Vicinity Property was designated for evaluation pursuant to FUSRAP by DOE, subsequent investigations have found no evidence of federal government responsibility for any radioactive material on the site and no statements in this document should be construed as the federal government accepting responsibility for any such material.

The DOE, in a December 16, 1992 letter to Cal Champlin, Town Clerk for the Town of Tonawanda, informed the town that, "In addition, the survey identified several small areas of the landfill which contain elevated levels of uranium ore and waste products from the production of uranium." The letter goes on to state, "Based on the results of the survey, the Town of Tonawanda Landfill has been designated for remedial action as part of DOE's Formerly Utilized Sites Remedial Action Program." This letter does not refer to the material as "MED-like" material. In the letter, the federal government takes responsibility for the material on the site, contrary to the statement in the Proposed Plan.

In the December 16, 1992 memorandum from James W. Wagoner of DOE, regarding "Designation of Tonawanda Vicinity Properties" it is stated,

Pursuant to the attached radiological survey report, the Town of Tonawanda Landfill is designated for remedial action under the Formerly Utilized Sites Remedial Action Program as a vicinity property to the Linde site. The survey report indicates that uranium ore and waste products from the processing of uranium ore are present in some portions of the landfill. This designation is restricted to those portions of the landfill containing uranium and uranium decay products from activities related to DOE predecessors. It does not include portions of the landfill which contain americium or radionuclides not used by the Department's predecessors.

In stating that, in 1992, the Tonawanda Landfill Vicinity Property Site was designated for "evaluation" pursuant to FUSRAP, the Proposed Plan misrepresents the record: the record unambiguously demonstrates that the said Site was designated for "remedial action" under FUSRAP.

We note that nothing in the Proposed Plan indicates that the information relied upon in making that designation has been found to have been inaccurate. To the contrary, its accuracy is essentially conceded. In the Proposed Plan, in Section 2.4 on page 3, it is stated,

In 1990, the DOE, while working on the Linde FUSRAP Site Investigation detected MED-like material at the Town of Tonawanda Landfill and the Mudflats. Subsequent soil samples collected from the areas inside the Town of Tonawanda Landfill and Mudflats detected elevated levels of uranium-238 (U-238) and radium-226 (Ra-226). Both of these isotopes are consistent with material expected to be in ore processing byproducts generated at the Linde Site (ORNL 1990).

A limited radiological investigation was conducted by the DOE in September, 1991 which included gamma walkover surveys and biased and systematic soil sampling. Laboratory results indicated some soil samples exhibited characteristics similar to MED product formerly produced at the Linde Site. As a result of these investigations, the impacted area of the Town of Tonawanda Landfill and the Mudflats were designated as a Vicinity Property of the Linde FUSRAP site (DOE 1992).

and in Section 3.5 on page 6, it is stated,

Portions of the Tonawanda Landfill Vicinity Property are contaminated with radionuclides from the U-238, U-235, and the Th-232 decay chains, including Ra-226 and Th-230 that may have originated from uranium ore processing that occurred at the Linde Site.

Furthermore, everything about the 1992 designation shows that it was made on the basis of the only inference that could logically be drawn from all the available circumstantial evidence, namely, that the Linde Site was the source of the radioactive contamination present at the Tonawanda Landfill Vicinity Property Site. Nothing in the Proposed Plan shows that there exists

any additional information newly acquired since 1992 which tends to controvert that evidence, thereby calling into question the soundness of that inference.

5. The March 1999 Memorandum of Understanding Between the U.S. Department of Energy and the U.S. Army Corps of Engineers states in item 7 of Section F, "Use of Terms," that "the term 'eligible FUSRAP site' means any geographic area determined by DOE to have been used for activities in support of the Nation's early atomic energy program, or placed into FUSRAP pursuant to Congressional direction." The MOU does not task the Corps with any further investigation to determine the federal government's responsibility for any radioactive material on the site, as this has already been done by the DOE as part of their responsibilities.

Therefore, the current status of the landfill is as follows: The Tonawanda Landfill Vicinity Property has been designated for inclusion into the FUSRAP program by the DOE. The Corps, under the FUSRAP program, has further characterized the site and has now issued a Proposed Plan for the site.

6. On page 1 of the Proposed Plan, it is stated, "Subsequent investigations have found no evidence of federal government responsibility for any of the radioactive material on the site . . ." This assertion is not supported with any technical information or legal analysis presented in the Proposed Plan or the Remedial Investigation Report. Therefore, this statement cannot be relied upon.

7. Historical information supports the conclusion that the uranium ore processing wastes in the landfill originated from the MED operations at the Linde site.

There is no question that liquid radioactive wastes were discharged to both the sanitary sewer and Two Mile Creek during the MED operations. In the 1993 Remedial Investigation Report for the Tonawanda Site, DOE estimated that 5,600 kg (12,300 lb) of uranium oxide (i.e., 3.8 Ci of natural uranium) and up to 5.5 Ci of radium-226 were released into the storm sewer leading to Two Mile Creek, and approximately 9,600 kg (21,000 lb) of uranium oxide (i.e., 6.5 Ci of natural uranium) was released into the sanitary sewer system.

From 1930 to 1960, landfilling of solid waste occurred in the western area of the site, which corresponds to the designated FUSRAP area. That time period includes the years of MED operations at the Linde site (1942-1946). There are several plausible pathways for the transport of the MED wastes to the Town of Tonawanda Landfill. In January 1995, DOE issued a public information document, "FUSRAP Update, The Tonawanda Site," in which DOE stated,

It is suspected that low-level radioactive material from dredged stream sediments from Twomile Creek was placed into the landfill during the late 1940s or early 1950s. The stream sediments were contaminated as a result of work performed at the Linde Air Products Division of Union Carbide. Linde performed separation operations on natural uranium ores for the nation's early atomic energy program under contract to the Manhattan Engineer District (MED).

In 1981, Oak Ridge Associated Universities reported that “the sewer systems have undergone periodic cleanings since 1946 . . .” (*Radiological Survey of the Liquid Effluent Disposal Pathways Formerly Used by Linde Air Products Division, Oak Ridge Associated Universities, October 8, 1981*).

In addition, as was typical of the unregulated waste handling methods of this time period, it is not unreasonable to infer that waste from the Linde site may have been deposited in the landfill. Given the large volumes of radioactive wastes produced, it is entirely possible that small amounts were sent to the landfill inadvertently.

8. Despite what uncertainty the Corps may have about the intervening events which caused the radioactive contamination ultimately to come to be located at the Tonawanda Landfill Vicinity Property Site, the inference that the Linde Site was the source of that radioactive contamination has not been refuted, and that is not altered by the bare conclusory assertion that the federal government bears no responsibility.

9. The analytical data in the proposed plan support the conclusion that the uranium, thorium, and radium contaminants in the landfill originated from the MED operations in the Town of Tonawanda. Both the Corps and this Department now have many years of experience in distinguishing between MED wastes, from the processing of uranium ore, and other industrial wastes found in Western New York that contain elevated concentrations of these radionuclides. Both have found industrial, non-MED slags on the Linde site, and the Department has considerable experience with slags in Niagara County. The slags have all contained uranium chain radionuclides in approximate equilibrium. A review of the data in Table 4-20 of the Remedial Investigation Report shows that in those samples that are unquestionably contaminated (for example, U-238 concentrations greater than 10 pCi/g), the concentrations of radium-226 and thorium-230 are not at all in equilibrium with the U-238. This disequilibrium is characteristic of the MED wastes at Linde.

10. The closure plan for the Town of Tonawanda is in the conceptual stage at this time. The requirements of 6 NYCRR Part 360 will govern the final design for the landfill closure project. These regulations specify the design of the landfill final cover systems components, leachate and gas collection and handling systems, construction QA/QC criteria among other requirements. Of particular concern regarding the proposal by the Corps to leave all of the MED waste material in place in the landfill are the regulatory requirements for property setback distances.

Part 360-2.13(a)(1) specifies that a minimum horizontal separation distance of 100 feet be maintained between deposited solid waste and the property line. Previous investigations at the landfill have identified areas along the northern boundary where waste materials are known to exist in very close proximity to, and in some locations up to the north property line. In general, 360-2.13(a)(1) will be used as guidance to determine where the edge of the solid waste will be allowed to remain in the northern area of the landfill, along the fence line bordering the residences along Hackett Drive. Therefore, all waste buried in this area will need to be excavated to a minimum distance of 100 feet south of the property line. Excavated materials will be placed

within the landfill footprint to be covered by the final cap. This setback distance will also allow for the construction of a surface water perimeter drainage ditch to control runoff from the closed landfill.

In order to facilitate this requirement and to allow for the Town to plan for the landfill closure, the Department requested that the Town's consultant prepare an updated conceptual fill plan. This plan identifies the proposed lateral limits and elevation grades for the final configuration of the landfill. The conceptual fill plan was submitted to the Department on May 10, 2007. The plan specifically avoids the placement of waste fill in the designated FUSRAP area of the landfill. Additionally, an area of shallow buried wastes which extends to the east from the FUSRAP area is identified for waste removal and relocation. The plan as developed provides for a waste free, buffer area varying from 100 feet to approximately 200 feet along the north/northwest area of the landfill property. Thus, most, if not all of the MED wastes in Areas A and B of the landfill will need to be removed.

Excavation of buried wastes within this buffer zone will be required for proper closure of the landfill. Additional waste may need to be excavated to construct the perimeter leachate collection and conveyance pipelines. This will be further determined during the final design of the landfill closure project. All excavated waste, including MED materials located in the identified FUSRAP area, will need to be relocated either into the Tonawanda landfill footprint or to an approved offsite disposal facility, depending on the concentration of radioactive materials in the excavated material.

This information was not available at the time the Baseline Risk Assessment was performed. The construction scenario evaluated in the Remedial Investigation Report is described as on page 6-20, as follows:

Landfill closure calls for placement of a geotextile membrane over the waste, covering the membrane with an 18 inch clay barrier layer (Component 1), placing a 12 inch gravel barrier protection layer over that, (Component 2), then covering with 6 inches of topsoil to support vegetation (Component 3).

This does not accurately describe the landfill closure operations and is not consistent with the applicable regulatory requirements for landfill closure. Therefore, an addendum to the Remedial Investigation Report is needed, to analyze the correct landfill closure scenario. That analysis must then be taken into account in a revised Proposed Remedial Action Plan.

11. As explained in the preceding comment, the uranium processing waste in the landfill must be excavated to allow proper closure of the landfill. Inasmuch as the Department of Energy determined that the site is eligible for remediation under FUSRAP, it is the federal government's responsibility to provide the radiological controls for any disturbance of this waste. The Town does not have the expertise to move this material safely, and hiring a contractor to move Federal radioactive material would be an unreasonable economic burden to the Town.

12. Since the federal government is responsible for managing the uranium ore processing waste in the landfill, it would best serve the people and the environment of New York State if the waste were placed in a more appropriate disposal facility other than a solid waste landfill.

13. On page 5, in the first paragraph of section 3.3, "Hydrogeology," the description of groundwater occurrence refers to a perched, semi-confined, and contact-zone system as described in the Remedial Investigation Report. It is not clear whether the perched system refers to the mounded groundwater in the waste. Also, the semi-confined system should be described as being in the glacial till-lacustrine deposits, for clarity. The Proposed Plan should be revised accordingly.

14. In the section paragraph of section 3.3, "Hydrogeology," the discussion of SMCLs should clarify that the TDS, sulfate, and chloride levels are naturally elevated in the Camillus shale and materials derived from this bedrock due to the presence of gypsum and other evaporites. The second paragraph does refer to naturally occurring concentrations, but the first paragraph could be clearer in that not all of the concentrations referenced are necessarily the result of migration from the landfill. The Department has seen from the data that there are elevated levels of some parameters in some wells, particularly BM-17, BM-18, and BM-19, which are likely attributable to the landfill.

15. As explained in comments 4 through 9, this Department does not concur with the assertion on page 9 the site does not fall under FUSRAP authority.

16. In Section 4.1, *Human Health Assessment*, it is assumed that either the cover will be maintained permanently, or if the cover is not maintained, the site will only be used for recreational purposes. The dose projections from these scenarios are the basis for the conclusion that no further action is needed. While the Department will require proper closure of the landfill, that closure will be designed to protect the public and the environment from the solid wastes in the landfill. It is the responsibility of the Federal Government to create and maintain any engineering controls and land use restrictions that are needed to protect the public from the federal radioactive waste in the landfill, whether or not any of those federal controls are redundant with State requirements. Over time, the State's approach to the long-term management of closed solid waste landfills may change, as the landfills age and technical advances occur. For example, in-situ treatments could be developed that would allow use of the land for certain purposes in the future. The State regulations cited on page 2 of the Proposed Plan will undoubtedly be revised, as we gain knowledge and experience with municipal waste sites. Therefore, the permanent cover and the land use limitations that the Federal Government relied upon must be specifically designed, constructed, and maintained for the long-term containment of the MED wastes. These measures, and the federal agency that will be responsible for them, must be clearly spelled out before the effectiveness of the preferred alternative can be assessed.

17. The information presented in Table 1 is misleading and should be revised. It appears that the maximum concentrations of **all** data from the site investigations are not being considered, including the 2,000 pCi/g Ra-226, 4,300 pCi/g Th-230 and 1,800 pCi/g U-238 values reported by DOE. The values presented in the Table 1 are much lower than these values. Given that the historical data was factored into the risk assessments, the summary table in the Proposed Plan should include all data.