



U.S. Army Corps of Engineers
Buffalo District Office
1776 Niagara Street, Buffalo, New York, 14207

**Site Closeout Report for the Ashland 1 (Including Seaway
Area D), Ashland 2 and Rattlesnake Creek FUSRAP Sites**

Tonawanda, New York

Final - October 2006

Formerly Utilized Sites Remedial Action Program

**DECLARATION OF RESPONSE ACTION COMPLETION &
ISSUANCE OF THE SITE CLOSEOUT REPORT FOR
ASHLAND 1 (INCLUDING SEAWAY AREA D), ASHLAND 2 AND RATTLESNAKE CREEK**

The response action at Ashland 1 (Including Seaway Area D), Ashland 2 and Rattlesnake Creek is complete in accordance with the Record of Decision (ROD) signed on April 20, 1998 and Explanation of Significant Differences (ESD) issued on September 20, 2004 and in compliance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, and the National Oil and Hazardous Substances Pollution Contingency Plan. The appropriate regulatory agencies have received the final site closure report and concurred and/or acknowledged that the response action has attained the cleanup requirements specified in the ROD and ESD.

Jeffrey C. Smith, Col
for Bruce A. Berwick
Brigadier General, US Army
Commanding

31 Oct 06
Date

**Site Closeout Report for the Ashland 1 (Including Seaway Area D), Ashland 2 and
Rattlesnake Creek FUSRAP Sites**

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I. INTRODUCTION

The Ashland 1 (Including Seaway Area D), Ashland 2 and Rattlesnake Creek sites have been successfully remediated under the Formerly Utilized Sites Remedial Action Program (FUSRAP) by the United States Army Corps of Engineers (USACE). The sites are located in Tonawanda, New York, a suburb of Buffalo. Radiologically contaminated soils were excavated and shipped offsite. The implemented remedy achieved the degree of cleanup and protection specified in the Record of Decision (ROD) for the Ashland 1 (Including Seaway Area D) and Ashland 2 Sites and the Explanation of Significant Differences (ESD) for the Rattlesnake Creek Portion of the Ashland Sites for all pathways of exposure. No further response is needed to protect human health and the environment from the project contaminants of concern. All areas of concern have been addressed. This report is intended to provide a final overall summary of response actions taken at the site.

II. SUMMARY OF SITE CONDITIONS

SITE DESCRIPTION

FUSRAP was initiated in 1974 to identify, and if necessary, investigate and clean up or control sites that were part of the Nation's early atomic energy program. Activities at these sites were performed by the Manhattan Engineer District (MED) (1944 - 1946) or under the Atomic Energy Commission (AEC) (1947 - 1975). MED was a predecessor of the U.S. Department of Energy (DOE). In 1997, Congress transferred responsibility of identifying and implementing the remedial actions for FUSRAP sites from the DOE to USACE.

The Buffalo District FUSRAP Ashland 1 (Including Seaway Area D), Ashland 2 and Rattlesnake Creek sites (Ashland sites) are located in Tonawanda, New York, as shown on Figure 1. During the early to mid-1940's, portions of the property located at the former Linde Site were used for the processing of uranium ores under Federal MED contracts. Also, during that time, efforts were underway to identify a storage site for waste residues produced during uranium processing. In 1943, MED leased a 10-acre tract known as the Haist property, now called Ashland 1, to serve as a storage site for the uranium ore processing residues. Residues were deposited at Ashland 1 from 1944 to 1946 and consisted primarily of low-grade uranium ore tailings. In 1960, the property was transferred to the Ashland Oil Company and has been used as part of this company's oil refinery activities since that time. In 1974, Ashland Oil Company constructed a bermed area for two petroleum product storage tanks and a drainage ditch on the Ashland 1 property. The majority of the soil removed during construction of the bermed area and drainage ditch was transported by the Ashland Oil Company to the Seaway landfill and Ashland 2 site for disposal, and some of it contained MED-related contamination. Surface water from Ashland 1 and Ashland 2 drains via Rattlesnake Creek and Two Mile Creek to the Niagara River.

The Ashland sites are comprised of three areas: 1.) Ashland 1 (Including Seaway Area D), 2.) Ashland 2, and 3.) Rattlesnake Creek. Figure 2 displays the locations of these areas. Ashland 1 is located to the southwest of the Seaway landfill. Ashland 2 and Rattlesnake Creek are located to the northeast of the Seaway landfill. A pipe beneath the Seaway landfill carries drainage from Ashland 1 and the surrounding area and feeds the 'south' branch of Rattlesnake Creek. There is also a 'north' branch of Rattlesnake Creek which is formed by runoff from the Seaway landfill. The two branches flow around Ashland 2, after which they join and flow downstream. The creek then goes underground for a stretch (see Figure 2) until it comes back above ground for a short distance and flows into Two Mile Creek.

REMEDIAL ACTION OBJECTIVES

A Remedial Investigation (RI) and Feasibility Study (FS) were performed by the DOE for all the Tonawanda FUSRAP sites, which included the Ashland sites. There were no removal actions at the Ashland sites prior to the ROD. The *Record of Decision (ROD) for the Ashland 1 (Including Seaway Area D) and Ashland 2 Sites* was issued by the USACE on April 20th, 1998. The ROD identified radium-226 (Ra-226), thorium-230 (Th-230) and uranium-238 (U-238) as radiological contaminants of concern (COCs) in soils. The ROD also determined that Title 40, Part 192 of the *Code of Federal Regulations* [40 CFR Part 192] and Title 10, Part 20 of the *Code of Federal Regulations* [10 CFR 20] were applicable or relevant and appropriate requirements (ARARs) for the Ashland sites. It further determined, based on the expected distribution of the COCs in the soil at the sites, that if soil containing more than 40 picocuries/gram (pCi/g) Th-230 was removed from the Ashland sites, the residual concentrations of the other COCs at the sites would be low enough to insure compliance with 40 CFR Part 192 and 10 CFR 20 and be protective of human health and the environment. Specific components of the selected alternative that would achieve compliance with the ARARs were:

- Excavate soils exceeding the site-specific derived guideline of 40 pCi/g Th-230
- Ship offsite for appropriately licensed or permitted disposal all soils excavated that exceed the 40 pCi/g Th-230 guidance.
- Restore the sites with clean backfill from an off-site commercial source, and seed to restore vegetative cover at the sites to their original state.

The following statute and regulations are ARARs for the cleanup of the radionuclides present in soils at the Ashland sites:

- The material will be controlled in a safe and environmentally sound manner (Uranium Mill Tailings Radiation Control Act (UMTRCA), 42 U.S.C 7901 et. seq.)
- Ra-226 concentrations shall not exceed background levels by more than 5 pCi/g in the top 15 cm (6 in.) or by more than 15 pCi/g in any subsequent 15 cm (6 in.) layer, averaged over 100 m² (Subpart B of 40 CFR 192).
- The release of Rn-222 and Rn-220 into the atmosphere resulting from the management of uranium and thorium by-product materials shall not exceed an average release rate of 20 pCi/m²-s (Subpart D of 40 CFR 192).
- The radiological dose to a potential receptor must be equal to or less than 25 millirem (mrem)/yr (Subpart E of 10 CFR 20).

During remedial operations at Ashland 2, USACE discovered MED-related contamination in Rattlesnake Creek. Further investigations revealed that the distribution of the COCs in the sediments of the creek was different than the distribution of those same COCs in the soils at the Ashland sites. In order to achieve residual radiation values and doses for Rattlesnake Creek which were consistent with the values obtained for Ashland 1 and Ashland 2, USACE developed site-specific derived concentration guideline levels (DCGLs) for use in the field during the remediation of the Rattlesnake Creek area. On September 20, 2004, USACE issued an ESD for the Rattlesnake Creek portion of the Ashland sites. The DCGLs for Rattlesnake Creek for the three radionuclides of concern (Ra-226, Th-230, and U-238) are provided in Table 1. The DCGLs are concentrations above background and represent average

concentration guidelines for specific size areas. General remedial action goals and ARARs remained the same.

	DCGLs for Area Size (pCi/g)		
	10,000 square meters	100 square meters	1 square meter
Ra-226	4.3	5	16
Th-230	12	14	46
U-238	350	450	2000

Table 1 – DCGLs for Rattlesnake Creek

REMEDIAL ACTIVITIES

There were three separate remedial operations:

- Ashland 2 - July 1998 through September 1999
- Ashland 1 (including Seaway Area D) - June 1999 through December 2002, and
- Rattlesnake Creek - May 2005 through September 2005

Areas that were excavated are presented in Figure 3. At Ashland 1 and Ashland 2, the depth of excavation was generally between 4 and 7 feet below ground surface; excavations at Ashland 1 were slightly deeper than Ashland 2. Rattlesnake Creek was a shallower dig since the material was deposited by sedimentation, with the vast majority of excavations being less than 3 ft below ground surface. Table 2 presents the total weights and volumes for the field efforts. The original in-situ estimate of volume for excavation and offsite disposal of contaminated soil at Ashland 1 (including Seaway Area D) and Ashland 2 was 42,000 yd³. The in-situ estimate in the ESD for RSC was 22,000 yd³. The original volume estimates were calculated by the DOE based on limited RI soil sampling and gamma walkover results. Further contributing to uncertainty, was the fact that less than half of these RI sampling results were analyzed for Th-230, which was the primary remediation driver. The DOE estimates also did not include volume in Rattlesnake Creek, since the results of the RI sampling did not indicate it required remediation. For Rattlesnake Creek, USACE implemented a comprehensive pre-excavation sampling program to obtain a more accurate volume estimate for the ESD. This resulted in approximately a 10% difference between the pre-remedial in-situ volume estimate and the final excavated surveyed volume for this portion of the project.

Materials from Ashland 1 and Ashland 2 were transported to the International Uranium Corporation (IUC) White Mesa Mill in Utah. Materials from Rattlesnake Creek were transported to US Ecology in Idaho. These were the only waste disposal facilities used, and no materials were segregated due to the presence of contaminants other than the COCs since all waste profile samples passed TCLP (Toxicity Characteristic Leaching Procedure) tests. Materials from all three sites were loaded into containers at the adjacent rail spur, and shipped to their final destinations. After the Final Status Surveys (FSSs) were completed, the excavated areas were backfilled and seeded. A description of FSS activities is provided in Section III, Monitoring Results. Ashland 1 and 2 received grass seed, while Rattlesnake Creek received a wetlands-type vegetation seed mixture.

Location	Shipped Volume (tons)	Final Surveyed Volume (yd ³)	Surface Area Excavated (acres)
Ashland 1	172,863	101,849	~12
Ashland 2	52,251	34,853	~7
Rattlesnake Creek	33,284	24,489	~6
Total	258,398	161,191	~25

Table 2 - Excavated Material Summary

COMMUNITY INVOLVEMENT

After the ROD was signed, the USACE engaged in many activities to inform the public of what was going to happen during remediation and to keep them up to date on progress. There were ten (10) public informational sessions held between 1998 and 2005. There were also various media events, press conferences, press tours and public tours. The main focus of these events was to inform the public of how the remedial action work was to be performed and to explain the measures to be established to ensure public safety. Updates on work progress were also provided at the public informational sessions.

SAFETY

Continuous air monitoring was performed during all remedial activities for all the Ashland sites. Air monitoring results on-site were in compliance with the regulatory limit of 2 E-14 microcuries Th-230/milliliter. Average airborne radioactivity concentrations at the perimeters were consistent with background values. Based on the data from the environmental monitoring program, no member of the public received a radiation exposure above guideline values. Table 3 presents a summary of safety statistics. There were no lost time accidents during the remedial action work at any of the Ashland sites. Radiation doses to onsite personnel were substantially below regulatory dose limits.

Location	Worker				Public
	Total Hours Worked	Lost Time Accidents	Personnel Monitored for Radiation Dose	Average Radiation Dose Received (mrem)	Average Airborne Radioactivity Concentration at Perimeter (gross alpha) (microcuries/milliliter)
Ashland 1	214,750	0	94	< 10	5.10 E-16
Ashland 2	63,133	0	69	6	2.12 E-15
Rattlesnake Creek	34,375	0	32	< 1	4.43 E-16
Total	312,258	0	-	-	-

Table 3 - Safety Statistics

RESIDUAL DOSE

Two post remedial dose assessments were conducted for the sites using the measured residual concentrations of the radionuclides of concern. The input parameters were consistent with those used in the original dose assessment for an urban resident. The projected future use of the sites is commercial/industrial, so this is a conservative evaluation of residual dose. Drinking water was assumed to be provided by a municipal source. For Ashland 2 and Rattlesnake Creek, a single dose assessment was performed since they are adjacent sites. For these two sites, it was assumed that a small garden provided 5% of the consumed vegetables. The size of the area was also different for the two post remedial dose assessments. Ashland 1 was treated as an individual site with its own dose assessment.

The residual doses and average residual concentrations are presented in Table 4. The average residual concentrations for the Ashland 2 site (alone) for Ra-226, Th-230 and U-238 (in pCi/g), respectively are: 0.85, 5.17 and 2.71. The average residual concentrations for the Rattlesnake Creek site (alone) for Ra-226, Th-230 and U-238 (in pCi/g), respectively are: 1.26, 1.84 and 4.49. All concentrations in this table include background concentrations except the residual dose for Ashland 2 and Rattlesnake Creek, which excluded background. These residual doses meet the requirements of the ROD and ESD. The average residual soil concentrations are lower than the projected values.

Value/Location	Soil Concentrations (pCi/g)			Annual Residual Dose to Urban Resident (mrem)*
	Ra-226	Th-230	U-238	
Average Residual Values				
Ashland 1	0.63	2.91	3.15	7.1
Ashland 2 & Rattlesnake Creek	1.04	3.62	3.60	4.7
Original Projected Residual Values**	2	12	5	-
Background Concentrations	1.1	1.4	1.2	-

Table 4 - Residual Soil Concentrations and Doses

* - The Ashland 2/Rattlesnake dose is independent of background concentrations; the Ashland 1 dose includes background concentrations.

** - At the time of the ROD, these were the residual projected concentrations.

FUTURE USE

The projected future use of the sites is commercial or industrial operations. A Waterfront Region Master Plan was written in 1992 to address revitalization of the Town of Tonawanda waterfront area. The Master Plan defined a planning region, set goals and objectives, outlined a plan for future development, and recommended strategies for plan implementation in phases. The Master Plan information was utilized in evaluating remedial alternatives for the Ashland sites, and the selected alternative allows development consistent with the Master Plan without restrictions.

Several properties around Rattlesnake Creek have been purchased by '5201 River Road LLC' to build 'Riverview Industrial Center.' Work began in September of 2005, and a road and culverts (for Rattlesnake Creek) have been installed.

III. MONITORING RESULTS

The FSS process was conducted in accordance with Multi Agency Radiation Site Survey Investigation Manual (MARSSIM.) As part of the closeout process, the following activities were performed for all areas of the sites:

- Gamma walkover scans to measure surface gamma radiation, with results plotted against geographic locations
- Quality Assurance (QA) checks of the walkover scans by USACE
- Sampling in a randomized pattern within individual survey units (sampling performed in accordance with the USACE-approved Sampling and Analysis Plan (SAP) and Final Status Survey Plan (FSSP))

- Analysis of samples at an offsite USACE-approved laboratory
- Collection of split samples for USACE QA analysis
- Validation of laboratory data
- Technical Data Packages (TDPs) concluding that each survey unit did not exceed the site cleanup criteria were written, submitted to, and approved by USACE and the New York State Department of Environmental Conservation (NYSDEC)
- Oversight and random checks by NYSDEC, including biased samples and splits

Table 5 summarizes the number of units and samples taken. The average residual radioactive concentrations can be found in Section II.

Location	# Class I FSS units	# Class II FSS units	# Class III FSS units	# FSS samples	# Gamma Scan Points
Ashland 1	32	4	1	569	601,258
Ashland 2	21	4	1	537	220,239
Rattlesnake Creek	24	1	1	749	177,329
Total	77	9	3	1,855	998,826

Table 5 - Summary of FSS

IV. DEMONSTRATION OF CLEANUP QUALITY QA/QC

USACE and the remediation contractors routinely performed many different QA/QC (Quality Assurance/Quality Control) activities. Contractor project QC was maintained through the implementation of project specific Quality Control Plans (QCPs) and Quality Assurance Project Plans (QAPPs.) Controlled copies of pertinent plans were available onsite for the duration of the projects. The USACE QA process included having a USACE construction inspector and/or health physicist on-site during the remediation to ensure that plans and proper procedures were implemented.

Upon completion of the gamma walkover scans, a QC review of the data was performed. The review included an examination of GPS printout data, instrument calibration check, review of procedures and discussion of findings. Upon completion of the QC process, USACE performed a QA review of the data and conducted a verification gamma scan. Argonne National Laboratory performed an independent review of gamma walkover data, as well as all final status survey data.

Field duplicates and QA splits were compared to the original samples as a measure of precision. All samples used to closeout the sites were found to meet the required quality standards.

NYSDEC also collected many splits and biased samples. NYSDEC shared the results of their sampling with USACE, and areas that exceeded the cleanup levels were excavated.

V. SUMMARY OF OPERATION AND MAINTENANCE

The applied alternative of complete excavation does not require operation and maintenance actions.

VI. SUMMARY OF REMEDIAL COSTS

Table 6 presents a summary of remediation costs. Increases to the original estimate in the ROD are explained in Section II, under Remedial Activities. There are no operation and maintenance costs. The Construction and FSS contractor for Ashland 1 was Shaw Environmental, and for Ashland 2 it was

ICF Kaiser/IT Group. The remediation contractor for Rattlesnake Creek was Severson Environmental Services, Inc.; the FSS contractor for Rattlesnake Creek was Cabrera Services, Inc.

Location	Estimate in ROD/ESD	Total Remediation Costs
	(millions of dollars)	
Ashland 1	\$38 (ROD)	\$69.7
Ashland 2		\$23.1
Rattlesnake Creek	\$20* (ESD)	\$18.5
Total	-	\$111.3

Table 6 - Summary of Costs

* The ROD did not anticipate the need to excavate in Rattlesnake Creek.

VII. FIVE-YEAR REVIEW

Since the implemented remedy has resulted in no contaminants of concern identified in the ROD remaining at the site above levels that allow for unlimited use and unrestricted exposure, no five-year reviews are required pursuant to §121(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Part 300.430(f)(4)(ii) of the National Contingency Plan (NCP). In addition, this applies to the requirement in USACE Engineering Regulation (ER) 200-1-3 for the requirement of a two-year review.

VIII. SITE SUMMARY

The implemented remedy achieved the degree of cleanup and protection specified in the Record of Decision (ROD) for the Ashland 1 (Including Seaway Area D) and Ashland 2 Sites and the Explanation of Significant Differences (ESD) for the Rattlesnake Creek Portion of the Ashland Sites for all pathways of exposure. No further response is needed to protect human health and the environment from the project contaminants of concern. All areas of concern have been addressed. All ROD Remedial Action Goals have been achieved, and all ARARs have been met. Residual concentrations have been found to be suitable for projected use of the sites without restrictions. No materials above the cleanup levels have been left in place. Long Term Stewardship of the sites is the responsibility of the DOE.

IX. BIBLIOGRPAHY

US Army Corps of Engineers; *Project Construction Report for the Rattlesnake Creek FUSRAP Site, Tonawanda, New York, 2006.*

US Army Corps of Engineers; *Explanation of Significant Differences for the Rattlesnake Creek Portion of the Ashland Sites, Tonawanda, New York (ESD), 2004.*

US Army Corps of Engineers; *Project Construction Report, FUSRAP Ashland 1 Site (Including Seaway Area D), Tonawanda, New York, 2004.*

US Army Corps of Engineers; *Project Construction Report, FUSRAP Ashland 2 Phase Remedial Action, Tonawanda, New York, 1999.*

US Army Corps of Engineers; *Record of Decision for the Ashland 1 (including Seaway Area D) and Ashland 2 Sites, Tonawanda, New York, (ROD), 1998.*

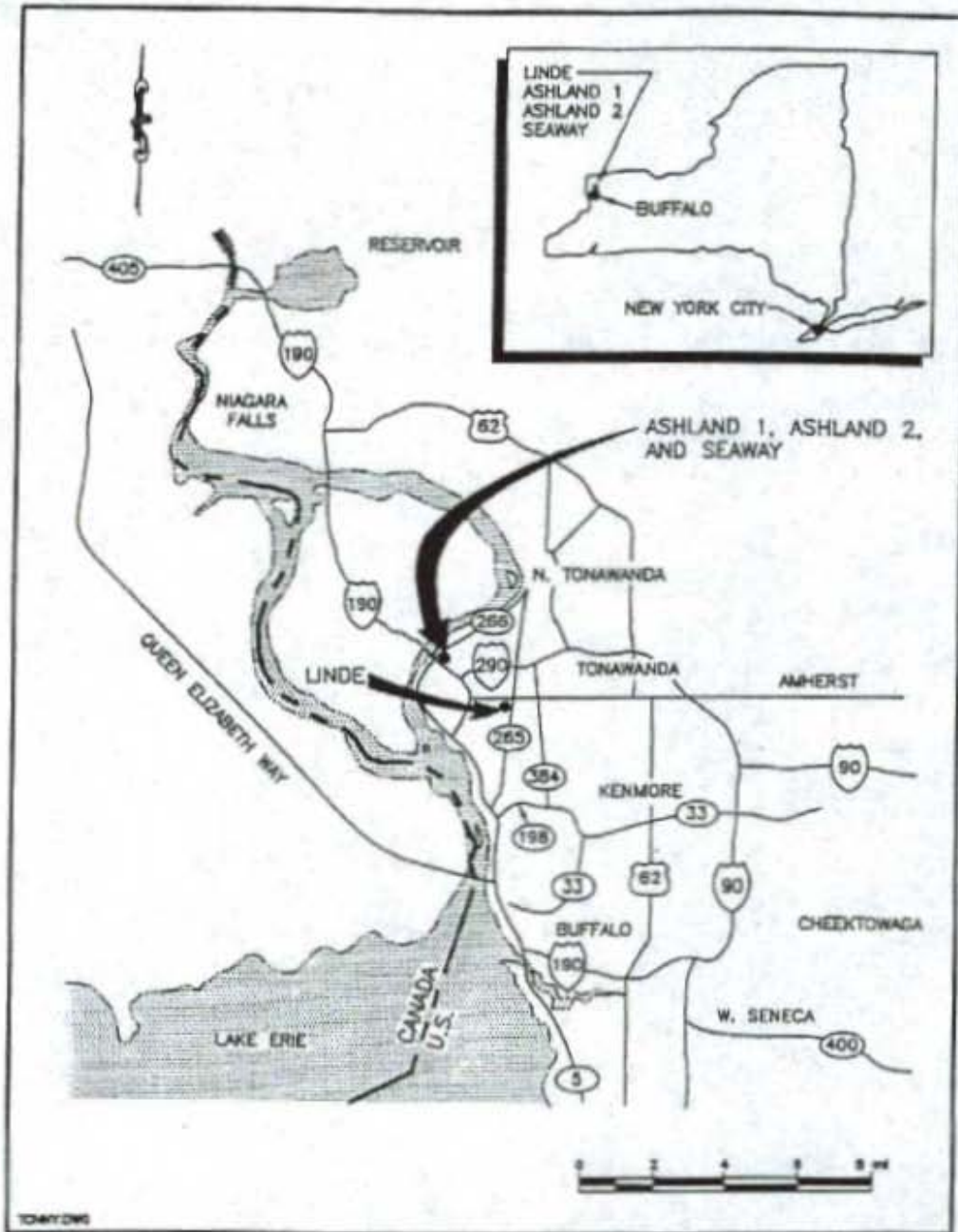


Figure 1 - General Location of the Ashland Sites



Figure 2 - Specific Features of the Ashland Sites



Figure 3 - Excavated Areas

Appendix A
Regulatory correspondence regarding achievement of ROD/ESD action goals

New York State Department of Environmental Conservation

Division of Solid and Hazardous Materials

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Denise M. Sheehan
Commissioner

September 22, 2006

Ms. Michelle C. Rhodes
Buffalo District, US Army Corps of Engineers
1776 Niagara Street
Buffalo, New York 14207-3199

Dear Ms. Rhodes:

Re: Site Closeout Report for Ashland

This responds to your letter, dated August 31, 2006, requesting our review of the draft Site Closeout Report for the Ashland 1, Ashland 2, and Rattlesnake Creek sites in the Town of Tonawanda. Department staff have reviewed the report. We found it a satisfactory summary of the project. We could not independently verify all of the information presented, but we did not identify any needed corrections. We have no other comments.

The Department of Environmental Conservation worked closely with the US Army Corps of Engineers throughout the remediation of these three sites, beginning with review of the proposed plan in 1998, and ending with the review of this document. We appreciate the Corps' efforts and cooperation.

In separate letters to the respective project managers, we previously informed the Corps of Engineers that each of the remediated Ashland sites meets the State's Cleanup Guidelines for Soils Contaminated with Radioactive Materials. We again commend the Corps for the successful completion of this project and look forward to continuing progress in remediating the other FUSRAP sites in western New York.

Sincerely,

Edwin E. Dassatti, P.E.

Director

Bureau of Hazardous Waste & Radiation Management

cc: Lt. Col. Hurley, USACE
P. Giardina, USEPA
A. Salame-Alfie, NYSDOH
P. Kranz, Erie Co.

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OCT 28 1999



John P. Cahill
Commissioner

Major Kally L. Eastman
Acting Commander
U.S. Army Engineering District, Buffalo District
1776 Niagara Street
Buffalo, New York 14207-3199

Dear Major Eastman:

This responds to your September 9, 1999 letter regarding the Ashland 2 FUSRAP site. Your letter transmitted a draft copy of the Closure Report for the site and referenced the final Quality Assurance and Independent Technical Review Report, which was sent to John Mitchell of this Department on August 17, 1999.

This Department's July 15, 1999 letter to the Corps of Engineers informed you of our determination that the Ashland 2 remediation met the radiation dose guidelines in our *Cleanup Guideline for Soils Contaminated with Radioactive Materials*, Division of Solid & Hazardous Materials Technical Administrative Guidance Memorandum 4003 ("TAGM 4003"). TAGM-4003 also calls for radiation doses to be as low as reasonably achievable (ALARA). Based on the available data and information, only very low concentrations of residual radioactive material remain at the Ashland 2 site. The Department finds that the Corps has effectively implemented the ALARA principle at Ashland 2. We commend the Corps for its efforts, and look forward to continued application of ALARA at the other FUSRAP sites in New York State.

Our July 15, 1999 letter requested additional information regarding the field surveying and sampling methods used at Ashland 2. The final Quality Assurance and Independent Technical Review Report, transmitted to John Mitchell on August 17, 1999, provided that information.

Thank you for providing these reports.

Sincerely,

Stephen Hammond, P.E.

Director

Division of Solid & Hazardous Materials

cc: Lt. Col. M. Feierstein, USACE
D. White, USNRC
S. Page, USEPA
R. Aldrich, NYSDOL
K. Rimawi, NYSDOH
D. Conroy, Praxair, Inc.
P. Kranz, Erie County

New York State Department of Environmental Conservation

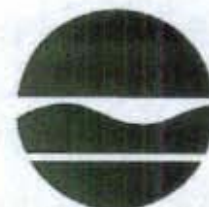
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Denise M. Sheehan
Commissioner

September 1, 2006

Ms. Janna Hummel
Department of the Army
Buffalo District, Corps of Engineers
1776 Niagara Street
Buffalo, New York 14207-3199

Dear Ms. Hummel:

Re: Ashland 1 FUSRAP Site
Project Construction Report (August 2004)

This responds to your request for our comments on the Final Project Construction Report for the Ashland 1 FUSRAP site in the Town of Tonawanda.

Content of the Report

Department staff reviewed the April 2004 draft of this report and submitted comments in a letter dated June 25, 2004. The revisions made in response to our comments are sufficient. We have no further comments on the content of the report.

Compliance with Department Guidance

This Department reviewed the Proposed Plan for the Ashland 1 and Ashland 2 sites in 1998. The plan presented a cleanup criterion only for thorium-230, although radium-266 and uranium isotopes were known to be present as well. In a letter dated April 13, 1998, we concurred with the proposed criterion, but stated that we would evaluate the remediation of the site based on the concentrations of all residual radionuclides, not on the thorium-230 alone.

We have therefore evaluated the residual radioactive contaminants with respect to the Department's *Cleanup Guidelines for Soils Contaminated with Radioactive Materials* (DSH-RAD-05-01, formerly TAGM-4003). That document recommends that the total effective dose equivalent from radioactive material remaining at the site be as low as reasonably achievable and less than 10 millirems per year.

We have used RESRAD, Version 6.3, to estimate the potential dose to a resident farmer on the site, using three sets of initial input concentrations: the average concentrations of residual radium, thorium and uranium reported for survey units 4, 12, and 27. These were selected to represent the worst-case average concentrations and relative distributions of radium, thorium, and uranium in

Class 1 units. Because our guideline applies only to the dose above background radiation, background concentrations were subtracted from the residual concentrations to obtain the initial input concentrations for the RESRAD model runs.

Copies of the RESRAD summary reports are enclosed. The predicted doses ranged from 4.2 to 9.7 millirems per year, which meet the dose guideline in DSH-RAD-05-01.

Confirmatory Surveys and Samples

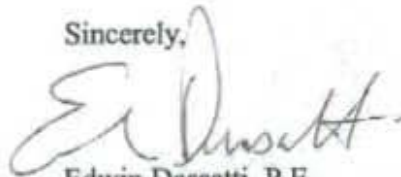
Department staff performed confirmatory surveys on 36 of the 37 survey units, and collected biased samples from several units. Staff also reviewed the Technical Data Package for each unit. In previous letters, the Department concurred with the backfilling of each unit.

Conclusion

Based on the Department staff's surveys, the individual technical data packages reviewed, and the data presented in the project construction report, the Ashland 1 site meets our guidelines and can be released for unrestricted use.

We commend the Corps on the successful completion of the Ashland 1 remediation. Thank you for the opportunity to review this report. If you have any questions, please contact John Mitchell of this Bureau at (518) 402-8579.

Sincerely,



Edwin Dassatti, P.E.

Director

Bureau of Hazardous Waste & Radiation Mgt.

Enclosure

cc w/o enc: Lt. Col. T. Touchette, USACE
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New York State Department of Environmental Conservation

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Denise M. Sheehan
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July 24, 2006

Ms. Janna Hummel
Department of the Army
Buffalo District, Corps of Engineers
1776 Niagara Street
Buffalo, New York 14207-3199

Dear Ms. Hummel:

Re: Rattlesnake Creek FUSRAP Site
Project Construction Report (*Draft Final - June 2006*)

This responds to Mr. Gustek's June 21, 2006 letter, transmitting the referenced report and requesting our comments. Department staff have reviewed the report, and found it a comprehensive summary of the work done by the Corps, its contractors, and Department staff.

Compliance with Criteria

The Project Construction Report concludes that the criteria set in the Record of Decision and the Explanation of Significant Differences have been met. In our November 17, 2003 letter to the Corps commenting on the proposed "Explanation of Significant Differences for the Rattlesnake Creek Portion of the Ashland Sites," we informed the Corps that we could not concur with the criteria that were adopted for uranium. Therefore, we have not relied upon that conclusion to evaluate the remediation.

Radiation Dose Projections

The Project Construction Report presents a radiation dose estimate based on the average of the residual concentrations at the Ashland 2 and Rattlesnake Creek sites, combined. The Department assessed the residual radioactive material at Ashland 2 in 1999. Therefore, we limited our dose assessment to Rattlesnake Creek.

In our comments on the Explanation of Significant Differences, we recommended that the uranium criterion be reduced to ensure that the site could be released for unrestricted use. We have therefore evaluated the residual radioactive contaminants with respect to the Department's *Cleanup Guidelines for Soils Contaminated with Radioactive Materials* (DSH-RAD-05-01, formerly TAGM-4003). That document recommends that the total effective dose equivalent from radioactive material remaining at the site be as low as reasonably achievable and less than 10 millirem per year.

We have used RESRAD, Version 6.3, to estimate the potential dose to a resident farmer on the site, which is a very conservative assumption for a stream bed. The model predicts a maximum total effective dose equivalent of 2.3 millirem per year, to occur in year 99 (a copy of the summary report is enclosed).

Confirmatory Surveys and Samples

Department staff performed confirmatory radiation surveys in most of the final status survey units. Staff identified some areas of elevated readings, which were satisfactorily remediated.

Conclusion

Based on the Department staff's surveys, the individual technical data packages reviewed, and the data presented in the project closure report, the Rattlesnake Creek site meets our guidelines and can be released for unrestricted use.

We commend the Corps on the successful completion of the Rattlesnake Creek remediation. Thank you for the opportunity to review this report. If you have any questions, please contact John Mitchell of this Bureau at (518) 402-8579.

Sincerely,



Edwin Dassatti, P.E.

Director

Bureau of Hazardous Waste & Radiation Mgt.

Enclosure

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