

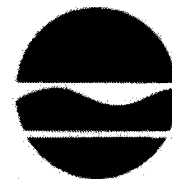
New York State Department of Environmental Conservation

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Alexander B. Grannis
Commissioner

SEP 10 2008

Lieutenant Colonel Daniel B. Snead
Commander
United States Army Corps of Engineers
1776 Niagara Street
Buffalo, New York 14207

Dear Lieutenant Colonel Snead:

Re: Niagara Falls Storage Site

The New York State Department of Environmental Conservation (Department) is in receipt of the "Remedial Investigation Report of the Niagara Falls Storage Site" (RI), dated December 2007. The RI was undertaken to assess environmental conditions at the Niagara Falls Storage Site (NFSS). The report includes a Human Health Risk Assessment and Groundwater Flow and Contaminant Transport Model in addition to the RI report. Field work associated with the investigation was conducted from 1999 through 2003.

As you are aware, the Department is fully involved in the review of the remedial investigation at the NFSS. The importance of the remedial investigation, and the collection and assessment of sufficient and appropriate environmental information, is critical to the corrective action process.

Review of the RI report by Department staff has generated numerous comments and concerns. A summary of our concerns are as follows;

- **Presentation of the report:** The report format is not conducive to effective review. Specific sampling locations exhibiting elevated contaminants of concern and the individual contaminants detected are not identified within the text of the report. Searching through the tables and appendixes to review data is cumbersome and time consuming, requiring extensive sorting and screening to review individual locations and/or parameters. Although much historical information exists with respect to past operations and investigations, the report does not provide a sufficient discussion of this information when interpreting the results of the current investigation.
- **Interpretation of data:** The report contains several invalid interpretations of data; conclusions about groundwater contamination have been based on computerized contouring, resulting in a misleading and erroneous presentation of the current conditions; background concentrations for groundwater constituents are derived by pooling data from different flow zones; and information from different media are combined in the presentation of contaminant distribution. In addition, the report makes no effort to determine the specific nature of contaminants at individual locations and interpret the data with respect to nearby points. Figures 4-2 through 4-25 present information on classes of compounds but not individual parameters. As presented, the report's evaluation of contaminant distribution is meaningless and determination of nature and extent impossible.

- Insufficient information to make remedial decisions: At several areas of the NFSS, significant contamination (both chemical and radiological) was detected. However, insufficient information detailing the nature, extent and rate of migration was presented to make remedial decisions. These areas, include but are not limited to, groundwater contamination detected in the northwest portion of the NFSS; chlorinated solvent contamination in EU 4; and contamination noted in the vicinity of former Building 409. Additional investigation will be necessary to close this data gap.
- The report does not provide a determination on the integrity of the Interim Waste Containment Structure (IWCS): As the repository of the waste residues at the facility, the ability of the IWCS to contain and prevent exposures to its contents is the primary focus of the RI (and subsequent Feasibility Study). We strongly recommend that the USACE provide an assessment of the IWCS with the goal of defining its acceptability as a containment structure now and into the future for a minimum of ten years. This assessment should also specify the time frame for assessment reviews into the future until such time as the waste can be handled, removed, and safely disposed at an appropriate facility. The Department does not consider shallow land burial of these waste materials as an appropriate long-term solution.

Specific comments are included as enclosures to this letter. We look forward to discussing this matter further.

Sincerely,



Edwin E. Dassatti, P.E.

Director

Division of Solid & Hazardous Materials

Enclosures

cc: w/enc. -

Senator Clinton
 Senator Schumer
 Congresswoman Slaughter
 J. Enck, Deputy Secretary for the Environment
 J. Gardella, Restoration Advisory Board
 A. Snyder, NYSDEC Region 9
 W. Mugdan, USEPA Region II
 G. Carlson, NYSDOH
 E. Murphy, NYSDEC

ecc: J. Strickland, R-9
 K. Johnson
 J. Mitchell

Comments on:
Groundwater Flow and Contaminant Transport Modeling
Niagara Falls Storage Site
Lewiston, New York

Page 1-4, last paragraph: With respect to ARARs, New York state requirements should also be taken into account.

Page 2-4, Section 2.2.2.1, first paragraph: Why weren't recent soil borings by CWM (post 1993) or the USACE's FUDS contractor (EA Engineering) reviewed as part of the program?

Page 2-6, Section 2.2.2.2, Figures 2.10, 2.11, 2.12: Although these Figures may be better presented as 3 dimensional animations on a computer, they do not translate well in two dimensions. Traditional Isopach or surface contour maps of the different unconsolidated deposits may better present the underlying geology.

Page 2-7, Section 2.2.2.3.2, third paragraph: When considering the distribution of sand lenses within the upper clay till at the area of interest, the reader should understand the set of data used (as shown in Figure 2.8) and the focus of the study (NFSS).

Page 2-11, Section 2.3.1, first paragraph: The term "statistically disconnected" with respect to sand lenses may be true in a statistical sense, but is better supported by field data.

Page 2-11, Section 2.3.2: Please note that due to the limited amount of hydraulic conductivity data for the glaciolacustrine clay unit, the power of the statistical evaluation is reduced.

Page 2-12, Section 2.3.6: Please note that some of the monitoring wells depicted on Figure 2.25 as Queenston Formation wells, are not screened in the bedrock (FP01D, F802LD, F102D, W202D, W1206D, W1101D, W1103D, W1104D & W1105D).

Page 2-14, Section 2.4.1, second paragraph: Please explain what "semivariogram analysis" is and why it is useful in evaluating sand lens correlation.

Page 2-17, Section 2.5.1, last paragraph, Figure 2.28:

- Does the USACE realize that several of the wells on the CWM property used to create Figure 2.28 are part of groundwater extraction systems?
- It is not understood why a wider number of monitoring wells on the CWM property, measured on October 17, 2000, were used to create this Figure (and other potentiometric surface maps).
- Why are water level measurements from only one year (two events) reviewed when water level measurements have been taken annually for several years? Multiple years of consistent flow directions creates a much more compelling argument.

Page 2-21, Section 2.6, second paragraph: Water budgets are conducted by CWM (and possibly Modern) annually. In addition, CWM has an on-site weather station.

Page 3-1, Section 3.2: Finite difference modeling was performed by CWM in the mid-1980's and in 2002.

Page 3-7, Section 3.3.3.2, Figure 3.4: Please provide information on the selection of recharge areas. Especially the swampland/ponded water depicted on the eastern side of the IWCS.

Page 3-13, Section 3.4.3.1, first paragraph: Was the zonation of hydraulic conductivity based on field data, or to make the model "fit" water level measurements?

Page 3-14, Section 3.4.3.2, third paragraph: The text states: "...the model tends to over predict the hydraulic heads near the CDD...". Could this be related to the selection of this area as a "recharge area" (as shown on Figure 3.4)?

Page 4-15, Section 4.3.2.1, last bullet on excluding constituents: Does this statement mean that if a constituent is not widespread, it's transport is not modeled? What if a constituent is in one isolated area and in high concentrations?

Page 4-29, Section 4.5: It is not clear from the simulations, whether the model considers groundwater discharge to surface water (Central Drainage Ditch, West Ditch).

**Comments on:
Remedial Investigation Report
Niagara Falls Storage Site
Lewiston, New York**

Page xxxv, Section ES.4, first paragraph: Change "...and on the northwest by the village of Lewiston" to "... and on the northwest by property owned by the town of Lewiston".

Page xli, Section ES.6, Surface and Subsurface Soil, first paragraph: A description of the "sealing" of the pipeline utilities extending off-site should be provided if available. If documentation is not available, the sealing of the pipelines should be field confirmed (and sealed if not).

Page xli, Section ES.6, Groundwater, first paragraph: The term "Plume" should not be used to describe the presence of radionuclides, metals or organic compounds in the groundwater. Insufficient data is presented in the report to substantiate the areas of elevated groundwater contaminants (as depicted on the Figures of Section 5) and appear to be a figment of computerized contouring of data and not representative of actual field conditions. This is not an acceptable and responsible method to present groundwater information.

Page 1-4, Section 1.5, fifth paragraph: NYSDEC comments on the 1986 USDOE Record of Decision include the Department's position that shallow land burial (such as the waste containment structure) is not appropriate for the K-65 waste. The Department considers the K-65 waste to be "Greater than Class C" material.

Page 1-5, Section 1.5, first paragraph: It is the Department's understanding that Building 403 was used as a firehouse not a laboratory and office building. Please clarify.

Page 1-5, Section 1.5.1, Baker-Smith Area: It is the Department's understanding that the Baker-Smith area was used for warehousing, a pipe shop and other "hand-shops".

Page 1-6, Section 1.5.1, Power Area: It should be mentioned that Building 401 was originally a coal fired, steam plant with coal storage located on the south side of the building.

Page 1-6, Section 1.5.1, Freshwater Treatment Plant: Given the importance of the current status of the former water treatment plant for the storage of residues, much greater detail of the design, operation and use of treatment plant units/buildings should be provided.

Page 1-6, Section 1.5.2: The materials originally "stored" in Building 411 and the Baker-Smith Area should be identified and listed in the report.

Page 1-9, Section 1.5.2, Other Wastes: Other operations and materials stored at the site (Fuel Rods, Cesium "caps", Uranium billets, "new naval waste area") should be included in

discussions of historical operations.

Page 1-9, Section 1.5.3.1: The results of the 1970 AEC radiological survey may not have been sufficiently sensitive, given that the detector was located one meter above the ground during the survey.

Page 2-3, Section 2.2.3 : Given that 444 documents and records associated with past construction, waste storage and remedial activities were reviewed to generate this section, three pages of findings is insufficient. Much greater discussion on historical information should be presented.

Page 2-11, Section 2.3.6: Why does this report use meteorology data from Niagara Falls Air Force base when the groundwater modeling report uses data from Lewiston?

Page 2-13, Section 2.4.1: Is General Engineering Laboratories ELAP certified?

Page 3-3, Section 3.1, Table 3-2: The sample naming convention is illogical. Linking the Exposure Unit (EU) to the sample name would make data review much simpler.

Page 3-4, Section 3.2.1: Were efforts made to tie the topographic survey to surveys of CWM and/or Modern Landfill?

The top paragraph on the page discusses areas of settlement on the IWCS cap noted during the 1999 survey. Please provide a figure showing these locations.

Page 3-6, Section 3.3.2.3, last paragraph: Given the importance of underground utilities as potential migration pathways, a greater discussion of the non-intrusive geophysical survey techniques and findings must be included in the report.

Page 3-10, Section 3.5.2: Why was the site broken into six sectors for the gamma walkover survey when it was previously broken into 14 exposure units (EUs)? This inconsistency only adds to confusion when reviewing the results.

Page 3-12, Section 3.6.2: NYSDOH considers surface soil to be the interval 0 - 2" for exposure (the RI used 0 - 6" as surface soil).

Page 3-22, Section 3.10.2.3: Were the new permanent wells surveyed?

Were wells installed in the lower water bearing zone cased off to prevent "dragdown", prior to advancing from the upper water bearing zone to the lower water bearing zone?

Page 3-25, Section 3.10.2.6: The report mentions that two site-wide water level measurement events were conducted (12/7/99 and 8/24/00). Is the data associated with these events presented

somewhere?

Page 3-25, Section 3.10.2.7: Were the temporary well points surveyed?

Page 3-25, Section 3.10.2.10: Since the temporary well points were not developed prior to sampling, this may skew the metals and radiological analytical results due to turbidity.

Page 3-38, Section 3.16.1.2: Is the source of the ten drums of solid Investigation Derived Waste, which were rejected by the disposal facility (WCS), known?

Page 4-1, Section 4.2, first bullet: Within the first bullet it states: "Numerous small chips of radioactive waste residue with elevated gamma readings were found near the ground surface in the vicinity of these trenches". It is my understanding in speaking with Corp representatives that these chips were collected upon discovery and surrounding soils were re-surveyed. This needs to be better documented in the report.

Page 4-1, Section 4.2: Please note the information contained in Table 4-1 indicates several other "significant" findings in addition to those presented here.

Page 4-1, Section 4.3: Why weren't the analytical results from the drum, road core and railroad ballast used to determine site related contaminants? Couldn't these matrices contribute to site contamination?

Page 4-2, Section 4.3.1: It is not understood why a background data set could not be established for roadways and railroad ballast. Aren't there roads or railroads not impacted by the site? Or for railroad ballast, why not statistically evaluate the data set and look for outliers? For roadways, a simple review of the data would indicate results out of the expected range (such as 26 ppm of arochlor-1254 in sample RC-core01-3730 or 5.72 pCi/g of Pu-239 in RC-core3-3734).

Page 4-2, Section 4.3.2: The uranium content seems elevated in the sample of Drum 1. Please provide additional details.

Page 4-2, Section 4.4.1: Because the first reference to an actual number for specific Background Screening Value was found in Table 4-20, it is suggested that within the written text of the document that a listing of background screening values for chemicals be placed in the chemical section and background screening values for radionuclides be placed in the radionuclide section. It might even be helpful if these lists were on separate pages so that they could be removed from the document, making it accessible upon further reading.

Page 4-5, Section 4.4.1, second bullet: Was the railroad bed near the monitoring wells in question sampled to support the hypothesis proposed for the elevated Uranium in samples from these wells?

Page 4-5, Section 4.4.1, fifth and sixth bullets: The appropriateness of the background locations for surface water and sediment needs to be reviewed considering that they are not upgradient/upstream/upwind of the site (and the R-10 pile was uncovered for years).

Page 4-6, Section 4.4.1, Statistical Evaluation: Due to the limited amount of background data, the power of the statistical evaluation is diminished. Therefore, the determination of Upper tolerance limits may be questionable and should be used with caution.

Page 4-7, Section 4.4.2: It is understood that statistical evaluation of data can be powerful. However it can also be confusing. Simpler methods for selecting site related contaminants of concern should also be presented (such as process knowledge, site use, historical information).

Page 4-9, Section 4.5: The use of the correct units for Uranium should be carefully observed. For uranium analysis on liquid media pCi/L or ug/L can be used depending on the purpose of the analysis and standard being compared. However, for soils or sediments the units have to be reported as pCi/g. This comment is applicable to all soil/sediment sample results.

Page 4-10, Section 4.6.1: With respect to naturally occurring inorganic compounds, it is not advisable to "pool" data from different strata; or to mix surface soil data with subsurface soil data.

Page 4-11, Section 4.9.1: It is not advisable to mix data from different flow zones.

Page 5-2, Section 5.1.1, second paragraph: If samples were collected from a ditch or drainage way, sediment is a proper term for the sample. Materials in these locations are much more likely from migration and/or deposition during rainfall/runoff events.

Page 5-4, Section 5.1.2, second paragraph: With the exception of the last sentence, this paragraph explains the distribution and migration characteristics of the site. However, the last sentence contradicts the reality of the hydrogeologic setting. As stated elsewhere in these comments, the use of the term "plume" is inaccurate and gives a exaggerated depiction of groundwater conditions and migration.

Page 5-4, Section 5.1.2, last paragraph: Bis (2-ethylhexyl) phthalate is a common laboratory contaminant and should have been addressed as part of data validation. Presenting a "plume" of this constituent is inappropriate and should not be presented.

Page 5-6, Section 5.2.1.1, third bullet: The discovery of positive Cs-137 analytical results at several locations around the site needs to be explained. Cs-137 has been shown, in some instances to result from global fallout settling in low laying areas, or as subtly mentioned on this page, in areas of former building foundations, inferring possible accumulated fallout off a roof drip edge or from KAPL waste being present. Plutonium-239 analysis should be performed to rule out the latter. In any event, a discussion should be presented highlighting potential sources.

Page 5-6, Section 5.2.1.1, fourth bullet: Were shallow soil sampling results consistent with the results of the gamma walkover survey (did the walkover survey detect contamination not identified by the soil sampling or visa-versa)?

Page 5-7, Section 5.2.1.1, second bullet: Please define what is meant by "...exceedances of the background UTL by a factor of at least 10 were *relatively few*."

Page 5-7, Section 5.2.1.1, third bullet: With respect to the distribution of Cs-137 detections in soil samples, it is not unexpected to have compounds present in a random fashion, especially considering the manner in which materials were stored and handled at the facility.

Page 5-7, Section 5.2.1.1, fourth bullet: The value of the information presented in this bullet would be greatly enhanced if the locations, concentrations and identity of the detected compounds were provided.

Page 5-8, Section 5.2.1.1, first bullet: This bullet provides only the bear minimum of information on the sampling results. Where were above background levels of radionuclides detected in the subsurface? What about metals? Volatile organics? The information presented is more appropriate for an executive summary rather than a presentation of the results of the investigation.

Page 5-8, Section 5.2.1.1, second bullet: Please provide the identification numbers corresponding to the abandoned drum samples referenced in this bullet. Please provide specific information on the compounds which were detected in samples of the material within the drum and the soil beneath the drum. This information will allow the reviewer to better assess the statement in the report that the drum is not the source of compounds detected in the soil.

Page 5-9, Section 5.2.1.4, first bullet: Given the characteristics of the unconsolidated strata the groundwater samples containing elevated dissolved total uranium were collected from, it is more likely that the contamination exists in discrete areas and not as a continuous "plume". In order to substantiate the "plume" depicted in Figure 5-4, several additional groundwater sampling points containing elevated dissolved total uranium are necessary between and in the vicinity of the two wells used.

Page 5-10, Section 5.2.1.4, second bullet: Why does the report consider ten times the background UTL as the criteria for determining impact to the groundwater? The purpose of the investigation is to characterize the different media. Often, just the presence of a constituent is sufficient to warrant additional investigation. This bullet is also inconsistent with the information presented in the fourth bullet, as Cs-137 is a radionuclide and it was detected in excess of 10 x the UTL (non-detect).

Page 5-10, Section 5.2.1.4, fourth bullet: Please correct the first sentence to read: "Cesium-137 was detected in groundwater at location MW 404A and GW810A....". The detection of Cs-137

in groundwater is of concern to this Department, and the investigation and characterization of the presence of CS-137 in groundwater at this area was not sufficient. Simply making calculations on two individual sampling results does not answer the questions of why the contaminant is present. Are wells 404A and 810 isolated areas exhibiting the highest levels of contamination or do other areas exist? Why did the resample of well 810A not detect Cs-137? What was different? Does the USACE have a theory?

Page 5-12, Section 5.2.2: Please see previous comments on the use of the term "plume".

Page 5-16, Section 5.3.1.1, Trenches 411, 412, 413: Why weren't parameters other than radiological parameters investigated? Doesn't the name: "New Naval Waste Area" suggest the materials at the area were possibly associated with the Navy Interim Pilot Production Plant? Discolored materials and elevated PID readings were noted in all three trenches. Wouldn't this suggest other contaminants besides radionuclides could be present?

Page 5-18, Section 5.3.1.1, second bullet: It is not clear why the presence of ballast in the area leads the author to suggest that the ballast is responsible for elevated concentrations of Ra-226 in soil samples. Was ballast noted in the samples? How does the ballast explain the presence of other contaminants detected in these samples?

Page 5-18, Section 5.3.1.1, fifth bullet: The report should also discuss the locations of the detections, not just state "frequently" or the "maximum concentration". Several locations had detections of PCBs above New York State cleanup standards.

Page 5-18, Section 5.3.1.1, sixth bullet: It should be noted that Tetrachloroethylene (PCE) was detected at a concentration of 63 parts per million in boring SB415.

Page 5-19, Section 5.3.1.1, fifth bullet: Please clarify which sample number corresponds with which material sampled.

Page 5-20, Section 5.3.1.2: Regardless of turbidity, elevated metals were present in the water sample. This implies that the contaminants are subject to suspension, transport and migration; and therefore a potential problem.

Page 5-21, Section 5.3.1.4: Review of the Section 5 Figures depicting groundwater "plumes" leads one to believe groundwater migrates in several directions from the same location. This observation is an additional reason why the Department does not consider the Report's presentation of groundwater conditions is appropriate.

Page 5-22, Section 5.3.1.4, first bullet: It is not so much the concentration of Cs-137 in groundwater samples, but more its presence that is of concern.

Page 5-22, Section 5.3.1.4, second bullet: The concentration of PCE in monitoring well 415A

warrants additional investigation and possible interim remedial actions.

Please note that due to the low solubility of PCE, the high concentration of PCE detected in well 415A may indicate the presence of separate phase product in the vicinity of this location. The Department will not consider natural attenuation as a viable remedial option to address contamination of this magnitude.

Page 5-23, Section 5.3.1.5, first bullet: Just because a contaminant is not prevalent at numerous locations does not exclude the possibility of it being a problem at individual locations.

Page 5-24, Section 5.3.1.5, fifth bullet: The results of samples collected from MH32 and MH35 are not discussed in the groundwater section of this EU. The results are discussed further in Section 5.3.2.

Page 5-24, Section 5.3.1.5, Sanitary Sewers, first bullet: The concern, again, is the presence of Cs-137 in samples, not necessarily the concentration. Is there a theory on whether these Cs-137 detections are due to groundwater infiltration or the opposite?

Page 5-25, Section 5.3.1.5, Storm Sewers, first bullet: It is interesting to note that adjacent manholes MH35 (acid sewer) and MH22 (storm sewer) both detected VOCs. However an investigation of groundwater in the vicinity was not conducted to determine if this media is affected. Investigation of this area should be conducted.

Page 5-25, Section 5.3.2: How can the limit of contamination in the pipeline be determined when no samples are collected downstream of the impacted locations? Additional sampling is necessary.

Page 5-26, Section 5.3.3, second bullet: Please note the following with respect to past usage of PCE: Multiple government uses of the property involved the use of solvents such as the Navy Interim Pilot Production Plant, Air Force Plant 68, and the Boron-10 Plant. Evidence of past disposal in the area includes abandoned drums, waste piles, pipes, sumps. It is not unreasonable to consider past government operations as a potential source.

Please remove the last sentence of this bullet, since the contamination noted on the NFSS is not associated with CWM operations, although CWM does operate groundwater extraction systems associated with past Federal Government contamination (P1202s and PCB Warehouse remedial systems).

Page 5-26, Section 5.3.3, fifth bullet: The presence of bis(2-ethylhexyl)phthalate in sample results could also be associated with analytical laboratory contamination.

Page 5-26, Section 5.3.3, sixth bullet: The presence of PCBs in this area could be related to oil jacketed lines, heat transfer fluids or gaskets, caulks and seals. The presence of PCE could be

associated with the disposal of spent solvent associated with the operations discussed in the comments in the second bullet.

Page 5-26, Section 5.3.3, eighth bullet: It is expected that elevated gamma walkover survey readings would be associated with surface soil containing radionuclides.

Page 5-26, Section 5.4.1: It would have been helpful if subsurface samples were taken northeast of road core RC 14 to assist in bounding the groundwater/soil contamination noted on the CWM side of the fence.

Page 5-32, Section 5.4.1.4, second paragraph: Data from monitoring well BH57 (screened in the upper Queenston formation) should not be compared to background values for the lower water bearing zone data.

Page 5-33, Section 5.4.2: When discussing elevated surface soils in the southeast corner of EU6, is the author referring to sample locations 606 and/or 6B005?

Page 5-35, Section 5.5.1.1: Please provide the locations, detected parameters and concentrations of contaminants discussed in this section. The current discussion is vague.

Page 5-36, Section 5.5.1.1, first and second bullet: Please note that the source of debris piles investigated by trench 302 and 305 is believed to be the result of DOE remedial work performed on Modern Landfill property in the 1980's (Vine street/Vicinity Property N North).

Page 5-38, Section 5.5.1.4, first bullet: Please note that the groundwater contamination noted in samples collected from wells 302/302A and 313 are not part of a "plume" and have different radiological signatures.

Page 5-40, Section 5.5.2: The best explanation of the dissolved uranium plume is that the "plume" does not exist and is a figment of computer contouring.

Page 5-43, Section 5.6.1.1, second bullet: Subsurface soil sample 8D006 (0.8) should also be noted when discussing samples with elevated contaminants.

Page 5-45, Section 5.6.1.1, fourth bullet: Was a sample of the "chips" exhibiting the high gamma readings collected and analyzed?

Page 5-46, Section 5.6.1.1, first bullet: The detection of "Niobium-95" in Trench 810 should be discussed.

Page 5-49, Section 5.6.1.4, second bullet: Additional investigation is required to support the statements in this bullet. The elevated U-234 samples were collected from different media (groundwater and sanitary sewer). Other groundwater samples in the vicinity do not indicate

contamination of the same magnitude and characteristics.

Page 5-49, Section 5.6.1.4, fourth bullet: The concern with Cs-137 is not the concentration but rather its presence since Cesium is not associated with uranium milling residues.

Page 5-49, Section 5.6.1.4, fifth bullet: Bis(2-ethylhexyl)phthalate is a common laboratory contaminant. The concentrations noted are not unusual in analytical reporting.

Page 5-49, Section 5.6.1.5: Due to the detection of elevated contaminants in samples collected from the underground utilities and the potential of these pipelines to serve as a migration pathway, further field investigation is required.

Page 5-51, Section 5.6.2: The localized areas of groundwater contamination identified north of the IWCS could be related to the open storage of R-10 residues in vicinity of this area.

Page 5-51, Section 5.6.3, first bullet: The disposal of building materials in the burial areas could be a potential source of detected contaminants.

Page 5-51, Section 5.6.3, second bullet: It is highly unlikely Cs-137 would migrate up-gradient in groundwater from EU 1 & 2 to EU 7.

Page 5-52, Section 5.6.3, third bullet: Soil samples should be collected from the areas on the northwest, east and southeast side of the IWCS where elevated gamma readings were noted, to address this identified data gap.

Page 5-53, Section 5.7.1.1: In summary, the contaminated soil identified in the vicinity of Building 401 will need to be addressed as part of the removal and remediation of Building 401.

Page 5-59, Section 5.7.1.4, third bullet: The text of this bullet points out why the areas of elevated concentrations in groundwater should not be referred to as plumes at this facility.

Page 5-60, Section 5.7.1.5, Floor Drains: The analytical data associated with samples collected from the Building 401 floor drains identified high levels of various contaminants. These drains (and associated piping) must be addressed as part of the building remediation and removal.

Page 5-62, Section 5.7.3, second bullet: It would be useful if, as part of the discussion on the correlation of soil sample results to gamma walkover data, there was an evaluation of the soil data to determine if other radioactive parameters were present besides gamma emitters. In other words, was the gamma survey effective in identifying areas of surface radiation contamination, given the range of radioactive materials possibly present?

Page 5-74, Section 5.10.1.4, first bullet: Please rewrite to read: "Several areas of localized groundwater contamination were identified...". The term "plume" gives the impression of

migration.

Also, see previous discussion on areas of groundwater contamination.

Page 5-75, Section 5.10.1.4, second bullet: Given its proximity to the IWCS and concerns over the identified contamination in the former Building 409 area, additional characterization and remedial work are warranted.

Page 5-75, Section 5.10.1.4, third bullet: Figure 5-16 does not accurately portray the groundwater potentiometric surface of the upper water bearing zone at the NFSS.

Page 5-76, Section 5.10.1.4, second bullet: This statement is not adequately supported by information gathered as part of the RI. Additional groundwater monitoring investigation is required to substantiate.

Page 5-78, Section 5.10.2: Replace "plumes" with "groundwater impacts".

Page 6-1, Section 6.1, second paragraph: New York state regulations must also be considered ARARs.

Page 6-3, Section 6.1, SVOCs: Bis(2-ethylhexyl)phthalate is a common laboratory contaminant. Evaluation of analytical data detecting this compound should take that into consideration.

Page 6-8, Section 6.6: Please see Department comments on the "Groundwater Flow and Contaminant Transport Modeling Report".

Page 6-9, Section 6.6.1, Item "3": Please see previous comments on the depiction of groundwater contamination.

Page 6-9, Section 6.6.1, last paragraph: As previously commented on in Section 5, the "definition" of a groundwater plume is not based on actual field/geologic conditions. Given the groundwater flow characteristics of the upper water bearing unit, and attenuation of contaminants in geologic material with a high ion exchange potential, the release would have to have occurred approximately 1000 years ago in order for contaminants to have migrated the distance depicted by the report in the northwest portion of the NFSS.

Page 6-10, Section 6.6.2: Please understand that modeling is a tool used as part of the remedial decision making process. Results of modeling are only as good as the imputed data and assumptions used. The drawbacks of modeling for the time frames evaluated here are inherent with the inability to calibrate and validate for the long period (1000's of years).

Page 6-13, Section 6.6.4: While the distribution coefficient (K_d) used for Uranium-238 (3.6 L/Kg), as part of the groundwater modeling, is much lower than what would be expected in a

clay rich material; the purpose of the modeling was to present a worst case scenario.

Page 7-4, Section 7.2.2, second paragraph: Please change strontium-190 to strontium-90.

Page 7-9, Section 7.3.2, Recommendations: Please clarify the proposed recommendations for Subsurface Utilities (How did the contaminants detected in this media drop out?)

Page 7-13, Section 7.3.4, Nature of Occurrence: Given the numerous contaminants and media affected at this Exposure Unit, additional investigation is necessary to fully characterize the unit. Further investigation must define the nature, extent and rate of migration of the identified contaminants.

Page 7-15, Section 7.3.4, Recommendations: Remedial action will be required for this Exposure Unit.

Page 7-30, Section 7.3.10, Recommendations: Besides the Interim Waste Containment Structure, the Feasibility Study should evaluate soil/groundwater adjacent to the unit and the ability to monitor the IWCS.

Page 7-38, Section 7.3.13, Recommendations: Building 401 should be taken down, followed by remediation of its foundation and subsurface.

Page 7-42, Section 7.3.15, Recommendations: Site drainage should continue to be monitored with respect to remedial actions taken at other exposure units and to assess groundwater discharge to surface water.

Page 7-46, Section 7.3.17, Recommendations: As stated previously, the characterization of groundwater contamination in this report is not accurate nor scientifically based. Any conclusions based on the flawed assumptions are also potentially flawed.