

Waste Receipt during Operations of Disposal Facilities (A Springboard Topic)

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A (waste estimation) or source term issue

In reviewing the investigatory history in various Burial Grounds documents, it has become clear that....characterize (of) these areas (is not) sufficient to allow the FFA parties to evaluate a full range of remedial alternatives. Indeed a reasonable person could not assert that the general character of the waste as to quantities, extent, state, concentrations, toxicity, etc. is understood.... While these efforts have upon them the patina of a remedial investigation, in fact the end decisions will be in essence presumptive.

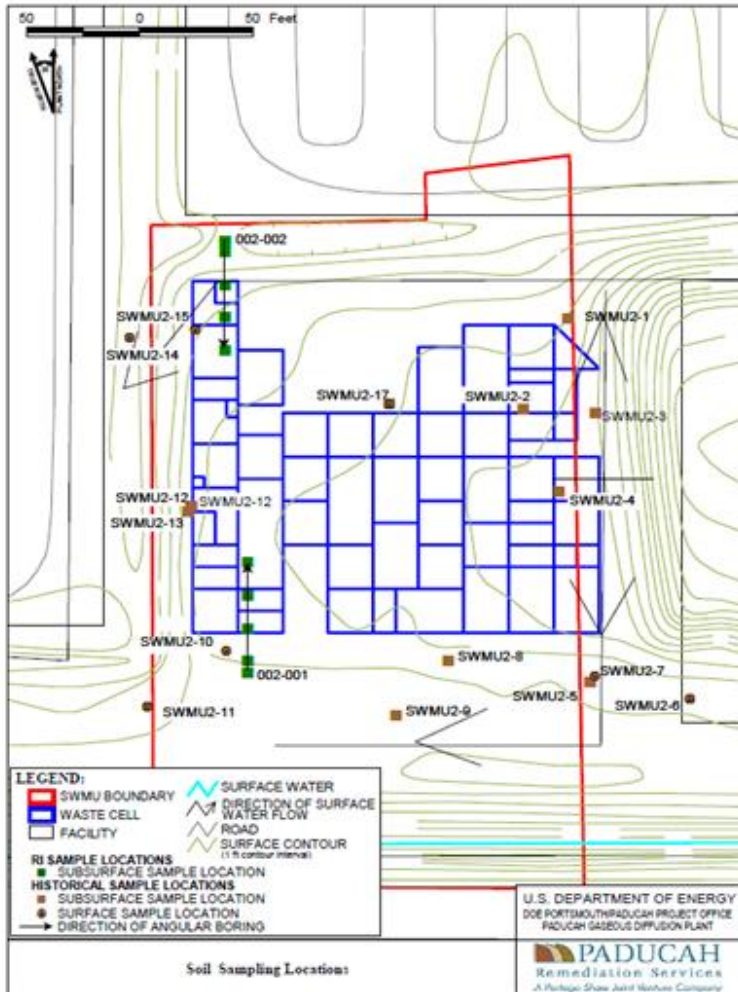
June 2009 Comments of the RI for Burial Ground Operable Unit at Paducah Gaseous Diffusion Plant.



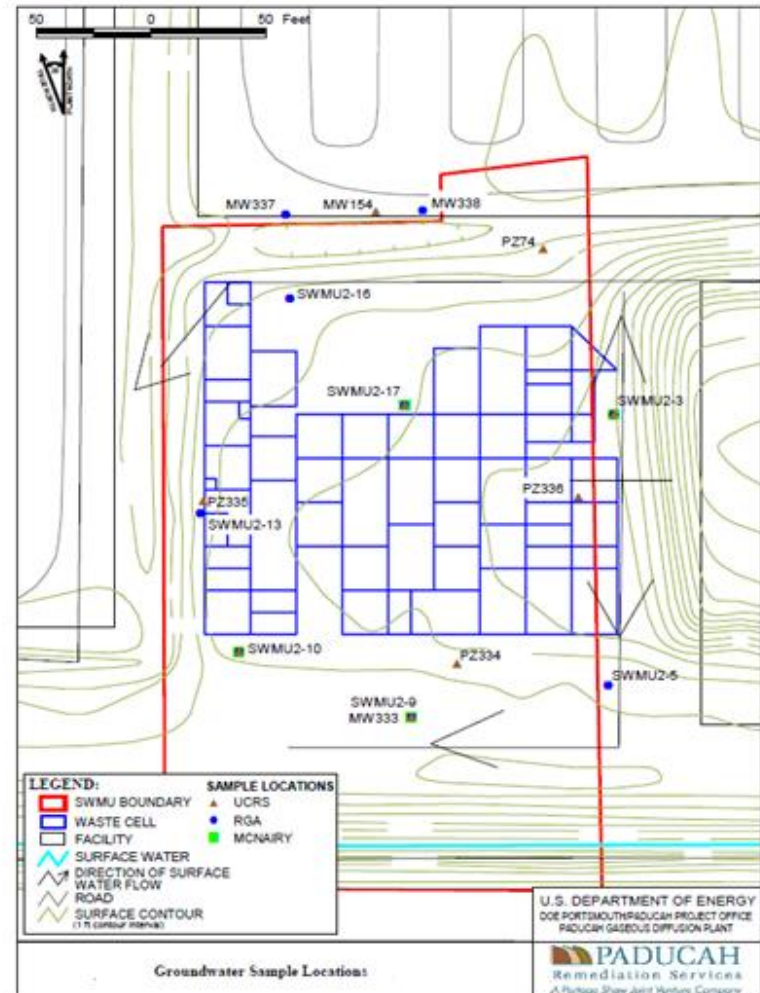
General character of unit

- Unit operated as a surface impoundment from 1952 to 1957. From 1957 through 1976 the unit operated as solids waste disposal facility receiving uranium contaminated wastes, uranium tetrafluoride, uranium metal, uranium-containing magnesium-fluoride slag and rejected UF_4 . Estimated net weight of uranium 3,200 tons.
- Approach was bias upon disposal records, i.e., uranium burial ground; although,
- the stated goal was nature and extent of contamination.
- Uranium risk driver (21% of the samples)
- Ultimately, insufficiencies in characterization were acknowledged but they are to be addressed in the FS.
- Assuming present funding, the FS will not be written for more than 20 years.

Characterization data

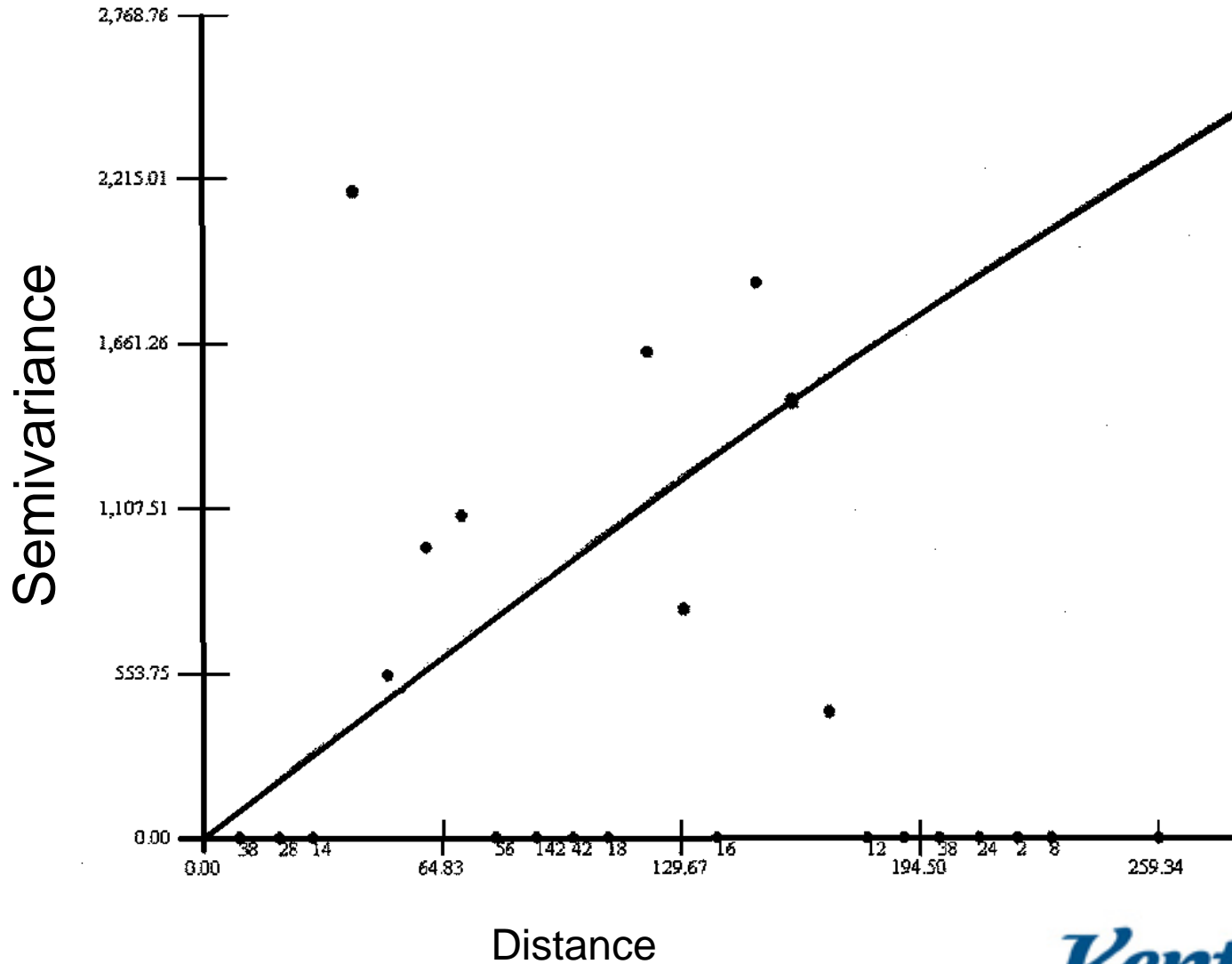


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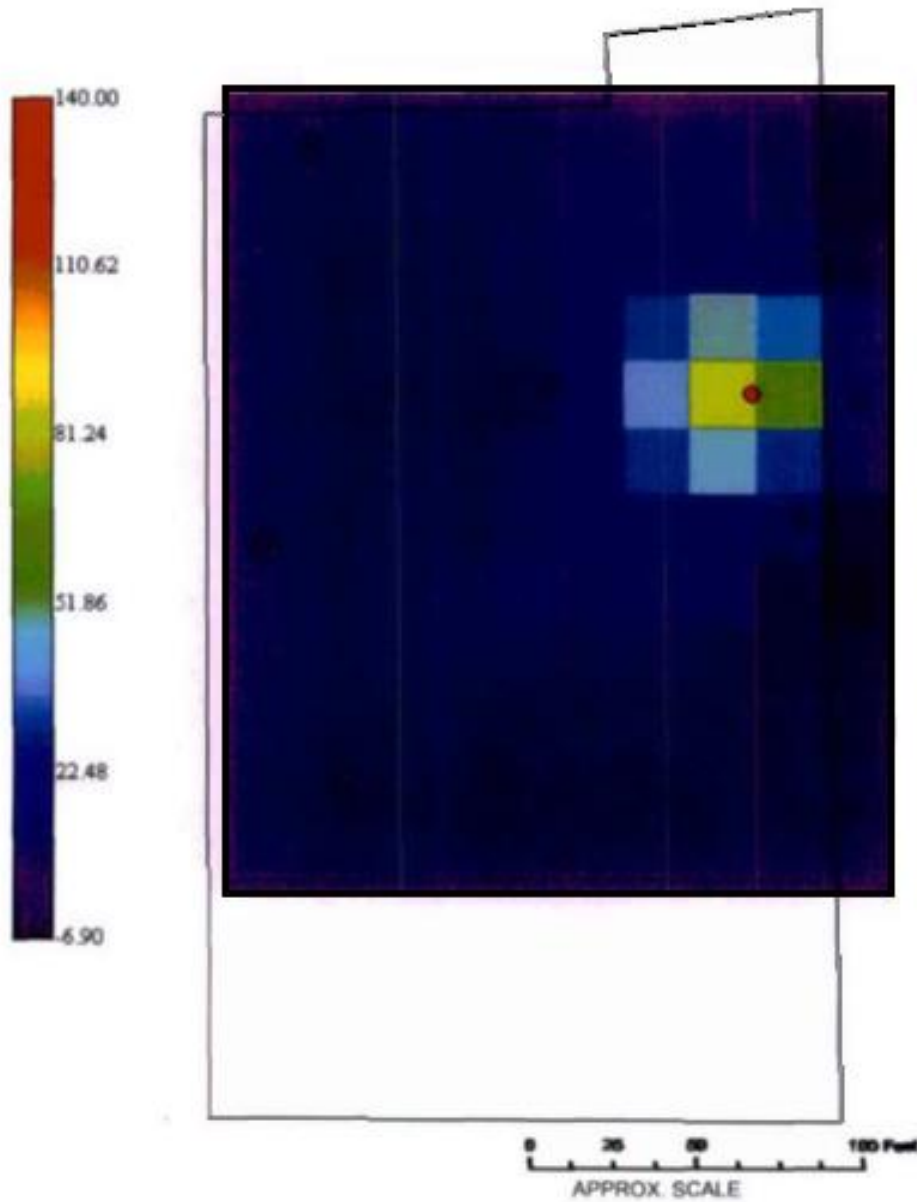


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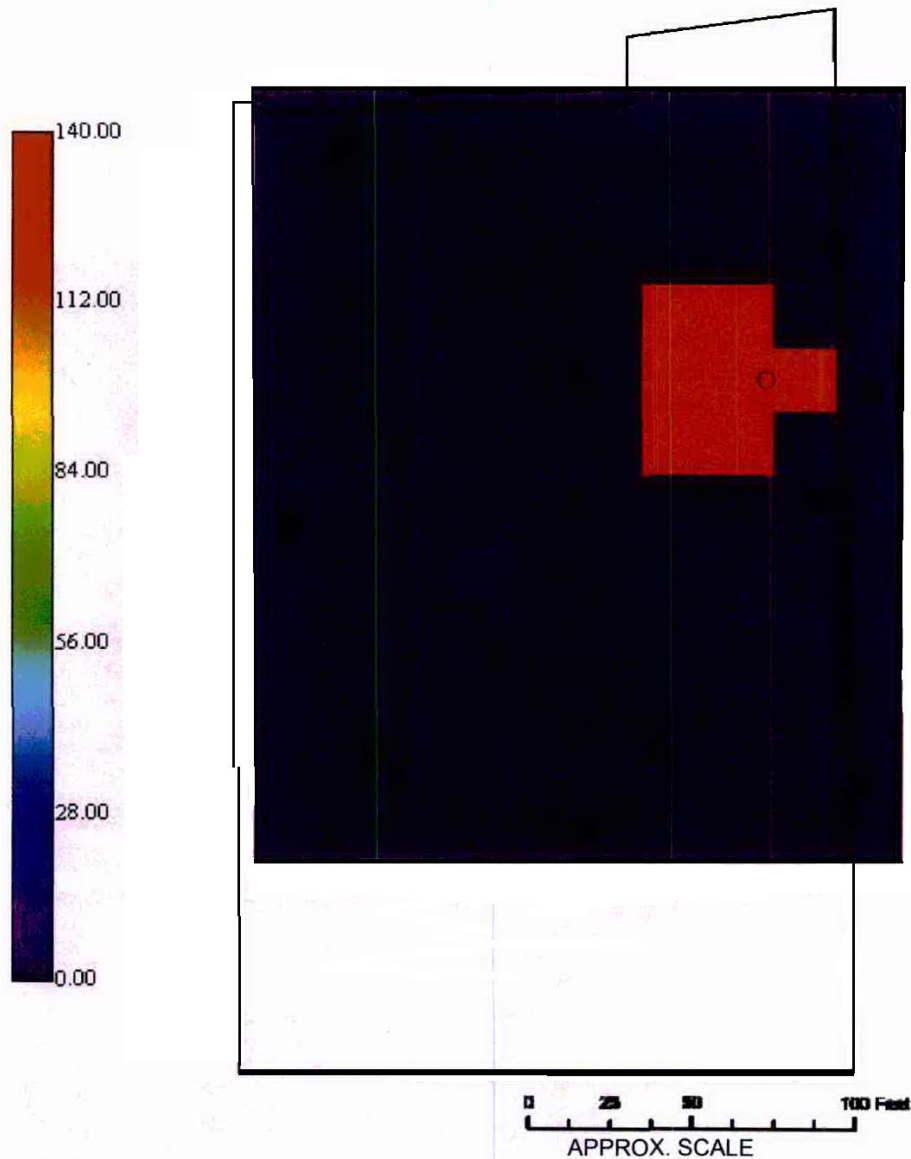
Kriging of the soil data



Kriging map of highest COC layer



Nearest Neighbor map of highest COC layer



Insufficiencies in characterization impact subsequent processes

Waste Inventory
Source Term



Failures at the RI phase passes through the whole process.



Remedy
Selection

Site
Selection

Design

Operations

Maintenance

Closure

Sufficient characterization prior to remedy selection

- A significant and determined effort to characterization and quantitation wastes before design of disposal facilities, and before pWAC.
- I understand that there are circumstances where this may not be appropriate. Example: Health and safety concerns,
- but the default should be characterization *in situ* sufficient to develop an informed pWAC and sufficient to support the initial PA.
- A COPC screened from consideration in the RI may, nevertheless, need to be accounted for in the PA.
- The purpose of eliminating COPCs from consideration in the RI is to focus on generic human health and environment risk scenarios significant to remedy selection.
- The purpose of the screening steps relative to the PA is to eliminate radionuclides and waste streams that are insignificant relative to the performance objectives.

Example of Waste Receipt

Table 9-4. Example of Waste Receipts

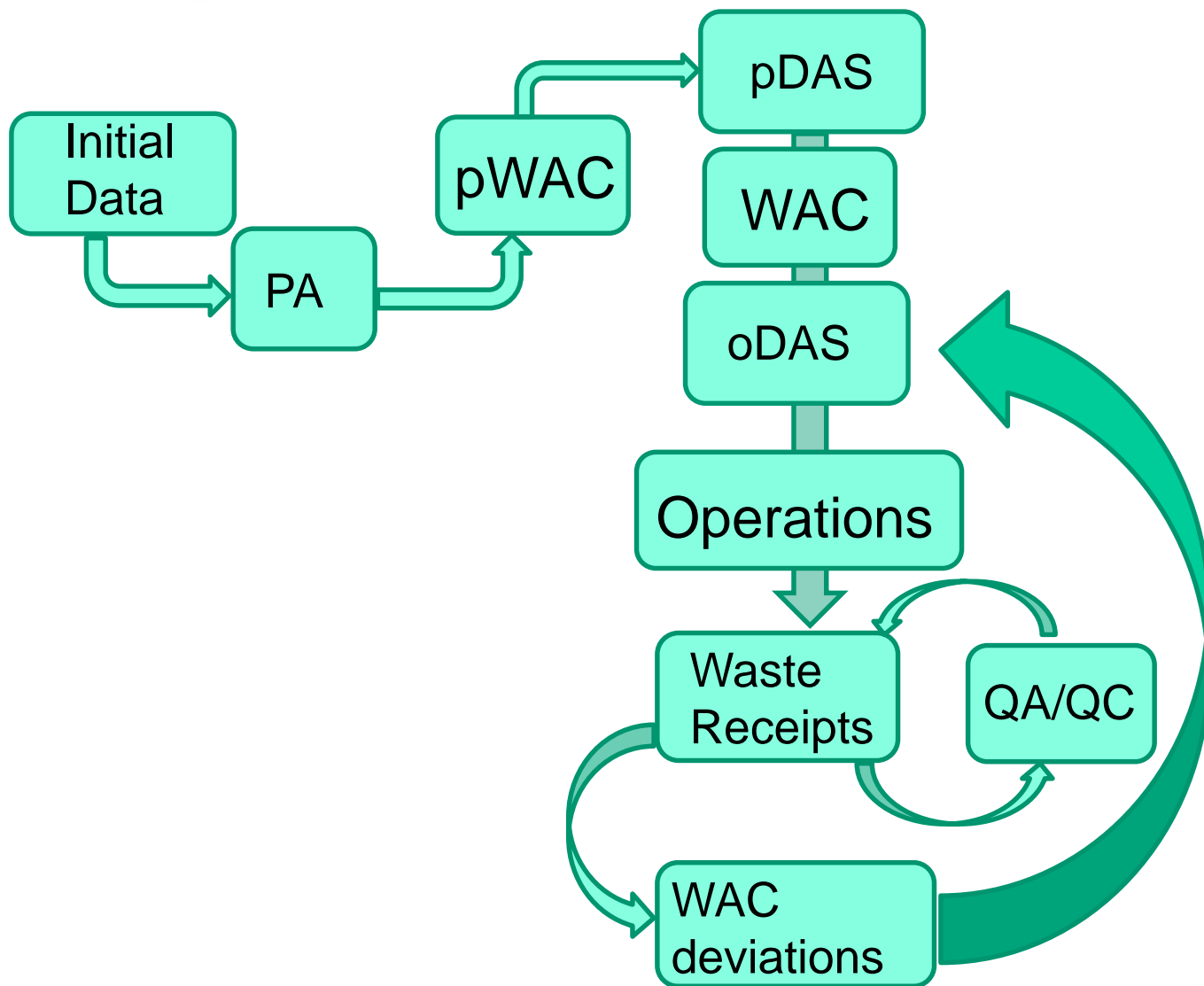
Disposal Facility/Unit	Disposed Volumes (m3) to date	PA-Estimated Disposal Capacity (m3)	Percent Filled (%)	Sum of Fractions or PA Curie Limit	PA/CA Impacts
Rad Landfill #1	20, 848	23,000	.91	1.2	Exceeded curie limit for Tc-99. SA to evaluate started in October and will be complete December 2015
Rad Landfill #2	10,000	20,000	50	.56	None

DOE-STD-5002-2017 5/17

Disposal Authorization Statement & Tank Closure Document



Initial data, waste receipts, DAS



Waste Receipts Contribution to PA

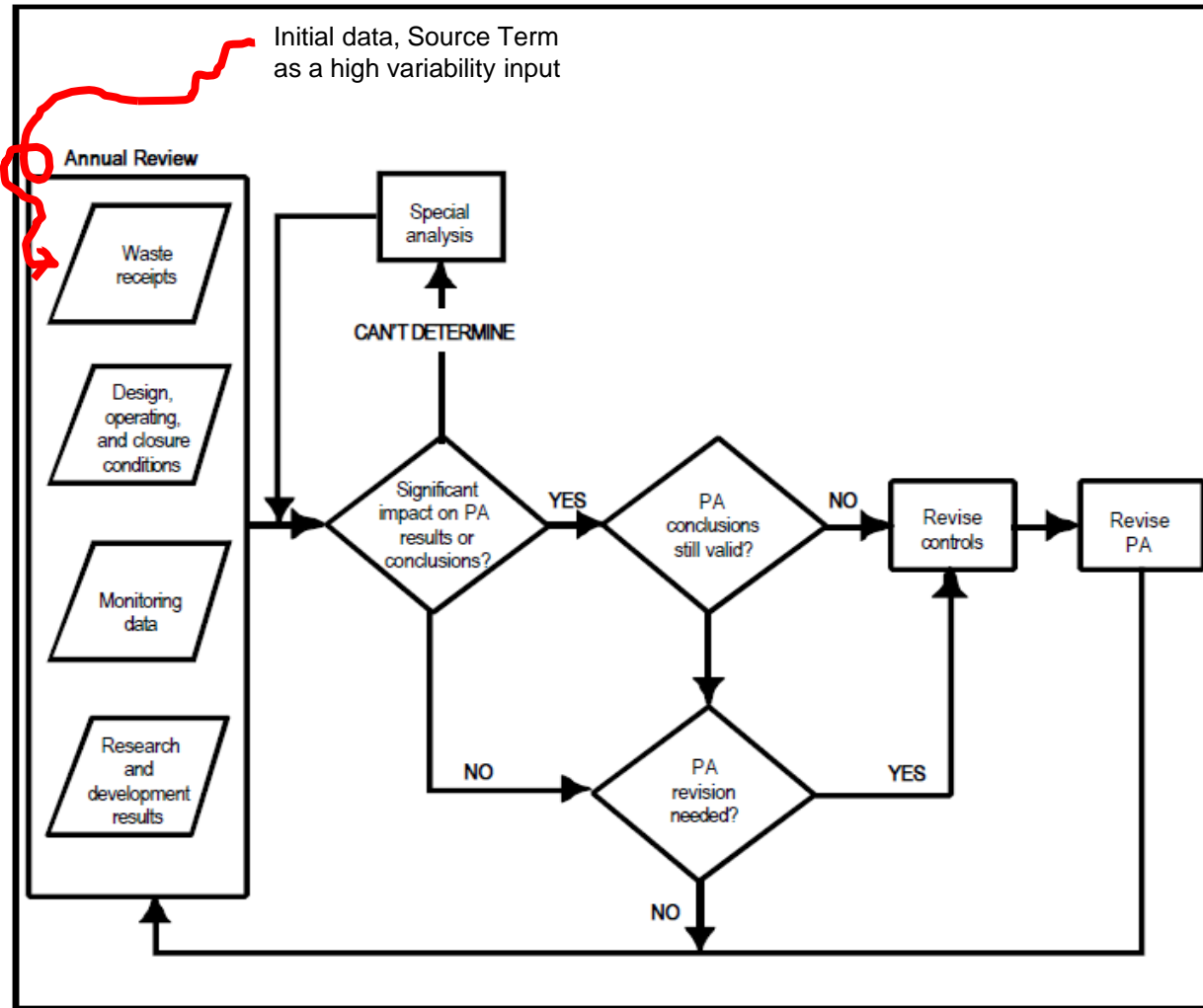


Figure 2-1. Performance Assessment Review and Revision Process.

Radionuclide Inventories

- A key objective of the PA is to develop WAC.
- Prior to waste removal, the PA inventory will be based on an estimated “assumed inventory”. This data could derive strictly from the data contained in the RI.
- In final closure, the actual inventories disposed, will need to be confirmed against the assumed inventory (RI?).
- This assumed inventory serves as the “control” for determining the comprehensiveness of the final inventory (i.e., has a waste stream been missed or underestimated).
- Uncertainties should be highlighted & evaluated in a sensitivity/uncertainty analysis and, as appropriate, approaches to manage uncertainty incorporated as part of PA maintenance.
- One should not plan to remedy insufficient in waste characterization or source term development by the waste receipts process.

A new economic model



Envisioned Timeframe Short



Offsite

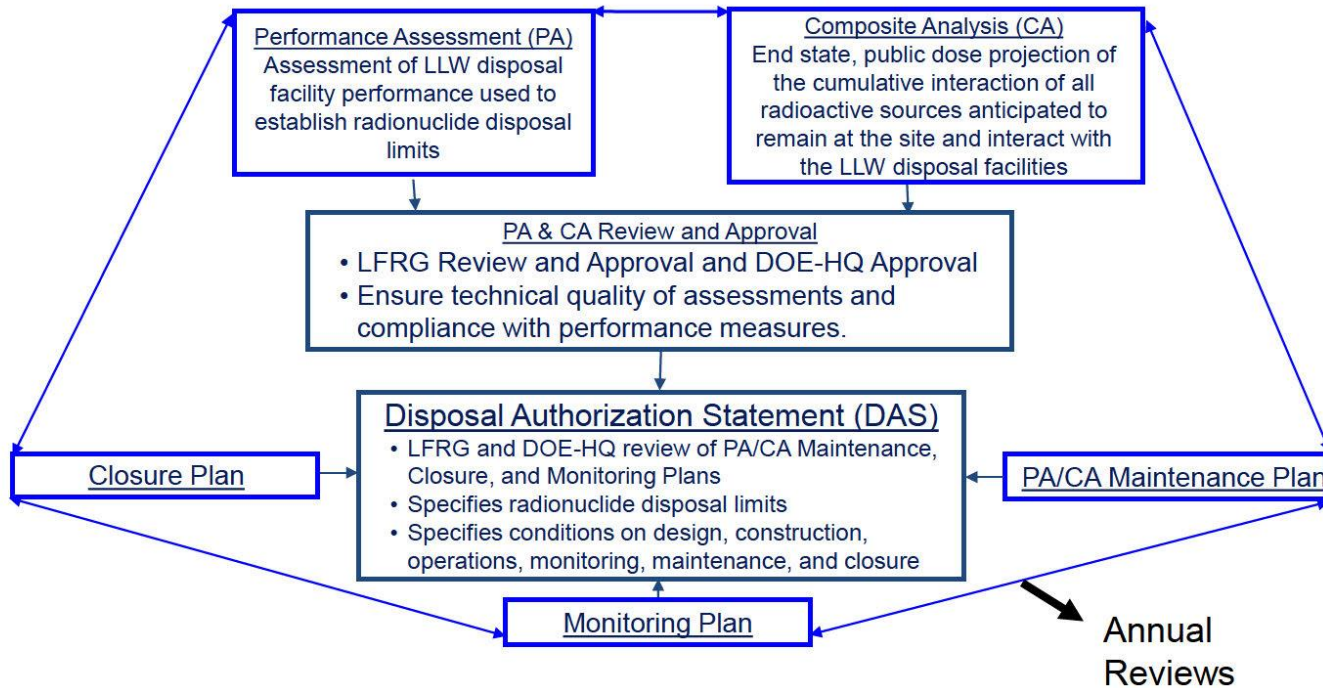
Onsite "Cell"

Onsite U Landfill (D)

Envisioned Timeframe Long

RWMB Requirement for a LLW Disposal Facility

An Integrated & Iterative Regulatory Framework



Risk-Informed, Performance Based Regulatory Basis