DATA QUALITY OBJECTIVES (DQO) WORKSHEET

DQO Number:_____ **Date:**_____

1. Scope of the Task (State the Problem)

Concurrence:	**Name (Typed)**	**Signature**
Waste Generator:		
Waste Services Representative:		
Waste Management Specialist:		
Waste Sampling Coordinator:		
Environmental Compliance Representative:		
Other:		
Other:		
Approval:		
Radiological Mixed Waste Management Team Leader		
Hazardous/Mixed Waste Management Team Leader		

2. Identifying the Decisions

2.1. What is the *expected* waste stream disposition endpoint?

	Bechtel Jacobs Company (BJC)
	Nevada Test Site (NTS)
	Envirocare
	Other (specify)

2.2. Has the disposition endpoint waste acceptance criteria (WAC) been identified?
_____ Yes _____ No

2.3. Is an initial treatment needed?
_____ Yes _____ No

2.4. Are there Waste Acceptance Criteria (WAC) requirements other than the disposition endpoint?
_____ Yes _____ No

If Yes, Explain:_____

2.5. Does a current disposition endpoint profile exist for this waste stream? (BJC Master Profile, Envirocare Profile, etc.)
_____ Yes _____ No

3. Identifying Inputs to Decisions

3.1. Is this waste stream ***expected*** to contain Resource Conservation and Recovery Act (RCRA) regulated constituents?
_____ Yes _____ No
_____ RCRA characteristic/listed
_____ RCRA Land Disposal Restriction (LDR) Limits
_____ Toxic Substances Control Act (TSCA)
_____ Exempted
_____ Excluded
_____ Treated
_____ Other

3.2. What RCRA Process Knowledge documentation is available to support the RCRA Determination in 3.1?
_____N/A

Reference Documents Attached:_____

3.3. What prior RCRA Laboratory Data is available to support question 3.1?
_____ N/A
_____ Prior Analytical (___SMO Approved Laboratory ___Non-SMO-Approved, data to support PK)

Reference Documents Attached:_____

3.4. Based on Process Knowledge and/or Prior Analytical data, is this waste stream ***close to or expected*** to exceed any of the following RCRA/TSCA regulatory Levels?

metals	____ Yes	____ No
volatiles	____ Yes	____ No
semi-volatiles	____ Yes	____ No
corrosivity	____ Yes	____ No
ignitability	____ Yes	____ No
toxicity	____ Yes	____ No
others	____ Yes	____ No

List others:_____

3.5. Is the waste stream ***close to or <u>expected</u>*** to exceed regulatory levels for PCB's?
____ Yes ____ No

____ Detectible PCB (>2ppm but < 50ppm)
____ PCB Bulk Product
____ PCB Remediation
____ Drained Carcass of PCB-Contaminated Electrical Equipment
____ Non-liquid cleaning materials and personal protective equipment wastes
____ Non-liquid wastes from research and development activities

3.6. What PCB Process Knowledge is available to support the Determination in 3.5?
____ N/A

Reference Documents Attached:_____

3.7. What prior PCB Laboratory Data is available to support 3.5?
____ N/A
____ Prior Analytical (_____SMO Approved Laboratory ___Non-SMO-Approved, data to support PK)

Reference Documents:_____

3.8. Are there any items that are considered prohibited by the disposition endpoint present in the waste? *(The committee should refer to the WAC of the possible disposition endpoint for further guidance)*.

Etiolocal Agents, Pathogens, Infectious Waste	___ Yes	____ No
Free Liquids	___ Yes	____ No
Pyrophorics, Explosives, Ignition Sources	___ Yes	____ No
Toxic Gases, Vapors, Fumes	___ Yes	____ No
Pressurized Gases	___ Yes	____ No
Dense Materials	___ Yes	____ No
Chelating Agents	___ Yes	____ No
Destabilizing Agents	___ Yes	____ No
Biological Waste	___ Yes	____ No
Particulates	___ Yes	____ No
Others:_____	___ Yes	____ No

Absence Verified by: _____Visual Inspection _____PK

3.9. Is the waste radioactively contaminated, or was the waste generated in a Radioactive Materials Management Area (RMMA)?
___ Yes ____ No _____Unknown

3.10. What are the **expected** radioactive isotopes that contaminate this waste stream and their activities?

Prior Radionuclide Distribution Reference Documents Attached:_____

Radionuclide (Ci)	Activity (Ci)	Radionuclide (Ci)	Activity (Ci)
_____	_____	_____	_____
_____	_____	_____	_____

_____ Radionuclides are suspect, activity unknown

3.11. What Process Knowledge is available to support the Radiological Determination in 3.10?
_____ N/A

Reference Documents Attached:_____

3.12. What prior Radionuclide Laboratory Data is available to the support 3.10?
____ N/A
____ Prior Analytical (_____SMO Approved Laboratory ___Non-SMO-Approved, data to support PK)

3.13. How was the ***expected*** radioactivity determined in 3.12?
____ N/A
____ Unknown
____ Alpha Spectroscopy
____ Liquid Scintillation
____ Mass Balance
____ Mass-to-Curie Conversion
_____ Gamma Spectroscopy
_____ Other

Reference Documents Attached:_____

4. Defining the Boundaries (describe the waste inventory and potential sampling criteria)

4.1. Number of containers in the population? _____ Drums _____ Boxes _____ Other

4.2. What are the container/equipment sizes?
___ 55 gal drum _____ 30 gal drum ____ B25 box _____ Other

4.3. What is the total volume of the population? _____

4.4. Is the site/area accessible? _____ Yes _____ No

5. Develop the Decision Rules

5.1. Is the waste ***expected*** to be a mixed waste? _____ Yes _____ No ____ N/A
_____ BJC Master Profile _____ Envirocare Profile _____ Other

5.1.1. Sampling for radiological characterization may be required using guidance identified in procedure ORNL-WC-507, *"Radiological Characterization of Solid Radioactive Waste"*.
5.1.2. Sampling for RCRA/TSCA may be required to qualify and quantify RCRA/TSCA constituents
5.1.3. Decision will be based on Process Knowledge, and/or the use of the Upper Confidence Level (UCL).
5.1.4. UCL will be statistically determined from the mean, using a 90% confidence level.

5.2. Is the waste **expected** to be radioactive low-level waste? _____ Yes _____ No ____ N/A
____ BJC Master Profile ____ NTS Profile ____ Envirocare Profile _____ Other

5.2.1. Sampling for radiological characterization may be required using guidance identified in procedure ORNL-WC-507, *"Radiological Characterization of Solid Radioactive Waste"*
5.2.2. Sampling for RCRA/TSCA may be required to verify that there are no RCRA/TSCA constituents present at regulatory levels in the waste stream
5.2.3. Decision will be based on PK, and/or the use of the Upper Confidence Level (UCL).
5.2.4. UCL will be statistically determined from the mean, using a 90% confidence level.

5.3. Is the waste **expected** to be a RCRA or TSCA regulated waste meeting the No Radioactivity Added (NRA) requirements? _____ Yes _____ No ____ N/A
____ BJC Master Profile ____ Clean Harbors Profile _____ Other

5.3.1. Sampling for NRA protocols may be required
5.3.2. Sampling for RCRA/TSCA may be required to quantify RCRA/TSCA constituents present in the waste stream
5.3.3. Decision will be based on the use of the Upper Confidence Level (UCL).
5.3.4. UCL will be statistically determined from the mean, using a 90% confidence level.

6. Specify the Limits on the Decision Rule

6.1. Is the waste expected to be a mixed waste? **(If NO or NA, go to 6.2)**
_____ Yes _____ No ____ N/A

6.1.1. Sampling results and/or documented PK must verify the radiological distribution and provide specific information describing the RCRA/TSCA regulated constituents present at regulatory levels.
6.1.2. Does PK adequately characterize the radiological distribution, and the levels of RCRA/TSCA regulated constituents? *(The Committee shall determine/agree that the level of process knowledge is adequate to characterize the waste stream, using a graded approach)*

Radiological Characterization: _____ **Yes** _____ **No**
RCRA/TSCA Characterization: _____ **Yes** _____ **No**

6.1.3. If PK **does not** adequately confirm the radiological constituents, sampling based on PK will be required based on guidance identified in procedure ORNL-WC-507, *"Radiological Characterization of Solid Radioactive Waste"*
6.1.4. If PK **does not** adequately confirm the levels of RCRA/TSCA regulated constituents, sampling based on PK will be required based on guidance identified in procedure EPWSD-QPA-TP-251, *"Guidance for Waste Characterization Sample Design: Selection of Sample Quantity and Location"*.
6.1.5. If either adequate PK and/or sampling results confirm that there are no RCRA/TSCA regulated constituents present, the waste stream will not be considered a mixed waste stream (see 5.2).
6.1.6. If either adequate PK and/or sampling results confirm RCRA/TSCA constituent concentrations, then the waste stream will be considered a mixed waste stream (see 5.1).

6.2. Is the waste expected to be a radioactive low-level waste? **(If NO or NA, go to 6.3**)
_____ Yes _____ No ____ N/A

6.2.1. Sampling results and/or documented PK must verify the radiological distribution and provide specific information describing that there are no RCRA/TSCA regulated constituents present at regulatory levels.

6.2.2. Does PK adequately characterize the radiological distribution and that there are RCRA/TSCA regulated constituents present at regulatory levels? *(The Committee shall determine/agree that the level of process knowledge is adequate to characterize the waste stream, using a graded approach)*

Radiological Characterization: _____ **Yes** _____ **No**
RCRA/TSCA Characterization: _____ **Yes** _____ **No**

6.2.3. If PK **does not** adequately confirm the radiological constituents, sampling based on PK will be required based on guidance identified in procedure ORNL-WC-507, *"Radiological Characterization of Solid Radioactive Waste"*

6.2.4. If PK **does not** adequately confirm the levels of RCRA/TSCA regulated constituents, sampling based on PK will be required based on guidance identified in procedure EPWSD-QPA-TP-251, *"Guidance for Waste Characterization Sample Design: Selection of Sample Quantity and Location"*.

6.2.5. If either adequate PK and/or sampling results confirm the radiological distribution **and** that there are no RCRA/TSCA regulated constituents present at regulatory levels, the waste stream will be considered a radioactive low level waste, using the characterization as attached.

6.3. Is the waste expected to be a RCRA or TSCA regulated waste meeting NRA requirements?
_____ Yes _____ No ____ N/A

6.3.1. Sampling results and/or documented PK must verify the NRA requirements can be met, and specific characterization with regards to RCRA/TSCA constituents must be available.

6.3.2. Does PK adequately characterize the NRA requirements, and the RCRA/TSCA regulated constituents?
_____ **Yes** _____ **No**

6.3.3. If PK does not adequately confirm NRA requirements, sampling based on PK will be required based on guidance identified in procedure WM-SWO-407, *"Guidance on No-Radioactivity Added Characterization for Hazardous and PCB waste at Oak Ridge National Lab"*

6.3.4. If PK does not adequately confirm specific RCRA/TSCA regulated constituent characterization, sampling based on PK will be required based on guidance identified in procedure EPWSD-QPA-TP-251, *"Guidance for Waste Characterization Sample Design: Selection of Sample Quantity and Location"*.

6.3.5. If either adequate PK and/or sampling results do not meet the requirements of NRA, and the waste has adequate PK/sampling results to confirm RCRA constituents, the waste stream will be considered a mixed waste (see 5.1).

6.3.6. If either adequate PK and/or sampling results do not meet the requirements of NRA, and the waste has adequate PK/sampling results to confirm that there are no RCRA constituents present, the waste stream will be considered a radioactive low-level waste (see 5.2).

7. Optimizing the Sample Design

7.1. Is a sampling and analysis plan needed to further characterize the waste?
____ Yes ____ No

7.2. What type of sampling will be necessary? ____ Swipes ____ Bulk/Grab ____ Both_____N/A

7.3. What EPA approved test methods must be performed to adequately characterize the waste in question based on PK and prior analytical information?_____N/A
___ TCLP Volatiles ____ Total 8260 ____ TCLP Semi-volatile ____ PCBs
___ TCLP Metals____ % Moisture ____ Soil pH ____ Paint Filter
___ TOX 9020/9022 ____ Flashpoint ____ TOC ____ BTU
___ Gross Alpha/Beta ____ Gamma Spec. ____ Alpha Spec. ____ Sr90
___ Low Energy Beta (specify)_____ ____ Portable Gamma Spec. ____ Other

7.4. Are there any unusual analytical issues with sampling this waste stream?_____No
___ Unusual Detection Limits ____ No contract in place at required laboratory
___ Possible matrix interferences ____ Method not on current contracts
___ No known measurement method ____ High dose rate on samples
___ Laboratory Radiological license limitations ___ Other

7.5. Does the matrix make it difficult for the detection limits to remain below the action level due to dilutions?
____ Yes _____ No _____N/A

If yes, is data acceptable as long as the detection limit is below the regulatory Limits?
____ Yes _____ No _____N/A

7.6. Which lab(s) will be utilized to analyze these samples?_____N/A
List:_____
_____
_____

7.7. If samples have radiological screening levels above the license/administrative limits for the given laboratory, can an alternative lab be used?
_____ Yes _____ No _____N/A

If yes, which lab?_____

7.8. Is the sample volume limited by the lab's license limits?
_____ Yes _____ No _____N/A

7.9. How many sets of samples are needed?_____ or _____N/A
(generally, the closer a waste stream is to a regulatory threshold of concern the greater the expectation for accuracy and precision in the sample result. In other words, the greater the variability of expected results, the larger the sampling set must be).

7.10. Are random numbers necessary for this population?
_____ Yes _____ No _____N/A

7.11. If some of the analytical data becomes invalid, can it be used?
____ Yes ____ No

If Yes, Explain:_____

7.12. Send data to:_____

7.13. Send copy to:_____

7.14. Is analytical data verification and validation needed for this waste stream? ____ Yes ____ No. At what frequencies?
_____

8. Data Usability

If the data from this process does not meet the requirements of the intended disposition, what should happen?
_____Refine the DQO process for this waste stream using this document_____
_____ Other_____

9. Data/Waste Characterization Frequency

9.1. Is the waste stream characterization required to be validated periodically?
____ Yes ____ No

If so, identify the frequency and interval of required periodic testing._____