

Table 1 – Munitions and Explosives of Concern Data Quality Objectives – MRS 1

DQO	Problem Statement	Project Goals	Required Information Inputs	Input Boundaries	Analytical Approach	Performance Criteria	Plan for Obtaining Data
<i>Explanation</i>	<i>Define the problem that necessitates the study</i>	<i>Identify study questions</i>	<i>Identify data and information needed to answer study questions</i>	<i>Specify the target population and define spatial limits</i>	<i>Develop the logic for drawing conclusions from findings</i>	<i>Specify probability limits for false rejections and false acceptance decision errors</i>	<i>Select the plan that meets the performance criteria</i>
MRS Characterization	<ul style="list-style-type: none"> Determine the nature and extent of MEC. 	<ul style="list-style-type: none"> Determine the location and type of MEC present. Determine the spatial extent of MEC. Determine if MEC exposure pathways for humans are complete. Determine if MEC pose a human health risk. <p>-----</p> <p>Possible Actions:</p> <ul style="list-style-type: none"> No DoD Action Indicated Institutional Controls MEC Removal Combination of Actions 	<ul style="list-style-type: none"> Data collected during previous activities. Results of visual observations along transects and in grids. Analog (density) and/or digital (instrument response) geophysical data. Results of intrusive investigation of identified anomalies. Survey of site receptors, demographics and land use. 	<ul style="list-style-type: none"> During field activities, transects will be spaced approximately 112 ft apart in the MRS boundary and 50 ft apart south of the MRS boundary; grids will equate to 50 ft by 50 ft areas within the MRS. Transect spacing is designed to search for areas where the smoke grenade (the smallest found item with an explosive hazard) would explode on impact with the ground, detonate and fragment. Grid locations in areas of high, medium, and low anomaly count areas will be determined based on results of transect investigations. The anomaly selection threshold in DGM grids is based on the maximum value determined during the geophysical proveout. The initial value is set at 11x the diameter of the MK II grenade (the smallest found item with an explosive hazard across all MRSs/AoPIs). Intrusively investigate potential MEC items. <p>-----</p> <p>Constraints: Rights-of-entry, weather, current land use activities.</p>	<ul style="list-style-type: none"> Maximum depth at which each type of MEC was encountered will be used to define the vertical extent for that type of MEC. The location and spatial extent of MEC will be used to define the lateral extent for each type of MEC encountered; the extent beyond the last MEC discovered will be equal to the transect spacing for the area in question. If evidence of MEC is found, then discovery location may be within a zone where ordnance landed that did not function as designed. All MD, frag, and targets will be evaluated as possibly indicative of the location of MEC. <p>-----</p> <p>Alternative actions will be formulated in the Feasibility Study based on the location and density of MEC, land use, and other data gathered during the investigation and comparison of those data with criteria established herein.</p>	<ul style="list-style-type: none"> Anomaly reacquisition (from DGM data) within 1 meter accuracy. Transect pathway positional accuracy is +/- 20 %, as an average across the MRS. Depth of detection for DGM data (i.e., the failure criteria) is 7x the diameter of the smoke grenade. QC/QA blind seed items will be detected and identified. 	<ul style="list-style-type: none"> Visually inspect and determine anomaly density within transects using AIR. Perform DGM in grids. Data collection along 0.99 acres/2.71 miles of transects and 0.29 acres/5 grids. Overlap DGM and analog data collection methods along a sample of transects for comparability. Synthesize anomaly density data into figures for PDT review and anomaly selection. Select grid placement locations. Grids will be placed in high, medium, and low anomalous areas, based on AIR data and discussions with the PDT; biased placement of percentage of grids to define location of potential MEC in areas beyond target zone. Intrusive investigation of a representative number of anomalies (to be determined by PDT) for AIR transects. Intrusive investigation of all MEC-like anomalies for DGM grids. Test trench of large anomalies.

Reference: Guidance on Systematic Planning Using the Data Quality Objectives Process, EPA QA//G-4, EPA/240/B-06/001, February 2006.

NOTE: MEC performance criteria are included in Section 4.0; MC DQOs are included in the UFP-QAPP (Appendix E).

Table 2 – Munitions and Explosives of Concern Data Quality Objectives – MRS 2

DQO	Problem Statement	Project Goals	Required Information Inputs	Input Boundaries	Analytical Approach	Performance Criteria	Plan for Obtaining Data
<i>Explanation</i>	<i>Define the problem that necessitates the study</i>	<i>Identify study questions</i>	<i>Identify data and information needed to answer study questions</i>	<i>Specify the target population and define spatial limits</i>	<i>Develop the logic for drawing conclusions from findings</i>	<i>Specify probability limits for false rejections and false acceptance decision errors</i>	<i>Select the plan that meets the performance criteria</i>
MRS Characterization	<ul style="list-style-type: none"> Determine the nature and extent of MEC. 	<ul style="list-style-type: none"> Determine the location and type of MEC present. Determine the spatial extent of MEC. Determine if MEC exposure pathways for humans are complete. Determine if MEC pose a human health risk. <p>-----</p> <p>Possible Actions:</p> <ul style="list-style-type: none"> No DoD Action Indicated Institutional Controls MEC Removal Combination of Actions 	<ul style="list-style-type: none"> Data collected during previous activities. Results of visual observations along transects and in grids. Analog (density) and/or digital (instrument response) geophysical data. Results of intrusive investigation of identified anomalies. Survey of site receptors, demographics and land use. 	<ul style="list-style-type: none"> During field activities, transects will be spaced approximately 112 ft apart and grids will equate to 50 ft by 50 ft areas within the MRS. Transect spacing is designed to search for areas where the MK II grenade (the smallest found item with an explosive hazard) would explode on impact with the ground, detonate and fragment. Grid locations in areas of high, medium, and low anomaly count areas will be determined based on results of transect investigations. The anomaly selection threshold in DGM grids is based on the maximum value determined during the geophysical proveout. The initial value is set at 11x the diameter of the MK II grenade (the smallest found item with an explosive hazard across all MRSs/AoPIs). Intrusively investigate potential MEC items. <p>-----</p> <p>Constraints: Rights-of-entry, weather, current land use activities.</p>	<ul style="list-style-type: none"> Maximum depth at which each type of MEC was encountered will be used to define the vertical extent for that type of MEC. The location and spatial extent of MEC will be used to define the lateral extent for each type of MEC encountered; the extent beyond the last MEC discovered will be equal to the transect spacing for the area in question. If evidence of MEC is found, then discovery location may be within a zone where ordnance landed that did not function as designed. All MD, frag, and targets will be evaluated as possibly indicative of the location of MEC. <p>-----</p> <p>Alternative actions will be formulated in the Feasibility Study based on the location and density of MEC, land use, and other data gathered during the investigation and comparison of those data with criteria established herein.</p>	<ul style="list-style-type: none"> Anomaly reacquisition (from DGM data) within 1 meter accuracy. Transect pathway positional accuracy is +/- 20 %, as an average across the MRS. Depth of detection for DGM data (i.e., the failure criteria) is 7x the diameter of the MK II grenade. QC/QA blind seed items will be detected and identified. 	<ul style="list-style-type: none"> Visually inspect and determine anomaly density within transects using DGM, AIR and/or mag-and-dig. Data collection along 0.63 acres/1.74 miles of transects and 0.11 acres/2 grids. Overlap DGM and analog data collection methods along a sample of transects for comparability. Synthesize anomaly density data into figures for PDT review and anomaly selection. Select grid placement locations. Grids will be placed in high, medium, and low anomalous areas, based on DGM data and discussions with the PDT; biased placement of percentage of grids to define location of potential MEC in areas beyond target zone. Intrusive investigation of all anomalies for mag-and-dig transects. Intrusive investigation of all MEC-like anomalies for DGM grids.

Reference: Guidance on Systematic Planning Using the Data Quality Objectives Process, EPA QA//G-4, EPA/240/B-06/001, February 2006.

NOTE: MEC performance criteria are included in Section 4.0; MC DQOs are included in the UFP-QAPP (Appendix E).

Table 3 – Munitions and Explosives of Concern Data Quality Objectives – MRS 3

DQO	Problem Statement	Project Goals	Required Information Inputs	Input Boundaries	Analytical Approach	Performance Criteria	Plan for Obtaining Data
<i>Explanation</i>	<i>Define the problem that necessitates the study</i>	<i>Identify study questions</i>	<i>Identify data and information needed to answer study questions</i>	<i>Specify the target population and define spatial limits</i>	<i>Develop the logic for drawing conclusions from findings</i>	<i>Specify probability limits for false rejections and false acceptance decision errors</i>	<i>Select the plan that meets the performance criteria</i>
MRS Characterization	<ul style="list-style-type: none"> Determine the nature and extent of MEC. 	<ul style="list-style-type: none"> Determine the location and type of MEC present. Determine the spatial extent of MEC. Determine if MEC exposure pathways for humans are complete. Determine if MEC pose a human health risk. <p>-----</p> <p>Possible Actions:</p> <ul style="list-style-type: none"> No DoD Action Indicated Institutional Controls MEC Removal Combination of Actions 	<ul style="list-style-type: none"> Data collected during previous activities. Results of visual observations along transects and in grids. Analog (density) and/or digital (instrument response) geophysical data. Results of intrusive investigation of identified anomalies. Survey of site receptors, demographics and land use. 	<ul style="list-style-type: none"> During field activities, transects will be variously spaced apart (i.e., 112 ft, 242 ft, or 416 ft) and grids will equate to 50 ft by 50 ft areas within the MRS. Transect spacing is designed to search for areas where the MK II grenades, 37mm, or 60mm mortars (the smallest found item with an explosive hazard) would explode on impact with the ground, detonate and fragment. Grid locations in areas of high, medium, and low anomaly count areas will be determined based on results of transect investigations. The anomaly selection threshold in DGM grids is based on the maximum value determined during the geophysical proveout. The initial value is set at 11x the diameter of the MK II grenade (the smallest found item with an explosive hazard across all MRSs/AoPIs). Intrusively investigate potential MEC items. <p>-----</p> <p>Constraints: Rights-of-entry, weather, current land use activities.</p>	<ul style="list-style-type: none"> Maximum depth at which each type of MEC was encountered will be used to define the vertical extent for that type of MEC. The location and spatial extent of MEC will be used to define the lateral extent for each type of MEC encountered; the extent beyond the last MEC discovered will be equal to the transect spacing for the area in question. If evidence of MEC is found, then discovery location may be within a zone where ordnance landed that did not function as designed. All MD, frag, and targets will be evaluated as possibly indicative of the location of MEC. <p>-----</p> <p>Alternative actions will be formulated in the Feasibility Study based on the location and density of MEC, land use, and other data gathered during the investigation and comparison of those data with criteria established herein.</p>	<ul style="list-style-type: none"> Anomaly reacquisition (from DGM data) within 1 meter accuracy. Transect pathway positional accuracy is +/- 20 %, as an average across the MRS. Depth of detection for DGM data (i.e., the failure criteria) is 7x the diameter of the MK II grenades, 37mm, or 60mm mortars. QC/QA blind seed items will be detected and identified. 	<ul style="list-style-type: none"> Visually inspect and determine anomaly density within transects using DGM, AIR and/or mag-and-dig. Data collection along 91.87 acres/252.63 miles of transects and 9.24 acres/161 grids. Overlap DGM and analog data collection methods along a sample of transects for comparability. Synthesize anomaly density data into figures for PDT review and anomaly selection. Select grid placement locations. Grids will be placed in high, medium, and low anomalous areas, based on DGM and AIR data and discussions with the PDT; biased placement of percentage of grids to define location of potential MEC in areas beyond target zone. Intrusive investigation of all anomalies for mag-and-dig transects. Intrusive investigation of a representative number of anomalies (to be determined by PDT) for AIR transects. Intrusive investigation of all anomalies for AIR grids. Intrusive investigation of all MEC-like anomalies for DGM grids.

Reference: Guidance on Systematic Planning Using the Data Quality Objectives Process, EPA QA//G-4, EPA/240/B-06/001, February 2006.

NOTE: MEC performance criteria are included in Section 4.0; MC DQOs are included in the UFP-QAPP (Appendix E).

Table 4 – Munitions and Explosives of Concern Data Quality Objectives – AoPI 3

DQO	Problem Statement	Project Goals	Required Information Inputs	Input Boundaries	Analytical Approach	Performance Criteria	Plan for Obtaining Data
<i>Explanation</i>	<i>Define the problem that necessitates the study</i>	<i>Identify study questions</i>	<i>Identify data and information needed to answer study questions</i>	<i>Specify the target population and define spatial limits</i>	<i>Develop the logic for drawing conclusions from findings</i>	<i>Specify probability limits for false rejections and false acceptance decision errors</i>	<i>Select the plan that meets the performance criteria</i>
MRS Characterization	<ul style="list-style-type: none"> Determine the nature and extent of MEC. 	<ul style="list-style-type: none"> Determine the location and type of MEC present. Determine the spatial extent of MEC. Determine if MEC exposure pathways for humans are complete. Determine if MEC pose a human health risk. <p>-----</p> <p>Possible Actions:</p> <ul style="list-style-type: none"> No DoD Action Indicated Institutional Controls MEC Removal Combination of Actions 	<ul style="list-style-type: none"> Data collected during previous activities. Results of visual observations along transects and in grids. Analog (density) and/or digital (instrument response) geophysical data. Results of intrusive investigation of identified anomalies. Survey of site receptors, demographics and land use. 	<ul style="list-style-type: none"> During field activities, transects will be spaced approximately 112 ft apart and grids will equate to 50 ft by 50 ft areas within the AoPI. Transect spacing is designed to search for areas where the MK II grenade (the smallest found item with an explosive hazard) would explode on impact with the ground, detonate and fragment. Grid locations in areas of high, medium, and low anomaly count areas will be determined based on results of transect investigations. The anomaly selection threshold in DGM grids is based on the maximum value determined during the geophysical proveout. The initial value is set at 11x the diameter of the MK II grenade (the smallest found item with an explosive hazard across all MRSs/AoPIs). Intrusively investigate potential MEC items. <p>-----</p> <p>Constraints: Rights-of-entry, weather, current land use activities.</p>	<ul style="list-style-type: none"> Maximum depth at which each type of MEC was encountered will be used to define the vertical extent for that type of MEC. The location and spatial extent of MEC will be used to define the lateral extent for each type of MEC encountered; the extent beyond the last MEC discovered will be equal to the transect spacing for the area in question. If evidence of MEC is found, then discovery location may be within a zone where ordnance landed that did not function as designed. All MD, frag, and targets will be evaluated as possibly indicative of the location of MEC. <p>-----</p> <p>Alternative actions will be formulated in the Feasibility Study based on the location and density of MEC, land use, and other data gathered during the investigation and comparison of those data with criteria established herein.</p>	<ul style="list-style-type: none"> Anomaly reacquisition (from DGM data) within 1 meter accuracy. Transect pathway positional accuracy is +/- 20 %, as an average across the AoPI. Depth of detection for DGM data (i.e., the failure criteria) is 7x the diameter of the MK II grenade. QC/QA blind seed items will be detected and identified. 	<ul style="list-style-type: none"> Visually inspect and determine anomaly density within transects using DGM and mag-and-dig. Data collection along 0.69 acres/1.89 miles of transects and 0.11 acres/2 grids. Overlap DGM and analog data collection methods along a sample of transects for comparability. Synthesize anomaly density data into figures for PDT review and anomaly selection. Select grid placement locations. Grids will be placed in high, medium, and low anomalous areas, based on DGM data and discussions with the PDT; biased placement of percentage of grids to define location of potential MEC in areas beyond target zone. Intrusive investigation of all anomalies for mag-and-dig transects. Intrusive investigation of all MEC-like anomalies for DGM grids.

Reference: Guidance on Systematic Planning Using the Data Quality Objectives Process, EPA QA//G-4, EPA/240/B-06/001, February 2006.

NOTE: MEC performance criteria are included in Section 4.0; MC DQOs are included in the UFP-QAPP (Appendix E).

(The DQOs presented here, for AoPI 3, may change following meetings between the USAESCH and the golf course owners.)

Table 5 – Munitions and Explosives of Concern Data Quality Objectives – AoPI 5

DQO	Problem Statement	Project Goals	Required Information Inputs	Input Boundaries	Analytical Approach	Performance Criteria	Plan for Obtaining Data
<i>Explanation</i>	<i>Define the problem that necessitates the study</i>	<i>Identify study questions</i>	<i>Identify data and information needed to answer study questions</i>	<i>Specify the target population and define spatial limits</i>	<i>Develop the logic for drawing conclusions from findings</i>	<i>Specify probability limits for false rejections and false acceptance decision errors</i>	<i>Select the plan that meets the performance criteria</i>
MRS Characterization	<ul style="list-style-type: none"> Determine the nature and extent of MEC. 	<ul style="list-style-type: none"> Determine the location and type of MEC present. Determine the spatial extent of MEC. Determine if MEC exposure pathways for humans are complete. Determine if MEC pose a human health risk. <p>-----</p> <p>Possible Actions:</p> <ul style="list-style-type: none"> No DoD Action Indicated Institutional Controls MEC Removal Combination of Actions 	<ul style="list-style-type: none"> Data collected during previous activities. Results of visual observations along transects and in grids. Analog (density) and/or digital (instrument response) geophysical data. Results of intrusive investigation of identified anomalies. Survey of site receptors, demographics and land use. 	<ul style="list-style-type: none"> During field activities, transects will be spaced approximately 173 ft apart and grids will equate to 50 ft by 50 ft areas within the AoPI. Transect spacing is designed to search for areas where the rifle grenade (the smallest found item with an explosive hazard) would explode on impact with the ground, detonate and fragment. Grid locations in areas of high, medium, and low anomaly count areas will be determined based on results of transect investigations. The anomaly selection threshold in DGM grids is based on the maximum value determined during the geophysical proveout. The initial value is set at 11x the diameter of the MK II grenade (the smallest found item with an explosive hazard across all MRSs/AoPIs). Intrusively investigate potential MEC items. <p>-----</p> <p>Constraints: Rights-of-entry, weather, current land use activities.</p>	<ul style="list-style-type: none"> Maximum depth at which each type of MEC was encountered will be used to define the vertical extent for that type of MEC. The location and spatial extent of MEC will be used to define the lateral extent for each type of MEC encountered; the extent beyond the last MEC discovered will be equal to the transect spacing for the area in question. If evidence of MEC is found, then discovery location may be within a zone where ordnance landed that did not function as designed. All MD, frag, and targets will be evaluated as possibly indicative of the location of MEC. <p>-----</p> <p>Alternative actions will be formulated in the Feasibility Study based on the location and density of MEC, land use, and other data gathered during the investigation and comparison of those data with criteria established herein.</p>	<ul style="list-style-type: none"> Anomaly reacquisition (from DGM data) within 1 meter accuracy. Transect pathway positional accuracy is +/- 20 %, as an average across the AoPI. Depth of detection for DGM data (i.e., the failure criteria) is 7x the diameter of the rifle grenade. QC/QA blind seed items will be detected and identified. 	<ul style="list-style-type: none"> Visually inspect and determine anomaly density within transects using DGM and mag-and-dig. Data collection along 0.11 acres/0.30 miles of transects and 0.06 acres/1 grid. Overlap DGM and analog data collection methods along a sample of transects for comparability. Synthesize anomaly density data into figures for PDT review and anomaly selection. Select grid placement locations. Grids will be placed in high, medium, and low anomalous areas, based on DGM data and discussions with the PDT; biased placement of percentage of grids to define location of potential MEC in areas beyond target zone. Intrusive investigation of all anomalies for mag-and-dig transects. Intrusive investigation of all MEC-like anomalies for DGM grids.

Reference: Guidance on Systematic Planning Using the Data Quality Objectives Process, EPA QA//G-4, EPA/240/B-06/001, February 2006.

NOTE: MEC performance criteria are included in Section 4.0; MC DQOs are included in the UFP-QAPP (Appendix E).

Table 6 – Munitions and Explosives of Concern Data Quality Objectives – AoPI 8

DQO	Problem Statement	Project Goals	Required Information Inputs	Input Boundaries	Analytical Approach	Performance Criteria	Plan for Obtaining Data
<i>Explanation</i>	<i>Define the problem that necessitates the study</i>	<i>Identify study questions</i>	<i>Identify data and information needed to answer study questions</i>	<i>Specify the target population and define spatial limits</i>	<i>Develop the logic for drawing conclusions from findings</i>	<i>Specify probability limits for false rejections and false acceptance decision errors</i>	<i>Select the plan that meets the performance criteria</i>
MRS Characterization	<ul style="list-style-type: none"> Determine the nature and extent of MEC. 	<ul style="list-style-type: none"> Determine the location and type of MEC present. Determine the spatial extent of MEC. Determine if MEC exposure pathways for humans are complete. Determine if MEC pose a human health risk. <p>-----</p> <p>Possible Actions:</p> <ul style="list-style-type: none"> No DoD Action Indicated Institutional Controls MEC Removal Combination of Actions 	<ul style="list-style-type: none"> Data collected during previous activities. Results of visual observations along transects and in grids. Analog (density) and/or digital (instrument response) geophysical data. Results of intrusive investigation of identified anomalies. Survey of site receptors, demographics and land use. 	<ul style="list-style-type: none"> During field activities, transects will be spaced approximately 112 ft apart and grids will equate to 50 ft by 50 ft areas within the AoPI. Transect spacing is designed to search for areas where the MK II grenade (the smallest found item with an explosive hazard) would explode on impact with the ground, detonate and fragment. Grid locations in areas of high, medium, and low anomaly count areas will be determined based on results of transect investigations. The anomaly selection threshold in DGM grids is based on the maximum value determined during the geophysical proveout. The initial value is set at 11x the diameter of the MK II grenade (the smallest found item with an explosive hazard across all MRSs/AoPIs). Intrusively investigate potential MEC items. <p>-----</p> <p>Constraints: Rights-of-entry, weather, current land use activities.</p>	<ul style="list-style-type: none"> Maximum depth at which each type of MEC was encountered will be used to define the vertical extent for that type of MEC. The location and spatial extent of MEC will be used to define the lateral extent for each type of MEC encountered; the extent beyond the last MEC discovered will be equal to the transect spacing for the area in question. If evidence of MEC is found, then discovery location may be within a zone where ordnance landed that did not function as designed. All MD, frag, and targets will be evaluated as possibly indicative of the location of MEC. <p>-----</p> <p>Alternative actions will be formulated in the Feasibility Study based on the location and density of MEC, land use, and other data gathered during the investigation and comparison of those data with criteria established herein.</p>	<ul style="list-style-type: none"> Anomaly reacquisition (from DGM data) within 1 meter accuracy. Transect pathway positional accuracy is +/- 20 %, as an average across the AoPI. Depth of detection for DGM data (i.e., the failure criteria) is 7x the diameter of the MK II grenade. QC/QA blind seed items will be detected and identified. 	<ul style="list-style-type: none"> Visually inspect and determine anomaly density within transects using DGM and mag-and-dig. Data collection along 0.79 acres/2.16 miles of transects and 0.11 acres/2 grids. Overlap DGM and analog data collection methods along a sample of transects for comparability. Synthesize anomaly density data into figures for PDT review and anomaly selection. Select grid placement locations. Grids will be placed in high, medium, and low anomalous areas, based on DGM data and discussions with the PDT; biased placement of percentage of grids to define location of potential MEC in areas beyond target zone. Intrusive investigation of all anomalies for mag-and-dig transects. Intrusive investigation of all MEC-like anomalies for DGM grids.

Reference: Guidance on Systematic Planning Using the Data Quality Objectives Process, EPA QA//G-4, EPA/240/B-06/001, February 2006.

NOTE: MEC performance criteria are included in Section 4.0; MC DQOs are included in the UFP-QAPP (Appendix E).

Table 7 – Munitions and Explosives of Concern Data Quality Objectives – AoPI 9E

DQO	Problem Statement	Project Goals	Required Information Inputs	Input Boundaries	Analytical Approach	Performance Criteria	Plan for Obtaining Data
<i>Explanation</i>	<i>Define the problem that necessitates the study</i>	<i>Identify study questions</i>	<i>Identify data and information needed to answer study questions</i>	<i>Specify the target population and define spatial limits</i>	<i>Develop the logic for drawing conclusions from findings</i>	<i>Specify probability limits for false rejections and false acceptance decision errors</i>	<i>Select the plan that meets the performance criteria</i>
MRS Characterization	<ul style="list-style-type: none"> Determine the nature and extent of MEC. 	<ul style="list-style-type: none"> Determine the location and type of MEC present. Determine the spatial extent of MEC. Determine if MEC exposure pathways for humans are complete. Determine if MEC pose a human health risk. <p>-----</p> <p>Possible Actions:</p> <ul style="list-style-type: none"> No DoD Action Indicated Institutional Controls MEC Removal Combination of Actions 	<ul style="list-style-type: none"> Data collected during previous activities. Results of visual observations along transects and in grids. Analog (density) and/or digital (instrument response) geophysical data. Results of intrusive investigation of identified anomalies. Survey of site receptors, demographics and land use. 	<ul style="list-style-type: none"> During field activities, transects will be spaced approximately 112 ft apart and grids will equate to 50 ft by 50 ft areas within the AoPI. Transect spacing is designed to search for areas where the MK II grenade (the smallest found item with an explosive hazard) would explode on impact with the ground, detonate and fragment. Grid locations in areas of high, medium, and low anomaly count areas will be determined based on results of transect investigations. The anomaly selection threshold in DGM grids is based on the maximum value determined during the geophysical proveout. The initial value is set at 11x the diameter of the MK II grenade (the smallest found item with an explosive hazard across all MRSs/AoPIs). Intrusively investigate potential MEC items. <p>-----</p> <p>Constraints: Rights-of-entry, weather, current land use activities.</p>	<ul style="list-style-type: none"> Maximum depth at which each type of MEC was encountered will be used to define the vertical extent for that type of MEC. The location and spatial extent of MEC will be used to define the lateral extent for each type of MEC encountered; the extent beyond the last MEC discovered will be equal to the transect spacing for the area in question. If evidence of MEC is found, then discovery location may be within a zone where ordnance landed that did not function as designed. All MD, frag, and targets will be evaluated as possibly indicative of the location of MEC. <p>-----</p> <p>Alternative actions will be formulated in the Feasibility Study based on the location and density of MEC, land use, and other data gathered during the investigation and comparison of those data with criteria established herein.</p>	<ul style="list-style-type: none"> Anomaly reacquisition (from DGM data) within 1 meter accuracy. Transect pathway positional accuracy is +/- 20 %, as an average across the AoPI. Depth of detection for DGM data (i.e., the failure criteria) is 7x the diameter of the MK II grenade. QC/QA blind seed items will be detected and identified. 	<ul style="list-style-type: none"> Visually inspect and determine anomaly density within transects using DGM and mag-and-dig. Data collection along 0.19 acres/0.53 miles of transects and 0.06 acres/1 grid. Overlap DGM and analog data collection methods along a sample of transects for comparability. Synthesize anomaly density data into figures for PDT review and anomaly selection. Select grid placement locations. Grids will be placed in high, medium, and low anomalous areas, based on DGM data and discussions with the PDT; biased placement of percentage of grids to define location of potential MEC in areas beyond target zone. Intrusive investigation of all anomalies for mag-and-dig transects. Intrusive investigation of all MEC-like anomalies for DGM grids.

Reference: Guidance on Systematic Planning Using the Data Quality Objectives Process, EPA QA//G-4, EPA/240/B-06/001, February 2006.

NOTE: MEC performance criteria are included in Section 4.0; MC DQOs are included in the UFP-QAPP (Appendix E).

Table 8 – Munitions and Explosives of Concern Data Quality Objectives – AoPI 9G

DQO	Problem Statement	Project Goals	Required Information Inputs	Input Boundaries	Analytical Approach	Performance Criteria	Plan for Obtaining Data
<i>Explanation</i>	<i>Define the problem that necessitates the study</i>	<i>Identify study questions</i>	<i>Identify data and information needed to answer study questions</i>	<i>Specify the target population and define spatial limits</i>	<i>Develop the logic for drawing conclusions from findings</i>	<i>Specify probability limits for false rejections and false acceptance decision errors</i>	<i>Select the plan that meets the performance criteria</i>
MRS Characterization	<ul style="list-style-type: none"> Determine the nature and extent of MEC. 	<ul style="list-style-type: none"> Determine the location and type of MEC present. Determine the spatial extent of MEC. Determine if MEC exposure pathways for humans are complete. Determine if MEC pose a human health risk. <p>-----</p> <p>Possible Actions:</p> <ul style="list-style-type: none"> No DoD Action Indicated Institutional Controls MEC Removal Combination of Actions 	<ul style="list-style-type: none"> Data collected during previous activities. Results of visual observations along transects and in grids. Analog (density) and/or digital (instrument response) geophysical data. Results of intrusive investigation of identified anomalies. Survey of site receptors, demographics and land use. 	<ul style="list-style-type: none"> During field activities, transects will be spaced approximately 112 ft apart and grids will equate to 50 ft by 50 ft areas within the AoPI. Transect spacing is designed to search for areas where the MK II grenade (the smallest found item with an explosive hazard) would explode on impact with the ground, detonate and fragment. Grid locations in areas of high, medium, and low anomaly count areas will be determined based on results of transect investigations. The anomaly selection threshold in DGM grids is based on the maximum value determined during the geophysical proveout. The initial value is set at 11x the diameter of the MK II grenade (the smallest found item with an explosive hazard across all MRSs/AoPIs). Intrusively investigate potential MEC items. <p>-----</p> <p>Constraints: Rights-of-entry, weather, current land use activities.</p>	<ul style="list-style-type: none"> Maximum depth at which each type of MEC was encountered will be used to define the vertical extent for that type of MEC. The location and spatial extent of MEC will be used to define the lateral extent for each type of MEC encountered; the extent beyond the last MEC discovered will be equal to the transect spacing for the area in question. If evidence of MEC is found, then discovery location may be within a zone where ordnance landed that did not function as designed. All MD, frag, and targets will be evaluated as possibly indicative of the location of MEC. <p>-----</p> <p>Alternative actions will be formulated in the Feasibility Study based on the location and density of MEC, land use, and other data gathered during the investigation and comparison of those data with criteria established herein.</p>	<ul style="list-style-type: none"> Anomaly reacquisition (from DGM data) within 1 meter accuracy. Transect pathway positional accuracy is +/- 20 %, as an average across the AoPI. Depth of detection for DGM data (i.e., the failure criteria) is 7x the diameter of the MK II grenade. QC/QA blind seed items will be detected and identified. 	<ul style="list-style-type: none"> Visually inspect and determine anomaly density within transects using DGM and mag-and-dig. Data collection along 0.65 acres/1.78 miles of transects and 0.11 acres/2 grids. Overlap DGM and analog data collection methods along a sample of transects for comparability. Synthesize anomaly density data into figures for PDT review and anomaly selection. Select grid placement locations. Grids will be placed in high, medium, and low anomalous areas, based on DGM data and discussions with the PDT; biased placement of percentage of grids to define location of potential MEC in areas beyond target zone. Intrusive investigation of all anomalies for mag-and-dig transects. Intrusive investigation of all MEC-like anomalies for DGM grids.

Reference: Guidance on Systematic Planning Using the Data Quality Objectives Process, EPA QA//G-4, EPA/240/B-06/001, February 2006.

NOTE: MEC performance criteria are included in Section 4.0; MC DQOs are included in the UFP-QAPP (Appendix E).

Table 9 – Munitions and Explosives of Concern Data Quality Objectives – AoPI 10A

DQO	Problem Statement	Project Goals	Required Information Inputs	Input Boundaries	Analytical Approach	Performance Criteria	Plan for Obtaining Data
<i>Explanation</i>	<i>Define the problem that necessitates the study</i>	<i>Identify study questions</i>	<i>Identify data and information needed to answer study questions</i>	<i>Specify the target population and define spatial limits</i>	<i>Develop the logic for drawing conclusions from findings</i>	<i>Specify probability limits for false rejections and false acceptance decision errors</i>	<i>Select the plan that meets the performance criteria</i>
MRS Characterization	<ul style="list-style-type: none"> Determine the nature and extent of MEC. 	<ul style="list-style-type: none"> Determine the location and type of MEC present. Determine the spatial extent of MEC. Determine if MEC exposure pathways for humans are complete. Determine if MEC pose a human health risk. <p>-----</p> <p>Possible Actions:</p> <ul style="list-style-type: none"> No DoD Action Indicated Institutional Controls MEC Removal Combination of Actions 	<ul style="list-style-type: none"> Data collected during previous activities. Results of visual observations along transects and in grids. Analog (density) and/or digital (instrument response) geophysical data. Results of intrusive investigation of identified anomalies. Survey of site receptors, demographics and land use. 	<ul style="list-style-type: none"> During field activities, transects will be spaced approximately 112 ft apart and grids will equate to 50 ft by 50 ft areas within the AoPI. Transect spacing is designed to search for areas where the MK II grenade (the smallest found item with an explosive hazard) would explode on impact with the ground, detonate and fragment. Grid locations in areas of high, medium, and low anomaly count areas will be determined based on results of transect investigations. The anomaly selection threshold in DGM grids is based on the maximum value determined during the geophysical proveout. The initial value is set at 11x the diameter of the MK II grenade (the smallest found item with an explosive hazard across all MRSs/AoPIs). Intrusively investigate potential MEC items. <p>-----</p> <p>Constraints: Rights-of-entry, weather, current land use activities.</p>	<ul style="list-style-type: none"> Maximum depth at which each type of MEC was encountered will be used to define the vertical extent for that type of MEC. The location and spatial extent of MEC will be used to define the lateral extent for each type of MEC encountered; the extent beyond the last MEC discovered will be equal to the transect spacing for the area in question. If evidence of MEC is found, then discovery location may be within a zone where ordnance landed that did not function as designed. All MD, frag, and targets will be evaluated as possibly indicative of the location of MEC. <p>-----</p> <p>Alternative actions will be formulated in the Feasibility Study based on the location and density of MEC, land use, and other data gathered during the investigation and comparison of those data with criteria established herein.</p>	<ul style="list-style-type: none"> Anomaly reacquisition (from DGM data) within 1 meter accuracy. Transect pathway positional accuracy is +/- 20 %, as an average across the AoPI. Depth of detection for DGM data (i.e., the failure criteria) is 7x the diameter of the MK II grenade. QC/QA blind seed items will be detected and identified. 	<ul style="list-style-type: none"> Visually inspect and determine anomaly density within transects using DGM and mag-and-dig. Data collection along 4.40 acres/12.09 miles of transects and 0.46 acres/8 grids. Overlap DGM and analog data collection methods along a sample of transects for comparability. Synthesize anomaly density data into figures for PDT review and anomaly selection. Select grid placement locations. Grids will be placed in high, medium, and low anomalous areas, based on DGM data and discussions with the PDT; biased placement of percentage of grids to define location of potential MEC in areas beyond target zone. Intrusive investigation of all anomalies for mag-and-dig transects. Intrusive investigation of all MEC-like anomalies for DGM grids.

Reference: Guidance on Systematic Planning Using the Data Quality Objectives Process, EPA QA//G-4, EPA/240/B-06/001, February 2006.

NOTE: MEC performance criteria are included in Section 4.0; MC DQOs are included in the UFP-QAPP (Appendix E).

Table 10 – Munitions and Explosives of Concern Data Quality Objectives – AoPI 10B

DQO	Problem Statement	Project Goals	Required Information Inputs	Input Boundaries	Analytical Approach	Performance Criteria	Plan for Obtaining Data
<i>Explanation</i>	<i>Define the problem that necessitates the study</i>	<i>Identify study questions</i>	<i>Identify data and information needed to answer study questions</i>	<i>Specify the target population and define spatial limits</i>	<i>Develop the logic for drawing conclusions from findings</i>	<i>Specify probability limits for false rejections and false acceptance decision errors</i>	<i>Select the plan that meets the performance criteria</i>
MRS Characterization	<ul style="list-style-type: none"> Determine the nature and extent of MEC. 	<ul style="list-style-type: none"> Determine the location and type of MEC present. Determine the spatial extent of MEC. Determine if MEC exposure pathways for humans are complete. Determine if MEC pose a human health risk. <p>-----</p> <p>Possible Actions:</p> <ul style="list-style-type: none"> No DoD Action Indicated Institutional Controls MEC Removal Combination of Actions 	<ul style="list-style-type: none"> Data collected during previous activities. Results of visual observations along transects and in grids. Analog (density) and/or digital (instrument response) geophysical data. Results of intrusive investigation of identified anomalies. Survey of site receptors, demographics and land use. 	<ul style="list-style-type: none"> During field activities, transects will be spaced approximately 416 ft apart and grids will equate to 50 ft by 50 ft areas within the AoPI. Transect spacing is designed to search for areas where the 60mm mortar (the smallest found item with an explosive hazard) would explode on impact with the ground, detonate and fragment. Grid locations in areas of high, medium, and low anomaly count areas will be determined based on results of transect investigations. The anomaly selection threshold in DGM grids is based on the maximum value determined during the geophysical proveout. The initial value is set at 11x the diameter of the MK II grenade (the smallest found item with an explosive hazard across all MRSs/AoPIs). Intrusively investigate potential MEC items. <p>-----</p> <p>Constraints: Rights-of-entry, weather, current land use activities.</p>	<ul style="list-style-type: none"> Maximum depth at which each type of MEC was encountered will be used to define the vertical extent for that type of MEC. The location and spatial extent of MEC will be used to define the lateral extent for each type of MEC encountered; the extent beyond the last MEC discovered will be equal to the transect spacing for the area in question. If evidence of MEC is found, then discovery location may be within a zone where ordnance landed that did not function as designed. All MD, frag, and targets will be evaluated as possibly indicative of the location of MEC. <p>-----</p> <p>Alternative actions will be formulated in the Feasibility Study based on the location and density of MEC, land use, and other data gathered during the investigation and comparison of those data with criteria established herein.</p>	<ul style="list-style-type: none"> Anomaly reacquisition (from DGM data) within 1 meter accuracy. Transect pathway positional accuracy is +/- 20 %, as an average across the AoPI. Depth of detection for DGM data (i.e., the failure criteria) is 7x the diameter of the 60mm mortar. QC/QA blind seed items will be detected and identified. 	<ul style="list-style-type: none"> Visually inspect and determine anomaly density within transects using DGM and mag-and-dig. Data collection along 0.23 acres/0.63 miles of transects and 0.06 acres/1 grid. Overlap DGM and analog data collection methods along a sample of transects for comparability. Synthesize anomaly density data into figures for PDT review and anomaly selection. Select grid placement locations. Grids will be placed in high, medium, and low anomalous areas, based on DGM data and discussions with the PDT; biased placement of percentage of grids to define location of potential MEC in areas beyond target zone. Intrusive investigation of all anomalies for mag-and-dig transects. Intrusive investigation of all MEC-like anomalies for DGM grids.

Reference: Guidance on Systematic Planning Using the Data Quality Objectives Process, EPA QA//G-4, EPA/240/B-06/001, February 2006.

NOTE: MEC performance criteria are included in Section 4.0; MC DQOs are included in the UFP-QAPP (Appendix E).

Table 11 – Munitions and Explosives of Concern Data Quality Objectives – AoPI 11B

DQO	Problem Statement	Project Goals	Required Information Inputs	Input Boundaries	Analytical Approach	Performance Criteria	Plan for Obtaining Data
<i>Explanation</i>	<i>Define the problem that necessitates the study</i>	<i>Identify study questions</i>	<i>Identify data and information needed to answer study questions</i>	<i>Specify the target population and define spatial limits</i>	<i>Develop the logic for drawing conclusions from findings</i>	<i>Specify probability limits for false rejections and false acceptance decision errors</i>	<i>Select the plan that meets the performance criteria</i>
MRS Characterization	<ul style="list-style-type: none"> Determine the nature and extent of MEC. 	<ul style="list-style-type: none"> Determine the location and type of MEC present. Determine the spatial extent of MEC. Determine if MEC exposure pathways for humans are complete. Determine if MEC pose a human health risk. <p>-----</p> <p>Possible Actions:</p> <ul style="list-style-type: none"> No DoD Action Indicated Institutional Controls MEC Removal Combination of Actions 	<ul style="list-style-type: none"> Data collected during previous activities. Results of visual observations along transects and in grids. Analog (density) and/or digital (instrument response) geophysical data. Results of intrusive investigation of identified anomalies. Survey of site receptors, demographics and land use. 	<ul style="list-style-type: none"> During field activities, transects will be spaced approximately 112 ft apart and grids will equate to 50 ft by 50 ft areas within the AoPI. Transect spacing is designed to search for areas where the MK II grenade (the smallest found item with an explosive hazard) would explode on impact with the ground, detonate and fragment. Grid locations in areas of high, medium, and low anomaly count areas will be determined based on results of transect investigations. The anomaly selection threshold in DGM grids is based on the maximum value determined during the geophysical proveout. The initial value is set at 11x the diameter of the MK II grenade (the smallest found item with an explosive hazard across all MRSs/AoPIs). Intrusively investigate potential MEC items. <p>-----</p> <p>Constraints: Rights-of-entry, weather, current land use activities.</p>	<ul style="list-style-type: none"> Maximum depth at which each type of MEC was encountered will be used to define the vertical extent for that type of MEC. The location and spatial extent of MEC will be used to define the lateral extent for each type of MEC encountered; the extent beyond the last MEC discovered will be equal to the transect spacing for the area in question. If evidence of MEC is found, then discovery location may be within a zone where ordnance landed that did not function as designed. All MD, frag, and targets will be evaluated as possibly indicative of the location of MEC. <p>-----</p> <p>Alternative actions will be formulated in the Feasibility Study based on the location and density of MEC, land use, and other data gathered during the investigation and comparison of those data with criteria established herein.</p>	<ul style="list-style-type: none"> Anomaly reacquisition (from DGM data) within 1 meter accuracy. Transect pathway positional accuracy is +/- 20 %, as an average across the AoPI. Depth of detection for DGM data (i.e., the failure criteria) is 7x the diameter of the MK II grenade. QC/QA blind seed items will be detected and identified. 	<ul style="list-style-type: none"> Visually inspect and determine anomaly density within transects using DGM and mag-and-dig. Data collection along 0.88 acres/2.42 miles of transects and 0.11 acres/2 grids. Overlap DGM and analog data collection methods along a sample of transects for comparability. Synthesize anomaly density data into figures for PDT review and anomaly selection. Select grid placement locations. Grids will be placed in high, medium, and low anomalous areas, based on DGM data and discussions with the PDT; biased placement of percentage of grids to define location of potential MEC in areas beyond target zone. Intrusive investigation of all anomalies for mag-and-dig transects. Intrusive investigation of all MEC-like anomalies for DGM grids.

Reference: Guidance on Systematic Planning Using the Data Quality Objectives Process, EPA QA//G-4, EPA/240/B-06/001, February 2006.

NOTE: MEC performance criteria are included in Section 4.0; MC DQOs are included in the UFP-QAPP (Appendix E).

Table 12 – Munitions and Explosives of Concern Data Quality Objectives – AoPI 11C

DQO	Problem Statement	Project Goals	Required Information Inputs	Input Boundaries	Analytical Approach	Performance Criteria	Plan for Obtaining Data
<i>Explanation</i>	<i>Define the problem that necessitates the study</i>	<i>Identify study questions</i>	<i>Identify data and information needed to answer study questions</i>	<i>Specify the target population and define spatial limits</i>	<i>Develop the logic for drawing conclusions from findings</i>	<i>Specify probability limits for false rejections and false acceptance decision errors</i>	<i>Select the plan that meets the performance criteria</i>
MRS Characterization	<ul style="list-style-type: none"> Determine the nature and extent of MEC. 	<ul style="list-style-type: none"> Determine the location and type of MEC present within each MRS. Determine the spatial extent of MEC within each MRS. Determine if MEC exposure pathways for humans are complete. Determine if MEC pose a human health risk. <p>-----</p> <p>Possible Actions:</p> <ul style="list-style-type: none"> No DoD Action Indicated Institutional Controls MEC Removal Combination of Actions 	<ul style="list-style-type: none"> Data collected during previous activities. Results of visual observations along transects and in grids. Analog (density) and/or digital (instrument response) geophysical data. Results of intrusive investigation of identified anomalies. Survey of site receptors, demographics and land use. 	<ul style="list-style-type: none"> During field activities, transects will be spaced approximately 112 ft apart and grids will equate to 50 ft by 50 ft areas within the AoPI. Transect spacing is designed to search for areas where the MK II grenade (the smallest found item with an explosive hazard) would explode on impact with the ground, detonate and fragment. Grid locations in areas of high, medium, and low anomaly count areas will be determined based on results of transect investigations. The anomaly selection threshold in DGM grids is based on the maximum value determined during the geophysical proveout. The initial value is set at 11x the diameter of the MK II grenade (the smallest found item with an explosive hazard across all MRSs/AoPIs). Intrusively investigate potential MEC items. <p>-----</p> <p>Constraints: Rights-of-entry, weather, current land use activities.</p>	<ul style="list-style-type: none"> Maximum depth at which each type of MEC was encountered will be used to define the vertical extent for that type of MEC. The location and spatial extent of MEC will be used to define the lateral extent for each type of MEC encountered; the extent beyond the last MEC discovered will be equal to the transect spacing for the area in question. If evidence of MEC is found, then discovery location may be within a zone where ordnance landed that did not function as designed. All MD, frag, and targets will be evaluated as possibly indicative of the location of MEC. <p>-----</p> <p>Alternative actions will be formulated in the Feasibility Study based on the location and density of MEC, land use, and other data gathered during the investigation and comparison of those data with criteria established herein.</p>	<ul style="list-style-type: none"> Anomaly reacquisition (from DGM data) within 1 meter accuracy. Transect pathway positional accuracy is +/- 20 %, as an average across the AoPI. Depth of detection for DGM data (i.e., the failure criteria) is 7x the diameter of the MK II grenade. QC/QA blind seed items will be detected and identified. 	<ul style="list-style-type: none"> Visually inspect and determine anomaly density within transects using DGM and mag-and-dig. Data collection along 0.14 acres/0.38 miles of transects and 5.03 acres of DGM (4.97 acres on ball field and 0.06 acres on 1 grid). Overlap DGM and analog data collection methods along a sample of transects for comparability. Synthesize anomaly density data into figures for PDT review and anomaly selection. Select grid placement locations. Grids will be placed in high, medium, and low anomalous areas, based on DGM data and discussions with the PDT; biased placement of percentage of grids to define location of potential MEC in areas beyond target zone. Intrusive investigation of all anomalies for mag-and-dig transects. Intrusive investigation of all MEC-like anomalies for DGM areas/grids.

Reference: Guidance on Systematic Planning Using the Data Quality Objectives Process, EPA QA//G-4, EPA/240/B-06/001, February 2006.

NOTE: MEC performance criteria are included in Section 4.0; MC DQOs are included in the UFP-QAPP (Appendix E).

Table 13 – Munitions and Explosives of Concern Data Quality Objectives – AoPI 11D

DQO	Problem Statement	Project Goals	Required Information Inputs	Input Boundaries	Analytical Approach	Performance Criteria	Plan for Obtaining Data
<i>Explanation</i>	<i>Define the problem that necessitates the study</i>	<i>Identify study questions</i>	<i>Identify data and information needed to answer study questions</i>	<i>Specify the target population and define spatial limits</i>	<i>Develop the logic for drawing conclusions from findings</i>	<i>Specify probability limits for false rejections and false acceptance decision errors</i>	<i>Select the plan that meets the performance criteria</i>
MRS Characterization	<ul style="list-style-type: none"> Determine the nature and extent of MEC. 	<ul style="list-style-type: none"> Determine the location and type of MEC present. Determine the spatial extent of MEC. Determine if MEC exposure pathways for humans are complete. Determine if MEC pose a human health risk. <p>-----</p> <p>Possible Actions:</p> <ul style="list-style-type: none"> No DoD Action Indicated Institutional Controls MEC Removal Combination of Actions 	<ul style="list-style-type: none"> Data collected during previous activities. Results of visual observations along transects and in grids. Analog (density) and/or digital (instrument response) geophysical data. Results of intrusive investigation of identified anomalies. Survey of site receptors, demographics and land use. 	<ul style="list-style-type: none"> During field activities, transects will be spaced approximately 112 ft apart and grids will equate to 50 ft by 50 ft areas within the AoPI. Transect spacing is designed to search for areas where the MK II grenade (the smallest found item with an explosive hazard) would explode on impact with the ground, detonate and fragment. Grid locations in areas of high, medium, and low anomaly count areas will be determined based on results of transect investigations. The anomaly selection threshold in DGM grids is based on the maximum value determined during the geophysical proveout. The initial value is set at 11x the diameter of the MK II grenade (the smallest found item with an explosive hazard across all MRSs/AoPIs). Intrusively investigate potential MEC items. <p>-----</p> <p>Constraints: Rights-of-entry, weather, current land use activities.</p>	<ul style="list-style-type: none"> Maximum depth at which each type of MEC was encountered will be used to define the vertical extent for that type of MEC. The location and spatial extent of MEC will be used to define the lateral extent for each type of MEC encountered; the extent beyond the last MEC discovered will be equal to the transect spacing for the area in question. If evidence of MEC is found, then discovery location may be within a zone where ordnance landed that did not function as designed. All MD, frag, and targets will be evaluated as possibly indicative of the location of MEC. <p>-----</p> <p>Alternative actions will be formulated in the Feasibility Study based on the location and density of MEC, land use, and other data gathered during the investigation and comparison of those data with criteria established herein.</p>	<ul style="list-style-type: none"> Anomaly reacquisition (from DGM data) within 1 meter accuracy. Transect pathway positional accuracy is +/- 20 %, as an average across the AoPI. Depth of detection for DGM data (i.e., the failure criteria) is 7x the diameter of the MK II grenade. QC/QA blind seed items will be detected and identified. 	<ul style="list-style-type: none"> Visually inspect and determine anomaly density within transects using DGM and mag-and-dig. Data collection along 0.42 acres/1.17 miles of transects and 0.06 acres/1 grid. Overlap DGM and analog data collection methods along a sample of transects for comparability. Synthesize anomaly density data into figures for PDT review and anomaly selection. Select grid placement locations. Grids will be placed in high, medium, and low anomalous areas, based on DGM data and discussions with the PDT; biased placement of percentage of grids to define location of potential MEC in areas beyond target zone. Intrusive investigation of all anomalies for mag-and-dig transects. Intrusive investigation of all MEC-like anomalies for DGM grids.

Reference: Guidance on Systematic Planning Using the Data Quality Objectives Process, EPA QA//G-4, EPA/240/B-06/001, February 2006.

NOTE: MEC performance criteria are included in Section 4.0; MC DQOs are included in the UFP-QAPP (Appendix E).

Table 14 – Munitions and Explosives of Concern Data Quality Objectives – Lake Craig and Lake Johnson

DQO	Problem Statement	Project Goals	Required Information Inputs	Input Boundaries	Analytical Approach	Performance Criteria	Plan for Obtaining Data
<i>Explanation</i>	<i>Define the problem that necessitates the study</i>	<i>Identify study questions</i>	<i>Identify data and information needed to answer study questions</i>	<i>Specify the target population and define spatial limits</i>	<i>Develop the logic for drawing conclusions from findings</i>	<i>Specify probability limits for false rejections and false acceptance decision errors</i>	<i>Select the plan that meets the performance criteria</i>
MRS Characterization	<ul style="list-style-type: none"> Determine the nature and extent of MEC along the shoreline. 	<ul style="list-style-type: none"> Determine the location and type of MEC present. Determine the spatial extent of MEC. Determine if MEC exposure pathways for humans are complete. Determine if MEC pose a human health risk. <p>-----</p> <p>Possible Actions:</p> <ul style="list-style-type: none"> No DoD Action Indicated Institutional Controls MEC Removal Combination of Actions 	<ul style="list-style-type: none"> Data collected during previous activities. Results of visual observations along transects and in grids. Analog (density) and/or digital (instrument response) geophysical data. Results of intrusive investigation of identified anomalies. Survey of site receptors, demographics and land use. 	<ul style="list-style-type: none"> During field activities, transects will be spaced approximately 416 ft apart and grids will equate to 50 ft by 50 ft areas along the shoreline. Transect spacing is designed to search for areas where the 60mm mortar (the smallest found item with an explosive hazard) would explode on impact with the ground, detonate and fragment. Grid locations in areas of high, medium, and low anomaly count areas will be determined based on results of transect investigations. The anomaly selection threshold in DGM grids is based on the maximum value determined during the geophysical proveout. The initial value is set at 11x the diameter of the MK II grenade (the smallest found item with an explosive hazard across all MRSs/AoPIs). Intrusively investigate potential MEC items. <p>-----</p> <p>Constraints: Rights-of-entry, weather, current land use activities.</p>	<ul style="list-style-type: none"> Maximum depth at which each type of MEC was encountered will be used to define the vertical extent for that type of MEC. The location and spatial extent of MEC will be used to define the lateral extent for each type of MEC encountered; the extent beyond the last MEC discovered will be equal to the transect spacing for the area in question. If evidence of MEC is found, then discovery location may be within a zone where ordnance landed that did not function as designed. All MD, frag, and targets will be evaluated as possibly indicative of the location of MEC. <p>-----</p> <p>Alternative actions will be formulated in the Feasibility Study based on the location and density of MEC, land use, and other data gathered during the investigation and comparison of those data with criteria established herein.</p>	<ul style="list-style-type: none"> Anomaly reacquisition (from DGM data) within 1 meter accuracy. Transect pathway positional accuracy is +/- 20 %, as an average across the study area. Depth of detection for DGM data (i.e., the failure criteria) is 7x the diameter of the 60mm mortar. QC/QA blind seed items will be detected and identified. 	<ul style="list-style-type: none"> Visually inspect and determine anomaly density within transects using AIR or mag-and-dig. Data collection along 0.60 acres/1.65 miles of transects and 0.11 acres/2 grids. Overlap DGM and analog data collection methods along a sample of transects for comparability. Synthesize anomaly density data into figures for PDT review and anomaly selection. Select grid placement locations. Grids will be placed in high, medium, and low anomalous areas, based on mag-and-dig and AIR data and discussions with the PDT; biased placement of percentage of grids to define location of potential MEC in areas beyond target zone. Intrusive investigation of all anomalies for mag-and-dig transects. Intrusive investigation of a representative number of anomalies (to be determined by PDT) for AIR transects. Intrusive investigation of all anomalies for AIR grids. Intrusive investigation of all MEC-like anomalies for DGM grids.

Reference: Guidance on Systematic Planning Using the Data Quality Objectives Process, EPA QA//G-4, EPA/240/B-06/001, February 2006.

NOTE: MEC performance criteria are included in Section 4.0; MC DQOs are included in the UFP-QAPP (Appendix E).