FINAL - Volume II of II

Site Inspection Report
Culebra Island Site
Puerto Rico

U.S. Army Corps of Engineers
Southeast and Pacific IMA Region

FUDS Project No. I02PR006802 through 14
Contract No. W912DY-04-D-0005
Task Order 0008

Prepared for:

U.S. Army Corps of Engineers, Jacksonville District
701 San Marco Boulevard
Jacksonville, Florida 32207
and
U.S. Army Engineering & Support Center, Huntsville
4820 University Square
Huntsville, Alabama 35816-1822

Prepared by:

PARSONS
5395 Triangle Parkway, Suite 100
Norcross, Georgia 30092
September 2007

FINAL
Volume II of II

Site Inspection Report
Culebra Island Site, Puerto Rico

U.S. Army Corps of Engineers Southeast and Pacific IMA Region

PARSONS

September
2005

APPENDIX A
PERFORMANCE WORK STATEMENT

Electronic copy included on enclosed CD

APPENDIX B

TECHNICAL PROJECT PLANNING SESSION DOCUMENTATION / MEETING MINUTES

Electronic copy included on enclosed CD

APPENDIX C

INTERVIEW DOCUMENTATION

No interviews were conducted as part of the Site Inspection.

APPENDIX D

FIELD NOTES AND FIELD FORMS

DAILY FIELD REPORT
MMRP SITE INSPECTION

CONTRACT NO.	W912DY-04-D-0005	**DELIVERY ORDER NO.**	0008
JOB NO:	744647-17000	**DATE/DAY:**	24-Oct-06
SITE NAME:	Culebra, PR	**REPORT NO:**	3
USACE DISTRICT:	CESAJ	**SHEET:**	1

WEATHER: Sunny. Mid to High 80s.

WORK IN PROGRESS OR COMPLETED:

1. Mobilization/Demobilization

		PREVIOUS CUMULATIVE	CUMULATIVE
20	*Miles Driven*	80	100
0	*Number of Flights/Miles Flown*	4/6641	4/6641
4	*Personnel:*		4

2. Reconnaissance Details

20,285	*Linear Feet:*	~7000	27,285

Discussion -

3. MC Sampling Details

3	*SoilSamples*	4
0	*Water Samples*	0

Sampling Notes: See Attached DQCR

4. QC Activities

0	*SoilSamples*	0
0	*Water Samples*	0

5. QA Activities

0	*SoilSamples*	0
0	*Water Samples*	0

6. Safety Activities

Safety brief was conducted covering PPE, noxious plants, tripping hazards, cliffs on the island, and QR safety.

PARSONS WORKFORCE		On-site Yes/No	Tailgate Brief Yes/No
Parsons FTL - Nancy Heflin	Cell Phone: 303-960-8797	Yes	Yes
Parsons UXO Technician/SSHO - Rick White	Cell Phone: 506-874-5940	Yes	Yes
Parsons Sampling Technician - Erich Stedman	Cell Phone: 678-595-8650	Yes	Yes
Parsons Field Team Member - Brian Barker	Cell Phone: 678-907-4281	Yes	Yes
VISITORS			

EQUIPMENT LIST:

Minelab, Schonstedt, Archer PDA with GPS and Arcpad, Rhinos

ADDITIONAL INFORMATION:

QR in MRS 09 revealed that there is no way to access SS#09 from the main land. Other alternatives such as the possibility of reaching it from the water will be attempted. Internet access is only available in town and access has not been reliable. Any correspondence requiring attention from the SVT should be done via telephone. The Daily will be sent each morning if internet is not available at that time will be attempted again mid day and in the evening until the Daily is sent. Please call with all questions.

All other site details recorded in PDA/Logbook

ACTIVITIES SCHEDULED FOR NEXT WORK DAY:

FTL will meet with FWS to planned field activities around endangered species nesting areas. Brian Barker will take ferry and fly back from Fajardo to ship soil samples from Monday and Tuesday. FTL will coordinate with Tammy Chang to ensure that she knows that samples have been held and when they should be expected by the lab. Erich and Rick will visit area near Flamenco beach to revisit an item found previously for further identification and collect track where GPS battery failed on Monday. FTL will attempt again to contact Hill Construction for access to SS#20. ROE has been granted stating that property owner must be reached prior to entering the site. FTL will coordinate with Luis Ayala to ensure that ROE has been signed and returned from the Sewage Treatment Facilities where ROE was obtained for SS #15 as ROE was refused from previous location. FTL will coordinate with FWS for use of kayaks for access to Flamenco Lagoon, and possible access to SS #9 by water from one bay to the west where water access is available. Erich will contact Captain Jerry to coordinate access to the cayos on Thursday. If needed logistics may require different actions.

PARSONS INFRASTRUCTURE AND TECHNOLOGY GROUP, INC.

REQUEST FOR PROJECT ACTION:

ACCIDENTS REPORTED TODAY: 0
ACCIDENTS TO DATE: 0

Prepared By Field Team Leader: Nancy Heflin

DAILY CONTRACTOR QUALITY CONTROL REPORT

Contract Number: W912DY-04-D-0005
Delivery Order Number: 0008
Project Name: MMRP FUDS SI
Project Number: 744647-17000
Site Location: Culebra, PR
Date: 24-Oct-06

Activities Conducted:

FTL met with Ellis Environmental to discuss field actions that may conflict with clearance on Cerro Balcon. The decision was discussed with Michael Short. Parsons will collect data on Friday and Sunday as Ellis will not be working on those days. It was discussed with Ellis and they agreed with the plan. SVT collected QR and SS#19 on the property where ROE was granted and vegetation would allow access. QR and SS#21 were also collected. FTL left message with property owner at SS#20, call was not returned. QR was conducted on DNER property in MRS 09. SS#10 was collected as close as possible to the planned point. The area is surrounded by cliffs on three sides and dense vegetation throughout kept the field team accessing the planned location for SS #10. Sample was collected ~175m northwest of the planned location.

Work Planned for Tomorrow

Continue sample collection and QR.

Field Instrument Measurements (list or provide attachment):

Water Sampling Location:	Temp (°C):	Cond (µS/cm)	Turb (NTU):	pH (s.u.):
N/A				

Comments: No water samples were collected today.

Equipment Calibrations (list or provide attachment)

N/A

List all field and quality control samples collected (list or provide attachment):

Sample ID	Media	Time	Analysis	Shipment Date	Lab	Comments
CUL-14-06-16*	Soil	1709	Metals and Expl.	10/25/2006	STL	ambient sample
CUL-05-06-19	Soil	0951	Metals and Expl.	10/25/2006	STL	
CUL-06-06-21	Soil	1114	Metals and Expl.	10/25/2006	STL	
CUL-09-06-10	Soil	1529	Metals and Expl.	10/25/2006	STL	

*Sample collected on 10/23/06 but listed to show shipment date

Comments: Please note that the Shipment Date is planned date and if shipment is not sent as planned a note will be found on next day's DQCR. Note that SS #16 was planned for shipment on 10/24 but was held on ice further and will be shipped on 10/25 due to ferry schedules and the need to ship from Isla Grande. All samples collected so far have been kept under ice. Fresh ice has been added to the cooler from time to time.

Departures from approved SAP:

Samples will be held on ice for shipment on 10/25/06

Instructions given by government personnel:

None

Check all attachments:

____ Field sampling forms (in separate submittal)

____ Field-generated analytical results

____ Chain-of-custody forms (in separate submittal)

Signed by:

Name	Nancy Heflin, FTL	
Date:	24-Oct-06	
Phone	Mobile: 303-960-8797	Office#: 678-969-2362

Copies sent to:

Deborah Walker (MM CX)	Chris Cochrane (MM DC PM)
Heidi Novotny (HTRW CX)	Becky Terry (USAESCH)
Don Silkebakken (Parsons PM)	Teresa Carpenter (USAESCH)
Laura Kelley (Parsons DPM)	Jose Mendez (CESAJ PM)
Tammy Chang (Parsons)	

DAILY FIELD REPORT
MMRP SITE INSPECTION

CONTRACT NO.	W912DY-04-D-0005	**DELIVERY ORDER NO.**	0008
JOB NO:	744647-17000	**DATE/DAY:**	25-Oct-06
SITE NAME:	Culebra, PR	**REPORT NO:**	3
USACE DISTRICT:	CESAJ	**SHEET:**	1
WEATHER:	Very Sunny. High 80s.		

WORK IN PROGRESS OR COMPLETED:

1. Mobilization/Demobilization

		PREVIOUS CUMULATIVE	CUMULATIVE
30	*Miles Driven*	80	110
0	*Number of Flights/Miles Flown*	4/6641	4/6641
4	*Personnel:*		4

2. Reconnaissance Details

19,098	*Linear Feet:*	27,285	46,383

Discussion -

3. MC Sampling Details

2	*Soil Samples*	6
0	*Water Samples*	0

Sampling Notes: See Attached DQCR

4. QC Activities

0	*Soil Samples*	0
0	*Water Samples*	0

5. QA Activities

0	*Soil Samples*	0
0	*Water Samples*	0

6. Safety Activities

Rick White conducted safety brief covering subjects such as sun protection, PPE, tripping and falling hazards, noxious plants and insects.

PARSONS WORKFORCE		On-site Yes/No	Tailgate Brief Yes/No
Parsons FTL - Nancy Heflin	Cell Phone: 303-960-8797	Yes	Yes
Parsons UXO Technician/SSHO - Rick White	Cell Phone: 506-8745940	Yes	Yes
Parsons Sampling Technician - Erich Stedman	Cell Phone: 678-595-8650	Yes	Yes
Parsons Field Team Member - Brian Barker	Cell Phone: 678-907-4281	Yes	Yes
VISITORS			

EQUIPMENT LIST:

Minelab, Schonstedt, Archer PDA with GPS and Arcpad, Rhinos

ADDITIONAL INFORMATION:

QR conducted in the vicinity of the water treatment plant and SS#15 was collected here as ROE was not granted in the original location. QR was conducted near SS#20 and sample was collected. Field team noted extremely dense vegetation in some areas. Team met with FWS to discuss endangered species avoidance and made plans with DNR to meet at 3:00 for escort to the beach north of Mount Resaca. Field Team met with local Police and Firefighter personnel. Field team conducted QR on Police station property however the location was not close enough to planned sample #08 to collect. The Field Team could not determine the property owners of land near SS #07 or #08. ROE was not granted on SS #08 or 07 property. The Field team will look for a different property that may be acceptable later in the week. Samples shipped to laboratory supplies for sediment sampling were obtained. Field Team attempted to make contact with land owner near SS #11 and SS#13. Got the number of one property owner near Flamenco Lagoon.

Field Team will communicate with Luis (CESAJ) tomorrow for possible ROE in this area. The Field Team believes this would be a good alternate location for SS #11 as ROE has been granted but the parcels for which it has been granted can not be identified. (Luis has attempted to reach realtor on the island who can identify the parcels and has been unable to connect, a note was left on her door to call the field team to discuss the matter.) QR was conducted in the vicinity of the airport. No evidence of a small arms range was found. No locations have been or will be moved without consultation with the Project team.

All other site details recorded in PDA/Logbook

ACTIVITIES SCHEDULED FOR NEXT WORK DAY:

Conference call with Project Team (including the Design Center, CESAJ PM and real estate representatives) concerning difficulties with ROEs. Visit Cayo Norte and collect QR and soil samples.

REQUEST FOR PROJECT ACTION:

ACCIDENTS REPORTED TODAY: 0
ACCIDENTS TO DATE: 0

Prepared By Field Team Leader: Nancy Heflin

DAILY CONTRACTOR QUALITY CONTROL REPORT

Contract Number: W912DY-04-D-0005
Delivery Order Number: 0008
Project Name: MMRP FUDS SI
Project Number: 744647-17000
Site Location: Culebra, PR
Date: 25-Oct-06

Activities Conducted:

QR near CUL-05-SS-06-15, CUL-14-SS-06-13, CUL-06-SS-06-20 and at the police station. Samples CUL-05-SS-06-15 and CUL-06-SS-06-20 were collected. CUL-14-SS-06-13 was not collected as no evidence of a small arms range was found. The Field Team will continue looking for evidence of small arms range to try to collect sample.

Work Planned for Tomorrow

Visit Cayo Norte and collect QR and soil samples.

Field Instrument Measurements (list or provide attachment):

Water Sampling Location:	Temp (°C):	Cond (µS/cm)	Turb (NTU):	pH (s.u.):
N/A				

Comments: No water samples were collected today.

Equipment Calibrations (list or provide attachment)

N/A

List all field and quality control samples collected (list or provide attachment):

Sample ID	Media	Time	Analysis	Shipment Date	Lab	Comments
CUL-05-SS-06-15	Soil	0832	Metals and Expl.	10/27/2006	STL	Samples held on ice for shipment.
CUL-06-SS-06-20	Soil	1030	Metals and Expl.	10/27/2006	STL	Samples held on ice for shipment.

Comments: Please note that the Shipment Date is planned date and if shipment is not sent as planned a note will be found here to show correction. Samples will be sent from San Juan Airport on Friday to ensure Saturday Delivery.

Departures from approved SAP:

Samples will be held on ice for shipment on 10/27/06

Instructions given by government personnel:

Mr. Luis Ayala says that no ROE is available near SS #08 and #07.

Check all attachments:

	Field sampling forms (in separate submittal)
	Field-generated analytical results
X	Chain-of-custody forms (in separate submittal)

Signed by:

Name	Nancy Heflin, FTL	
Date:	25-Oct-06	
Phone	Mobile: 303-960-8797	Office#: 678-969-2362

Copies sent to:

Deborah Walker (MM CX)	Chris Cochrane (MM DC PM)
Heidi Novotny (HTRW CX)	Becky Terry (USAESCH)
Don Silkebakken (Parsons PM)	Teresa Carpenter (USAESCH)
Laura Kelley (Parsons DPM)	Jose Mendez (CESAJ PM)
Tammy Chang (Parsons)	

DAILY FIELD REPORT
MMRP SITE INSPECTION

CONTRACT NO.	W912DY-04-D-0005	**DELIVERY ORDER NO.**	0008
JOB NO:	744647-17000	**DATE/DAY:**	26-Oct-06
SITE NAME:	Culebra, PR	**REPORT NO:**	5
USACE DISTRICT:	CESAJ	**SHEET:**	1

WEATHER: Very Sunny. High 80s.

WORK IN PROGRESS OR COMPLETED:

1. Mobilization/Demobilization

		PREVIOUS CUMULATIVE		CUMULATIVE
5	*Miles Driven*	80		115
0	*Number of Flights/Miles Flown*	4/6641		4/6641
4	*Personnel:*	4		4

2. Reconnaissance Details

11,475	*Linear Feet:*	46,383		57,858
28,821	*Linear Feet visual by boat*	0		28,821

Discussion -

3. MC Sampling Details

4	*Soil Samples*	10
0	*Water Samples*	0

Sampling Notes: See Attached DQCR

4. QC Activities

0	*Soil Samples*	0
0	*Water Samples*	0

5. QA Activities

0	*Soil Samples*	0
0	*Water Samples*	0

6. Safety Activities

Rick White conducted safety brief covering subjects such as sun protection, boating safety and hazards, trips and falls.

PARSONS WORKFORCE		On-site Yes/No	Tailgate Brief Yes/No
Parsons FTL - Nancy Heflin	Cell Phone: 303-960-8797	Yes	Yes
Parsons UXO Technician/SSHO - Rick White	Cell Phone: 506-8745940	Yes	Yes
Parsons Sampling Technician - Erich Stedman	Cell Phone: 678-595-8650	Yes	Yes
Parsons Field Team Member - Brian Barker	Cell Phone: 678-907-4281	Yes	Yes
VISITORS			

EQUIPMENT LIST:

Minelab, Schonstedt, Archer PDA with GPS and Arcpad, Rhinos, Dry Bags, loppers.

ADDITIONAL INFORMATION:

QR conducted on Cayo Norte. Extremely difficult vegetation and terrain. CUL-08-SS-06-24, CUL-08-SS-06-23, and CUL-08-SE-06-05 were collected on Cayo Norte. Cayo Geniqui was visited and QR was done using the Rhino on the accessible part of the island. CUL-09-SS-06-09 was collected by access from the water. The entire area is overgrown mangroves and inaccessible on foot. Cays north of Cayo Norte were visited via boat but were inaccessible as surrounded by rocky outcrops and rough surf.

All other site details recorded in PDA/Logbook

ACTIVITIES SCHEDULED FOR NEXT WORK DAY:

Visit Cerro Balcon and collect soil samples.

REQUEST FOR PROJECT ACTION:

ACCIDENTS REPORTED TODAY: 0
ACCIDENTS TO DATE: 0

Prepared By Field Team Leader: Nancy Heflin

DAILY CONTRACTOR QUALITY CONTROL REPORT

Contract Number: W912DY-04-D-0005
Delivery Order Number: 0008
Project Name: MMRP FUDS SI
Project Number: 744647-17000
Site Location: Culebra, PR
Date: 26-Oct-06

Activities Conducted:
QR on Cayo Norte and collected CUL-08-SS-24, CUL-08-SS-06-23, CUL-08-SE-06-05 and on Culebra collected CUL-09-SS-06-09 via boat access.

Work Planned for Tomorrow
Visit Cerro Balcon and collect QR and soil samples.

Field Instrument Measurements (list or provide attachment):

Water Sampling Location:	Temp (°C):	Cond (µS/cm)	Turb (NTU):	pH (s.u.):
N/A				

Comments: No water samples were collected today.

Equipment Calibrations (list or provide attachment)
N/A

List all field and quality control samples collected (list or provide attachment):

Sample ID	Media	Time	Analysis	Shipment Date	Lab	Comments
CUL-08-SE-06-05	Sediment	1026	Metals and Expl.	10/27/2006	STL	Samples held on ice for shipment.
CUL-08-SS-06-24	Soil	1056	Metals and Expl.	10/27/2006	STL	Samples held on ice for shipment.
CUL-08-SS-06-23	Soil	1147	Metals and Expl.	10/27/2006	STL	Samples held on ice for shipment.
CUL-09-SS-06-09	Soil	1602	Metals and Expl.	10/27/2006	STL	Samples held on ice for shipment.

Comments: Please note that the Shipment Date is planned date and if shipment is not sent as planned a note will be found here to show correction. Samples will be sent from San Juan Airport on Friday to ensure Saturday Delivery.

Departures from approved SAP:

Samples will be held on ice for shipment on 10/27/06

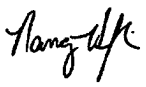
Instructions given by government personnel:

Check all attachments:

_____ Field sampling forms (in separate submittal)

_____ Field-generated analytical results

_____ Chain-of-custody forms (in separate submittal)

Signed by: 

Name	Nancy Heflin, FTL	
Date:	26-Oct-06	
Phone	Mobile: 303-960-8797	Office#: 678-969-2362

Copies sent to:

Deborah Walker (MM CX)	Chris Cochrane (MM DC PM)
Heidi Novotny (HTRW CX)	Becky Terry (USAESCH)
Don Silkebakken (Parsons PM)	Teresa Carpenter (USAESCH)
Laura Kelley (Parsons DPM)	Jose Mendez (CESAJ PM)
Tammy Chang (Parsons)	

DAILY FIELD REPORT
MMRP SITE INSPECTION

CONTRACT NO.	W912DY-04-D-0005	**DELIVERY ORDER NO.**	0008
JOB NO:	744647-17000	**DATE/DAY:**	27-Oct-06
SITE NAME:	Culebra, PR	**REPORT NO:**	5
USACE DISTRICT:	CESAJ	**SHEET:**	1

WEATHER: Very Sunny. High 80s.

WORK IN PROGRESS OR COMPLETED:

1. Mobilization/Demobilization

		PREVIOUS CUMULATIVE	CUMULATIVE
40	*Miles Driven*	115	155
0	*Number of Flights/Miles Flown*	4	4
0	*Personnel:*	4	4

2. Reconnaissance Acreage

17,032	*Linear Feet:*	57,858	74,890
0	*Linear Feet visual by boat*	28,821	28,821

Discussion -

3. MC Sampling Details

2	*Soil Samples*	12
0	*Water Samples*	0

Sampling Notes: See Attached DQCR

4. QC Activities

3	*Soil Samples*	3
0	*Water Samples*	0

Sampling Notes: See Attached DQCR

5. QA Activities

1	*Soil Samples*	1
0	*Water Samples*	0

Sampling Notes: See Attached DQCR

6. Safety Activities

Rick White conducted safety brief covering eye protection, biological hazards, and trip hazards. Another hatch of mosquitoes came out yesterday. They are completely indifferent to OFF and team members are covered in mosquito bites.

PARSONS WORKFORCE		On-site Yes/No	Tailgate Brief Yes/No
Parsons FTL - Nancy Heflin	Cell Phone: 303-960-8797	Yes	Yes
Parsons UXO Technician/SSHO - Rick White	Cell Phone: 506-8745940	Yes	Yes
Parsons Sampling Technician - Erich Stedman	Cell Phone: 678-595-8650	Yes	Yes
Parsons Field Team Member - Brian Barker	Cell Phone: 678-907-4281	Yes	Yes
VISITORS			

EQUIPMENT LIST:

Minelab, Schonstedt, Archer PDA with GPS and Arcpad, Rhinos.

ADDITIONAL INFORMATION:

QR conducted between CUL-05-SS-06-17 and CUL-05-SS-06-18. Extremely difficult vegetation and terrain. QR around CUL-05-SS-06-17 was done by crawling under the vegetation and was accomplished at a very slow pace. A jeep trail was followed near CUL-05-SS-06-18 toward Ellis Environmental's Magazine and QR was conducted moving off of the trail and looping back where vegetation allowed. Cow trails in this area allowed for some access into the brush without crawling.

All other site details recorded in PDA/Logbook

ACTIVITIES SCHEDULED FOR NEXT WORK DAY:

The field team will take Saturday off and will begin again on Sunday with QR along the north side of Cerro Balcon as possible - terrain may be too difficult to safely traverse. QR will also be conducted in Area 06.

REQUEST FOR PROJECT ACTION:

ACCIDENTS REPORTED TODAY: 0
ACCIDENTS TO DATE: 0

Prepared By Field Team Leader: Nancy Heflin

DAILY CONTRACTOR QUALITY CONTROL REPORT

Contract Number: W912DY-04-D-0005
Delivery Order Number: 0008
Project Name: MMRP FUDS SI
Project Number: 744647-17000
Site Location: Culebra, PR
Date: 27-Oct-06

Activities Conducted:
QR and collected samples CUL-05-SS-06-17 and CUL-05-SS-06-18.

Work Planned for Tomorrow
Visit Cerro Balcon and Area 06 to conduct QR.

Field Instrument Measurements (list or provide attachment):

Water Sampling Location:	Temp (°C):	Cond (µS/cm)	Turb (NTU):	pH (s.u.):
N/A				

Comments: No water samples were collected today.

Equipment Calibrations (list or provide attachment)
N/A

List all field and quality control samples collected (list or provide attachment):

Sample ID	Media	Time	Analysis	Shipment Date	Lab	Comments
CUL-05-SS-06-17	Soil	0942	Metals and Expl.	10/30/2006	STL	MS/MSD
CUL-05-SS-06-17-QA	Soil	0942	Metals and Expl.	10/30/2006	GPL	
CUL-06-SS-06-29	Soil	1607	Metals and Expl.	10/30/2006	STL	FD of CUL-05-SS-06-17
CUL-05-SS-06-18	Soil	1353	Metals and Expl.	10/30/2006	STL	

Comments: Please note that the Shipment Date is planned date and if shipment is not sent as planned a note will be found here to show correction. Samples will be sent from Puerto Rico on Monday.

Departures from approved SAP:

Samples will be held on ice for shipment on 10/30/06.

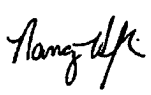
Instructions given by government personnel:

Check all attachments:

_____ Field sampling forms (in separate submittal)

_____ Field-generated analytical results

_____ Chain-of-custody forms (in separate submittal)

Signed by: 

Name	Nancy Heflin, FTL	
Date:	27-Oct-06	
Phone	Mobile: 303-960-8797	Office#: 678-969-2362
Copies sent to:		
	Deborah Walker (MM CX)	Chris Cochrane (MM DC PM)
	Heidi Novotny (HTRW CX)	Becky Terry (USAESCH)
	Don Silkebakken (Parsons PM)	Teresa Carpenter (USAESCH)
	Laura Kelley (Parsons DPM)	Jose Mendez (CESAJ PM)
	Tammy Chang (Parsons)	

DAILY FIELD REPORT
MMRP SITE INSPECTION

CONTRACT NO.	W912DY-04-D-0005	**DELIVERY ORDER NO.**	0008
JOB NO:	744647-17000	**DATE/DAY:**	29-Oct-06
SITE NAME:	Culebra, PR	**REPORT NO:**	7
USACE DISTRICT:	CESAJ	**SHEET:**	1

WEATHER: Partly cloudy in the morning and sunny in the afternoon. High 80s.

WORK IN PROGRESS OR COMPLETED:

1. Mobilization/Demobilization

		PREVIOUS CUMULATIVE		CUMULATIVE
40	*Miles Driven*	155		195
0	*Number of Flights/Miles Flown*	4		4
0	*Personnel:*	4		4

2. Reconnaissance Details

46,178	*Linear Feet:*	74,890		121,068
0	*Linear Feet visual by boat*	28,821		28,821

Discussion -

3. MC Sampling Details

3	*Soil and Sediment Samples*	15
0	*Water Samples*	0

Sampling Notes: See Attached DQCR

4. QC Activities

1	*Soil and Sediment Samples*	4
0	*Water Samples*	0

Sampling Notes: See Attached DQCR

5. QA Activities

1	*Soil and Sediment Samples*	2
0	*Water Samples*	0

Sampling Notes: See Attached DQCR

6. Safety Activities

Rick White conducted safety brief covering hydration, slips, trips, falls, and hazard communication.

PARSONS WORKFORCE		On-site Yes/No	Tailgate Brief Yes/No
Parsons FTL - Nancy Heflin	Cell Phone: 303-960-8797	Yes	Yes
Parsons UXO Technician/SSHO - Rick White	Cell Phone: 506-8745940	Yes	Yes
Parsons Sampling Technician - Erich Stedman	Cell Phone: 678-595-8650	Yes	Yes
Parsons Field Team Member - Brian Barker	Cell Phone: 678-907-4281	Yes	Yes
VISITORS			

EQUIPMENT LIST:

Minelab, Schonstedt, Archer PDA with GPS and Arcpad, Rhinos.

ADDITIONAL INFORMATION:

Conducted QR on the north side of Cerro Balcon and along the beach on the north side of the island facing Cayo Norte in the morning. Cut into Flamenco Lagoon to get sediment samples. CUL-04-SE-06-03 was collected at a water depth of 3 feet as the sediment on the bottom got to soft to walk in safely. The same happend at CUL-04-SE-06-04 at a depth of ~2.5 feet and a distance of 15 feet from shore. Team cut through woods to get to CUL-04-SS-06-11. Due to extensive overhead canopy the GPS could not get a fix and will potenially not be able to post process to submeter accuracy. QR was conducted south of CUL-04-SS-06-11 and along the beach. QR along the west side of Flamenco Beach will be done on a weekday when there are not as many tourists present.

All other site details recorded in PDA/Logbook

ACTIVITIES SCHEDULED FOR NEXT WORK DAY:

Tomorrow the field team will conduct QR in Area 06 along roads and will meet with DNR to access the beaches on the north side of the island. QR will be conducted around the foot trail used to access the beaches.

REQUEST FOR PROJECT ACTION:

ACCIDENTS REPORTED TODAY: 0

DAILY CONTRACTOR QUALITY CONTROL REPORT

Contract Number: W912DY-04-D-0005
Delivery Order Number: 0008
Project Name: MMRP FUDS SI
Project Number: 744647-17000
Site Location: Culebra, PR
Date: 29-Oct-06

Activities Conducted:
QR and collected samples CUL-04-SE-06-03, CUL-04-SE-06-04, and CUL-04-SS-06-11.

Work Planned for Tomorrow
Visit Area 06 and the north side of Area 05 to conduct QR.

Field Instrument Measurements (list or provide attachment):

Water Sampling Location:	Temp (°C):	Cond (µS/cm)	Turb (NTU):	pH (s.u.):
N/A				

Comments: No water samples were collected today.

Equipment Calibrations (list or provide attachment)
N/A

List all field and quality control samples collected (list or provide attachment):

Sample ID	Media	Time	Analysis	Shipment Date	Lab	Comments
CUL-04-SE-06-04	Sediment	1240	Metals and Expl.	10/30/2006	STL	
CUL-04-SE-06-03	Sediment	1303	Metals and Expl.	10/30/2006	STL	
CUL-04-SS-06-11	Soil	1534	Metals and Expl.	10/30/2006	STL	
CUL-04-SS-06-11-QA	Soil	1534	Metals and Expl.	10/30/2006	GPL	
CUL-04-SS-06-30	Soil	1628	Metals and Expl.	10/30/2006	STL	FD of CUL-04-SS-06-11

Comments: Please note that the Shipment Date is planned date and if shipment is not sent as planned a note will be found here to show correction. Samples will be sent from Puerto Rico on Monday.

Departures from approved SAP:

Samples will be held on ice for shipment on 10/30/06

Instructions given by government personnel:

Check all attachments:

____ Field sampling forms (in separate submittal)

____ Field-generated analytical results

____ Chain-of-custody forms (in separate submittal)

Signed by: Nancy Heflin

Name	Nancy Heflin, FTL	
Date:	29-Oct-06	
Phone	Mobile: 303-960-8797	Office#: 678-969-2362
Copies sent to:		
	Deborah Walker (MM CX)	Chris Cochrane (MM DC PM)
	Heidi Novotny (HTRW CX)	Becky Terry (USAESCH)
	Don Silkebakken (Parsons PM)	Teresa Carpenter (USAESCH)
	Laura Kelley (Parsons DPM)	Jose Mendez (CESAJ PM)
	Tammy Chang (Parsons)	

DAILY FIELD REPORT
MMRP SITE INSPECTION

CONTRACT NO.	W912DY-04-D-0005	**DELIVERY ORDER NO.**	0008
JOB NO:	744647-17000	**DATE/DAY:**	30-Oct-06
SITE NAME:	Culebra, PR	**REPORT NO:**	8
USACE DISTRICT:	CESAJ	**SHEET:**	1

WEATHER: Scattered showers in the morning. Partly cloudy Mid 80s in the afternoon.

WORK IN PROGRESS OR COMPLETED:

1. Mobilization/Demobilization

		PREVIOUS CUMULATIVE		CUMULATIVE
40	*Miles Driven*	195		235
0	*Number of Flights/Miles Flown*	4		4
0	*Personnel:*	4		4

2. Reconnaissance Acreage

29,808	*Linear Feet:*	121,068		150,876
0	*Linear Feet visual by boat*	28,821		28,821

Discussion -

3. MC Sampling Details

4	*Sediment and Soil Samples*	19
0	*Water Samples*	0

Sampling Notes: See Attached DQCR

4. QC Activities

0	*Sediment and Soil Samples*	4
0	*Water Samples*	0

5. QA Activities

0	*Sediment and Soil Samples*	2
0	*Water Samples*	0

6. Safety Activities

Rick White conducted safety brief covering vehicle safety

PARSONS WORKFORCE		On-site Yes/No	Tailgate Brief Yes/No
Parsons FTL - Nancy Heflin	Cell Phone: 303-960-8797	Yes	Yes
Parsons UXO Technician/SSHO - Rick White	Cell Phone: 506-8745940	Yes	Yes
Parsons Sampling Technician - Erich Stedman	Cell Phone: 678-595-8650	Yes	Yes
Parsons Field Team Member - Brian Barker	Cell Phone: 678-907-4281	Yes	Yes
VISITORS			

EQUIPMENT LIST:

Minelab, Schonstedt, Archer PDA with GPS and Arcpad, Rhinos.

ADDITIONAL INFORMATION:

When going to the approach into Zoni Lagoon, we ran into a representative from "Culebra Realty". He mentioned he has worked in this area (clearing land for buildings) for 13 years and has never found any munitions-related materials. He was referring to the developed hillside, south of Zoni Lagoon. He noted that the only access to the Lagoon was from the beach. QR was conducted on the beach and into the mangroves; however no GPS signal could be obtained due to the extensive tree canopy. There was some trash in the area but no munitions-related debris was observed. The sediment sample was taken over 25 feet into the lagoon in a water depth of ~3 feet. The Field Team met with an employee from the Mayor's office and was directed to the correct property that ROE had been granted for sample SS-05. The employee recommended returning in the late afternoon or evening to speak with the Mayor's brother who currently lives on the land so that he can point out the property boundaries.

The Team also collected CUL-11-SS-06-27 behind the school yard and collected CUL-10-SS-06-08 and conducted QR. QR was conducted and soil sample CUL-10-SS-06-07 was collected. Samples were sent out today. The Field Team spoke with FWS today. Teresa asked that the team avoid two areas on FWS land where an endangered species is present on "boulder fields". She stated that the boulder fields were covered in vegetation and could not be easily recognized; she pointed out the area on the maps. These areas were marked by the Field Team on field maps and will be avoided.

All other site details recorded in PDA/Logbook

ACTIVITIES SCHEDULED FOR NEXT WORK DAY:

Tomorrow the field team will conduct QR and collect samples on Culebrita or Luis Pena Cayo depending on weather conditions.

PARSONS INFRASTRUCTURE AND TECHNOLOGY GROUP, INC.

REQUEST FOR PROJECT ACTION:

ACCIDENTS REPORTED TODAY: 0
ACCIDENTS TO DATE: 0

Prepared By Field Team Leader: Nancy Heflin

DAILY CONTRACTOR QUALITY CONTROL REPORT

Contract Number: W912DY-04-D-0005
Delivery Order Number: 0008
Project Name: MMRP FUDS SI
Project Number: 744647-17000
Site Location: Culebra, PR
Date: 30-Oct-06

Activities Conducted:
QR and collected CUL-05-SE-06-01, CUL-11-SS-06-27, CUL-10-SS-06-07, and CUL-10-SS-06-08.

Work Planned for Tomorrow
QR and sampling on Culebrita or Luis Pena Cayo.

Field Instrument Measurements (list or provide attachment):

Water Sampling Location:	Temp (°C):	Cond (µS/cm)	Turb (NTU):	pH (s.u.):
N/A				

Comments: No water samples were collected today.

Equipment Calibrations (list or provide attachment)
N/A

List all field and quality control samples collected (list or provide attachment):

Sample ID	Media	Time	Analysis	Shipment Date	Lab	Comments
CUL-05-SE-06-01	Sediment	1126	Metals and Expl.	11/1/2006	STL	
CUL-11-SS-06-27	Soil	1429	Metals and Expl.	11/1/2006	STL	ambient sample
CUL-10-SS-06-07	Soil	1605	Metals and Expl.	11/1/2006	STL	
CUL-10-SS-06-08	Soil	1704	Metals and Expl.	11/1/2006	STL	

Comments: Please note that the Shipment Date is planned date and if shipment is not sent as planned a note will be found here to show correction. Samples will be sent from Puerto Rico on Wednesday.

Departures from approved SAP:

Samples have been held on ice for shipment on 11/1/06

Instructions given by government personnel:

Check all attachments:

____ Field sampling forms (in separate submittal)

____ Field-generated analytical results

____ Chain-of-custody forms (in separate submittal)

Signed by:

Name	Nancy Heflin, FTL	
Date:	30-Oct-06	
Phone	Mobile: 303-960-8797	Office#: 678-969-2362

Copies sent to:

Deborah Walker (MM CX)	Chris Cochrane (MM DC PM)
Heidi Novotny (HTRW CX)	Becky Terry (USAESCH)
Don Silkebakken (Parsons PM)	Teresa Carpenter (USAESCH)
Laura Kelley (Parsons DPM)	Jose Mendez (CESAJ PM)
Tammy Chang (Parsons)	

DAILY FIELD REPORT
MMRP SITE INSPECTION

CONTRACT NO.	W912DY-04-D-0005	**DELIVERY ORDER NO.**	0008
JOB NO:	744647-17000	**DATE/DAY:**	31-Oct-06
SITE NAME:	Culebra, PR	**REPORT NO:**	9
USACE DISTRICT:	CESAJ	**SHEET:**	1

WEATHER: Scattered showers midday and in the afternoon. Partly cloudy mid 80s most of the day.

WORK IN PROGRESS OR COMPLETED:

1. Mobilization/Demobilization

		PREVIOUS CUMULATIVE	CUMULATIVE
20	*Miles Driven*	235	255
0	*Number of Flights/Miles Flown*	4	4
0	*Personnel:*	4	4

2. Reconnaissance Details

18,001	*Linear Feet:*	150,876	168,877
0	*Linear Feet visual by boat*	28,821	28,821

Discussion -

3. MC Sampling Details

2	*Sediment Samples*	21
0	*Water Samples*	0

Sampling Notes: See Attached DQCR

4. QC Activities

0	*Sediment Samples*	4
0	*Water Samples*	0

5. QA Activities

0	*Sediment Samples*	2
0	*Water Samples*	0

6. Safety Activities

Rick White conducted safety brief covering vehicle safety

PARSONS WORKFORCE		On-site Yes/No	Tailgate Brief Yes/No
Parsons FTL - Nancy Heflin	Cell Phone: 303-960-8797	Yes	Yes
Parsons UXO Technician/SSHO - Rick White	Cell Phone: 506-8745940	Yes	Yes
Parsons Sampling Technician - Erich Stedman	Cell Phone: 678-595-8650	Yes	Yes
Parsons Field Team Member - Brian Barker	Cell Phone: 678-907-4281	Yes	Yes
VISITORS			

EQUIPMENT LIST:

Minelab, Schonstedt, Archer PDA with GPS and Arcpad, Rhinos.

ADDITIONAL INFORMATION:

Traveled by charter boat to Luis Pena Cayo as this was the first day seas were calm enough to visit this cayo. QR and MC samples collected as planned despite difficulties due to dense vegetation and adverse terrain. As a result no other activities were conducted today. Several spent 5-inch projectiles were identified during the QR activities.

All other site details recorded in PDA/Logbook

ACTIVITIES SCHEDULED FOR NEXT WORK DAY:

Continue QR and MC sampling on Culebra in accordance with information provided by Don Silkebakken and Laura Kelley following conference call on October 31 which included Tom Freeman of USACE St Louis District and CESAJ personnel (Jose Mendez, Charles Fales, Migdalia, and Robert Bridgers) as well as USAESCH Chris Cochrane. Parsons presented the status to date of the SI and the team agreed to the remaining QR and MC sampling revisions as proposed.

REQUEST FOR PROJECT ACTION:

ACCIDENTS REPORTED TODAY: 0
ACCIDENTS TO DATE: 0

Prepared By Field Team Leader: Nancy Heflin

DAILY CONTRACTOR QUALITY CONTROL REPORT

Contract Number: W912DY-04-D-0005
Delivery Order Number: 0008
Project Name: MMRP FUDS SI
Project Number: 744647-17000
Site Location: Culebra, PR
Date: 31-Oct-06

Activities Conducted:
QR and collected samples CUL-13-SS-06-01 and CUL-13-SS-06-02

Work Planned for Tomorrow
QR and sampling on Culebrit or Luis Pena Cayo depending on weather conditions

Field Instrument Measurements (list or provide attachment):

Water Sampling Location:	Temp (°C):	Cond (µS/cm)	Turb (NTU):	pH (s.u.):
N/A				

Comments: No water samples were collected today.

Equipment Calibrations (list or provide attachment)
N/A

List all field and quality control samples collected (list or provide attachment):

Sample ID	Media	Time	Analysis	Shipment Date	Lab	Comments
CUL-13-SS-06-01	Soil	1154	Metals and Expl.	11/1/2006	STL	
CUL-13-SS-06-02	Soil	1420	Metals and Expl.	11/1/2006	STL	

Comments: Please note that the Shipment Date is planned date and if shipment is not sent as planned a note will be found here to show correction. Samples will be sent from Puerto Rico on Wednesday.

Departures from approved SAP:

Samples will be held on ice for shipment on 11/1/06

Instructions given by government personnel:

Check all attachments:

	Field sampling forms (in separate submittal)
	Field-generated analytical results
	Chain-of-custody forms (in separate submittal)

Signed by:

Name	Nancy Heflin, FTL	
Date:	31-Oct-06	
Phone	Mobile: 303-960-8797	Office#: 678-969-2362

Copies sent to:

Deborah Walker (MM CX)	Chris Cochrane (MM DC PM)
Heidi Novotny (HTRW CX)	Becky Terry (USAESCH)
Don Silkebakken (Parsons PM)	Teresa Carpenter (USAESCH)
Laura Kelley (Parsons DPM)	Jose Mendez (CESAJ PM)
Tammy Chang (Parsons)	

PARSONS INFRASTRUCTURE AND TECHNOLOGY GROUP, INC.

DAILY FIELD REPORT
MMRP SITE INSPECTION

CONTRACT NO.	W912DY-04-D-0005	**DELIVERY ORDER NO.**	0008
JOB NO:	744647-17000	**DATE/DAY:**	1-Nov-06
SITE NAME:	Culebra, PR	**REPORT NO:**	9
USACE DISTRICT:	CESAJ	**SHEET:**	1

WEATHER: Scattered showers mid day and in the afternoon. Partly cloudy Mid 80s most of the day.

WORK IN PROGRESS OR COMPLETED:

1. Mobilization/Demobilization

		PREVIOUS CUMULATIVE		CUMULATIVE
20	*Miles Driven*	255		275
0	*Number of Flights/Miles Flown*	4		4
0	*Personnel:*	4		4

2. Reconnaissance Details

23,719	*Linear Feet:*	168,877		192,596
0	*Linear Feet visual by boat*	28,821		28,821

Discussion -

3. MC Sampling Details

4	*Sediment and Soil Samples*	25
0	*Water Samples*	0

Sampling Notes: See Attached DQCR

4. QC Activities

0	*Sediment and Soil Samples*	4
0	*Water Samples*	0

5. QA Activities

0	*Sediment and Soil Samples*	2
0	*Water Samples*	0

6. Safety Activities

Rick White conducted safety brief.

PARSONS WORKFORCE		On-site Yes/No	Tailgate Brief Yes/No
Parsons FTL - Nancy Heflin	Cell Phone: 303-960-8797	Yes	Yes
Parsons UXO Technician/SSHO - Rick White	Cell Phone: 506-8745940	Yes	Yes
Parsons Sampling Technician - Erich Stedman	Cell Phone: 678-595-8650	No	No
Parsons Field Team Member - Brian Barker	Cell Phone: 678-907-4281	Yes	Yes
VISITORS			

EQUIPMENT LIST:

Minelab, Schonstedt, Archer PDA with GPS and Arcpad, Rhinos.

ADDITIONAL INFORMATION:

Culebrita was visited today. Vegetation and Terrain were very difficult. The team had to leave the island at 3:30 due to bad weather and rough seas. The team collected 4 samples and conducted some QR. The team will go back to Culebrita tomorrow to complete SI activities.

All other site details recorded in PDA/Logbook

ACTIVITIES SCHEDULED FOR NEXT WORK DAY:

Tomorrow the field team will conduct QR and collect the remainder of the samples on Culebrita and attempt to visit the cays on the west side of Culebra.

REQUEST FOR PROJECT ACTION:

ACCIDENTS REPORTED TODAY: 0
ACCIDENTS TO DATE: 0

Prepared By Field Team Leader: Nancy Heflin

DAILY CONTRACTOR QUALITY CONTROL REPORT

Contract Number: W912DY-04-D-0005
Delivery Order Number: 0008
Project Name: MMRP FUDS SI
Project Number: 744647-17000
Site Location: Culebra, PR
Date: 1-Nov-06

Activities Conducted:

QR on Culebrita and down road and beach near CUL-11-SS-06-04 and CUL-11-SS-06-05. Collected CUL-07-SS-06-26, CUL 07-SS-06-22, CUL-11-SS-06-04 and CUL-11-SS-06-05. Field team was unable to complete work on Culebrita and had to return due to weather and rough seas. Sample CUL-11-SS-06-05 was collected off of the beach - at the closest accessible point to the original location.

Work Planned for Tomorrow

QR and sampling on the remainder of Culebrita.

Field Instrument Measurements (list or provide attachment):

Water Sampling Location:	Temp (°C):	Cond (µS/cm)	Turb (NTU):	pH (s.u.):
N/A				

Comments: No water samples were collected today.

Equipment Calibrations (list or provide attachment)

N/A

List all field and quality control samples collected (list or provide attachment):

Sample ID	Media	Time	Analysis	Shipment Date	Lab	Comments
CUL-07-SS-06-26	Soil	1011	Metals and Expl.	11/3/2006	STL	
CUL-07-SS-06-22	Soil	1325	Metals and Expl.	11/3/2006	STL	ambient sample
CUL-11-SS-06-04	Soil	1604	Metals and Expl.	11/3/2006	STL	
CUL-11-SS-06-05	Soil	1658	Metals and Expl.	11/3/2006	STL	

Comments: Please note that the Shipment Date is planned date and if shipment is not sent as planned a note will be found here to show correction. Samples will be sent from Puerto Rico on Friday.

Departures from approved SAP:

Samples will be held on ice for shipment on 11/3/06

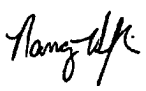
Instructions given by government personnel:

Check all attachments:

_____ Field sampling forms (in separate submittal)

_____ Field-generated analytical results

_____ Chain-of-custody forms (in separate submittal)

Signed by: 

Name	Nancy Heflin, FTL	
Date:	1-Nov-06	
Phone	Mobile: 303-960-8797	Office#: 678-969-2362

Copies sent to:

Deborah Walker (MM CX)	Chris Cochrane (MM DC PM)
Heidi Novotny (HTRW CX)	Becky Terry (USAESCH)
Don Silkebakken (Parsons PM)	Teresa Carpenter (USAESCH)
Laura Kelley (Parsons DPM)	Jose Mendez (CESAJ PM)
Tammy Chang (Parsons)	

PARSONS INFRASTRUCTURE AND TECHNOLOGY GROUP, INC.

DAILY FIELD REPORT
MMRP SITE INSPECTION

CONTRACT NO.	W912DY-04-D-0005	**DELIVERY ORDER NO.**	0008
JOB NO:	744647-17000	**DATE/DAY:**	2-Nov-06
SITE NAME:	Culebra, PR	**REPORT NO:**	11
USACE DISTRICT:	CESAJ	**SHEET:**	1

WEATHER: Scattered showers mid day and in the afternoon. Partly cloudy Mid 80s most of the day.

WORK IN PROGRESS OR COMPLETED:

1. Mobilization/Demobilization

		PREVIOUS CUMULATIVE		CUMULATIVE
25	*Miles Driven*	275		300
0	*Number of Flights/Miles Flown*	4		4
0	*Personnel:*	4		4

2. Reconnaissance Details

10,604	*Linear Feet:*	192,596		203,200
17,377	*Linear Feet visual by boat*	28,821		46,198

Discussion -

3. MC Sampling Details

2	*Sediment and Soil Samples*	27
0	*Water Samples*	0

Sampling Notes: See Attached DQCR

4. QC Activities

3	*Sediment and Soil Samples*	7
0	*Water Samples*	0

Sampling Notes: See Attached DQCR

5. QA Activities

1	*Sediment and Soil Samples*	3
0	*Water Samples*	0

6. Safety Activities

Rick White conducted safety brief covering boat safety and trips and falls

PARSONS WORKFORCE		On-site Yes/No	Tailgate Brief Yes/No
Parsons FTL - Nancy Heflin	Cell Phone: 303-960-8797	Yes	Yes
Parsons UXO Technician/SSHO - Rick White	Cell Phone: 506-8745940	Yes	Yes
Parsons Sampling Technician - Erich Stedman	Cell Phone: 678-595-8650	Yes	Yes
Parsons Field Team Member - Brian Barker	Cell Phone: 678-907-4281	Yes	Yes
VISITORS			

EQUIPMENT LIST:

Minelab, Schonstedt, Archer PDA with GPS and Arcpad, Rhinos.

ADDITIONAL INFORMATION:

The keys of Lobito, Monocay, the two keys off of Watercay were covered by boat QR. These islands were inaccessible by foot due to no safe approach because of cliffs and very rocky shores. The island of Watercay was visited and many MK 76 practice bombs were observed. The field team returned to Culebrita where soil sample CUL-07-SS-06-25 and sediment sample CUL-07-SE-06-02 were collected. Dense vegetation and water depth prevented the collection of sediment sample #2 from the proposed location. It was collected from the same lagoon as the proposed sample, but from a more accessible location. QR was performed on the northwest peninsula of Culebrita.

All other site details recorded in PDA/Logbook

ACTIVITIES SCHEDULED FOR NEXT WORK DAY:

Tomorrow the field team will collect soil samples CUL-11-SS-06-03, CUL-11-SS-06-06, CUL-14-SS-06-13, and CUL-05-SS-06-14 and additional QR will be performed. Samples will be shipped to the lab.

REQUEST FOR PROJECT ACTION:

ACCIDENTS REPORTED TODAY: 0
ACCIDENTS TO DATE: 0

Prepared By Field Team Leader: Nancy Heflin

DAILY CONTRACTOR QUALITY CONTROL REPORT

Contract Number: W912DY-04-D-0005
Delivery Order Number: 0008
Project Name: MMRP FUDS SI
Project Number: 744647-17000
Site Location: Culebra, PR
Date: 2-Nov-06

Activities Conducted:

The keys of Lobito, Monocay, the two keys off of Watercay were covered by boat QR. These islands were inaccessible by foo due to no safe approach because of cliffs and very rocky shores. The island of Watercay was visited and many MK 76 practice bombs were observed. The field team returned to Culebrita where soil sample CUL-07-SS-06-25 and sediment sample CUL-07-SE-06-02 were collected. Dense vegetation and water depth prevented the collection of sediment sample CUL-07-SE-06-02 from the proposed location. It was collected from the same lagoon as the proposed sample, but in a more accessible location. QR was performed on the northwest peninsula of Culebrita.

Work Planned for Tomorrow

Tomorrow the field team will collect soil samples CUL-11-SS-06-03, CUL-11-SS-06-06, CUL-14-SS-06-13, and CUL-05-SS-06-14 and additional QR will be performed. Samples will be shipped to the laboratories.

Field Instrument Measurements (list or provide attachment):

Water Sampling Location:	Temp (°C):	Cond (µS/cm)	Turb (NTU):	pH (s.u.):
N/A				

Comments: No water samples were collected today.

Equipment Calibrations (list or provide attachment)

N/A

List all field and quality control samples collected (list or provide attachment):

Sample ID	Media	Time	Analysis	Shipment Date	Lab	Comments
CUL-07-SE-06-02	Sediment	1124	Metals and Expl.	11/3/2006	STL	
CUL-07-SS-06-25	Soil	1210	Metals and Expl.	11/3/2006	STL	MS/MSD
CUL-07-SS-06-25-QA	Soil	1210	Metals and Expl.	11/3/2006	GPL	QA split sample
CUL-07-SS-06-32	Soil	1604	Metals and Expl.	11/3/2006	STL	FD of CUL-07-SS-06-25

Comments: Please note that the Shipment Date is planned date and if shipment is not sent as planned a note will be found here to show correction. Samples will be sent from Puerto Rico on Friday.

Departures from approved SAP:

Samples will be held on ice for shipment on 11/3/06

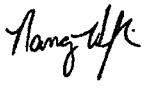
Instructions given by government personnel:

Check all attachments:

____ Field sampling forms (in separate submittal)

____ Field-generated analytical results

____ Chain-of-custody forms (in separate submittal)

Signed by: 

Name	Nancy Heflin, FTL	
Date:	2-Nov-06	
Phone	Mobile: 303-960-8797	Office#: 678-969-2362
Copies sent to:		
	Deborah Walker (MM CX)	Chris Cochrane (MM DC PM)
	Heidi Novotny (HTRW CX)	Becky Terry (USAESCH)
	Don Silkebakken (Parsons PM)	Teresa Carpenter (USAESCH)
	Laura Kelley (Parsons DPM)	Jose Mendez (CESAJ PM)
	Tammy Chang (Parsons)	

PARSONS INFRASTRUCTURE AND TECHNOLOGY GROUP, INC.

DAILY FIELD REPORT
MMRP SITE INSPECTION

CONTRACT NO.	**W912DY-04-D-0005**	**DELIVERY ORDER NO.**	**0008**
JOB NO:	744647-17000	**DATE/DAY:**	3-Nov-06
SITE NAME:	Culebra, PR	**REPORT NO:**	12
USACE DISTRICT:	CESAJ	**SHEET:**	1
WEATHER:	High 80s to low 90s, Sunny and Humid		

WORK IN PROGRESS OR COMPLETED:

1. Mobilization/Demobilization

		PREVIOUS CUMULATIVE		CUMULATIVE
30	*Miles Driven*	300		330
0	*Number of Flights/Miles Flown*	4		4
0	*Personnel:*	4		4

2. Reconnaissance Acreage

13,662	*Linear Feet:*	203,200		216,862
0	*Linear Feet visual by boat*	46,198		46,198

Discussion -

3. MC Sampling Details

4	*Sediment and Soil Samples*	31
0	*Water Samples*	0

Sampling Notes: See Attached DQCR

4. QC Activities

0	*Sediment and Soil Samples*	7
0	*Water Samples*	0

5. QA Activities

0	*Sediment and Soil Samples*	3
0	*Water Samples*	0

6. Safety Activities

Rick White conducted safety brief covering sun protection and eye protection.

PARSONS WORKFORCE		On-site Yes/No	Tailgate Brief Yes/No
Parsons FTL - Nancy Heflin	Cell Phone: 303-960-8797	Yes	Yes
Parsons UXO Technician/SSHO - Rick White	Cell Phone: 506-8745940	Yes	Yes
Parsons Sampling Technician - Erich Stedman	Cell Phone: 678-595-8650	Yes	Yes
Parsons Field Team Member - Brian Barker	Cell Phone: 678-907-4281	Yes	Yes
VISITORS			

EQUIPMENT LIST:

Minelab, Schonstedt, Archer PDA with GPS and Arcpad, Rhinos.

ADDITIONAL INFORMATION:

Samples shipped to the lab. QR was conducted enroute to CUL-05-SS-06-12 in the morning. The terrain was very steep and the vegetation was difficult. Large boulders with deep gaps between made travel difficult. QR was then conducted near CUL-05-SS-06-14 and sample was collected. The field team collected CUL-14-SS-06-13 and CUL-11-SS-06-06 in the afternoon, as well as conducted more QR between CUL-06-SS-06-21 and CUL-06-SS-06-20.

All other site details recorded in PDA/Logbook

ACTIVITIES SCHEDULED FOR NEXT WORK DAY:

Field team will conduct QR in the vicinity of sample CUL-11-SS-06-03 and collect referenced sample. Additional QR will be done on any remaining lands on Culebra, leaving the FWS on the north side of the Island for Sunday and Monday.

REQUEST FOR PROJECT ACTION:

ACCIDENTS REPORTED TODAY: 0
ACCIDENTS TO DATE: 0

Prepared By Field Team Leader: Nancy Heflin

DAILY CONTRACTOR QUALITY CONTROL REPORT

Contract Number: W912DY-04-D-0005
Delivery Order Number: 0008
Project Name: MMRP FUDS SI
Project Number: 744647-17000
Site Location: Culebra, PR
Date: 3-Nov-06

Activities Conducted:
QR and collected samples CUL-05-SS-06-12, CUL-05-SS-06-14, CUL-14-SS-06-13, and CUL-11-SS-06-06.

Work Planned for Tomorrow
Conduct QR and collect CUL-11-SS-06-03.

Field Instrument Measurements (list or provide attachment):

Water Sampling Location:	Temp (°C):	Cond (µS/cm)	Turb (NTU):	pH (s.u.):
N/A				

Comments: No water samples were collected today.

Equipment Calibrations (list or provide attachment)
N/A

List all field and quality control samples collected (list or provide attachment):

Sample ID	Media	Time	Analysis	Shipment Date	Lab	Comments
CUL-05-SS-06-12	Soil	1002	Metals and Expl.	11/7/2006	STL	
CUL-05-SS-06-14	Soil	1219	Metals and Expl.	11/7/2006	STL	
CUL-14-SS-06-13	Soil	1520	Metals and Expl.	11/7/2006	STL	
CUL-11-SS-06-06	Soil	1604	Metals and Expl.	11/7/2006	STL	

Comments: Please note that the Shipment Date is planned date and if shipment is not sent as planned a note will be found here to show correction. Samples will be sent from San Juan on Tuesday when Rick and Nancy leave.

Departures from approved SAP:

Samples will be held on ice for shipment on 11/7/06

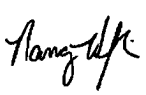
Instructions given by government personnel:

Check all attachments:

_____ Field sampling forms (in separate submittal)

_____ Field-generated analytical results

_____ Chain-of-custody forms (in separate submittal)

Signed by: 

Name	Nancy Heflin, FTL	
Date:	3-Nov-06	
Phone	Mobile: 303-960-8797	Office#: 678-969-2362
Copies sent to:		
	Deborah Walker (MM CX)	Chris Cochrane (MM DC PM)
	Heidi Novotny (HTRW CX)	Becky Terry (USAESCH)
	Don Silkebakken (Parsons PM)	Teresa Carpenter (USAESCH)
	Laura Kelley (Parsons DPM)	Jose Mendez (CESAJ PM)
	Tammy Chang (Parsons)	

DAILY FIELD REPORT
MMRP SITE INSPECTION

CONTRACT NO.	W912DY-04-D-0005	**DELIVERY ORDER NO.**	0008
JOB NO:	744647-17000	**DATE/DAY:**	4-Nov-06
SITE NAME:	Culebra, PR	**REPORT NO:**	13
USACE DISTRICT:	CESAJ	**SHEET:**	1
WEATHER:	High 80s to low 90s, Sunny and Humid		

WORK IN PROGRESS OR COMPLETED:

1. Mobilization/Demobilization

		PREVIOUS CUMULATIVE	CUMULATIVE
40	*Miles Driven*	330	370
0	*Number of Flights/Miles Flown*	4	4
0	*Personnel:*	4	4

2. Reconnaissance Details

15,991	*Linear Feet:*	216,862	232,853
0	*Linear Feet visual by boat*	46,198	46,198

Discussion -

3. MC Sampling Details

1	*Sediment and Soil Samples*	32
0	*Water Samples*	0

Sampling Notes: See Attached DQCR

4. QC Activities

0	*Sediment and Soil Samples*	7
0	*Water Samples*	0

5. QA Activities

0	*Sediment and Soil Samples*	3
0	*Water Samples*	0

6. Safety Activities

Rick White conducted safety brief covering hazard communication and hydration.

PARSONS WORKFORCE		On-site Yes/No	Tailgate Brief Yes/No
Parsons FTL - Nancy Heflin	Cell Phone: 303-960-8797	Yes	Yes
Parsons UXO Technician/SSHO - Rick White	Cell Phone: 506-8745940	Yes	Yes
Parsons Sampling Technician - Erich Stedman	Cell Phone: 678-595-8650	Yes	Yes
Parsons Field Team Member - Brian Barker	Cell Phone: 678-907-4281	Yes	Yes
VISITORS			

EQUIPMENT LIST:

Minelab, Schonstedt, Archer PDA with GPS and Arcpad, Rhinos.

ADDITIONAL INFORMATION:

QR was conducted in the morning near CUL-11-SS-06-03 and sample was collected. QR conducted in Areas 11, 10, and 9. Sampling personnel prepared to demob tomorrow. The remaining team members will stay for two additional days of QR only.

All other site details recorded in PDA/Logbook

ACTIVITIES SCHEDULED FOR NEXT WORK DAY:

Brian and Erich will demobilize tomorrow. The remaining team members will conduct QR on the north side of Culebra near Resaca Beach and Brava Beach.

REQUEST FOR PROJECT ACTION:

ACCIDENTS REPORTED TODAY: 0
ACCIDENTS TO DATE: 0

Prepared By Field Team Leader: Nancy Heflin

DAILY CONTRACTOR QUALITY CONTROL REPORT

Contract Number: W912DY-04-D-0005
Delivery Order Number: 0008
Project Name: MMRP FUDS SI
Project Number: 744647-17000
Site Location: Culebra, PR
Date: 4-Nov-06

Activities Conducted:
QR in areas 11, 10, and 9 and collected soil sample CUL-11-SS-06-03.

Work Planned for Tomorrow
QR in areas of Resaca and Brava Beaches, also along footpath to beach.

Field Instrument Measurements (list or provide attachment):

Water Sampling Location:	Temp (°C):	Cond (µS/cm)	Turb (NTU):	pH (s.u.):
N/A				

Comments: No water samples were collected today.

Equipment Calibrations (list or provide attachment)
N/A

List all field and quality control samples collected (list or provide attachment):

Sample ID	Media	Time	Analysis	Shipment Date	Lab	Comments
CUL-11-SS-06-03	Soil	0854	Metals and Expl.	11/7/2006	STL	

Comments: Please note that the Shipment Date is planned date and if shipment is not sent as planned a note will be found here to show correction.

Departures from approved SAP:

Sample will be held on ice for shipment on 11/7/06

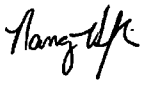
Instructions given by government personnel:

Check all attachments:

____ Field sampling forms (in separate submittal)

____ Field-generated analytical results

____ Chain-of-custody forms (in separate submittal)

Signed by: 

Name	Nancy Heflin, FTL	
Date:	4-Nov-06	
Phone	Mobile: 303-960-8797	Office#: 678-969-2362
Copies sent to:		
	Deborah Walker (MM CX)	Chris Cochrane (MM DC PM)
	Heidi Novotny (HTRW CX)	Becky Terry (USAESCH)
	Don Silkebakken (Parsons PM)	Teresa Carpenter (USAESCH)
	Laura Kelley (Parsons DPM)	Jose Mendez (CESAJ PM)
	Tammy Chang (Parsons)	

DAILY FIELD REPORT
MMRP SITE INSPECTION

CONTRACT NO.	W912DY-04-D-0005	**DELIVERY ORDER NO.**	0008
JOB NO:	744647-17000	**DATE/DAY:**	5-Nov-06
SITE NAME:	Culebra, PR	**REPORT NO:**	14
USACE DISTRICT:	CESAJ	**SHEET:**	1

WEATHER: High 80s, Sunny with some clouds in the afternoon.

WORK IN PROGRESS OR COMPLETED:

1. Mobilization/Demobilization

		PREVIOUS CUMULATIVE		CUMULATIVE
100	*Miles Driven*	370		470
2	*Number of Flights/Miles Flown*	4		6
2	*Personnel: 2 team members demob, 2 remain for 2 days of QR only*	4		4

2. Reconnaissance Details

20,220	*Linear Feet:*	232,853		253,073
0	*Linear Feet visual by boat*	46,198		46,198

Discussion -

3. MC Sampling Details

0	*Sediment and Soil Samples*	32
0	*Water Samples*	0

4. QC Activities

0	*Sediment and Soil Samples*	7
0	*Water Samples*	0

5. QA Activities

0	*Sediment and Soil Samples*	3
0	*Water Samples*	0

6. Safety Activities

Rick White conducted safety brief covering slips and falls, hydration, and sun protection.

PARSONS WORKFORCE		On-site Yes/No	Tailgate Brief Yes/No
Parsons FTL - Nancy Heflin	Cell Phone: 303-960-8797	Yes	Yes
Parsons UXO Technician/SSHO - Rick White	Cell Phone: 506-8745940	Yes	Yes
Parsons Sampling Technician - Erich Stedman	Cell Phone: 678-595-8650	No	No
Parsons Field Team Member - Brian Barker	Cell Phone: 678-907-4281	No	No
VISITORS			

EQUIPMENT LIST:

Minelab, Schonstedt, Archer PDA with GPS and Arcpad, Rhinos.

ADDITIONAL INFORMATION:

QR was conducted on the path to the beach and on Resaca and Brava Beaches. Brian and Erich demobilized back to Atlanta.

All other site details recorded in PDA/Logbook

ACTIVITIES SCHEDULED FOR NEXT WORK DAY:

The field team will conduct additional QR around Brava Beach and along Flamenco Beach where QR was not collected previously. The field team will try to fill in any data gaps in QR in accessible areas. The field team will also inventory all gear in preparation of demob.

REQUEST FOR PROJECT ACTION:

ACCIDENTS REPORTED TODAY: 0
ACCIDENTS TO DATE: 0

Prepared By Field Team Leader: Nancy Heflin

DAILY CONTRACTOR QUALITY CONTROL REPORT

Contract Number: W912DY-04-D-0005
Delivery Order Number: 0008
Project Name: MMRP FUDS SI
Project Number: 744647-17000
Site Location: Culebra, PR
Date: 5-Nov-06

Activities Conducted:
QR on Resaca and Brava Beaches.

Work Planned for Tomorrow
The field team will conduct additional QR around Brava Beach and along Flamenco Beach where QR was not collected previously. The field team will try to fill in any data gaps in QR in accessible areas.

Field Instrument Measurements (list or provide attachment):

Water Sampling Location:	Temp (°C):	Cond (µS/cm)	Turb (NTU):	pH (s.u.):
N/A				

Comments: No water samples were collected today.

Equipment Calibrations (list or provide attachment)
N/A

List all field and quality control samples collected (list or provide attachment):

Sample ID	Media	Time	Analysis	Shipment Date	Lab	Comments
NA						

Comments: Ice was added to the cooler with samples collected on Friday and Saturday. Final shipment will be sent on 11/7/2006.

Departures from approved SAP:

Samples have been maintained on ice for shipment on 11/7/06

Instructions given by government personnel:

Check all attachments:

_____ Field sampling forms (in separate submittal)

_____ Field-generated analytical results

_____ Chain-of-custody forms (in separate submittal)

Signed by:

Name	Nancy Heflin, FTL	
Date:	5-Nov-06	
Phone	Mobile: 303-960-8797	Office#: 678-969-2362

Copies sent to:

Deborah Walker (MM CX)	Chris Cochrane (MM DC PM)
Heidi Novotny (HTRW CX)	Becky Terry (USAESCH)
Don Silkebakken (Parsons PM)	Teresa Carpenter (USAESCH)
Laura Kelley (Parsons DPM)	Jose Mendez (CESAJ PM)
Tammy Chang (Parsons)	

PARSONS INFRASTRUCTURE AND TECHNOLOGY GROUP, INC.

DAILY FIELD REPORT
MMRP SITE INSPECTION

CONTRACT NO.	W912DY-04-D-0005	**DELIVERY ORDER NO.**	0008
JOB NO:	744647-17000	**DATE/DAY:**	6-Nov-06
SITE NAME:	Culebra, PR	**REPORT NO:**	15
USACE DISTRICT:	CESAJ	**SHEET:**	1
WEATHER:	High 80s, Partly Cloudy		

WORK IN PROGRESS OR COMPLETED:

1. Mobilization/Demobilization

		PREVIOUS CUMULATIVE		CUMULATIVE
40	*Miles Driven*	470		510
0	*Number of Flights/Miles Flown*	6		6
0	*Personnel:*	2		2

2. Reconnaissance Details

16,780	*Linear Feet:*	253,073		269,853
0	*Linear Feet visual by boat*	46,198		46,198

Discussion -

3. MC Sampling Details

0	*Sediment and Soil Samples*	32
0	*Water Samples*	0

4. QC Activities

0	*Sediment and Soil Samples*	7
0	*Water Samples*	0

5. QA Activities

0	*Sediment and Soil Samples*	3
0	*Water Samples*	0

6. Safety Activities

Rick White conducted safety brief covering insect bites and stings.

PARSONS WORKFORCE		On-site Yes/No	Tailgate Brief Yes/No
Parsons FTL - Nancy Heflin	Cell Phone: 303-960-8797	Yes	Yes
Parsons UXO Technician/SSHO - Rick White	Cell Phone: 506-8745940	Yes	Yes
Parsons Sampling Technician - Erich Stedman	Cell Phone: 678-595-8650	No	No
Parsons Field Team Member - Brian Barker	Cell Phone: 678-907-4281	No	No
VISITORS			

EQUIPMENT LIST:

Minelab, Schonstedt, Archer PDA with GPS and Arcpad, Rhinos.

ADDITIONAL INFORMATION:

QR was conducted on a road near area 06, 05, and 04, along the path to Brava Beach and along portions of Flamenco Beach not previously covered.

All other site details recorded in PDA/Logbook

ACTIVITIES SCHEDULED FOR NEXT WORK DAY:

Nancy and Rick will demobilize on Tuesday Nov 7th.

REQUEST FOR PROJECT ACTION:

ACCIDENTS REPORTED TODAY: 0
ACCIDENTS TO DATE: 0

Prepared By Field Team Leader: Nancy Heflin

Check all attachments:

Field sampling forms (in separate submittal)

Field-generated analytical results

Chain-of-custody forms (in separate submittal)

Signed by:

Name	Nancy Heflin, FTL	
Date:	6-Nov-06	
Phone	Mobile: 303-960-8797	Office#: 678-969-2362
Copies sent to:		
	Deborah Walker (MM CX)	Chris Cochrane (MM DC PM)
	Heidi Novotny (HTRW CX)	Becky Terry (USAESCH)
	Don Silkebakken (Parsons PM)	Teresa Carpenter (USAESCH)
	Laura Kelley (Parsons DPM)	Jose Mendez (CESAJ PM)
	Tammy Chang (Parsons)	

APPENDIX E

PHOTOGRAPH DOCUMENTATION

Field Team Leader's Site Observations

Monday, October 23, 2006

Time	*Team Leader*	*Property ID*	Culebra
12:53:00 PM	Nancy Heflin	Latitude:	18.3181593338897
		Longitude:	-65.317633

Observation Entry: 1

Barrier:		***SoilColor:***	
Vegetation:		***Topography:***	
Drainage:		***SurfaceDebris:***	None
Road:		***SubSurfaceMetalDetect:***	None
SoilType:		***MECMD:***	None

Field Team parked along road at DNR sign for Beach access near the center of Firewood Bay. The Team conducted QR in MRS 11 along Firewood Bay and north to Stream point. From Stream Point they continued along the trail east toward Flamenco Beach.

Time	*Team Leader*	*Property ID*	Culebra
12:57:00 PM	Nancy Heflin	Latitude:	18.3181250005636
		Longitude:	-65.3176766666667

Observation Entry: 2

Barrier:	None	***SoilColor:***	White
Vegetation:	Dense Trees	***Topography:***	Flat
Drainage:	Ocean	***SurfaceDebris:***	None
Road:		***SubSurfaceMetalDetect:***	None
SoilType:	Sand	***MECMD:***	None

Concrete structure visible in the brush just off of the beach. No surface debris observed.

Time	Team Leader	Property ID	Culebra
1:17:00 PM	Nancy Heflin		

Latitude: 18.318935333897
Longitude: -65.3225931666667

Observation Entry: 3

Barrier:	Complete	SoilColor:	Tan
Vegetation:	Light Brush	Topography:	Steep Slope
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Rocky	MECMD:	None

Short rocky beach with cliffs backing up to the ocean. No debris observed.

Time	Team Leader	Property ID	Culebra
1:40:00 PM	Nancy Heflin		

Latitude: 18.3225060005637
Longitude: -65.324735

Observation Entry: 4

Barrier:	Partial	SoilColor:	White
Vegetation:	Dense Trees	Topography:	Flat
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Sand	MECMD:	None

Collapsed concrete structure. No debris observed.

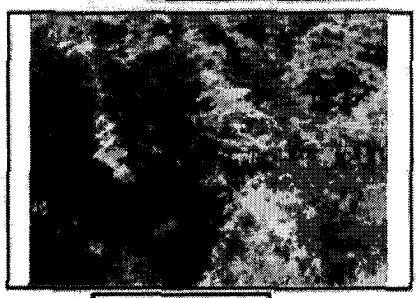
Time	Team Leader	Property ID	Culebra
2:11:00 PM	Nancy Heflin		

Latitude: 18.3252555005638
Longitude: -65.3284491666667

Observation Entry: 5

Barrier:		**SoilColor:**	Tan
Vegetation:	Heavy Brush	**Topography:**	Steep Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Game Trail	**SubSurfaceMetalDetect:**	None
SoilType:	Rocky	**MECMD:**	None

No debris observed. Very dense vegetation off of trail.



Time	Team Leader	Property ID	Culebra
4:56:00 PM	Nancy Heflin		

Latitude: 18.3084258338967
Longitude: -65.283888

Observation Entry: 6

Barrier:	Partial	**SoilColor:**	Tan
Vegetation:	Grasses	**Topography:**	Flat
Drainage:	None	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:	Sand	**MECMD:**	None

QR was conducted in MRS14 near the location of Lower Town. Foundation of concrete structure. No debris observed.

Time	Team Leader	Property ID	Culebra
5:08:43 PM	Nancy Heflin		

Latitude: 18.3096508338967
Longitude: -65.2824998333333

Observation Entry: 7

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	
Road:		SubSurfaceMetalDetect:	
SoilType:		MECMD:	

Collected SS-16 SS-16 collected in woods near lowertown.

Tuesday, October 24, 2006

Time	Team Leader	Property ID	Culebra
9:51:19 AM	Nancy Heflin		

Latitude: 18.3005750005632
Longitude: -65.2711458333334

Observation Entry: 8

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	
Road:		SubSurfaceMetalDetect:	
SoilType:		MECMD:	

Collected SS-19 Recent burn in this area.

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry:
10:04:00 AM	Nancy Heflin	Culebra	18.3009335005632	-65.2703326666667	9

Barrier:	Partial	SoilColor:	Brown	QR was conducted on the property surrounding SS 19 where ROE had been granted. The noxious plant pointed out by Teresa at FWS that causes a worse reaction on the skin than machaneel. Looks like small holly leaves lined up like a fern.
Vegetation:	Heavy Brush	Topography:	Gentle Slope	
Drainage:	None	SurfaceDebris:	None	
Road:		SubSurfaceMetalDetect:	None	
SoilType:	clay	MECMD:	None	

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry:
10:13:00 AM	Nancy Heflin	Culebra	18.3005275005631	-65.270238	10

Barrier:	Partial	SoilColor:	Brown	Gate on road. No debris observed. Very dense vegetation.
Vegetation:	Heavy Brush	Topography:	Gentle Slope	
Drainage:	None	SurfaceDebris:	None	
Road:	Unimproved	SubSurfaceMetalDetect:	None	
SoilType:	Loam	MECMD:	None	

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
10:18:00 AM	Nancy Heflin	Culebra	18.3000431672298	-65.270416	11

Barrier:	Partial	SoilColor:	Brown
Vegetation:	Heavy Brush	Topography:	Gentle Slope
Drainage:	Intermittent	SurfaceDebris:	None
Road:	Unimproved to access plu	SubSurfaceMetalDetect:	None
SoilType:	Loam	MECMD:	None

Could not continue south due to vegetation. Heavy trees and thorny underbrush. Access is not possible. No debris observed.

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
11:14:17 AM	Nancy Heflin	Culebra	18.2910326672296	-65.262537	12

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	
Road:		SubSurfaceMetalDetect:	
SoilType:		MECMD:	

Collected SS-21

Time	Team Leader	Property ID	Culebra
11:28:00 AM	Nancy Heflin		

Latitude: 18.2914031672296
Longitude: -65.2624995

Observation Entry: 13

Barrier:	Partial	**SoilColor:**	Brown
Vegetation:	Dense Trees	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Trail	**SubSurfaceMetalDetect:**	None
SoilType:	Mixed	**MECMD:**	None

Field Team conducted QR in MRA 06 on the property were ROE was granted to collect SS 21.
No debris observed.

Time	Team Leader	Property ID	Culebra
11:55:00 AM	Nancy Heflin		

Latitude: 18.2906660005629
Longitude: -65.2634908333333

Observation Entry: 14

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Steep Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Trail	**SubSurfaceMetalDetect:**	None
SoilType:	Loam	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
1:43:00 PM	Nancy Heflin	Culebra	18.2843148338961	-65.2834346666667	15

Barrier:	None	SoilColor:	Brown
Vegetation:	Mixed Trees and Brush	Topography:	Steep Slope
Drainage:	None	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None

QR was conducted in MRA 09 along the bay north of Soldado Pt. and in Sueno Cove to the east near SS 10

No debris observed.

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
1:46:00 PM	Nancy Heflin	Culebra	18.2839961672294	-65.2832998333333	16

Barrier:	None	SoilColor:	Brown
Vegetation:	Mixed Trees and Brush	Topography:	Steep Slope
Drainage:	None	SurfaceDebris:	None
Road:	Unimproved	SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None

cliff

Time	Team Leader	Property ID	Culebra
1:52:00 PM	Nancy Heflin		

Latitude: 18.2845676672294
Longitude: -65.2841328333333

Observation Entry: 17

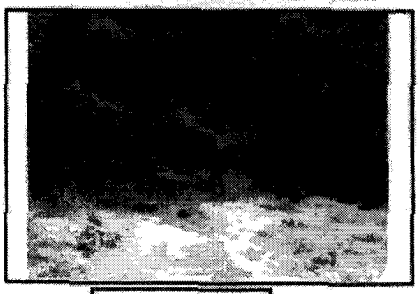
Barrier:	Partial	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Unimproved	**SubSurfaceMetalDetect:**	None
SoilType:	Mixed	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
2:12:00 PM	Nancy Heflin		

Latitude: 18.2814190005627
Longitude: -65.2865666666667

Observation Entry: 18

Barrier:	None	**SoilColor:**	Tan
Vegetation:	Mixed Trees and Brush an	**Topography:**	Steep Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	None
SoilType:	Sand	**MECMD:**	None



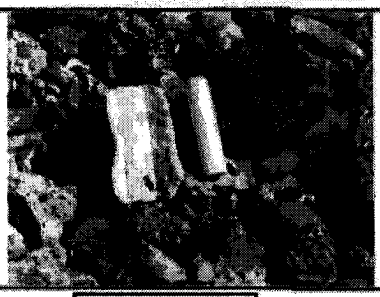
Time	Team Leader	Property ID	Culebra
2:17:00 PM	Nancy Heflin		

Latitude: 18.2799241672293
Longitude: -65.2863801666667

Observation Entry: 19

Barrier:	None	**SoilColor:**	White
Vegetation:	beach	**Topography:**	Flat
Drainage:	None	**SurfaceDebris:**	Single Item
Road:		**SubSurfaceMetalDetect:**	None
SoilType:	Sand and coral rock	**MECMD:**	MD

fins set, aluminum, likely mortar



Time	Team Leader	Property ID	Culebra
2:25:00 PM	Nancy Heflin		

Latitude: 18.2787995005626
Longitude: -65.2871158333333

Observation Entry: 20

Barrier:	None	**SoilColor:**	White
Vegetation:	Mixed Trees and Brush	**Topography:**	
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:		**MECMD:**	None

rough rocky beach access very difficult

Time	Team Leader	Property ID	Culebra
2:47:00 PM	Nancy Heflin		

Latitude: 18.2827791672294
Longitude: -65.2894738333333

Observation Entry: 21

Barrier:	Partial natural	SoilColor:	Brown
Vegetation:	none	Topography:	Broken Terrain
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Rock	MECMD:	None

Cliff on other side and rocky headland make continuing along the beach very difficult.

Time	Team Leader	Property ID	Culebra
3:10:00 PM	Nancy Heflin		

Latitude: 18.2813581672293
Longitude: -65.2844406666667

Observation Entry: 22

Barrier:	Partial natural	SoilColor:	Brown
Vegetation:	Light Brush	Topography:	Steep Slope
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Rocky	MECMD:	None

In Sueno Bay, there are Cliff off of the rocky shore. No soil is present only rocky talus and coral pieces. There are several shacks build along bay on DNER property. No soil only rocky beach and cliffs covered in viney vegetation. No debris observed.

Photo taken at beginning of QR along bay.

Time	Team Leader	Property ID	Culebra
3:19:00 PM	Nancy Heflin		

Latitude: 18.2818796672293
Longitude: -65.2865775

Observation Entry: 23

Barrier:	None	**SoilColor:**	Tan
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	None
SoilType:	Sand	**MECMD:**	None

Soil sample 10, on slope up from beach. No debris observed.

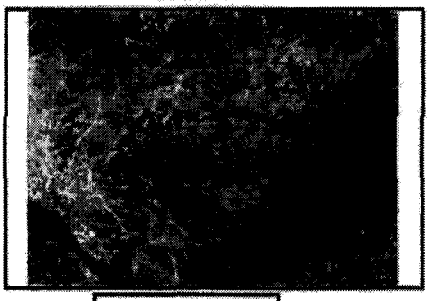


Photo of soil sample location in dense grasses. The surface is not easily visible

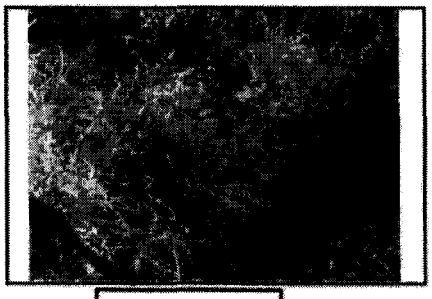
Time	Team Leader	Property ID	Culebra
3:29:05 PM	Nancy Heflin		

Latitude: 18.281564833896
Longitude: -65.286358

Observation Entry: 24

Barrier:		**SoilColor:**	
Vegetation:		**Topography:**	
Drainage:		**SurfaceDebris:**	
Road:		**SubSurfaceMetalDetect:**	
SoilType:		**MECMD:**	

Collected SS-10



Time	Team Leader	Property ID	Culebra
3:53:00 PM	Nancy Heflin		

Latitude: 18.2851316672294
Longitude: -65.2837993333333

Observation Entry: 25

Barrier:	Partial	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	None
SoilType:	Rocky	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
3:58:00 PM	Nancy Heflin		

Latitude: 18.2867200005628
Longitude: -65.2847211666667

Observation Entry: 26

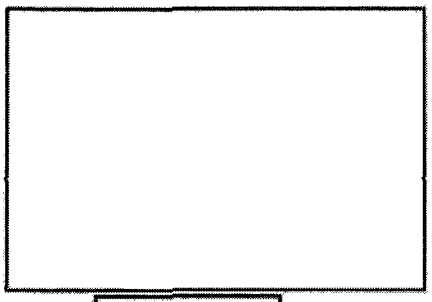
Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Vertical
Drainage:	None	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	None
SoilType:	Mixed	**MECMD:**	None

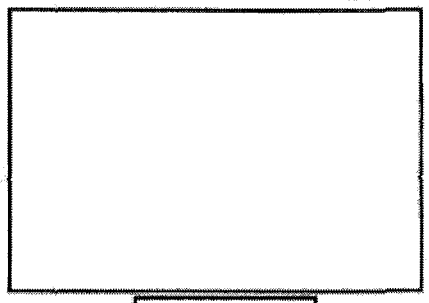
Along road to DNR property at MRA 09. No debris observed.

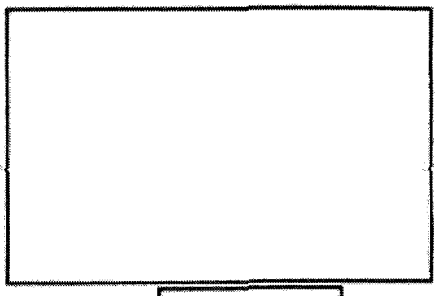
Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
4:01:00 PM	Nancy Heflin	Culebra	18.2884405005628	-65.285406	27

Barrier:	None	SoilColor:	Brown
Vegetation:	Mixed Trees and Brush	Topography:	Steep Slope
Drainage:	None	SurfaceDebris:	None
Road:	Paved	SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None

No debris observed.



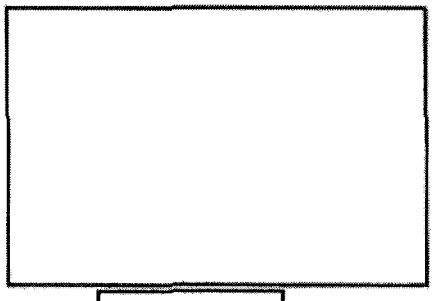


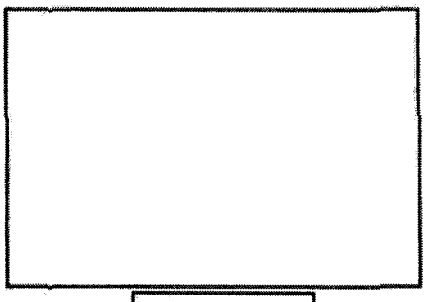


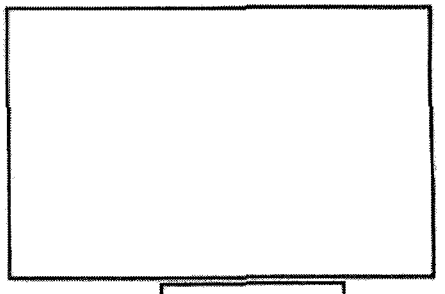
Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
4:05:00 PM	Nancy Heflin	Culebra	18.2891345005629	-65.2865166666667	28

Barrier:	Partial	SoilColor:	Brown
Vegetation:	Mixed Trees and Brush	Topography:	Gentle Slope
Drainage:	None	SurfaceDebris:	None
Road:	Paved	SubSurfaceMetalDetect:	None
SoilType:	Rocky	MECMD:	None

No debris observed.







Wednesday, October 25, 2006

Time	Team Leader	Property ID
8:07:00 AM	Nancy Heflin	Culebra

Latitude: 18.3169825005636
Longitude: -65.2806498333333

Observation Entry: 29

Barrier:	Complete	**SoilColor:**	Reddish brown
Vegetation:	Light Brush	**Topography:**	Flat
Drainage:	artificial Wetlands	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:	Mixed	**MECMD:**	None

Water Treatment area within MRA 05. Alternate property for SS 15. Artificial wetland in long rectangular plastic lined pool. No debris observed.

Time	Team Leader	Property ID
8:13:00 AM	Nancy Heflin	Culebra

Latitude: 18.3163060005636
Longitude: -65.2806868333333

Observation Entry: 30

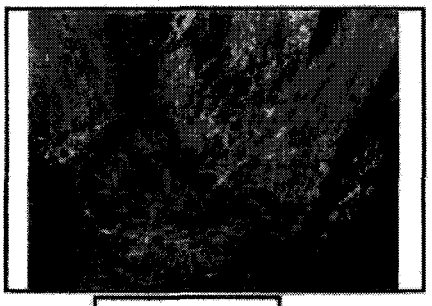
Barrier:	Complete	**SoilColor:**	Brown
Vegetation:	Light Brush	**Topography:**	Flat
Drainage:	Intermittent	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:	Mixed	**MECMD:**	None

Water treatment facility. Area is completely fenced with barbed wire at top of fence. No debris observed.

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
8:31:54 AM	Nancy Heflin	Culebra	18.3160995005636	-65.27913	31

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	
Road:		SubSurfaceMetalDetect:	
SoilType:		MECMD:	

Collected SS-15 On hillside SE of water treatment facility.



View up to hillside where sample was collected

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
8:53:00 AM	Nancy Heflin	Culebra	18.3156508338969	-65.277905	32

Barrier:	None	SoilColor:	Brown
Vegetation:	Heavy Brush	Topography:	Steep Slope
Drainage:	None	SurfaceDebris:	None
Road:	4WD Trail	SubSurfaceMetalDetect:	None
SoilType:	Rocky	MECMD:	None

Along paved road to Water Treatment Facility.
Heavy brush and fences off of both sides of the road.

Time	Team Leader	Property ID	Culebra
10:22:00 AM	Nancy Heflin	Latitude:	18.2998606672298
		Longitude:	-65.2620656666667

Observation Entry: 33

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	Creek	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	None
SoilType:	Mixed	**MECMD:**	None

QR conducted along 4wd trail to SS-20.

Time	Team Leader	Property ID	Culebra
10:29:47 AM	Nancy Heflin	Latitude:	18.2987798338964
		Longitude:	-65.2621341666667

Observation Entry: 34

Barrier:		**SoilColor:**	
Vegetation:		**Topography:**	
Drainage:		**SurfaceDebris:**	
Road:		**SubSurfaceMetalDetect:**	
SoilType:		**MECMD:**	

Collected SS-20 Dense veg restricts access to exact location

Time	Team Leader	Property ID	Culebra
10:35:00 AM	Nancy Heflin		

Latitude: 18.2987720005631
Longitude: -65.2621233333333

Observation Entry: 35

Barrier:	None	**SoilColor:**	Dark Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Flat
Drainage:	None	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	None
SoilType:	Organic	**MECMD:**	None

No debris observed.

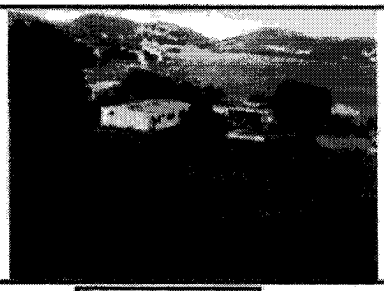
Time	Team Leader	Property ID	Culebra
12:55:00 PM	Nancy Heflin		

Latitude: 18.3013158338965
Longitude: -65.2973983333333

Observation Entry: 36

Barrier:	Partial	**SoilColor:**	Brown
Vegetation:	Grasses	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:	clay	**MECMD:**	None

Police station property (within MRA10), hillside west of station. No debris observed.



Time	Team Leader	Property ID	Culebra
4:33:00 PM	Nancy Heflin		

Latitude: 18.3185661672303
Longitude: -65.3097433333333

Observation Entry: 37

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Grasses	**Topography:**	Flat
Drainage:	None	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	None
SoilType:	Mixed	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
4:36:00 PM	Nancy Heflin		

Latitude: 18.3173055005636
Longitude: -65.3090053333333

Observation Entry: 38

Barrier:	Partial	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	None
SoilType:	Sand	**MECMD:**	None

Opening in fence along road north of the airport. Within MRA 14, near proposed SS-13.

Time	Team Leader	Property ID	Culebra
4:39:00 PM	Nancy Heflin		

Latitude: 18.3171951672303
Longitude: -65.308645

Observation Entry: 39

Barrier:	Complete	**SoilColor:**	
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	Storm Drain	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:	Mixed	**MECMD:**	None

Concrete lined ditch, ~4ft deep. No debris observed.

Time	Team Leader	Property ID	Culebra
4:57:00 PM	Nancy Heflin		

Latitude: 18.3170200005636
Longitude: -65.3082991666667

Observation Entry: 40

Barrier:	None	**SoilColor:**	Mixed
Vegetation:	Dense Trees	**Topography:**	Flat
Drainage:	Manmade Ditch	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:	Rocky	**MECMD:**	None

Concrete lined ditch, ~4ft deep

Time	Team Leader	Property ID	Culebra
5:07:00 PM	Nancy Heflin	Latitude: 18.3156315005636	
		Longitude: -65.3074135	

Observation Entry: 41

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Flat
Drainage:	None	**SurfaceDebris:**	None
Road:	Gravel or Rock	**SubSurfaceMetalDetect:**	None
SoilType:	Mixed	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
5:19:00 PM	Nancy Heflin	Latitude: 18.3148860005635	
		Longitude: -65.3044913333333	

Observation Entry: 42

Barrier:	None	**SoilColor:**	Reddish brown
Vegetation:	Grasses	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Unimproved	**SubSurfaceMetalDetect:**	None
SoilType:	Rocky	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
5:27:00 PM	Nancy Heflin	Culebra	18.3132196672302	-65.3016433333333	43

Barrier:	Partial	SoilColor:	Brown
Vegetation:		Topography:	Flat
Drainage:	Manmade Ditch	SurfaceDebris:	None
Road:	4WD Trail	SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None

No debris observed.

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
5:35:00 PM	Nancy Heflin	Culebra	18.3106093338968	-65.3004165	44

Barrier:	None	SoilColor:	Brown
Vegetation:	Grasses	Topography:	Flat
Drainage:	None	SurfaceDebris:	None
Road:	Paved	SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None

No noted change in vegetation on hillside north of airport. The vegetation does not indicate any changes in topography. No observation of small arms range debris or backstop.

Thursday, October 26, 2006

Time	Team Leader	Property ID	Culebra
9:16:00 AM	Nancy Heflin		

Latitude: 18.3346426672307
Longitude: -65.251157

Observation Entry: 45

Barrier:	None	**SoilColor:**	White
Vegetation:	Thin Trees	**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:	Sand	**MECMD:**	None

QR conducted on Cayo Norte (MRS 08). No debris observed.

Time	Team Leader	Property ID	Culebra
9:28:00 AM	Nancy Heflin		

Latitude: 18.3350881672307
Longitude: -65.2533651666667

Observation Entry: 46

Barrier:		**SoilColor:**	Brown
Vegetation:	Heavy Brush	**Topography:**	Gentle Slope
Drainage:		**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:	Mixed	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
9:51:00 AM	Nancy Heflin		

Latitude: 18.3350735005641
Longitude: -65.2544871666667

Observation Entry: 47

Barrier:		SoilColor:	Brown
Vegetation:	Heavy Brush	Topography:	Gentle Slope
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None

No debris observed.

Time	Team Leader	Property ID	Culebra
9:58:00 AM	Nancy Heflin		

Latitude: 18.3352298338974
Longitude: -65.2550468333333

Observation Entry: 48

Barrier:		SoilColor:	Brown
Vegetation:	Light Brush	Topography:	Gentle Slope
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None

vegetation makes passage to sample location very difficult

Time	Team Leader	Property ID	Culebra
10:07:00 AM	Nancy Heflin		

Latitude: 18.3349966672307
Longitude: -65.256175

Observation Entry: 49

Barrier:		**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:		**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:	Mixed	**MECMD:**	None

drainage to lagoon

Time	Team Leader	Property ID	Culebra
10:18:00 AM	Nancy Heflin		

Latitude: 18.3349028338974
Longitude: -65.2573391666667

Observation Entry: 50

Barrier:		**SoilColor:**	Brown
Vegetation:	Light Brush	**Topography:**	Gentle Slope
Drainage:		**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:	Mixed	**MECMD:**	None

lagoon on Cayo Norte

Time	Team Leader	Property ID	Culebra
10:22:00 AM	Nancy Heflin	Latitude:	18.3351215005641
		Longitude:	-65.2577275

Observation Entry: 51

Barrier:		SoilColor:	Brown
Vegetation:	Grasses	Topography:	Gentle Slope
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None

stream entering lagoon from hillside

Time	Team Leader	Property ID	Culebra
10:25:47 AM	Nancy Heflin	Latitude:	18.3351321672307
		Longitude:	-65.2578336666667

Observation Entry: 52

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	
Road:		SubSurfaceMetalDetect:	
SoilType:		MECMD:	

Collected SE-05 at stream entering lagoon from hillside

Time	Team Leader	Property ID	Culebra
10:47:00 AM	Nancy Heflin	Latitude:	18.3361770006641
		Longitude:	-65.2583333333334

Observation Entry: 53

Barrier:		SoilColor:	Brown
Vegetation:	Mixed Trees and Brush	Topography:	Steep Slope
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None

Steep rocky slope to SS#24 location, No debris observed.

Time	Team Leader	Property ID	Culebra
10:56:20 AM	Nancy Heflin	Latitude:	18.3364018338974
		Longitude:	-65.258635

Observation Entry: 54

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	
Road:		SubSurfaceMetalDetect:	
SoilType:		MECMD:	

Collected SS-24

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
11:33:00 AM	Nancy Heflin	Culebra	18.3377516672308	-65.2602321666667	55

Barrier:	Partial	SoilColor:	Brown	No debris observed.
Vegetation:	Heavy Brush	Topography:	Steep Slope	
Drainage:	None	SurfaceDebris:	None	
Road:		SubSurfaceMetalDetect:	None	
SoilType:	Rocky	MECMD:	None	

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
11:47:32 AM	Nancy Heflin	Culebra	18.3376575005641	-65.2606485	56

Barrier:		SoilColor:		Collected SS-23
Vegetation:		Topography:		
Drainage:		SurfaceDebris:		
Road:		SubSurfaceMetalDetect:		
SoilType:		MECMD:		

Time	Team Leader	Property ID	Observation Entry:
12:03:00 PM	Nancy Heflin	Culebra	57

Latitude: 18.3371260005641
Longitude: -65.2615671666667

Barrier:		SoilColor:	Brown
Vegetation:	Mixed Trees and Brush	Topography:	Steep Slope
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None

Very steep rocky slope, no debris observed.

Time	Team Leader	Property ID	Observation Entry:
12:11:00 PM	Nancy Heflin	Culebra	58

Latitude: 18.3369711672308
Longitude: -65.262149

Barrier:	Partial	SoilColor:	Brown
Vegetation:	Mixed Trees and Brush	Topography:	Steep Slope
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Rocky	MECMD:	None

Time	Team Leader	Property ID	Culebra
12:20:00 PM	Nancy Heflin		

Latitude: 18.3357683338974
Longitude: -65.261101

Observation Entry: 59

Barrier:	None	**SoilColor:**	Tan
Vegetation:	Mixed Trees and Brush	**Topography:**	Steep Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:	Rocky	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
12:36:00 PM	Nancy Heflin		

Latitude: 18.3346510005641
Longitude: -65.2602906666667

Observation Entry: 60

Barrier:		**SoilColor:**	Brown
Vegetation:		**Topography:**	Broken Terrain
Drainage:		**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:	Rocky	**MECMD:**	None

large rocks onshore into water

Time	Team Leader	Property ID
12:49:00 PM	Nancy Heflin	Culebra

Latitude: 18.3336106672307
Longitude: -65.257526

Observation Entry: 61

Barrier:		SoilColor:	Tan
Vegetation:		Topography:	Flat
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Sand	MECMD:	None

Beach looking into lagoon. No debris observed.

Time	Team Leader	Property ID
12:59:00 PM	Nancy Heflin	Culebra

Latitude: 18.3334138338974
Longitude: -65.254098

Observation Entry: 62

Barrier:		SoilColor:	Mixed
Vegetation:	Mixed Trees and Brush	Topography:	Flat
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None

Helipad in woods just off of the beach. No munitions debris observed.

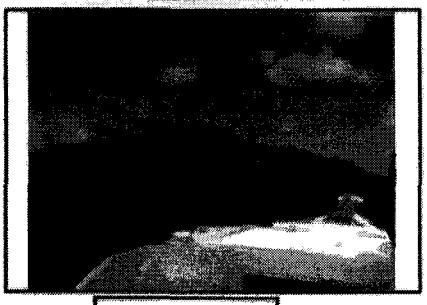
Time	Team Leader	Property ID	Culebra
2:04:00 PM	Nancy Heflin		

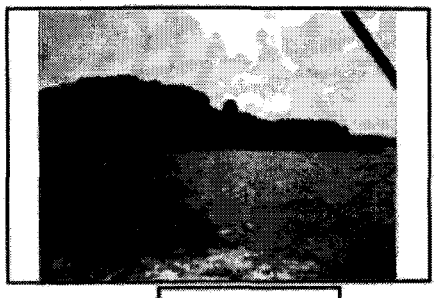
Latitude: 18.3362695005641
Longitude: -65.2319143333333

Observation Entry: 63

Barrier:	Complete natural barrier	SoilColor:	
Vegetation:	Grasses	Topography:	Steep Slope
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:		MECMD:	None

Cayos Geniqui - rock cliffs on all sides





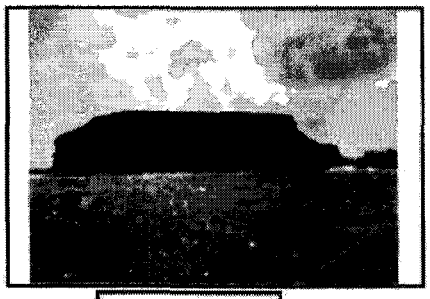
Time	Team Leader	Property ID	Culebra
2:08:00 PM	Nancy Heflin		

Latitude: 18.3388905005642
Longitude: -65.2294836666667

Observation Entry: 64

Barrier:	Complete	SoilColor:	
Vegetation:	none	Topography:	Vertical
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:		MECMD:	None

Cayos Geniqui



Time	Team Leader	Property ID	Culebra
2:13:00 PM	Nancy Heflin		

Latitude: 18.344249167231
Longitude: -65.236211

Observation Entry: 65

Barrier:	Complete	**SoilColor:**	
Vegetation:	none	**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:		**MECMD:**	None

Cayo Tiburon is all rocks with no vegetation. Sea Birds present.

Tiburon facing west

[illegible]

Tiburon facing north

Time	Team Leader	Property ID	Culebra
2:15:00 PM	Nancy Heflin		

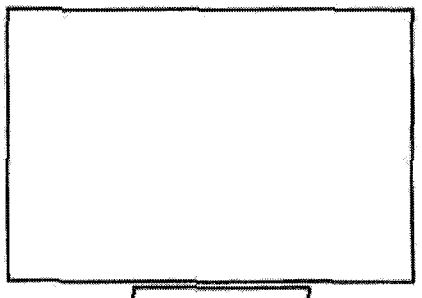
Latitude: 18.3482416672311
Longitude: -65.236626

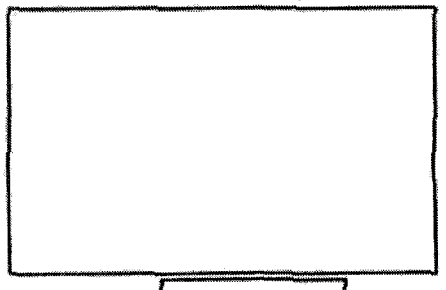
Observation Entry: 66

Barrier:	Complete	**SoilColor:**	
Vegetation:	none	**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:	Rocky	**MECMD:**	None

Cayo Ballena all rocks. Sea birds present.

[illegible]





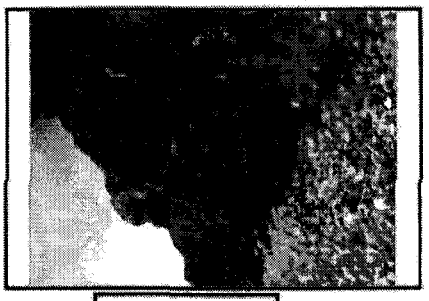
Time	Team Leader	Property ID	Culebra
2:25:00 PM	Nancy Heflin		

Latitude: 18.3373765005641
Longitude: -65.2340365

Observation Entry: 67

Barrier:	None	SoilColor:	
Vegetation:		Topography:	
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:		MECMD:	None

Small beach very rocky on Cayo Geniqui



Beach seen on right side of the photo

Time	Team Leader	Property ID	Culebra
2:43:00 PM	Nancy Heflin		

Latitude: 18.3373550005641
Longitude: -65.2337373333333

Observation Entry: 68

Barrier:	Complete natural	SoilColor:	Brown
Vegetation:	Grasses	Topography:	Steep Slope
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Rocky	MECMD:	None

Cayos Geniqui - QR conducted on low area between two cays and no evidence of munitions or munitions debris was found.

Time	Team Leader	Property ID	Culebra
4:02:16 PM	Nancy Heflin	Latitude: 18.2877558338961	
		Longitude: -65.2832171666667	

Observation Entry: 69

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	
Road:		SubSurfaceMetalDetect:	
SoilType:		MECMD:	

Collected SS-09

Friday, October 27, 2006

Time	Team Leader	Property ID	Culebra
8:35:00 AM	Nancy Heflin	Latitude: 18.30663216723	
		Longitude: -65.2760155	

Observation Entry: 70

Barrier:	None	SoilColor:	Brown
Vegetation:	Grasses	Topography:	Steep Slope
Drainage:	Ocean mangroves	SurfaceDebris:	None
Road:	Paved	SubSurfaceMetalDetect:	None
SoilType:	Rocky	MECMD:	None

QR conducted in MRA 05 to SS-17.

Time	Team Leader	Property ID	Culebra
8:39:00 AM	Nancy Heflin		

Latitude: 18.3073595005633
Longitude: -65.2753796666667

Observation Entry: 71

Barrier:	Partial	SoilColor:	Brown
Vegetation:	Grasses	Topography:	Steep Slope
Drainage:	Ocean mangroves	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None

concrete pad. PVC in one corner indicates it is likely septic tank or water reserve

Three homes on top of the hill.

Time	Team Leader	Property ID	Culebra
9:00:00 AM	Nancy Heflin		

Latitude: 18.3084215005634
Longitude: -65.2755086666667

Observation Entry: 72

Barrier:		SoilColor:	Brown
Vegetation:	Heavy Brush	Topography:	Gentle Slope
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None

very dense vegetation approaching SS17. No debris observed.

Time	Team Leader	Property ID	Culebra
9:14:00 AM	Nancy Heflin		

Latitude: 18.30869916723
Longitude: -65.2753385

Observation Entry: 73

Barrier:		SoilColor:	Brown
Vegetation:	Heavy Brush	Topography:	Gentle Slope
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None

large piece of metal roofing buried in grass

Time	Team Leader	Property ID	Culebra
9:42:23 AM	Nancy Heflin		

Latitude: 18.3086988338967
Longitude: -65.2752976666667

Observation Entry: 74

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	
Road:		SubSurfaceMetalDetect:	
SoilType:		MECMD:	

Collected SS-17 MS MSD QA Split taken

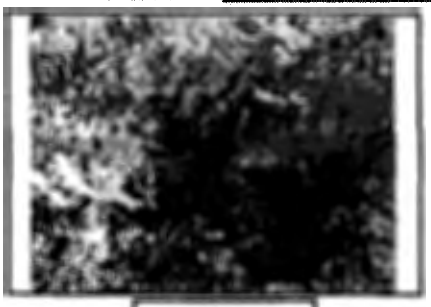
Time	Team Leader	Property ID
10:17:00 AM	Nancy Heflin	Culebra

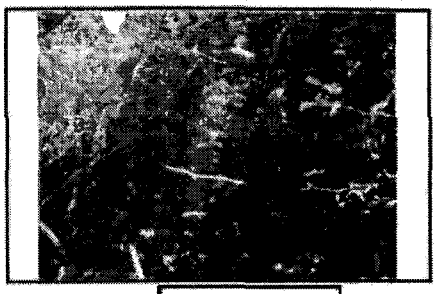
Latitude: 18.3087265005634
Longitude: -65.2749526666667

Observation Entry: 75

Barrier:		SoilColor:	Brown
Vegetation:	Heavy Brush	Topography:	Gentle Slope
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None

very dense brush, many thorns, must crawl in some areas. No debris observed.





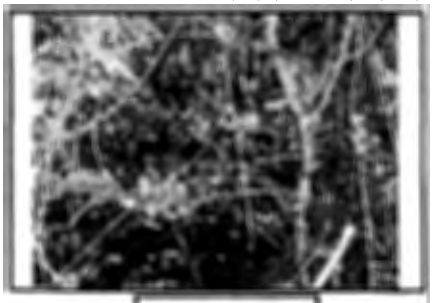
Time	Team Leader	Property ID
10:33:00 AM	Nancy Heflin	Culebra

Latitude: 18.3086998338967
Longitude: -65.2744815

Observation Entry: 76

Barrier:		SoilColor:	Brown
Vegetation:	Heavy Brush	Topography:	Gentle Slope
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	Low Density
SoilType:	Mixed	MECMD:	None

vegetation makes access extremely difficult. No debris observed.



Time	Team Leader	Property ID	Culebra
10:54:00 AM	Nancy Heflin		

Latitude: 18.3086483338967
Longitude: -65.27425

Observation Entry: 77

Barrier:		**SoilColor:**	Brown
Vegetation:	Heavy Brush	**Topography:**	Gentle Slope
Drainage:		**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	Medium Density
SoilType:	Mixed	**MECMD:**	None

4 ft tall barbwire fence

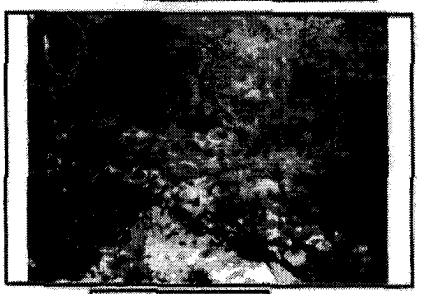
Time	Team Leader	Property ID	Culebra
11:05:00 AM	Nancy Heflin		

Latitude: 18.30870216723
Longitude: -65.2740595

Observation Entry: 78

Barrier:		**SoilColor:**	Brown
Vegetation:	Heavy Brush	**Topography:**	Gentle Slope
Drainage:		**SurfaceDebris:**	none
Road:		**SubSurfaceMetalDetect:**	Low Density
SoilType:	Mixed	**MECMD:**	None

Dry stream bed. No surface debris observed.



Time	Team Leader	Property ID	Culebra
11:14:00 AM	Nancy Heflin	Latitude:	18.30903166723
		Longitude:	-65.2740423333333

Observation Entry: 79

Barrier:		**SoilColor:**	Brown
Vegetation:	Heavy Brush	**Topography:**	Gentle Slope
Drainage:		**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	Low Density
SoilType:	Mixed	**MECMD:**	None

single strand of barbwire

Time	Team Leader	Property ID	Culebra
11:37:00 AM	Nancy Heflin	Latitude:	18.3094630005634
		Longitude:	-65.2738308333333

Observation Entry: 80

Barrier:		**SoilColor:**	Brown
Vegetation:	Heavy Brush	**Topography:**	Gentle Slope
Drainage:		**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	Low Density
SoilType:	Mixed	**MECMD:**	None

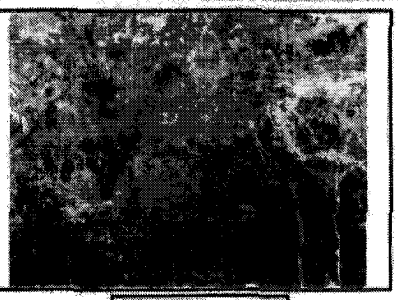
Stream bed breaking up into thicker vegetation

Time	Team Leader	Property ID	Culebra
11:54:00 AM	Nancy Heflin	Latitude:	18.3082003338987
		Longitude:	-65.2740711666667

Observation Entry: 81

Barrier:		SoilColor:	Brown
Vegetation:	Mixed Brush and Grasses	Topography:	Gentle Slope
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	Low Density
SoilType:	Mixed	MECMD:	None

Solid rock in stream bed roughly 100-ft long. No surface debris observed.



Time	Team Leader	Property ID	Culebra
12:01:00 PM	Nancy Heflin	Latitude:	18.3076225005633
		Longitude:	-65.2741398333333

Observation Entry: 82

Barrier:		SoilColor:	Mixed
Vegetation:	Heavy Brush	Topography:	Gentle Slope
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None

large solid rock in stream bed, No surface debris observed.

Time	Team Leader	Property ID
12:11:00 PM	Nancy Heflin	Culebra

Latitude: 18.3064385005633
Longitude: -65.274627

Observation Entry: 83

Barrier:		**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Gentle Slope
Drainage:		**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:	Mixed	**MECMD:**	None

Following rocky stream bed. No debris observed.

Time	Team Leader	Property ID
1:38:00 PM	Nancy Heflin	Culebra

Latitude: 18.3136643338968
Longitude: -65.2659153333334

Observation Entry: 84

Barrier:	None	**SoilColor:**	Brown
Vegetation:	cleared by land owner no	**Topography:**	Steep Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

Large clearing near Ellis, Cerro Balcon (MRA 05), clearance but according to Luis Ayala this area was not cleared by Ellis but was graded by the landowner for development purposes.

Time	Team Leader	Property ID	Culebra
1:46:00 PM	Nancy Heflin	Latitude: 18.3144305005635	
		Longitude: -65.2653516666667	

Observation Entry: 85

Barrier:	None	SoilColor:	Brown
Vegetation:		Topography:	Steep Slope
Drainage:	None	SurfaceDebris:	None
Road:	4WD Trail	SubSurfaceMetalDetect:	No Detect
SoilType:	Mixed	MECMD:	None

No debris observed.

Time	Team Leader	Property ID	Culebra
1:53:00 PM	Nancy Heflin	Latitude: 18.3144156672302	
		Longitude: -65.265831	

Observation Entry: 86

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:		MECMD:	None

No surface debris observed at SS18

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
1:53:23 PM	Nancy Heflin	Culebra	18.3144145005635	-65.2658436666667	87

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	
Road:		SubSurfaceMetalDetect:	
SoilType:		MECMD:	

Collected SS-18 Wooded area above newly graded area

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
2:08:00 PM	Nancy Heflin	Culebra	18.3143176672302	-65.265918	88

Barrier:	None	SoilColor:	Brown
Vegetation:		Topography:	Steep Slope
Drainage:		SurfaceDebris:	None
Road:	4WD Trail	SubSurfaceMetalDetect:	No Detect
SoilType:	Mixed	MECMD:	None

No surface debris observed.

Time	Team Leader	Property ID	Culebra
2:14:00 PM	Nancy Heflin		

Latitude: 18.3133945005635
Longitude: -65.2662081666667

Observation Entry: 89

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Grasses	**Topography:**	Steep Slope
Drainage:	Intermittent	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

intermittent wash outs throughout the non vegetated areas. No debris observed

Time	Team Leader	Property ID	Culebra
2:45:00 PM	Nancy Heflin		

Latitude: 18.3137560005635
Longitude: -65.2687983333334

Observation Entry: 90

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Grasses	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	Medium Density
SoilType:	Mixed	**MECMD:**	None

Area near house where Ellis's guard watches the road to the magazine.

Time	Team Leader	Property ID	Culebra
2:50:00 PM	Nancy Heflin		

Latitude: 18.3129886672302
Longitude: -65.2701728333333

Observation Entry: 91

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Grasses	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

QR conducted along path following enterances in the vegetation to the side of the road where possible. No debris observed.

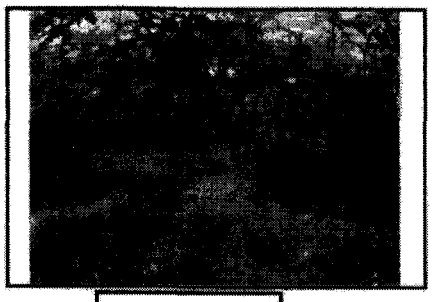
Time	Team Leader	Property ID	Culebra
2:56:00 PM	Nancy Heflin		

Latitude: 18.3124863338968
Longitude: -65.2706615

Observation Entry: 92

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Rocky	**MECMD:**	None

No debris observed.



Time	Team Leader	Property ID	Culebra
3:03:00 PM	Nancy Heflin		

Latitude: 18.3113323338968
Longitude: -65.2720033333333

Observation Entry: 93

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Flat
Drainage:	None	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

Grassy area off trail to Ellis Magazine. lots of thorny brush. No debris observed.

Time	Team Leader	Property ID	Culebra
3:10:00 PM	Nancy Heflin		

Latitude: 18.3115260005634
Longitude: -65.2724671666667

Observation Entry: 94

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

No debris observed

Time	Team Leader	Property ID	Culebra
3:16:00 PM	Nancy Heflin		

Latitude: 18.3112231672301
Longitude: -65.2719123333333

Observation Entry: 95

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
3:21:00 PM	Nancy Heflin		

Latitude: 18.3109540005634
Longitude: -65.2726005

Observation Entry: 96

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Heavy Brush	**Topography:**	Gentle Slope
Drainage:	Intermittent	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
3:28:00 PM	Nancy Heflin		

Latitude: 18.3107731672301
Longitude: -65.2742328333333

Observation Entry: 97

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Grasses	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

At the end of road to Magazine. Very dense vegetation in surrounding areas.

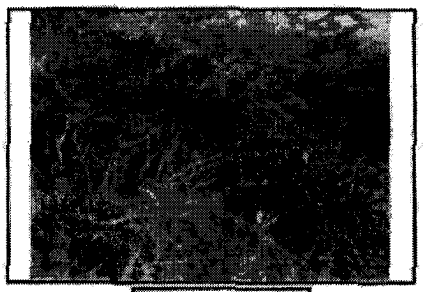
Time	Team Leader	Property ID	Culebra
3:32:00 PM	Nancy Heflin		

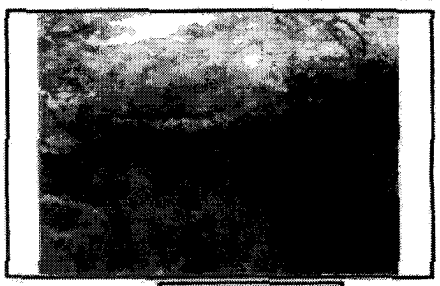
Latitude: 18.3105691672301
Longitude: -65.2737326666667

Observation Entry: 98

Barrier:	None	**SoilColor:**	Red
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Game Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

Ellis explosives magazine, Thick brush stopped movement forward





Time	Team Leader	Property ID	Culebra
3:36:00 PM	Nancy Heflin		

Latitude: 18.3107825005634
Longitude: -65.2732513333333

Observation Entry: 99

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Light Brush	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

Cow trail through thorny brush. No debris observed.

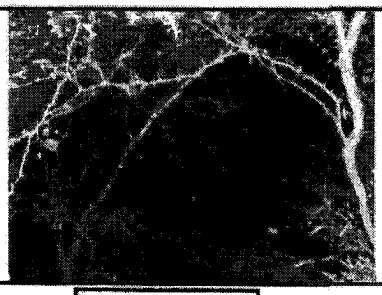
Time	Team Leader	Property ID	Culebra
3:38:00 PM	Nancy Heflin		

Latitude: 18.3108523338968
Longitude: -65.2730365

Observation Entry: 100

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Light Brush	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:	Mixed	**MECMD:**	None

Thorny bushes



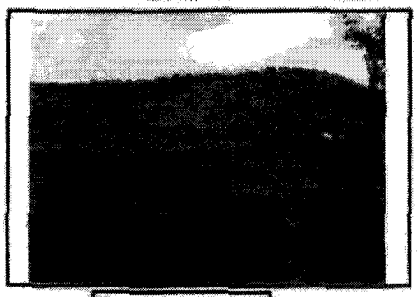
Time	Team Leader	Property ID	Culebra
3:46:00 PM	Nancy Heflin		

Latitude: 18.3117303338968
Longitude: -65.2715201666667

Observation Entry: 101

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Heavy Brush	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	None
SoilType:	Mixed	**MECMD:**	None

Ellis clearance areas on side of Cerro Balcon as viewed from road to magazine area.



Time	Team Leader	Property ID	Culebra
3:54:00 PM	Nancy Heflin		

Latitude: 18.3136533338968
Longitude: -65.2693405

Observation Entry: 102

Barrier:	None	**SoilColor:**	Tan
Vegetation:	Mixed Brush and Grasses	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	None
SoilType:	Mixed	**MECMD:**	.30 caliber cartridge

.30 caliber cartridge

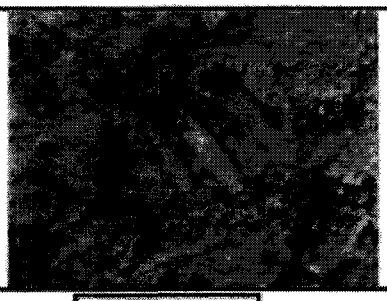
Time	Team Leader	Property ID
3:56:00 PM	Nancy Heflin	Culebra

Latitude: 18.3137500005635
Longitude: -65.2690761666667

Observation Entry: 103

Barrier:	None	**SoilColor:**	Tan
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Mixed	**MECMD:**	.30 caliber cartridge

several .30 caliber cartridges all within 10 feet of eachother.



Time	Team Leader	Property ID
3:59:00 PM	Nancy Heflin	Culebra

Latitude: 18.3137983338968
Longitude: -65.2689323333333

Observation Entry: 104

Barrier:	Partial	**SoilColor:**	Tan
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	Intermittent	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	Medium Density
SoilType:	Mixed	**MECMD:**	None

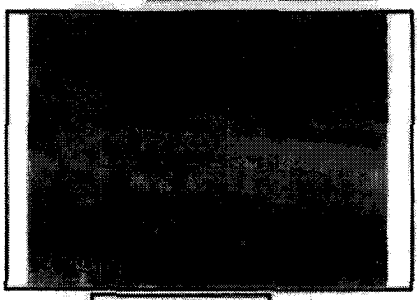
Time	Team Leader	Property ID	Culebra
4:03:00 PM	Nancy Heflin		

Latitude: 18.3136058338968
Longitude: -65.268526

Observation Entry: 105

Barrier:	Partial due to steep slope	**SoilColor:**	Tan
Vegetation:	Light Brush	**Topography:**	Steep Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

Steep slope to the south of guard house.



Time	Team Leader	Property ID	Culebra
4:11:00 PM	Nancy Heflin		

Latitude: 18.3143846672302
Longitude: -65.2672058333334

Observation Entry: 106

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Grasses	**Topography:**	Steep Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	Medium Density
SoilType:	Mixed	**MECMD:**	None

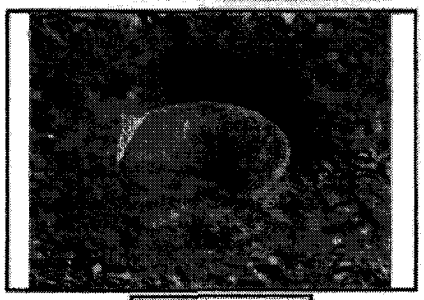
Time	Team Leader	Property ID	Culebra
4:21:00 PM	Nancy Heflin		

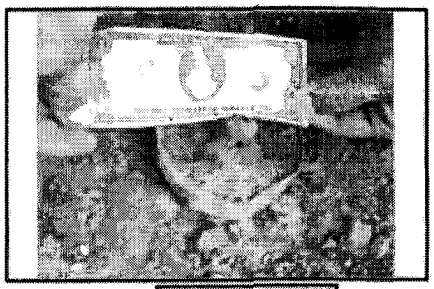
Latitude: 18.3133165005635
Longitude: -65.2656428333333

Observation Entry: 107

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Steep Slope
Drainage:	None	**SurfaceDebris:**	Single Item
Road:	4WD Trail	**SubSurfaceMetalDetect:**	None
SoilType:	Mixed	**MECMD:**	Munitions Debris

4.2" Mortar Round/Base





Time	Team Leader	Property ID	Culebra
4:26:00 PM	Nancy Heflin		

Latitude: 18.3132080005635
Longitude: -65.2641613333333

Observation Entry: 108

Barrier:	None	**SoilColor:**	Brown
Vegetation:		**Topography:**	Gentle Slope
Drainage:		**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Mixed	**MECMD:**	None

Along 4wd trail from Ellis clearance to main road.

Time	Team Leader	Property ID	Culebra
4:34:00 PM	Nancy Heflin	Latitude:	18.3132003338968
		Longitude:	-65.260835

Observation Entry: 109

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Steep Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	Medium Density
SoilType:	Mixed	**MECMD:**	None

Along 4wd trail from Ellis clearance to main road.

Sunday, October 29, 2006

Time	Team Leader	Property ID	Culebra
8:02:00 AM	Nancy Heflin	Latitude:	18.3187560005636
		Longitude:	-65.2640156666667

Observation Entry: 110

Barrier:	None	**SoilColor:**	Brown
Vegetation:		**Topography:**	Gentle Slope
Drainage:	Intermittent	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Mixed	**MECMD:**	None

QR conducted along the side of the 4wd road to north side of Cerro Balcon.

Time	Team Leader	Property ID	Culebra
8:07:00 AM	Nancy Heflin		

Latitude: 18.3189926672303
Longitude: -65.2655051666667

Observation Entry: 111

Barrier:	None	**SoilColor:**	Mixed
Vegetation:		**Topography:**	Gentle Slope
Drainage:	Intermittent	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Mixed	**MECMD:**	None

No debris Observed.

Time	Team Leader	Property ID	Culebra
8:12:00 AM	Nancy Heflin		

Latitude: 18.319128833897
Longitude: -65.2670316666667

Observation Entry: 112

Barrier:	Partial	**SoilColor:**	Brown
Vegetation:		**Topography:**	Gentle Slope
Drainage:	Intermittent	**SurfaceDebris:**	Single Item
Road:	4WD Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	30 cal. Bullet

.30 caliber bullet

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
8:19:00 AM	Nancy Heflin	Culebra	18.319293833897	-65.2681061666667	113

Barrier:	None	SoilColor:	Brown	Gate to paved drive.
Vegetation:	Grasses	Topography:	Gentle Slope	
Drainage:	None	SurfaceDebris:	None	
Road:	4WD Trail	SubSurfaceMetalDetect:	Low Density	
SoilType:	Mixed	MECMD:	None	

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
8:25:00 AM	Nancy Heflin	Culebra	18.3178853338969	-65.2670391666667	114

Barrier:	Complete	SoilColor:	Brown	No debris observed
Vegetation:	Grasses	Topography:	Steep Slope	
Drainage:	None	SurfaceDebris:	None	
Road:		SubSurfaceMetalDetect:	No Detect	
SoilType:	Mixed	MECMD:	None	

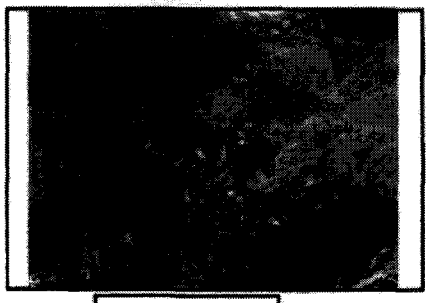
Time	Team Leader	Property ID
8:27:00 AM	Nancy Heflin	Culebra

Latitude: 18.3178306672303
Longitude: -65.2670405

Observation Entry: 115

Barrier:	Partial	**SoilColor:**	Brown
Vegetation:	Grasses	**Topography:**	Steep Slope
Drainage:	Intermittent	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

Heavy grasses on uneven boulders, can't see feet and too difficult to walk off of driveway.



Time	Team Leader	Property ID
8:31:00 AM	Nancy Heflin	Culebra

Latitude: 18.3177583338969
Longitude: -65.2669208333333

Observation Entry: 116

Barrier:	Partial	**SoilColor:**	Brown
Vegetation:	Grasses	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Gravel or Rock	**SubSurfaceMetalDetect:**	Single Item
SoilType:	Mixed	**MECMD:**	None

Large metallic zone. Wire mesh for road construction visible below grass.

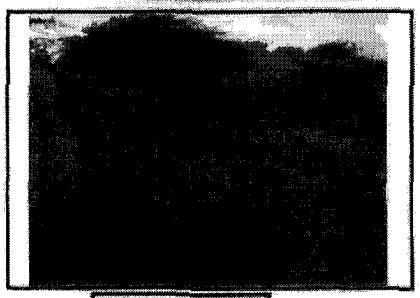
Time	Team Leader	Property ID	Culebra
8:35:00 AM	Nancy Heflin		

Latitude: 18.3174040005636
Longitude: -65.266958

Observation Entry: 117

Barrier:	Partial	**SoilColor:**	Brown
Vegetation:	Dense Trees	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Mixed	**MECMD:**	None

No debris observed.



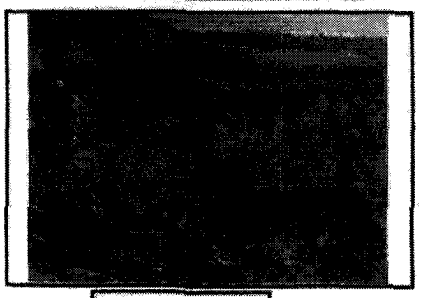
Time	Team Leader	Property ID	Culebra
8:43:00 AM	Nancy Heflin		

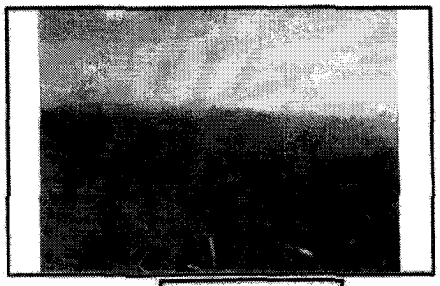
Latitude: 18.3167255005636
Longitude: -65.2664998333333

Observation Entry: 118

Barrier:	Partial	**SoilColor:**	Brown
Vegetation:	Heavy Brush	**Topography:**	Steep Slope
Drainage:	None	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:	Mixed	**MECMD:**	None

Extremely steep terrain, too steep to safely conduct QR





Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
8:57:00 AM	Nancy Heflin	Culebra	18.3202291672303	-65.2696481666667	119

Barrier:	None	SoilColor:	Brown	No debris observed.
Vegetation:		Topography:	Gentle Slope	
Drainage:	Intermittent	SurfaceDebris:	None	
Road:	4WD Trail	SubSurfaceMetalDetect:	Low Density	
SoilType:	Mixed	MECMD:	None	

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
9:00:00 AM	Nancy Heflin	Culebra	18.321080833897	-65.270336	120

Barrier:	None	SoilColor:	Brown	No debris observed.
Vegetation:	Light Brush	Topography:	Steep Slope	
Drainage:	Intermittent	SurfaceDebris:	None	
Road:	4WD Trail	SubSurfaceMetalDetect:	Low Density	
SoilType:	Mixed	MECMD:	None	

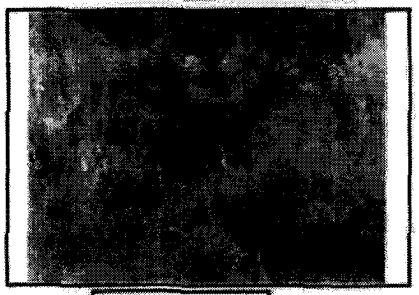
Time	Team Leader	Property ID
9:04:00 AM	Nancy Heflin	Culebra

Latitude: 18.321756333897
Longitude: -65.2708755

Observation Entry: 121

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Light Brush	**Topography:**	Steep Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

"NO PASE" sign on the side of the road. No debris observed.



Time	Team Leader	Property ID
9:21:00 AM	Nancy Heflin	Culebra

Latitude: 18.3189006672303
Longitude: -65.2649231666667

Observation Entry: 122

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Heavy Brush	**Topography:**	Steep Slope
Drainage:	Intermittent	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Mixed	**MECMD:**	None

Very Steep terrain off of road.

Photo taken down slope

Time	Team Leader	Property ID	Culebra
9:27:00 AM	Nancy Heflin		

Latitude: 18.3176978338969
Longitude: -65.262917

Observation Entry: 123

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Dense Trees	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
9:31:00 AM	Nancy Heflin		

Latitude: 18.3166816672302
Longitude: -65.2612311666667

Observation Entry: 124

Barrier:	None	**SoilColor:**	Mixed
Vegetation:	Heavy Brush	**Topography:**	Gentle Slope
Drainage:	Intermittent	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	None
SoilType:	Mixed	**MECMD:**	None

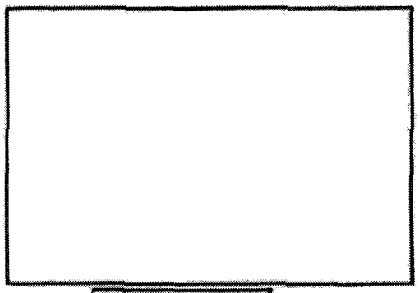
No debris observed.

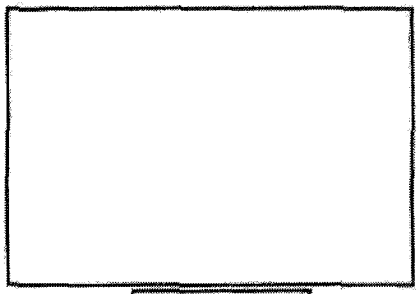
Time	Team Leader	Property ID	Culebra
9:34:00 AM	Nancy Heflin	Latitude:	18.3162960005636
		Longitude:	-65.2605093333333

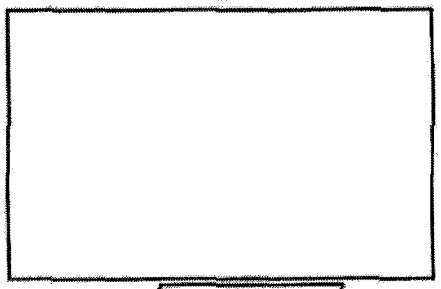
Observation Entry: 125

Barrier:	None	SoilColor:	Brown
Vegetation:	Heavy Brush	Topography:	Gentle Slope
Drainage:	None	SurfaceDebris:	None
Road:	4WD Trail	SubSurfaceMetalDetect:	Low Density
SoilType:	Mixed	MECMD:	None

Non ordnance piece of metal identified on surface.





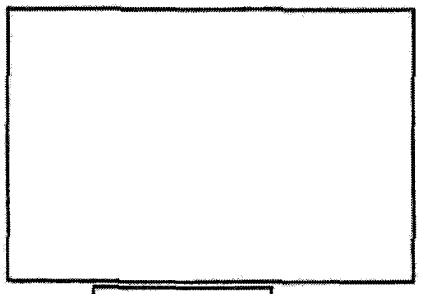


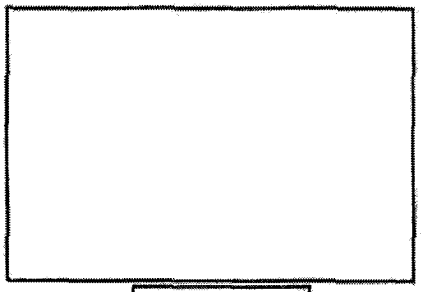
Time	Team Leader	Property ID	Culebra
9:38:00 AM	Nancy Heflin	Latitude:	18.3160288338969
		Longitude:	-65.2600465

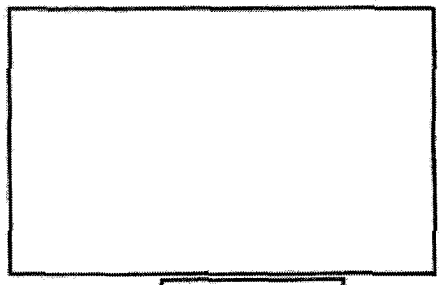
Observation Entry: 126

Barrier:	None	SoilColor:	White
Vegetation:	Light Brush	Topography:	Gentle Slope
Drainage:	None	SurfaceDebris:	Low Density
Road:	4WD Trail	SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None

Non ordnance metal on surface







Time	Team Leader	Property ID	Culebra
9:45:00 AM	Nancy Heflin		

Latitude: 18.3157716672302
Longitude: -65.2579325

Observation Entry: 127

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Grasses	**Topography:**	Gentle Slope
Drainage:	Intermittent	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	None
SoilType:	Mixed	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
10:09:00 AM	Nancy Heflin		

Latitude: 18.3205671672303
Longitude: -65.2566043333333

Observation Entry: 128

Barrier:	None	**SoilColor:**	White
Vegetation:		**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	Low Density
SoilType:	Sand	**MECMD:**	None

The SVT conducted QR along Zoni Beach (MRA 05).
No debris observed.

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
10:15:00 AM	Nancy Heflin	Culebra	18.3218765005637	-65.2585263333334	129

Barrier:	Partial	SoilColor:	White
Vegetation:		Topography:	Flat
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	Low Density
SoilType:	Sand	MECMD:	None

Non-Ordnance debris present on surface along the beach.

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
10:21:00 AM	Nancy Heflin	Culebra	18.3231538338971	-65.2605435	130

Barrier:	None	SoilColor:	White
Vegetation:		Topography:	Flat
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	Low Density
SoilType:	Sand	MECMD:	None

Time	Team Leader	Property ID	Culebra
10:24:00 AM	Nancy Heflin		

Latitude: 18.3239076672304
Longitude: -65.2623

Observation Entry: 131

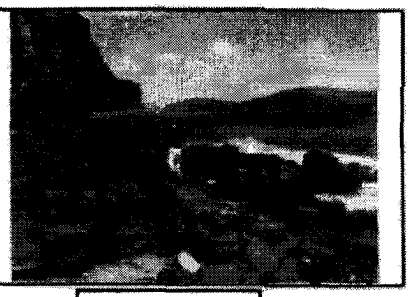
Barrier:	None	**SoilColor:**	White
Vegetation:		**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	Low Density
SoilType:	Sand	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
10:28:00 AM	Nancy Heflin		

Latitude: 18.3247365005638
Longitude: -65.2625805

Observation Entry: 132

Barrier:	None	**SoilColor:**	
Vegetation:		**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:	Rocky	**MECMD:**	None



Time	Team Leader	Property ID	Culebra
10:33:00 AM	Nancy Heflin		

Latitude: 18.3248526672305
Longitude: -65.2628405

Observation Entry: 133

Barrier:	Partial natural barrier	**SoilColor:**	Brown
Vegetation:	Grasses	**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

Field team climbed steep rocky area to grassy hillside above. Boulders under grass make walking very difficult and uneven.

Time	Team Leader	Property ID	Culebra
10:42:00 AM	Nancy Heflin		

Latitude: 18.3249503338971
Longitude: -65.2632436666667

Observation Entry: 134

Barrier:	Partial natural	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
10:46:00 AM	Nancy Heflin		

Latitude: 18.3251900005638
Longitude: -65.2641776666667

Observation Entry: 135

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Grasses	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Mixed	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
10:52:00 AM	Nancy Heflin		

Latitude: 18.3245296005638
Longitude: -65.2633483333333

Observation Entry: 136

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Mixed	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID
10:56:00 AM	Nancy Heflin	Culebra

Latitude: 18.3244401672305
Longitude: -65.2629211666667

Observation Entry: 137

Barrier:	Partial natural	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Steep Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	Low Density
SoilType:	Mixed	**MECMD:**	None

No debris observed.

view from hillside before descending the steep rocky area back to the beach

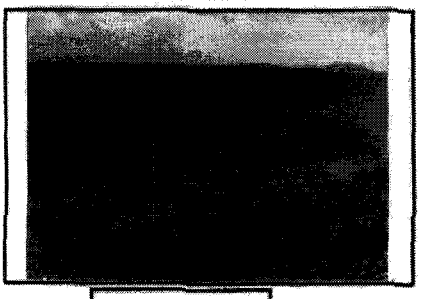
Time	Team Leader	Property ID
10:59:00 AM	Nancy Heflin	Culebra

Latitude: 18.3246621672305
Longitude: -65.2627763333333

Observation Entry: 138

Barrier:	Partial natural	**SoilColor:**	Brown
Vegetation:	Light Brush	**Topography:**	Steep Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

No debris observed.



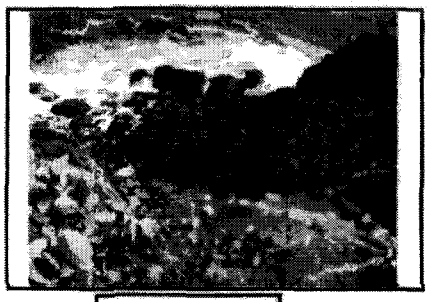
Time	Team Leader	Property ID	Culebra
11:12:00 AM	Nancy Heflin		

Latitude: 18.3233926672304
Longitude: -65.2608505

Observation Entry: 139

Barrier:	None	**SoilColor:**	White
Vegetation:		**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	very Low Density
SoilType:	Sand	**MECMD:**	None

No debris observed.



steep area where team climbed up and down

Time	Team Leader	Property ID	Culebra
11:18:00 AM	Nancy Heflin		

Latitude: 18.3215915005637
Longitude: -65.2580728333333

Observation Entry: 140

Barrier:	None	**SoilColor:**	White
Vegetation:		**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	Low Density
SoilType:	Sand	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
11:25:00 AM	Nancy Heflin	Latitude:	18.319726833897
		Longitude:	-65.2550203333333

Observation Entry: 141

Barrier:	None	SoilColor:	White
Vegetation:		Topography:	Flat
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	very Low Density
SoilType:	Sand	MECMD:	None

No debris observed.

Time	Team Leader	Property ID	Culebra
12:39:51 PM	Nancy Heflin	Latitude:	18.3247483338971
		Longitude:	-65.3186911666667

Observation Entry: 142

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	
Road:		SubSurfaceMetalDetect:	
SoilType:		MECMD:	

Collected SE-04 in lagoon at 3 feet water depth.

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
12:57:00 PM	Nancy Heflin	Culebra	18.3217886672304	-65.3122843333333	143

Barrier:	None	SoilColor:	Brown
Vegetation:	Dense Trees	Topography:	Flat
Drainage:	Pond	SurfaceDebris:	None
Road:	4WD Trail	SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None

QR conducted QR in the vacinty of SE - 03 and SE-04 and the areas surrounding Flamenco Lagoon. (MRS 04)

Trash dump pile along gravel road on the south side of Flamenco Lagoon.

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
1:01:00 PM	Nancy Heflin	Culebra	18.3224813338971	-65.311985	144

Barrier:		SoilColor:	
Vegetation:	Dense Trees	Topography:	
Drainage:	Pond	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:		MECMD:	None

Sediment on the bottom of the lagoon restricts going deeper. Feet sink and get caught in the sediment.

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
1:02:08 PM	Nancy Heflin	Culebra	18.3224765005637	-65.311979	145

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	
Road:		SubSurfaceMetalDetect:	
SoilType:		MECMD:	

Collected SE-03 Lagoon bottom gets too mucky to go deeper. 15 feet from shore and water depth of 2.5 ft

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
3:05:00 PM	Nancy Heflin	Culebra	18.3274695005639	-65.319128	146

Barrier:	None	SoilColor:	Tan
Vegetation:		Topography:	Broken Terrain
Drainage:	Ocean	SurfaceDebris:	None
Road:	4WD Trail	SubSurfaceMetalDetect:	Low Density
SoilType:	Silt	MECMD:	None

QR along the gravel road along the north end of Flamenco Lagoon

Time	Team Leader	Property ID	Culebra
3:08:00 PM	Nancy Heflin		

Latitude: 18.3265998338972
Longitude: -65.3179653333333

Observation Entry: 147

Barrier:	Partial	**SoilColor:**	Tan
Vegetation:	Mixed Trees and Brush	**Topography:**	Flat
Drainage:	None	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Silt	**MECMD:**	None

Dense vegetation off of the gravel road. No debris observed.

Time	Team Leader	Property ID	Culebra
3:11:00 PM	Nancy Heflin		

Latitude: 18.3264603338972
Longitude: -65.3166826666667

Observation Entry: 148

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Flat
Drainage:	None	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Loam	**MECMD:**	None

Field team entered into the woods to collect SS-11. GPS coverage was lost and supplemented with Garmin GPS tracks through the woods. No debris observed.

Entrance where team cut path into brush.

Time	Team Leader	Property ID	Culebra
3:14:00 PM	Nancy Heflin		

Latitude: 18.3264853338972
Longitude: -65.3166693333333

Observation Entry: 149

Barrier:	None	SoilColor:	Dark Brown
Vegetation:	Dense Trees	Topography:	Flat
Drainage:	None	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Organic	MECMD:	None

No debris observed.

Time	Team Leader	Property ID	Culebra
3:33:31 PM	Nancy Heflin		

Latitude: 18.3272856672305
Longitude: -65.3165706666667

Observation Entry: 150

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	
Road:		SubSurfaceMetalDetect:	
SoilType:		MECMD:	

Collected SS-11 in woods cut down several trees but could not get good GPS coverage

Time	Team Leader	Property ID	Culebra
3:47:00 PM	Nancy Heflin		

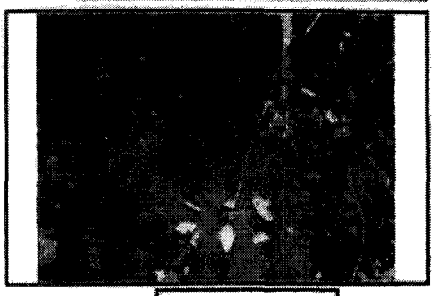
Latitude: 18.3264728338972
Longitude: -65.3161341666667

Observation Entry: 151

Barrier:	None	**SoilColor:**	Tan
Vegetation:	Mixed Trees and Brush	**Topography:**	Flat
Drainage:	None	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	Very Low Density
SoilType:	Silt	**MECMD:**	None

Very low density of metallic anomalies in woods, no debris observed on surface.

Chopped trees to clear vegetation to get GPS coverage to mark the location of SS-



area cleared to collect SS-11.

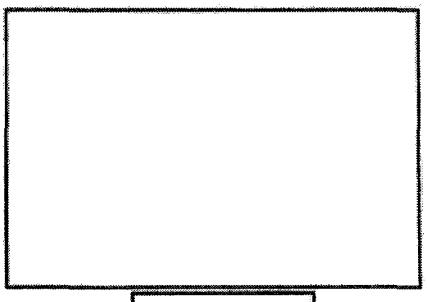
Time	Team Leader	Property ID	Culebra
3:55:00 PM	Nancy Heflin		

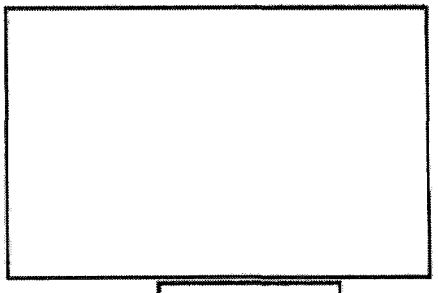
Latitude: 18.3269658338972
Longitude: -65.3147668333333

Observation Entry: 152

Barrier:	None	**SoilColor:**	Tan
Vegetation:	Mixed Trees and Brush	**Topography:**	Flat
Drainage:	None	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Silt	**MECMD:**	None

Road near hotel development.





Time	Team Leader	Property ID	Culebra
4:02:00 PM	Nancy Heflin		

Latitude: 18.3283506672306
Longitude: -65.3152046666667

Observation Entry: 153

Barrier:	None	**SoilColor:**	White
Vegetation:		**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Sand	**MECMD:**	None

Very little non-ordnance debris on beach. No ordnance debris was observed.

Time	Team Leader	Property ID	Culebra
4:05:00 PM	Nancy Heflin		

Latitude: 18.3288935005639
Longitude: -65.313968

Observation Entry: 154

Barrier:	None	**SoilColor:**	Tan
Vegetation:	Mixed Trees and Brush	**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	Low Density
SoilType:	Sand	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
4:11:00 PM	Nancy Heflin		

Latitude: 18.3306441672306
Longitude: -65.3129308333333

Observation Entry: 156

Barrier:	None	SoilColor:	White
Vegetation:	Mixed Trees and Brush	Topography:	Flat
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	Low Density
SoilType:	Sand	MECMD:	None

Time	Team Leader	Property ID	Culebra
4:16:00 PM	Nancy Heflin		

Latitude: 18.3301455005639
Longitude: -65.3129096666667

Observation Entry: 156

Barrier:	None	SoilColor:	White
Vegetation:	Dense Trees	Topography:	Flat
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Mixed	MECMD:	None

Building foundation and colapsed roof. No munitions or military debris identified.

Time	Team Leader	Property ID	Culebra
4:23:00 PM	Nancy Heflin		

Latitude: 18.3276460005639
Longitude: -65.3135128333333

Observation Entry: 157

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Flat
Drainage:	Pond	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Loam	**MECMD:**	None

Gravel road off of beach along Flamenco Lagoon. No debris observed.

Time	Team Leader	Property ID	Culebra
4:27:00 PM	Nancy Heflin		

Latitude: 18.3265086672305
Longitude: -65.3128648333333

Observation Entry: 158

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Flat
Drainage:	Pond	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Mixed	**MECMD:**	None

Possible old military bunker now converted into a private property sign

Photo taken facing north toward the beach.

Time	Team Leader	Property ID	Culebra
4:31:00 PM	Nancy Heflin		

Latitude: 18.3256355005638
Longitude: -65.3124496666667

Observation Entry: 159

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Flat
Drainage:	Pond	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Mixed	**MECMD:**	None

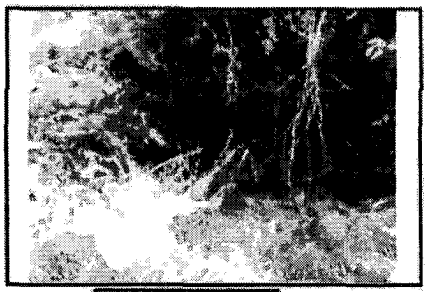
Time	Team Leader	Property ID	Culebra
4:38:00 PM	Nancy Heflin		

Latitude: 18.3222108338971
Longitude: -65.3120086666667

Observation Entry: 160

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Flat
Drainage:	Pond	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Mixed	**MECMD:**	None

No debris observed.



Time	Team Leader	Property ID	Culebra
4:42:00 PM	Nancy Heflin		

Latitude: 18.3223801672304
Longitude: -65.3136123333333

Observation Entry: 161

Barrier:	None	**SoilColor:**	Tan
Vegetation:	Mixed Brush and Grasses	**Topography:**	Flat
Drainage:	Pond	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	None
SoilType:	Mixed	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
4:46:00 PM	Nancy Heflin		

Latitude: 18.3226710005637
Longitude: -65.3167983333333

Observation Entry: 162

Barrier:	None	**SoilColor:**	Tan
Vegetation:	Mixed Trees and Brush	**Topography:**	Flat
Drainage:	Pond	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	None
SoilType:	Mixed	**MECMD:**	None

thick vegetation on side of road restricts access. No debris observed.

Time	Team Leader	Property ID	Culebra
4:51:00 PM	Nancy Heflin		

Latitude: 18.3247838338971
Longitude: -65.3189008333333

Observation Entry: 163

Barrier:	None	**SoilColor:**	Tan
Vegetation:	Mixed Trees and Brush	**Topography:**	Flat
Drainage:	Pond	**SurfaceDebris:**	Non-ordnance trash
Road:	Paved	**SubSurfaceMetalDetect:**	
SoilType:	Mixed	**MECMD:**	None

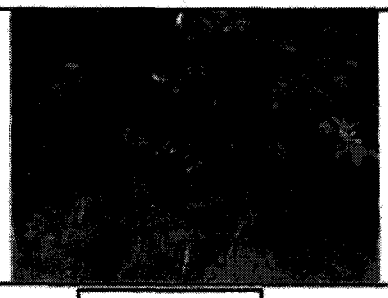
Too much trash on side of road to get anomaly reading.

Time	Team Leader	Property ID	Culebra
4:57:00 PM	Nancy Heflin		

Latitude: 18.3275636672305
Longitude: -65.3191306666667

Observation Entry: 164

Barrier:	None	**SoilColor:**	Tan
Vegetation:	Mixed Trees and Brush	**Topography:**	Flat
Drainage:	Pond	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	None
SoilType:	Sand	**MECMD:**	None



Monday, October 30, 2006

Time	Team Leader	Property ID	Culebra
8:20:00 AM	Nancy Heflin		

Latitude: 18.3051651672299
Longitude: -65.2451656666667

Observation Entry: 165

Barrier:	None	SoilColor:	Tan
Vegetation:	Heavy Brush	Topography:	Flat
Drainage:	None	SurfaceDebris:	None
Road:	Game Trail	SubSurfaceMetalDetect:	Low Density
SoilType:	Sand	MECMD:	None

QR was conducted near Point Negra along the 4wd trail toward the north end of Mangrove Harbor.

Time	Team Leader	Property ID	Culebra
8:22:00 AM	Nancy Heflin		

Latitude: 18.3051638338966
Longitude: -65.2447485

Observation Entry: 166

Barrier:	Complete	SoilColor:	Tan
Vegetation:	Heavy Brush	Topography:	Flat
Drainage:	Ocean	SurfaceDebris:	None
Road:	Game Trail	SubSurfaceMetalDetect:	Medium Density
SoilType:	Sand	MECMD:	None

trail dead ends at ocean

Time	Team Leader	Property ID
8:28:00 AM	Nancy Heflin	Culebra

Latitude: 18.3071945005633
Longitude: -65.2448505

Observation Entry: 167

Barrier:	Complete	**SoilColor:**	Tan
Vegetation:	Heavy Brush	**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:	Sand	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID
8:37:00 AM	Nancy Heflin	Culebra

Latitude: 18.3070115005633
Longitude: -65.2454483333333

Observation Entry: 168

Barrier:	Complete	**SoilColor:**	Tan
Vegetation:	Light Brush	**Topography:**	Flat
Drainage:	Wetlands	**SurfaceDebris:**	None
Road:	Game Trail	**SubSurfaceMetalDetect:**	None
SoilType:	Sand	**MECMD:**	None

Low areas flooded by heavy rains or tidal water.

Time	Team Leader	Property ID	Culebra
8:44:00 AM	Nancy Heflin		

Latitude: 18.3063808338966
Longitude: -65.2470028333334

Observation Entry: 169

Barrier:	None	**SoilColor:**	Tan
Vegetation:	Grasses	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Gravel or Rock	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Sand	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
8:48:00 AM	Nancy Heflin		

Latitude: 18.3064263338966
Longitude: -65.2482398333333

Observation Entry: 170

Barrier:	None	**SoilColor:**	Tan
Vegetation:	Heavy Brush	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Gravel or Rock	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Sand	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
8:53:00 AM	Nancy Heflin		

Latitude: 18.30650966723
Longitude: -65.2504553333333

Observation Entry: 171

Barrier:	None	**SoilColor:**	Tan
Vegetation:	Heavy Brush	**Topography:**	Steep Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Gravel or Rock	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Sand	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
9:00:00 AM	Nancy Heflin		

Latitude: 18.3083705005634
Longitude: -65.2540766666667

Observation Entry: 172

Barrier:	None	**SoilColor:**	Tan
Vegetation:	Heavy Brush	**Topography:**	Steep Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Gravel or Rock	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Sand	**MECMD:**	None

No surface debris observed.

Time	Team Leader	Property ID
9:10:00 AM	Nancy Heflin	Culebra

Latitude: 18.3092906672301
Longitude: -65.259145

Observation Entry: 173

Barrier:	None	**SoilColor:**	Tan
Vegetation:	Heavy Brush	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Gravel or Rock	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Sand	**MECMD:**	None

Time	Team Leader	Property ID
9:13:00 AM	Nancy Heflin	Culebra

Latitude: 18.30888766723
Longitude: -65.260034

Observation Entry: 174

Barrier:	None	**SoilColor:**	Tan
Vegetation:	Light Brush	**Topography:**	Flat
Drainage:	Creek	**SurfaceDebris:**	None
Road:	Gravel or Rock	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Sand	**MECMD:**	None

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
11:26:04 AM	Nancy Heflin	Culebra	18.3223065005637	-65.2608466666667	175

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	
Road:		SubSurfaceMetalDetect:	
SoilType:		MECMD:	

Collected SE-01 In ~3 ft water depth

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
2:28:47 PM	Nancy Heflin	Culebra	18.3045726672299	-65.3027193333333	176

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	
Road:		SubSurfaceMetalDetect:	
SoilType:		MECMD:	

Collected SS-27 Rocky, clay, brown soil. Located near ball field.

Time	Team Leader	Property ID	Culebra
2:37:00 PM	Nancy Heflin		

Latitude: 18.3046890005633
Longitude: -65.3028668333334

Observation Entry: 177

Barrier:		**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Gentle Slope
Drainage:		**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	Low Density
SoilType:	Mixed	**MECMD:**	None

QR conducted in the vicinity of proposed sample SS-27. No debris observed.

Time	Team Leader	Property ID	Culebra
2:43:00 PM	Nancy Heflin		

Latitude: 18.3057068338966
Longitude: -65.3039898333333

Observation Entry: 178

Barrier:		**SoilColor:**	White
Vegetation:	Mixed Brush and Grasses	**Topography:**	Gentle Slope
Drainage:		**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:	Mixed	**MECMD:**	None

Approaching unknown property.

Time	Team Leader	Property ID	Culebra
2:52:00 PM	Nancy Heflin		

Latitude: 18.3049656672299
Longitude: -65.3029598333333

Observation Entry: 179

Barrier:		**SoilColor:**	Brown
Vegetation:	Grasses	**Topography:**	Flat
Drainage:		**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:	Mixed	**MECMD:**	None

Sample location SS-27. Overlooking school baseball field.

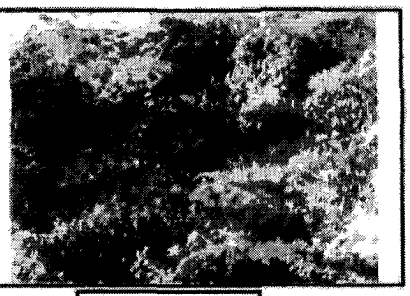
Time	Team Leader	Property ID	Culebra
3:50:00 PM	Nancy Heflin		

Latitude: 18.3006953338965
Longitude: -65.2938556666667

Observation Entry: 180

Barrier:		**SoilColor:**	Mixed
Vegetation:	Grasses	**Topography:**	Gentle Slope
Drainage:		**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:	Mixed	**MECMD:**	None

QR conducted on property near work site by road. Property owner contacted via phone and confirmed that he had already signed a right of entry with the corps.



Time	Team Leader	Property ID	Culebra
4:04:09 PM	Nancy Heflin	Latitude:	18.2992781672298
		Longitude:	-65.2942601666667

Observation Entry: 181

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	
Road:		SubSurfaceMetalDetect:	
SoilType:		MECMD:	

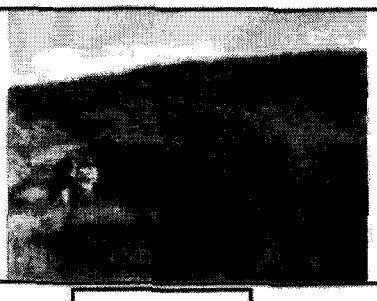
Collected SS-08 Grass between area of dense vegetation

Time	Team Leader	Property ID	Culebra
4:14:00 PM	Nancy Heflin	Latitude:	18.2996836672298
		Longitude:	-65.2950246666667

Observation Entry: 182

Barrier:		SoilColor:	Brown
Vegetation:	Mixed Brush and Grasses	Topography:	Gentle Slope
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None

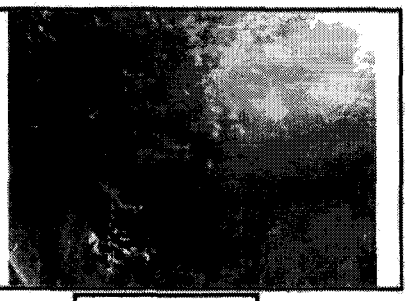
dense vegetation off of trail. No debris observed.



Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
4:21:00 PM	Nancy Heflin	Culebra	18.2992590005631	-65.2946606666667	183

Barrier:		SoilColor:	Brown
Vegetation:	Mixed Brush and Grasses	Topography:	Gentle Slope
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None

Tall grass surrounded by dense vegetation. No debris observed.



Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
4:55:00 PM	Nancy Heflin	Culebra	18.2999940005631	-65.3006565	184

Barrier:	None	SoilColor:	Brown
Vegetation:	Heavy Brush	Topography:	Gentle Slope
Drainage:	Ocean	SurfaceDebris:	None
Road:	4WD Trail	SubSurfaceMetalDetect:	Medium Density mostly trash
SoilType:	Mixed	MECMD:	None

QR conducted along 4wd trail near proposed sample location SS-07. No munitions related debris visiable on surface.

Time	Team Leader	Property ID	Culebra
5:00:00 PM	Nancy Heflin		

Latitude: 18.2976886672297
Longitude: -65.299878

Observation Entry: 185

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Heavy Brush	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Mixed	**MECMD:**	None

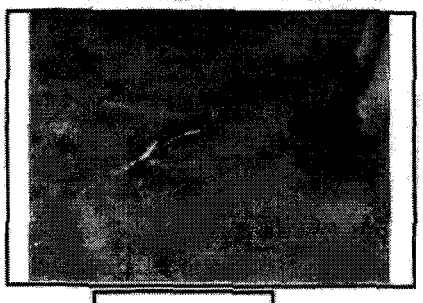
Time	Team Leader	Property ID	Culebra
5:03:31 PM	Nancy Heflin		

Latitude: 18.2972711672297
Longitude: -65.2997663333333

Observation Entry: 186

Barrier:		**SoilColor:**	
Vegetation:		**Topography:**	
Drainage:		**SurfaceDebris:**	
Road:		**SubSurfaceMetalDetect:**	
SoilType:		**MECMD:**	

Collected SS-07

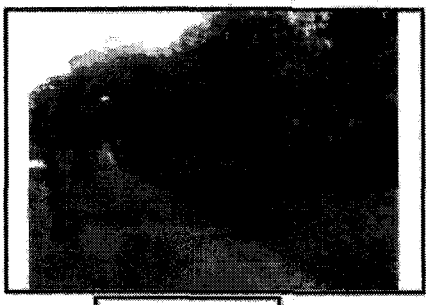


Time	Team Leader	Property ID
5:14:00 PM	Nancy Heflin	Culebra

Latitude: 18.295963500563
Longitude: -65.2993193333334

Observation Entry: 187

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Heavy Brush	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

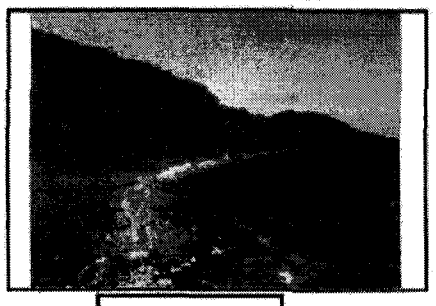


Time	Team Leader	Property ID
5:17:00 PM	Nancy Heflin	Culebra

Latitude: 18.294578500563
Longitude: -65.298692

Observation Entry: 188

Barrier:	None	**SoilColor:**	White
Vegetation:	Mixed Trees and Brush	**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None



Time	Team Leader	Property ID	Culebra
5:19:00 PM	Nancy Heflin		

Latitude: 18.2941193338963
Longitude: -65.2978975

Observation Entry: 189

Barrier:	None	**SoilColor:**	White
Vegetation:	Mixed Trees and Brush	**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

No debris observed.

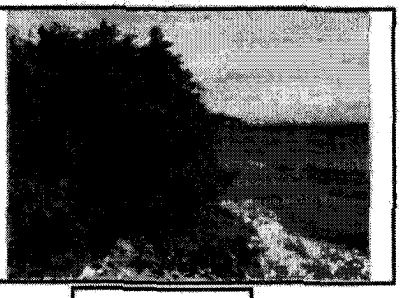
Time	Team Leader	Property ID	Culebra
5:23:00 PM	Nancy Heflin		

Latitude: 18.2937506672296
Longitude: -65.297477

Observation Entry: 190

Barrier:	None	**SoilColor:**	White
Vegetation:	Mixed Trees and Brush	**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

high tide and vegetation restricts movement



Time	Team Leader	Property ID
5:28:00 PM	Nancy Heflin	Culebra

Latitude: 18.294528000563
Longitude: -65.2990935

Observation Entry: 191

Barrier:	None	**SoilColor:**	White
Vegetation:		**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	Low Density
SoilType:	Rocky	**MECMD:**	None

Time	Team Leader	Property ID
5:35:00 PM	Nancy Heflin	Culebra

Latitude: 18.2945003338963
Longitude: -65.299667

Observation Entry: 192

Barrier:	None	**SoilColor:**	White
Vegetation:		**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

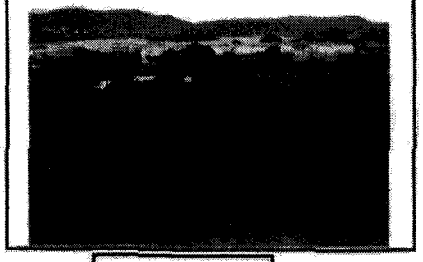
power sub station with vegetation cleared in the vicinty. No debris observed.

Time	Team Leader	Property ID	Culebra
5:36:00 PM	Nancy Heflin	Latitude: 18.294765500563	Observation Entry: 193
		Longitude: -65.2996213333333	

Barrier:	None	SoilColor:	Tan	No debris observed.
Vegetation:		Topography:	Flat	
Drainage:	Ocean	SurfaceDebris:	None	
Road:	4WD Trail	SubSurfaceMetalDetect:	Low Density	
SoilType:	Sand	MECMD:	None	

Time	Team Leader	Property ID	Culebra
5:45:00 PM	Nancy Heflin	Latitude: 18.3001516672298	Observation Entry: 194
		Longitude: -65.300425	

Barrier:	None	SoilColor:	Brown	No debris observed.
Vegetation:	Mixed Trees and Brush	Topography:	Steep Slope	
Drainage:	Intermittent	SurfaceDebris:	None	
Road:	4WD Trail	SubSurfaceMetalDetect:	Low Density	
SoilType:	Mixed	MECMD:	None	



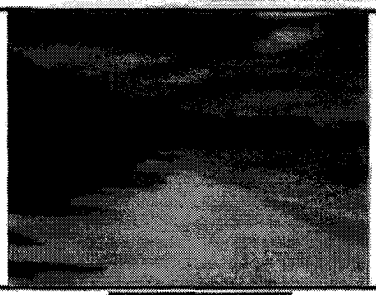
Tuesday, October 31, 2006

Time	Team Leader	Property ID	Culebra
8:59:00 AM	Nancy Heflin	Latitude:	18.3116103338968
		Longitude:	-65.3326085

Observation Entry: 195

Barrier:	None	SoilColor:	White
Vegetation:	Mixed Trees and Brush	Topography:	Flat
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Sand	MECMD:	None

QR conducted on Cayo de Luis Pena along northwest portion of the cay.



Time	Team Leader	Property ID	Culebra
9:03:00 AM	Nancy Heflin	Latitude:	18.3109628338968
		Longitude:	-65.333369

Observation Entry: 196

Barrier:	None	SoilColor:	Black
Vegetation:	Mixed Trees and Brush	Topography:	Broken Terrain
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Rocky	MECMD:	None

Time	Team Leader	Property ID	Culebra
9:06:00 AM	Nancy Heflin		

Latitude: 18.3107621672301
Longitude: -65.334027

Observation Entry: 197

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Broken Terrain
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

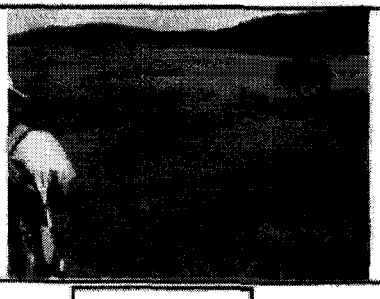
Time	Team Leader	Property ID	Culebra
9:09:00 AM	Nancy Heflin		

Latitude: 18.3106575005634
Longitude: -65.3346506666667

Observation Entry: 198

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Grasses	**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

short grass area, likely trimmed down by goats



Time	Team Leader	Property ID	Culebra
9:11:00 AM	Nancy Heflin	Latitude:	18.3106306672301
		Longitude:	-65.3346653333333

Observation Entry: 199

Barrier:	None	SoilColor:	Brown
Vegetation:	Grasses	Topography:	Gentle Slope
Drainage:	None	SurfaceDebris:	Single Item
Road:		SubSurfaceMetalDetect:	Low Density
SoilType:	Mixed	MECMD:	projectile body

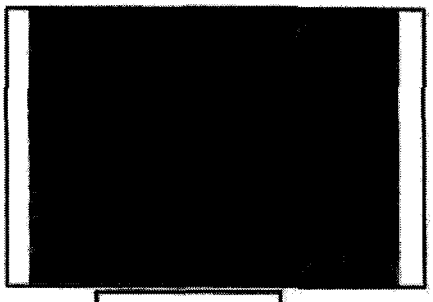
projectile body empty 5 or 6 inch, MD

Time	Team Leader	Property ID	Culebra
9:13:00 AM	Nancy Heflin	Latitude:	18.3106338338968
		Longitude:	-65.3346115

Observation Entry: 200

Barrier:	None	SoilColor:	Brown
Vegetation:	Grasses	Topography:	Gentle Slope
Drainage:	Ocean	SurfaceDebris:	Single Item
Road:		SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	Projectile debris

projectile body empty 5 or 6 inch, MD



Time	Team Leader	Property ID
9:18:00 AM	Nancy Heflin	Culebra

Latitude: 18.3107241672301
Longitude: -65.3350906666667

Observation Entry: 201

Barrier:	None	**SoilColor:**	Mixed
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	Low Density
SoilType:	Rocky	**MECMD:**	None

rock beach

Time	Team Leader	Property ID
9:19:00 AM	Nancy Heflin	Culebra

Latitude: 18.3105988338968
Longitude: -65.3351386666667

Observation Entry: 202

Barrier:		**SoilColor:**	Mixed
Vegetation:		**Topography:**	Gentle Slope
Drainage:		**SurfaceDebris:**	Single Item
Road:		**SubSurfaceMetalDetect:**	Low Density
SoilType:	Rocky	**MECMD:**	Munitions Debris

3 inch projectile body, empty

Time	Team Leader	Property ID	Culebra
9:25:00 AM	Nancy Heflin		

Latitude: 18.3106003338968
Longitude: -65.3359968333333

Observation Entry: 203

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Grasses	**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

another goat feeding area

Time	Team Leader	Property ID	Culebra
9:28:00 AM	Nancy Heflin		

Latitude: 18.3103800005634
Longitude: -65.3360016666667

Observation Entry: 204

Barrier:		**SoilColor:**	Mixed
Vegetation:		**Topography:**	Gentle Slope
Drainage:		**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:	Mixed	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
9:31:00 AM	Nancy Heflin		

Latitude: 18.3098543338967
Longitude: -65.336107

Observation Entry: 205

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Dense Trees	**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
9:34:00 AM	Nancy Heflin		

Latitude: 18.3096470005634
Longitude: -65.3362281666667

Observation Entry: 206

Barrier:	Partial	**SoilColor:**	Brown
Vegetation:	Light Brush	**Topography:**	Vertical
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

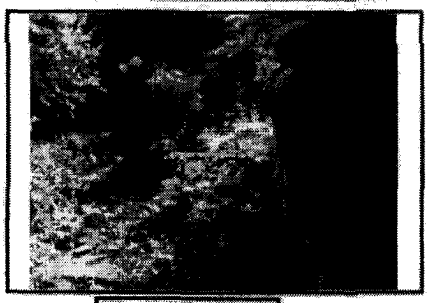
No debris observed.

Time	Team Leader	Property ID
9:37:00 AM	Nancy Heflin	Culebra

Latitude: 18.30925916723
Longitude: -65.3361613333333

Observation Entry: 207

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Light Brush	**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None



Time	Team Leader	Property ID
9:41:00 AM	Nancy Heflin	Culebra

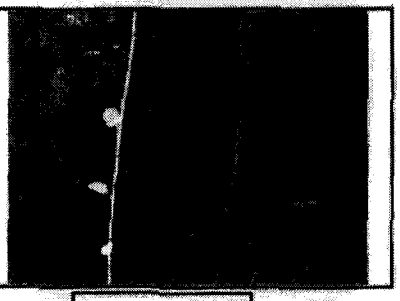
Latitude: 18.3087325005634
Longitude: -65.3358631666667

Observation Entry: 208

Barrier:		**SoilColor:**	
Vegetation:		**Topography:**	
Drainage:		**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:		**MECMD:**	None

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
9:45:00 AM	Nancy Heflin	Culebra	18.3087960005634	-65.3355455	209

Barrier:	None	SoilColor:	Brown	No debris observed.
Vegetation:	Dense Trees	Topography:	Gentle Slope	
Drainage:	Ocean	SurfaceDebris:	None	
Road:		SubSurfaceMetalDetect:	No Detect	
SoilType:	Mixed	MECMD:	None	



Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
9:55:00 AM	Nancy Heflin	Culebra	18.3087913338967	-65.3349036666667	210

Barrier:	None	SoilColor:	Brown	No debris observed.
Vegetation:	Dense Trees	Topography:	Gentle Slope	
Drainage:	Ocean	SurfaceDebris:	None	
Road:		SubSurfaceMetalDetect:	No Detect	
SoilType:	Mixed	MECMD:	None	

Time	Team Leader	Property ID	Culebra
10:13:00 AM	Nancy Heflin		

Latitude: 18.3085830005634
Longitude: -65.3336446666667

Observation Entry: 211

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Steep Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
10:18:00 AM	Nancy Heflin		

Latitude: 18.3085450005634
Longitude: -65.3335603333333

Observation Entry: 212

Barrier:	None	**SoilColor:**	Mixed
Vegetation:	Dense Trees	**Topography:**	Steep Slope
Drainage:	Ocean	**SurfaceDebris:**	Single Item
Road:		**SubSurfaceMetalDetect:**	None
SoilType:	Mixed	**MECMD:**	None

large fist sized piece of metal or metallic rock

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
10:30:00 AM	Nancy Heflin	Culebra	18.3085743338967	-65.3331093333333	213

Barrier:	None	SoilColor:	Brown
Vegetation:	Dense Trees	Topography:	Steep Slope
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Mixed	MECMD:	None

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
10:38:00 AM	Nancy Heflin	Culebra	18.3082910005634	-65.3329353333334	214

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:		MECMD:	None

concrete anchor, crooked on slope may not be original location but could have rolled down steep slope.

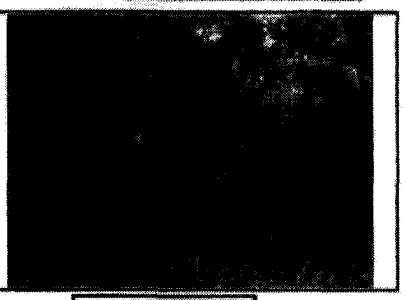
Time	Team Leader	Property ID	Culebra
10:47:00 AM	Nancy Heflin		

Latitude: 18.3080870005634
Longitude: -65.332801

Observation Entry: 215

Barrier:	None	**SoilColor:**	
Vegetation:	Dense Trees	**Topography:**	Steep Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	No Detect
SoilType:		**MECMD:**	None

old paved road, steep slope up and down hill. Gentle slope on road.



Time	Team Leader	Property ID	Culebra
10:55:00 AM	Nancy Heflin		

Latitude: 18.30764066723
Longitude: -65.3318205

Observation Entry: 216

Barrier:	None	**SoilColor:**	
Vegetation:	Mixed Trees and Brush	**Topography:**	Steep Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	No Detect
SoilType:		**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
10:58:00 AM	Nancy Heflin		

Latitude: 18.3074703338967
Longitude: -65.3321068333333

Observation Entry: 217

Barrier:	None	SoilColor:	
Vegetation:		Topography:	Flat
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:		MECMD:	None

Heli pad at highpoint on hill.

Time	Team Leader	Property ID	Culebra
10:59:00 AM	Nancy Heflin		

Latitude: 18.3075713338967
Longitude: -65.3323656666667

Observation Entry: 218

Barrier:	None	SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:		MECMD:	None

Foot path off of heli pad toward building debris and foundations. Also more concrete anchors.

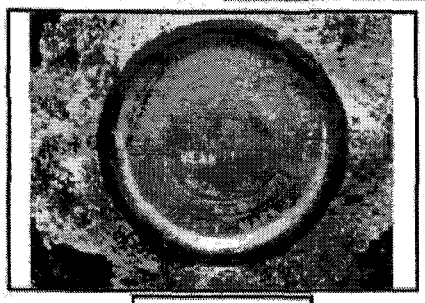
Time	Team Leader	Property ID
11:00:00 AM	Nancy Heflin	Culebra

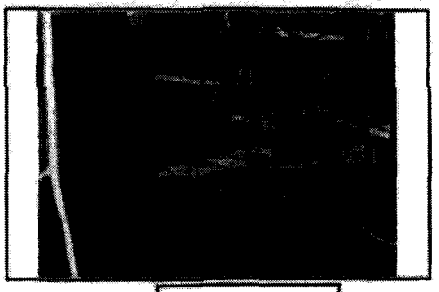
Latitude: 18.3075403338967
Longitude: -65.3326481666667

Observation Entry: 219

Barrier:		**SoilColor:**	
Vegetation:		**Topography:**	
Drainage:		**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:		**MECMD:**	None

Building foundation and extensive evidence of military use. Building foundations and building debris cover entire area.





Time	Team Leader	Property ID
11:21:00 AM	Nancy Heflin	Culebra

Latitude: 18.30864516723
Longitude: -65.3321151666667

Observation Entry: 220

Barrier:		**SoilColor:**	Brown
Vegetation:	Dense Trees	**Topography:**	Steep Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
11:31:00 AM	Nancy Heflin	Latitude:	18.3096696672301
		Longitude:	-65.3320353333333

Observation Entry: 221

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Dense Trees	**Topography:**	Steep Slope
Drainage:	None	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

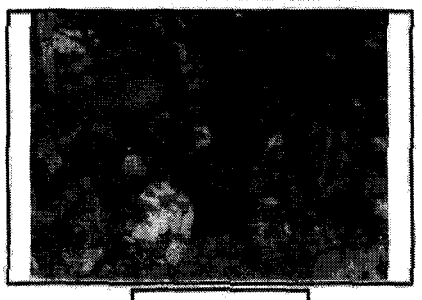
No debris observed.

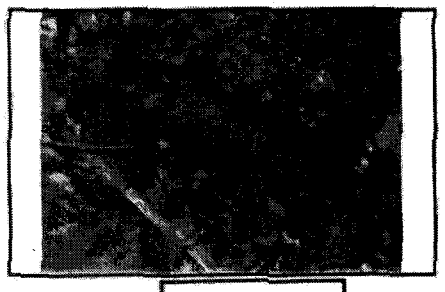
Time	Team Leader	Property ID	Culebra
11:34:00 AM	Nancy Heflin	Latitude:	18.3098775005634
		Longitude:	-65.3320015

Observation Entry: 222

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Dense Trees	**Topography:**	Steep Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:	Rocky	**MECMD:**	5 Inch Projectile 4 total expended

Four 5" projectile - Base ejection with mechanical time fuze (empty/ no hazard), much less rusted than previous projectiles found on Cayo de Luis Pena.





Time	Team Leader	Property ID	Culebra
11:37:00 AM	Nancy Heflin		

Latitude: 18.3098760005634
Longitude: -65.332002

Observation Entry: 223

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:		MECMD:	back end of 3 inc Projectile

3 inch projectile expended.

Time	Team Leader	Property ID	Culebra
11:40:00 AM	Nancy Heflin		

Latitude: 18.3100976672301
Longitude: -65.3319321666667

Observation Entry: 224

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:		MECMD:	expended Projectile 5 inch

5" projectile - Base ejection with mechanical time fuze (empty/ no hazard)

Time	Team Leader	Property ID	Culebra
11:52:00 AM	Nancy Heflin		

Latitude: 18.3112870005634
Longitude: -65.3317298333333

Observation Entry: 225

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
11:53:45 AM	Nancy Heflin		

Latitude: 18.3113396672301
Longitude: -65.33156

Observation Entry: 226

Barrier:		**SoilColor:**	
Vegetation:		**Topography:**	
Drainage:		**SurfaceDebris:**	
Road:		**SubSurfaceMetalDetect:**	
SoilType:		**MECMD:**	

Collected SS-01

Time	Team Leader	Property ID	Culebra
1:28:00 PM	Nancy Heflin		

Latitude: 18.2999713338965
Longitude: -65.3308426666667

Observation Entry: 227

Barrier:	None	SoilColor:	Brown
Vegetation:	Mixed Trees and Brush	Topography:	Gentle Slope
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Mixed	MECMD:	None

QR conducted on Cayo de Luis Pena along south portion of the cay. No debris observed.

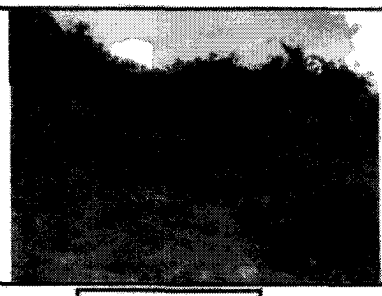
Time	Team Leader	Property ID	Culebra
1:33:00 PM	Nancy Heflin		

Latitude: 18.3001546672298
Longitude: -65.3307913333333

Observation Entry: 228

Barrier:	None	SoilColor:	Brown
Vegetation:	Mixed Trees and Brush	Topography:	Gentle Slope
Drainage:	Ocean	SurfaceDebris:	None
Road:	Game Trail	SubSurfaceMetalDetect:	No Detect
SoilType:	Mixed	MECMD:	None

No debris observed.



Time	Team Leader	Property ID	Culebra
1:37:00 PM	Nancy Heflin		

Latitude: 18.3002691672298
Longitude: -65.3305831666667

Observation Entry: 229

Barrier:	None	**SoilColor:**	
Vegetation:	Mixed Trees and Brush	**Topography:**	Steep Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	No Detect
SoilType:		**MECMD:**	None

No debris observed.

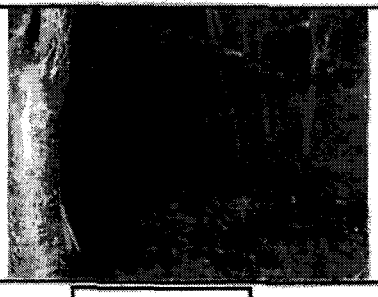
Time	Team Leader	Property ID	Culebra
1:44:00 PM	Nancy Heflin		

Latitude: 18.3008941672298
Longitude: -65.3297081666667

Observation Entry: 230

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	Intermittent	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

No debris observed.



Time	Team Leader	Property ID	Culebra
1:49:00 PM	Nancy Heflin		

Latitude: 18.3012316672298
Longitude: -65.3302841666667

Observation Entry: 231

Barrier:	Partial	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	Creek	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	Flare container

flare or signal cartridge

Time	Team Leader	Property ID	Culebra
1:52:00 PM	Nancy Heflin		

Latitude: 18.3017881672299
Longitude: -65.3303028333333

Observation Entry: 232

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
1:53:00 PM	Nancy Heflin	Latitude:	18.3017818338965
		Longitude:	-65.330313

Observation Entry: 233

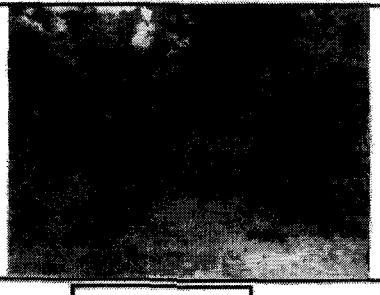
Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

No debris observed

Time	Team Leader	Property ID	Culebra
1:59:00 PM	Nancy Heflin	Latitude:	18.3026571672299
		Longitude:	-65.3308956666666

Observation Entry: 234

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	Intermittent	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None



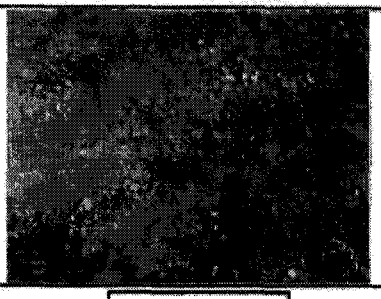
Time	Team Leader	Property ID	Culebra
2:19:34 PM	Nancy Heflin		

Latitude: 18.3033715005632
Longitude: -65.331567

Observation Entry: 235

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	
Road:		SubSurfaceMetalDetect:	
SoilType:		MECMD:	

Collected SS-02, low area where serface water likely drains to subsurface. Mudcracks present.



Time	Team Leader	Property ID	Culebra
2:36:00 PM	Nancy Heflin		

Latitude: 18.3038570005632
Longitude: -65.3322206666667

Observation Entry: 236

Barrier:	None	SoilColor:	Brown
Vegetation:	Mixed Brush and Grasses	Topography:	Gentle Slope
Drainage:	Ocean	SurfaceDebris:	None
Road:	Paved	SubSurfaceMetalDetect:	No Detect
SoilType:	Mixed	MECMD:	None

ceramic telephone wire insulators on ground

Time	Team Leader	Property ID	Culebra
2:38:00 PM	Nancy Heflin		

Latitude: 18.3039303338966
Longitude: -65.3321326666667

Observation Entry: 237

Barrier:	Partial	**SoilColor:**	Brown
Vegetation:	Grasses	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	Single Item
Road:	Paved	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	Small arms debris

.30 caliber blank

Time	Team Leader	Property ID	Culebra
2:49:00 PM	Nancy Heflin		

Latitude: 18.3032838338965
Longitude: -65.3324991666667

Observation Entry: 238

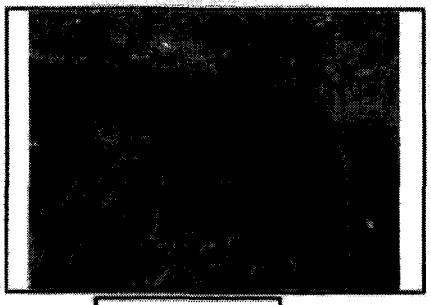
Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
2:55:00 PM	Nancy Heflin		

Latitude: 18.3029235005632
Longitude: -65.3325216666667

Observation Entry: 239

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Steep Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None



Time	Team Leader	Property ID	Culebra
3:05:00 PM	Nancy Heflin		

Latitude: 18.3022968338965
Longitude: -65.332704

Observation Entry: 240

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Steep Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
3:23:00 PM	Nancy Heflin		

Latitude: 18.3013351672298
Longitude: -65.33308583333334

Observation Entry: 241

Barrier:	None	**SoilColor:**	Tan
Vegetation:	Dense Trees	**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:	Sand	**MECMD:**	None

Sonar Buoy with Trimble GPS piece attached. May or may not be military, post 1975. No explosive components

Time	Team Leader	Property ID	Culebra
3:34:00 PM	Nancy Heflin		

Latitude: 18.3005438338965
Longitude: -65.332525

Observation Entry: 242

Barrier:		**SoilColor:**	Brown
Vegetation:		**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
3:40:00 PM	Nancy Heflin		

Latitude: 18.2995538338965
Longitude: -65.3313596666667

Observation Entry: 243

Barrier:		SoilColor:	White
Vegetation:		Topography:	Flat
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Sand	MECMD:	None

No debris observed.

Wednesday, November 01, 2006

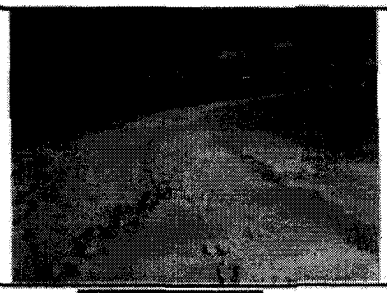
Time	Team Leader	Property ID	Culebra
8:59:00 AM	Nancy Heflin		

Latitude: 18.3180221672303
Longitude: -65.2279493333333

Observation Entry: 244

Barrier:	None	SoilColor:	White
Vegetation:		Topography:	Flat
Drainage:	Ocean	SurfaceDebris:	None
Road:	Unimproved	SubSurfaceMetalDetect:	No Detect
SoilType:	Sand	MECMD:	None

QR conducted on Culebrita. No debris osbervered.



Time	Team Leader	Property ID	Culebra
9:03:00 AM	Nancy Heflin		

Latitude: 18.3184165005636
Longitude: -65.2271893333334

Observation Entry: 245

Barrier:		**SoilColor:**	Tan
Vegetation:	Mixed Trees and Brush	**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:	Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Sand	**MECMD:**	None

Trailhead to other beaches and to the lighthouse. No debris observed.

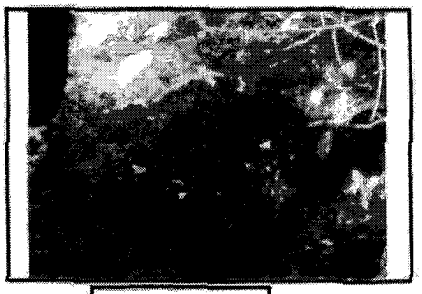
Time	Team Leader	Property ID	Culebra
9:05:00 AM	Nancy Heflin		

Latitude: 18.3179658333897
Longitude: -65.226871

Observation Entry: 246

Barrier:	None	**SoilColor:**	Tan
Vegetation:	Heavy Brush	**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:	Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Sand	**MECMD:**	None

No debris observed.



Time	Team Leader	Property ID	Culebra
9:09:00 AM	Nancy Heflin		

Latitude: 18.3171181672303
Longitude: -65.2260681666667

Observation Entry: 247

Barrier:	None	**SoilColor:**	Tan
Vegetation:		**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Sand	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
9:12:00 AM	Nancy Heflin		

Latitude: 18.3182180005636
Longitude: -65.2252453333333

Observation Entry: 248

Barrier:	None	**SoilColor:**	Black
Vegetation:	Dense Trees	**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
9:16:00 AM	Nancy Heflin		

Latitude: 18.318365333897
Longitude: -65.2239008333333

Observation Entry: 249

Barrier:	None	**SoilColor:**	White
Vegetation:		**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	Low Density
SoilType:	Rocky	**MECMD:**	None

No debris observed.

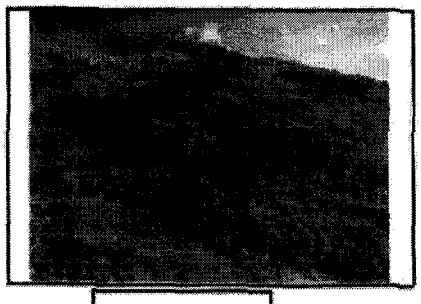
Time	Team Leader	Property ID	Culebra
9:18:00 AM	Nancy Heflin		

Latitude: 18.3185766672303
Longitude: -65.2237143333333

Observation Entry: 250

Barrier:	None	**SoilColor:**	reddish brown
Vegetation:	Light Brush	**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

No debris observed.



Time	Team Leader	Property ID	Culebra
9:21:00 AM	Nancy Heflin		

Latitude: 18.3189745005636
Longitude: -65.2232213333334

Observation Entry: 251

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Light Brush	**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
9:23:00 AM	Nancy Heflin		

Latitude: 18.3193091672303
Longitude: -65.223221

Observation Entry: 252

Barrier:		**SoilColor:**	Brown
Vegetation:	Light Brush	**Topography:**	Gentle Slope
Drainage:		**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

sea cliffs on back side of the island

Time	Team Leader	Property ID	Culebra
9:27:00 AM	Nancy Heflin		

Latitude: 18.319936833897
Longitude: -65.2236168333334

Observation Entry: 253

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Grasses	**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

No debris observed.

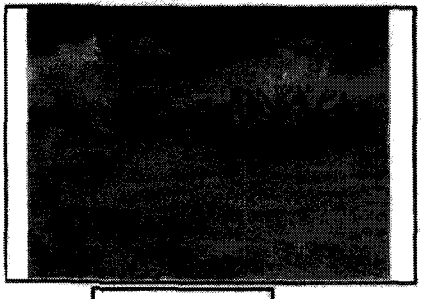
Time	Team Leader	Property ID	Culebra
9:32:00 AM	Nancy Heflin		

Latitude: 18.3205141672303
Longitude: -65.223526

Observation Entry: 254

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Light Brush	**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

No debris observed.



Time	Team Leader	Property ID	Culebra
9:39:00 AM	Nancy Heflin		

Latitude: 18.3208831672304
Longitude: -65.22367

Observation Entry: 255

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Light Brush	**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
9:43:00 AM	Nancy Heflin		

Latitude: 18.3210141672304
Longitude: -65.2239976666667

Observation Entry: 256

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Light Brush	**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

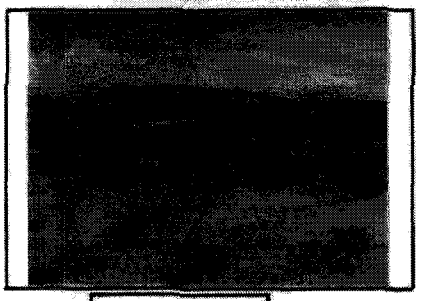
No debris observed.

Time	Team Leader	Property ID	Culebra
9:47:00 AM	Nancy Heflin		

Latitude: 18.3213776672304
Longitude: -65.2245245

Observation Entry: 257

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Grasses	**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None



Time	Team Leader	Property ID	Culebra
9:49:00 AM	Nancy Heflin		

Latitude: 18.3219695005637
Longitude: -65.2245915

Observation Entry: 258

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Grasses	**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
9:53:00 AM	Nancy Heflin		

Latitude: 18.3221331672304
Longitude: -65.225081

Observation Entry: 259

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Light Brush	**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
10:01:00 AM	Nancy Heflin		

Latitude: 18.3220860005637
Longitude: -65.2258273333334

Observation Entry: 260

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

No debris observed

Time	Team Leader	Property ID	Culebra
10:05:00 AM	Nancy Heflin		

Latitude: 18.3218888338971
Longitude: -65.2261308333334

Observation Entry: 261

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Heavy Brush	**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
10:10:47 AM	Nancy Heflin		

Latitude: 18.3217686672304
Longitude: -65.2262661666667

Observation Entry: 262

Barrier:		**SoilColor:**	
Vegetation:		**Topography:**	
Drainage:		**SurfaceDebris:**	
Road:		**SubSurfaceMetalDetect:**	
SoilType:		**MECMD:**	

Collected SS-26

Time	Team Leader	Property ID	Culebra
10:32:00 AM	Nancy Heflin		

Latitude: 18.3218121672304
Longitude: -65.2266208333333

Observation Entry: 263

Barrier:	None	SoilColor:	Brown
Vegetation:	Mixed Trees and Brush	Topography:	Flat
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Rocky	MECMD:	None

Time	Team Leader	Property ID	Culebra
10:39:00 AM	Nancy Heflin		

Latitude: 18.3220380005637
Longitude: -65.2270521666667

Observation Entry: 264

Barrier:		SoilColor:	Brown
Vegetation:		Topography:	Flat
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Rocky	MECMD:	None

No debris observed.

Time	Team Leader	Property ID	Culebra
10:44:00 AM	Nancy Heflin		

Latitude: 18.3220450005637
Longitude: -65.2275163333334

Observation Entry: 265

Barrier:		**SoilColor:**	Brown
Vegetation:	Light Brush	**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
10:52:00 AM	Nancy Heflin		

Latitude: 18.3208096672304
Longitude: -65.2264906666667

Observation Entry: 266

Barrier:	None	**SoilColor:**	Brown
Vegetation:		**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

No debris observed.

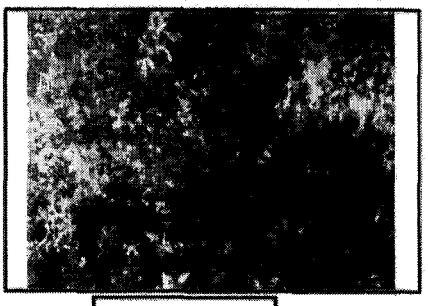
Time	Team Leader	Property ID	Culebra
11:32:00 AM	Nancy Heflin		

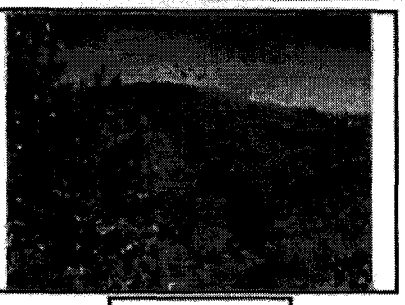
Latitude: 18.3174870005636
Longitude: -65.22693

Observation Entry: 267

Barrier:	None	**SoilColor:**	Tan
Vegetation:	Heavy Brush	**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:	Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Sand	**MECMD:**	None

No debris observed.





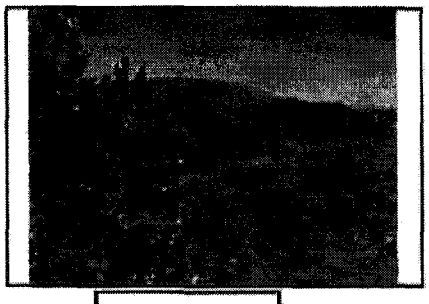
Time	Team Leader	Property ID	Culebra
11:37:00 AM	Nancy Heflin		

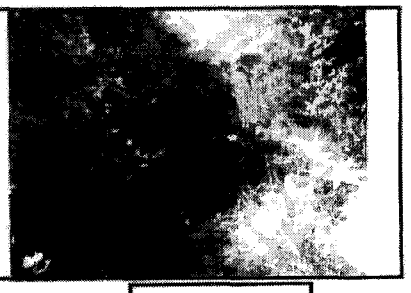
Latitude: 18.3169805005636
Longitude: -65.227384

Observation Entry: 268

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Heavy Brush	**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:	trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

No debris observed.



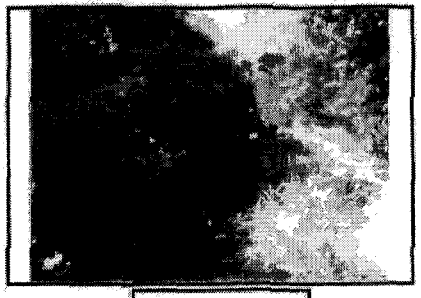


Time	Team Leader	Property ID	Culebra
11:43:00 AM	Nancy Heflin	Latitude: 18.3161691672302	
		Longitude: -65.228958	

Observation Entry: 269

Barrier:		**SoilColor:**	
Vegetation:	Heavy Brush	**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:		**MECMD:**	None

No debris observed.



Time	Team Leader	Property ID	Culebra
11:47:00 AM	Nancy Heflin	Latitude: 18.3159421672302	
		Longitude: -65.2299251666667	

Observation Entry: 270

Barrier:		**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

well

Time	Team Leader	Property ID	Culebra
11:50:00 AM	Nancy Heflin		

Latitude: 18.3161566672302
Longitude: -65.2309283333333

Observation Entry: 271

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Light Brush	**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:	Game Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Loam	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
11:55:00 AM	Nancy Heflin		

Latitude: 18.3147936672302
Longitude: -65.2303031666667

Observation Entry: 272

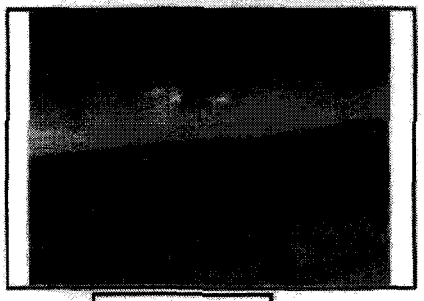
Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:	Game Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Loam	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
11:58:00 AM	Nancy Heflin	Latitude:	18.3140331672302
		Longitude:	-65.229719

Observation Entry: 273

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:	Game Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Loam	**MECMD:**	None



Time	Team Leader	Property ID	Culebra
12:02:00 PM	Nancy Heflin	Latitude:	18.3135408338968
		Longitude:	-65.2284145

Observation Entry: 274

Barrier:		**SoilColor:**	
Vegetation:	Mixed Trees and Brush	**Topography:**	
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:		**MECMD:**	None

Time	Team Leader	Property ID
12:36:00 PM	Nancy Heflin	Culebra

Latitude: 18.3139280005635
Longitude: -65.2273758333333

Observation Entry: 275

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

Time	Team Leader	Property ID
12:42:00 PM	Nancy Heflin	Culebra

Latitude: 18.3133506672302
Longitude: -65.2272025

Observation Entry: 276

Barrier:		**SoilColor:**	
Vegetation:		**Topography:**	
Drainage:		**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	
SoilType:		**MECMD:**	None

building debris and foundation or helipad

Time	Team Leader	Property ID	Culebra
12:54:00 PM	Nancy Heflin		

Latitude: 18.3141433338968
Longitude: -65.2272073333333

Observation Entry: 277

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Light Brush	**Topography:**	Steep Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
1:01:00 PM	Nancy Heflin		

Latitude: 18.3138643338968
Longitude: -65.2268786666667

Observation Entry: 278

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Steep Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID
1:10:00 PM	Nancy Heflin	Culebra

Latitude: 18.3139118338968
Longitude: -65.2264206666667

Observation Entry: 279

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Steep Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID
1:17:00 PM	Nancy Heflin	Culebra

Latitude: 18.3138705005635
Longitude: -65.2257808333333

Observation Entry: 280

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Steep Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
1:19:00 PM	Nancy Heflin		

Latitude: 18.3136621672302
Longitude: -65.2254636666667

Observation Entry: 281

Barrier:	None	SoilColor:	Brown
Vegetation:	Mixed Brush and Grasses	Topography:	Steep Slope
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Rocky	MECMD:	None

Time	Team Leader	Property ID	Culebra
1:24:50 PM	Nancy Heflin		

Latitude: 18.3134828338968
Longitude: -65.2251905

Observation Entry: 282

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	
Road:		SubSurfaceMetalDetect:	
SoilType:		MECMD:	

Collected SS-22

Time	Team Leader	Property ID
1:32:00 PM	Nancy Heflin	Culebra

Latitude: 18.3135783338968
Longitude: -65.2251293333333

Observation Entry: 283

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Steep Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

Time	Team Leader	Property ID
1:36:00 PM	Nancy Heflin	Culebra

Latitude: 18.3139975005635
Longitude: -65.2253486666667

Observation Entry: 284

Barrier:	None	**SoilColor:**	Mixed
Vegetation:		**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
2:00:00 PM	Nancy Heflin		

Latitude: 18.3157415005636
Longitude: -65.2260853333334

Observation Entry: 285

Barrier:	None	**SoilColor:**	Tan
Vegetation:		**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Sand	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
2:24:00 PM	Nancy Heflin		

Latitude: 18.32178233389 71
Longitude: -65.2262613333334

Observation Entry: 286

Barrier:	None	**SoilColor:**	Mixed
Vegetation:	Heavy Brush	**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	Low Density
SoilType:	Rocky	**MECMD:**	None

mechanical time fuze

Time	Team Leader	Property ID	Culebra
4:03:48 PM	Nancy Heflin		

Latitude: 18.3184356672303
Longitude: -65.3175438333333

Observation Entry: 287

Barrier:		**SoilColor:**	
Vegetation:		**Topography:**	
Drainage:		**SurfaceDebris:**	
Road:		**SubSurfaceMetalDetect:**	
SoilType:		**MECMD:**	

Collected SS-04 Just off road due to no ROE in this area.

Time	Team Leader	Property ID	Culebra
4:09:00 PM	Nancy Heflin		

Latitude: 18.318443333897
Longitude: -65.3175751666667

Observation Entry: 288

Barrier:	None	**SoilColor:**	Tan
Vegetation:	Mixed Trees and Brush	**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

QR conducted near SS-4 and SS-5 along Firewood Bay.

Time	Team Leader	Property ID	Culebra
4:12:00 PM	Nancy Heflin		

Latitude: 18.318186833897
Longitude: -65.3173085

Observation Entry: 289

Barrier:		**SoilColor:**	Tan
Vegetation:		**Topography:**	Flat
Drainage:	Wetlands	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Mixed	**MECMD:**	None

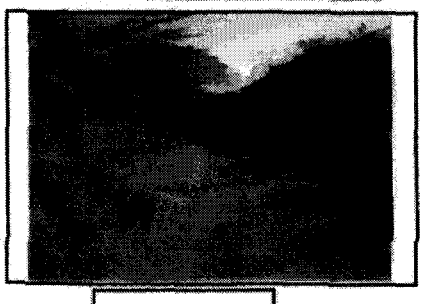
well ~8ft wide located near the road.

Time	Team Leader	Property ID	Culebra
4:20:00 PM	Nancy Heflin		

Latitude: 18.3156093338969
Longitude: -65.3169596666667

Observation Entry: 290

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	Low Density likely trash
SoilType:	Mixed	**MECMD:**	None

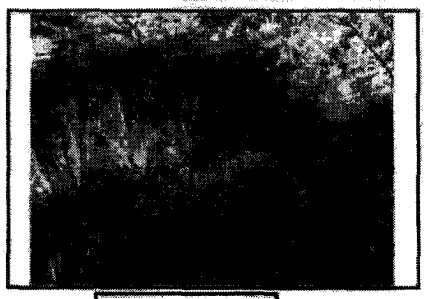


Time	Team Leader	Property ID	Culebra
4:28:00 PM	Nancy Heflin		

Latitude: 18.3148665005635
Longitude: -65.3170011666667

Observation Entry: 291

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Heavy Brush	**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None



Time	Team Leader	Property ID	Culebra
4:32:00 PM	Nancy Heflin		

Latitude: 18.3156116672302
Longitude: -65.3170043333333

Observation Entry: 292

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Heavy Brush	**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
4:36:00 PM	Nancy Heflin		

Latitude: 18.3178073338969
Longitude: -65.3173135

Observation Entry: 293

Barrier:	None	SoilColor:	Tan
Vegetation:	Mixed Brush and Grasses	Topography:	Flat
Drainage:	Ocean	SurfaceDebris:	None
Road:	4WD Trail	SubSurfaceMetalDetect:	No Detect
SoilType:	Sand	MECMD:	None

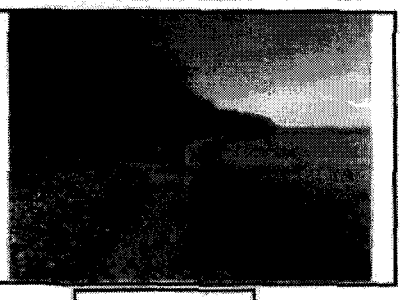
No debris observed.

Time	Team Leader	Property ID	Culebra
4:39:00 PM	Nancy Heflin		

Latitude: 18.3163898338969
Longitude: -65.317138

Observation Entry: 294

Barrier:		SoilColor:	White
Vegetation:		Topography:	Flat
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Rocky	MECMD:	None



Time	Team Leader	Property ID	Culebra
4:47:00 PM	Nancy Heflin		

Latitude: 18.3146736672302
Longitude: -65.3174496666667

Observation Entry: 295

Barrier:	None	SoilColor:	Mixed
Vegetation:	Heavy Brush	Topography:	Flat
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Rocky	MECMD:	None

Time	Team Leader	Property ID	Culebra
4:57:51 PM	Nancy Heflin		

Latitude: 18.3126226672302
Longitude: -65.3163391666667

Observation Entry: 296

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	
Road:		SubSurfaceMetalDetect:	
SoilType:		MECMD:	

Collected SS-05

Time	Team Leader	Property ID	Culebra
5:00:00 PM	Nancy Heflin		

Latitude: 18.3128443338968
Longitude: -65.3163395

Observation Entry: 297

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Heavy Brush	**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	Low Density trash on beach
SoilType:	Rocky	**MECMD:**	None

QR on PR DNR property along water very near beachfront hotel.

Thursday, November 02, 2006

Time	Team Leader	Property ID	Culebra
8:44:00 AM	Nancy Heflin		

Latitude: 18.3112846672301
Longitude: -65.3480785

Observation Entry: 298

Barrier:	None	**SoilColor:**	Brown
Vegetation:		**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	MD MK 80s bomb

QR conducted on Cayo Del Agua. 80 series he bomb case in the water

Time	Team Leader	Property ID	Culebra
8:47:00 AM	Nancy Heflin		

Latitude: 18.31130566672301
Longitude: -65.3482038333333

Observation Entry: 299

Barrier:	None	SoilColor:	Brown
Vegetation:		Topography:	Gentle Slope
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	Low Density
SoilType:	Rocky	MECMD:	MD MK 76

mk 76 practice bomb pieces

Time	Team Leader	Property ID	Culebra
8:50:00 AM	Nancy Heflin		

Latitude: 18.31134883389688
Longitude: -65.3483368333333

Observation Entry: 300

Barrier:	None	SoilColor:	Brown
Vegetation:		Topography:	Gentle Slope
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	Low Density
SoilType:	Rocky	MECMD:	MD MK 76

mk 76 piece

Time	Team Leader	Property ID	Culebra
8:52:00 AM	Nancy Heflin	Latitude: 18.3113023338968	
		Longitude: -65.3483548333333	

Observation Entry: 301

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:		MECMD:	MD MK 76

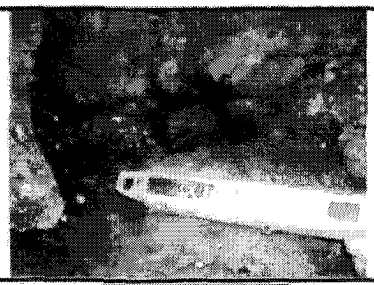
mk 76 piece

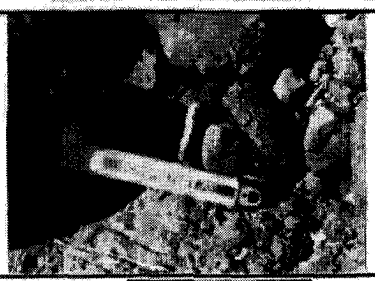
Time	Team Leader	Property ID	Culebra
8:54:00 AM	Nancy Heflin	Latitude: 18.3113280005634	
		Longitude: -65.348454	

Observation Entry: 302

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:		MECMD:	MD MK 76

mk 76 piece





Time	Team Leader	Property ID	Culebra
9:02:00 AM	Nancy Heflin	Latitude:	18.3110458338968
		Longitude:	-65.348901

Observation Entry: 303

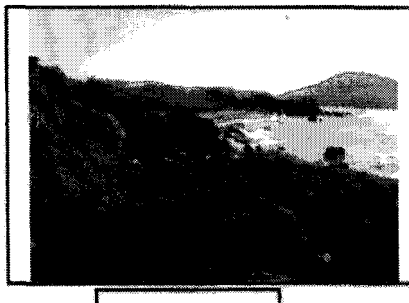
Barrier:	Partial	**SoilColor:**	Brown
Vegetation:		**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	Low Density
SoilType:	Rocky	**MECMD:**	None

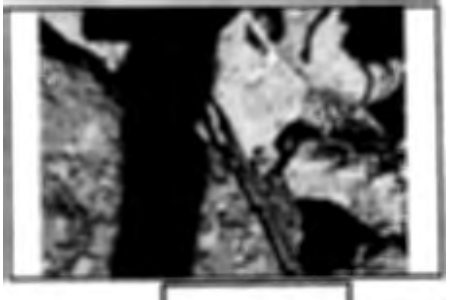
Time	Team Leader	Property ID	Culebra
9:09:00 AM	Nancy Heflin	Latitude:	18.3110958338968
		Longitude:	-65.3484461666667

Observation Entry: 304

Barrier:		**SoilColor:**	
Vegetation:		**Topography:**	
Drainage:		**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:		**MECMD:**	MD MK 76

mk 76 piece





Time	Team Leader	Property ID	Culebra
9:15:00 AM	Nancy Heflin		

Latitude: 18.3116331672301
Longitude: -65.3477113333333

Observation Entry: 305

Barrier:		**SoilColor:**	
Vegetation:		**Topography:**	
Drainage:		**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:		**MECMD:**	MD MK 76

15+ mk76s scattered everywhere on the rock.

Time	Team Leader	Property ID	Culebra
9:24:00 AM	Nancy Heflin		

Latitude: 18.3118336672301
Longitude: -65.3470735

Observation Entry: 306

Barrier:	Partial	**SoilColor:**	Brown
Vegetation:		**Topography:**	Broken Terrain
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	Low Density
SoilType:	Rocky	**MECMD:**	MD MK 76

several mk76 in crack

Time	Team Leader	Property ID	Culebra
9:31:00 AM	Nancy Heflin		

Latitude: 18.3115746672301
Longitude: -65.3469641666667

Observation Entry: 307

Barrier:	None	SoilColor:	Mixed
Vegetation:	Grasses	Topography:	Broken Terrain
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	Low Density
SoilType:	Rocky	MECMD:	MD

aircraft flare tray

Time	Team Leader	Property ID	Culebra
9:35:00 AM	Nancy Heflin		

Latitude: 18.3108831672301
Longitude: -65.3470866666667

Observation Entry: 308

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:		MECMD:	MD MK 76

several more mk76

Time	Team Leader	Property ID	Culebra
9:38:00 AM	Nancy Heflin		

Latitude: 18.3109690005634
Longitude: -65.3473848333333

Observation Entry: 309

Barrier:		**SoilColor:**	Brown
Vegetation:		**Topography:**	Broken Terrain
Drainage:		**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	Low Density
SoilType:	Rocky	**MECMD:**	None

t painted on the rock

Time	Team Leader	Property ID	Culebra
9:41:00 AM	Nancy Heflin		

Latitude: 18.31115998338968
Longitude: -65.3478318333333

Observation Entry: 310

Barrier:		**SoilColor:**	
Vegetation:		**Topography:**	
Drainage:		**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:		**MECMD:**	MD

aircraft flare tray

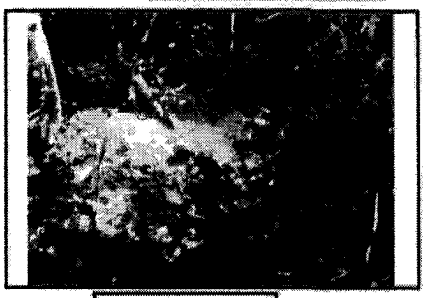
Time	Team Leader	Property ID	Culebra
11:23:48 AM	Nancy Heflin		

Latitude: 18.3207096672304
Longitude: -65.2376076666667

Observation Entry: 311

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	
Road:		SubSurfaceMetalDetect:	
SoilType:		MECMD:	

Collected SE-02 on the edge of the lagoon



Time	Team Leader	Property ID	Culebra
11:32:00 AM	Nancy Heflin		

Latitude: 18.3210186672304
Longitude: -65.237782

Observation Entry: 312

Barrier:		SoilColor:	White
Vegetation:		Topography:	Flat
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Sand	MECMD:	None

QR conducted on northwestern portion of Culebrita. Lagoon at SE-2

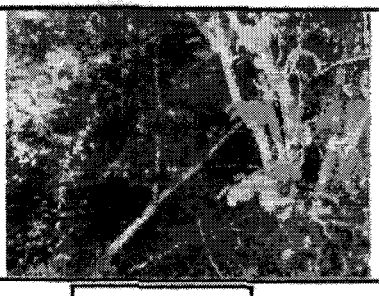
Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
11:42:00 AM	Nancy Heflin	Culebra	18.320304333697	-65.2378288333334	313

Barrier:		SoilColor:	Brown
Vegetation:	Heavy Brush	Topography:	Gentle Slope
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Mixed	MECMD:	None

heavy brush along the edge of the lagoon

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
11:51:00 AM	Nancy Heflin	Culebra	18.3200791672303	-65.2377576666667	314

Barrier:		SoilColor:	Brown
Vegetation:	Mixed Trees and Brush	Topography:	Gentle Slope
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Mixed	MECMD:	None



Time	Team Leader	Property ID	Culebra
11:58:00 AM	Nancy Heflin	Latitude: 18.319723833897	
		Longitude: -65.2377178333333	

Observation Entry: 315

Barrier:		**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Gentle Slope
Drainage:		**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

The brush greatly restricted movement so the SVT followed the grassy patches between heavy brush.

Time	Team Leader	Property ID	Culebra
12:06:00 PM	Nancy Heflin	Latitude: 18.3194741672303	
		Longitude: -65.237348	

Observation Entry: 316

Barrier:		**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Gentle Slope
Drainage:		**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

Time	Team Leader	Property ID
12:09:55 PM	Nancy Heflin	Culebra

Latitude: 18.3193511672303
Longitude: -65.2371058333333

Observation Entry: 317

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	
Road:		SubSurfaceMetalDetect:	
SoilType:		MECMD:	

Collected SS-25 Grass between heavy brush

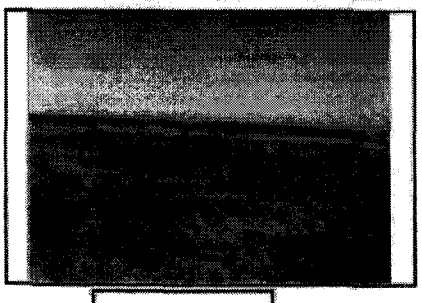
Time	Team Leader	Property ID
12:26:00 PM	Nancy Heflin	Culebra

Latitude: 18.3192943333897
Longitude: -65.2369458333333

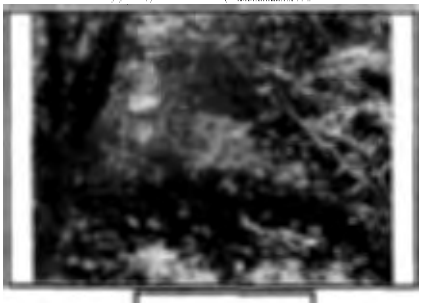
Observation Entry: 318

Barrier:		SoilColor:	Brown
Vegetation:	Mixed Trees and Brush	Topography:	Gentle Slope
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Mixed	MECMD:	None

small area of water on western slope of hillside. Lagoon visible down eastern slope.



view of lagoon off eastern slope of hill



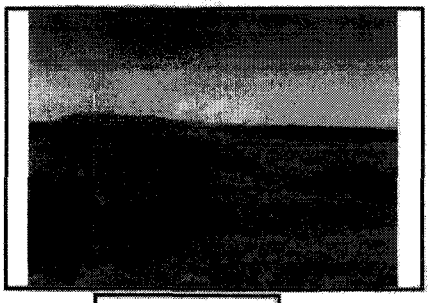
Time	Team Leader	Property ID	Culebra
12:32:00 PM	Nancy Heflin		

Latitude: 18.319073333897
Longitude: -65.236258

Observation Entry: 319

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Steep Slope
Drainage:	Wetlands	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Loam	**MECMD:**	None

top of ridge line



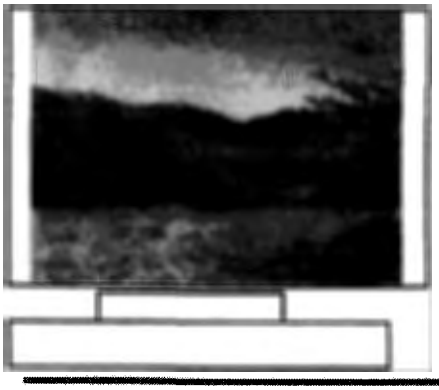
Time	Team Leader	Property ID	Culebra
12:39:00 PM	Nancy Heflin		

Latitude: 18.3186505005636
Longitude: -65.23602

Observation Entry: 320

Barrier:		**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Gentle Slope
Drainage:		**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:	Mixed	**MECMD:**	None

grassy area



Time	Team Leader	Property ID	Culebra
12:55:00 PM	Nancy Heflin		

Latitude: 18.3182566672303
Longitude: -65.2345943333333

Observation Entry: 321

Barrier:		**SoilColor:**	Brown
Vegetation:	Heavy Brush	**Topography:**	Gentle Slope
Drainage:		**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
1:00:00 PM	Nancy Heflin		

Latitude: 18.3183800005636
Longitude: -65.2343288333334

Observation Entry: 322

Barrier:		**SoilColor:**	Brown
Vegetation:	Heavy Brush	**Topography:**	Gentle Slope
Drainage:		**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

No debris observed. Very dense vegetation.

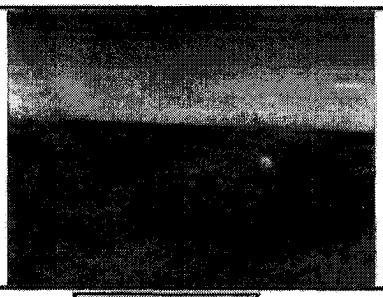
Time	Team Leader	Property ID	Culebra
1:06:00 PM	Nancy Heflin		

Latitude: 18.3185930005636
Longitude: -65.2343308333333

Observation Entry: 323

Barrier:		**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Gentle Slope
Drainage:		**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

No debris observed.



Time	Team Leader	Property ID	Culebra
1:20:00 PM	Nancy Heflin		

Latitude: 18.3191466672303
Longitude: -65.2340476666667

Observation Entry: 324

Barrier:		**SoilColor:**	Brown
Vegetation:	Heavy Brush	**Topography:**	Gentle Slope
Drainage:		**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:	Mixed	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID
1:31:00 PM	Nancy Heflin	Culebra

Latitude: 18.319591833897
Longitude: -65.2337108333333

Observation Entry: 325

Barrier:		SoilColor:	Brown
Vegetation:	Mixed Brush and Grasses	Topography:	Gentle Slope
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None

Time	Team Leader	Property ID
1:47:00 PM	Nancy Heflin	Culebra

Latitude: 18.3200950005637
Longitude: -65.2333063333333

Observation Entry: 326

Barrier:		SoilColor:	Brown
Vegetation:	Mixed Brush and Grasses	Topography:	Gentle Slope
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None

No debris observed. Rocky beach

Time	Team Leader	Property ID	Culebra
1:50:00 PM	Nancy Heflin		

Latitude: 18.3203095005637
Longitude: -65.2331895

Observation Entry: 327

Barrier:		SoilColor:	White
Vegetation:		Topography:	Flat
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Sand	MECMD:	None

sandy beach

Time	Team Leader	Property ID	Culebra
1:57:00 PM	Nancy Heflin		

Latitude: 18.321451333897
Longitude: -65.236493

Observation Entry: 328

Barrier:		SoilColor:	Mixed
Vegetation:		Topography:	Flat
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Rocky	MECMD:	None

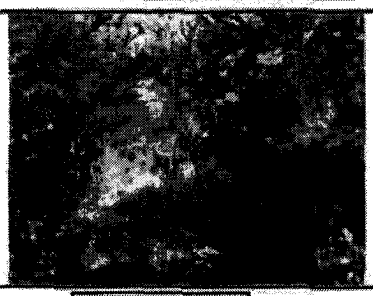
Outcrop of bedrock on beach. No debris observed.

Friday, November 03, 2006

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
9:17:00 AM	Nancy Heflin	Culebra	18.3187025005636	-65.2898491666667	329

Barrier:	None	SoilColor:	Brown
Vegetation:	Mixed Trees and Brush	Topography:	Gentle Slope
Drainage:	None	SurfaceDebris:	None
Road:	Game Trail	SubSurfaceMetalDetect:	Low Density
SoilType:	Loam	MECMD:	None

QR conducted from 4wd jeep trail up toward Mt. Resaca and SS-12.



Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
9:26:00 AM	Nancy Heflin	Culebra	18.319678333897	-65.2894748333333	330

Barrier:	None	SoilColor:	Brown
Vegetation:	Mixed Trees and Brush	Topography:	Steep Slope
Drainage:	None	SurfaceDebris:	None
Road:	Game Trail	SubSurfaceMetalDetect:	Low Density
SoilType:	Loam	MECMD:	None

Boulder field

Time	Team Leader	Property ID	Culebra
9:34:00 AM	Nancy Heflin		

Latitude: 18.3200510005637
Longitude: -65.2894001666667

Observation Entry: 331

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Steep Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Game Trail	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Rocky	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
9:39:00 AM	Nancy Heflin		

Latitude: 18.3203531672303
Longitude: -65.2891783333333

Observation Entry: 332

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Steep Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Game Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

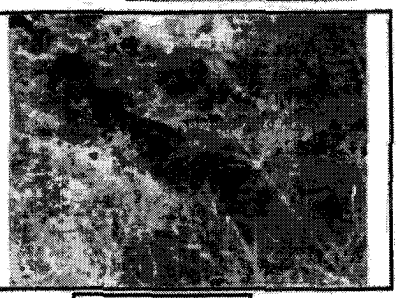
Boulders with vegetation covering in many places.

Time	Team Leader	Property ID	Culebra
9:48:00 AM	Nancy Heflin	Latitude: 18.3206801672303	
		Longitude: -65.2889645	

Observation Entry: 333

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Game Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

No debris observed



Time	Team Leader	Property ID	Culebra
10:00:00 AM	Nancy Heflin	Latitude: 18.3211201672304	
		Longitude: -65.2890286666667	

Observation Entry: 334

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Steep Slope
Drainage:	None	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
10:01:53 AM	Nancy Heflin		

Latitude: 18.3211201672304
Longitude: -65.289037

Observation Entry: 335

Barrier:		**SoilColor:**	
Vegetation:		**Topography:**	
Drainage:		**SurfaceDebris:**	
Road:		**SubSurfaceMetalDetect:**	
SoilType:		**MECMD:**	

Collected SS-12 Extremely dense vegetation and rocky uneven terrain restricted access to proposed sample location. mostly rocky with no dirt. An area with dirt and thinner tees for gps coverage was selected.

Time	Team Leader	Property ID	Culebra
10:30:00 AM	Nancy Heflin		

Latitude: 18.3199370005637
Longitude: -65.2894946666667

Observation Entry: 336

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Steep Slope
Drainage:	None	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
10:36:00 AM	Nancy Heflin		

Latitude: 18.319728333897
Longitude: -65.2894805

Observation Entry: 337

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Steep Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Game Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky mostly boulders	**MECMD:**	None

No debris observed

Time	Team Leader	Property ID	Culebra
10:43:00 AM	Nancy Heflin		

Latitude: 18.319088833897
Longitude: -65.2897215

Observation Entry: 338

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Steep Slope
Drainage:	Intermittent	**SurfaceDebris:**	None
Road:	Game Trail	**SubSurfaceMetalDetect:**	None
SoilType:	Rocky	**MECMD:**	None

some vegetation cut down along new section of barber wire fence.

Time	Team Leader	Property ID	Culebra
11:24:00 AM	Nancy Heflin		

Latitude: 18.3119118338968
Longitude: -65.2846528333333

Observation Entry: 339

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

QR conducted on pasture land near SS-14.

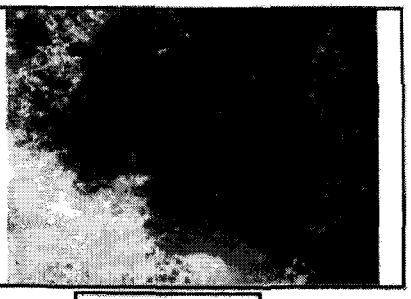
Time	Team Leader	Property ID	Culebra
11:29:00 AM	Nancy Heflin		

Latitude: 18.3131886672302
Longitude: -65.2851365

Observation Entry: 340

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Gentle Slope
Drainage:	Creek	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	Low Density
SoilType:	Mixed	**MECMD:**	None

No debris observed.



Time	Team Leader	Property ID	Culebra
11:32:00 AM	Nancy Heflin		

Latitude: 18.3137816672302
Longitude: -65.2853086666667

Observation Entry: 341

Barrier:	None	SoilColor:	Brown
Vegetation:	Grasses	Topography:	Gentle Slope
Drainage:	Wetlands	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Mixed	MECMD:	None

pooled water and soppy wet ground

Time	Team Leader	Property ID	Culebra
11:38:00 AM	Nancy Heflin		

Latitude: 18.3155075005636
Longitude: -65.2851155

Observation Entry: 342

Barrier:	None	SoilColor:	Brown
Vegetation:	Grasses	Topography:	Gentle Slope
Drainage:	None	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Mixed	MECMD:	None

No debris observed

Time	Team Leader	Property ID	Culebra
11:41:00 AM	Nancy Heflin		

Latitude: 18.3154333338969
Longitude: -65.2848366666667

Observation Entry: 343

Barrier:	Partial barbwire fence	**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Loam	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
11:53:00 AM	Nancy Heflin		

Latitude: 18.3145898338969
Longitude: -65.2842768333333

Observation Entry: 344

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Steep Slope
Drainage:	Intermittent	**SurfaceDebris:**	None
Road:	Game Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

cow trails on steep incline. stream at bottom of hill

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
12:02:00 PM	Nancy Heflin	Culebra	18.3141836672302	-65.2836745	345

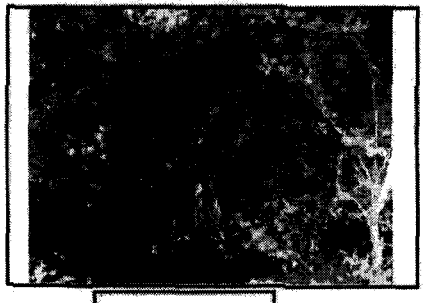
Barrier:	None	SoilColor:	Brown
Vegetation:	Mixed Brush and Grasses	Topography:	Steep Slope
Drainage:	None	SurfaceDebris:	None
Road:	Game Trail	SubSurfaceMetalDetect:	No Detect
SoilType:	Loam	MECMD:	None

No debris observed.

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
12:12:00 PM	Nancy Heflin	Culebra	18.3143060005635	-65.283228	346

Barrier:	None	SoilColor:	White
Vegetation:	Mixed Brush and Grasses	Topography:	Steep Slope
Drainage:	None	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Rocky	MECMD:	None

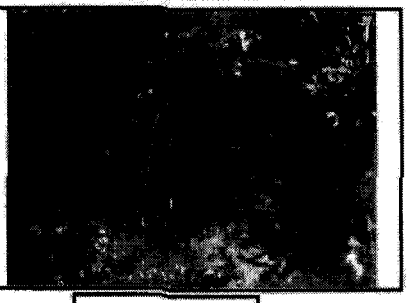
No debris observed.



Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
12:18:59 PM	Nancy Heflin	Culebra	18.3147768338969	-65.2830681666667	347

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	
Road:		SubSurfaceMetalDetect:	
SoilType:		MECMD:	

Collected SS-14



Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
12:26:00 PM	Nancy Heflin	Culebra	18.3147686672302	-65.2830593333333	348

Barrier:	None	SoilColor:	Brown
Vegetation:	Mixed Brush and Grasses	Topography:	Steep Slope
Drainage:	None	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Loam	MECMD:	None

No debris observed.

Time	Team Leader	Property ID	Culebra
12:45:00 PM	Nancy Heflin		

Latitude: 18.3146293338969
Longitude: -65.2836841666667

Observation Entry: 349

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Steep Slope
Drainage:	Intermittent	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

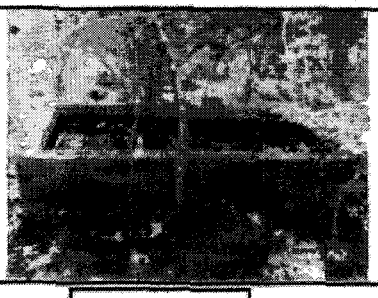
Time	Team Leader	Property ID	Culebra
12:53:00 PM	Nancy Heflin		

Latitude: 18.3145536672302
Longitude: -65.2843136666667

Observation Entry: 350

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	Intermittent	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

concrete water filled structure.
Possible water trough for cows.



Time	Team Leader	Property ID	Culebra
12:58:00 PM	Nancy Heflin		

Latitude: 18.3141286672302
Longitude: -65.28495

Observation Entry: 351

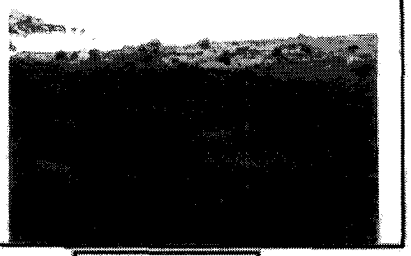
Barrier:	None	SoilColor:	Brown
Vegetation:	Mixed Brush and Grasses	Topography:	Gentle Slope
Drainage:	None	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Rocky	MECMD:	None

Time	Team Leader	Property ID	Culebra
1:02:00 PM	Nancy Heflin		

Latitude: 18.3139320005635
Longitude: -65.285237

Observation Entry: 352

Barrier:	None	SoilColor:	Brown
Vegetation:	Grasses	Topography:	Gentle Slope
Drainage:	None	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Rocky	MECMD:	None



Time	Team Leader	Property ID	Culebra
3:19:58 PM	Nancy Heflin		

Latitude: 18.3168050005636
Longitude: -65.3080856666667

Observation Entry: 353

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	
Road:		SubSurfaceMetalDetect:	
SoilType:		MECMD:	

Collected SS-13 Odd spotty reading on minelab. no bullets found however there is what looks like an old berm present.

Time	Team Leader	Property ID	Culebra
4:03:47 PM	Nancy Heflin		

Latitude: 18.3070670005633
Longitude: -65.3069833333333

Observation Entry: 354

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	
Road:		SubSurfaceMetalDetect:	
SoilType:		MECMD:	

Collected SS-06 On slope next to road. Washout from hillside between houses.

Time	Team Leader	Property ID
5:19:00 PM	Nancy Heflin	Culebra

Latitude: 18.2946726672297
Longitude: -65.2608431666667

Observation Entry: 355

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	very Low Density
SoilType:	Mixed	**MECMD:**	None

QR conducted along 4wd trail right of way in MRS 06 where ROE was not granted.

Time	Team Leader	Property ID
5:22:00 PM	Nancy Heflin	Culebra

Latitude: 18.2952651672297
Longitude: -65.2592116666667

Observation Entry: 356

Barrier:	Partial	**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Mixed	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
5:26:00 PM	Nancy Heflin		

Latitude: 18.2970596672297
Longitude: -65.2597255

Observation Entry: 357

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Gentle Slope
Drainage:	Intermittent	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
5:31:00 PM	Nancy Heflin		

Latitude: 18.2996616672298
Longitude: -65.2597055

Observation Entry: 358

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

No debris observed.

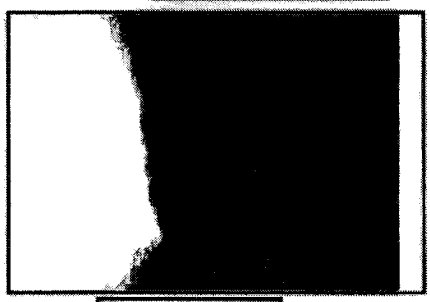
Time	Team Leader	Property ID
5:35:00 PM	Nancy Heflin	Culebra

Latitude: 18.3004433338965
Longitude: -65.2610655

Observation Entry: 359

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

No debris observed.



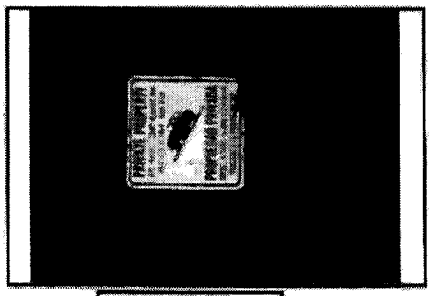
Time	Team Leader	Property ID
5:37:00 PM	Nancy Heflin	Culebra

Latitude: 18.3006363338965
Longitude: -65.2615325

Observation Entry: 360

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

Sign at base of hill indicating private drive.



Saturday, November 04, 2006

Time	Team Leader	Property ID	Culebra
7:48:00 AM	Nancy Heflin		

Latitude: 18.3256246672305
Longitude: -65.3199063333333

Observation Entry: 361

Barrier:		SoilColor:	Brown
Vegetation:	Grasses	Topography:	
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None

QR conducted on hillside near proposed sample SS-3. Grass is taller than our heads and it is difficult to see the ground.

Time	Team Leader	Property ID	Culebra
7:54:00 AM	Nancy Heflin		

Latitude: 18.3253851672305
Longitude: -65.3201291666667

Observation Entry: 362

Barrier:		SoilColor:	Brown
Vegetation:	Grasses	Topography:	Steep Slope
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Mixed	MECMD:	None

very tall grass limits the use of the minelab

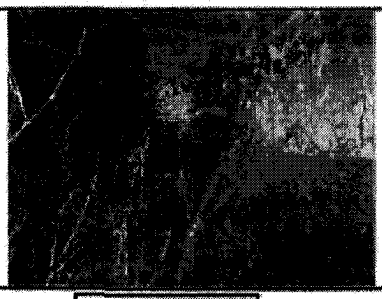
Time	Team Leader	Property ID	Culebra
8:00:00 AM	Nancy Heflin		

Latitude: 18.3250718338971
Longitude: -65.3203843333334

Observation Entry: 363

Barrier:		SoilColor:	Brown
Vegetation:	Grasses	Topography:	Steep Slope
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Mixed	MECMD:	None

grass still tall, slightly less dense



Time	Team Leader	Property ID	Culebra
8:06:00 AM	Nancy Heflin		

Latitude: 18.3247955005638
Longitude: -65.3206036666667

Observation Entry: 364

Barrier:		SoilColor:	Brown
Vegetation:	Grasses	Topography:	Steep Slope
Drainage:		SurfaceDebris:	Single Item
Road:		SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	MD 20mm case

20mm shell casing

Time	Team Leader	Property ID	Culebra
8:16:00 AM	Nancy Heflin		

Latitude: 18.3243568338971
Longitude: -65.3209711666667

Observation Entry: 365

Barrier:		SoilColor:	Brown
Vegetation:	Grasses	Topography:	Steep Slope
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None

dense tall grass

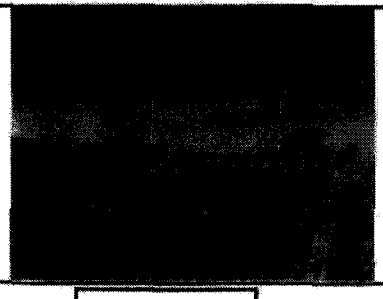
Time	Team Leader	Property ID	Culebra
8:28:00 AM	Nancy Heflin		

Latitude: 18.3235038338971
Longitude: -65.3218198333333

Observation Entry: 366

Barrier:		SoilColor:	Brown
Vegetation:	Grasses	Topography:	Gentle Slope
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None

grass shorter, less dense



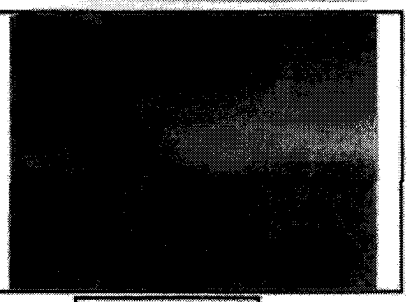
Time	Team Leader	Property ID	Culebra
8:33:00 AM	Nancy Heflin		

Latitude: 18.3234690005638
Longitude: -65.3223305

Observation Entry: 367

Barrier:		SoilColor:	Brown
Vegetation:	Grasses	Topography:	Gentle Slope
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None

top of hill

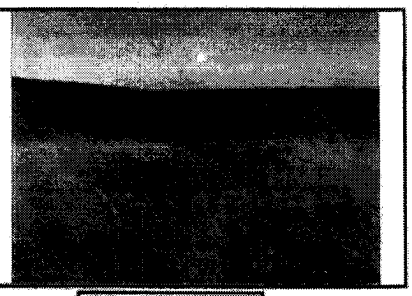


Time	Team Leader	Property ID	Culebra
8:40:00 AM	Nancy Heflin		

Latitude: 18.3238353338971
Longitude: -65.3230778333333

Observation Entry: 368

Barrier:		SoilColor:	Brown
Vegetation:	Grasses	Topography:	Gentle Slope
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Mixed	MECMD:	None



Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
8:54:17 AM	Nancy Heflin	Culebra	18.3244360005638	-65.3240121666667	369

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	
Road:		SubSurfaceMetalDetect:	
SoilType:		MECMD:	

Collected SS-03 Very steep slope towards proposed sample location

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
9:09:00 AM	Nancy Heflin	Culebra	18.3247930005638	-65.323675	370

Barrier:		SoilColor:	Brown
Vegetation:	Grasses	Topography:	Gentle Slope
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None

tall grass, difficult to use minelab

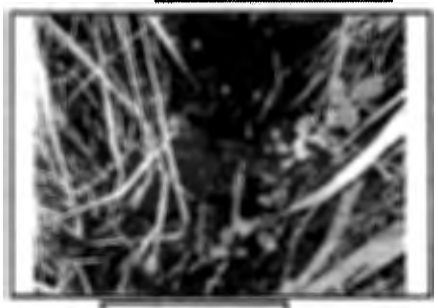
Time	Team Leader	Property ID	Culebra
9:20:00 AM	Nancy Heflin		

Latitude: 18.3247461672305
Longitude: -65.3227818333333

Observation Entry: 371

Barrier:		SoilColor:	Brown
Vegetation:	Grasses	Topography:	Gentle Slope
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None

unknown piece of metal



Time	Team Leader	Property ID	Culebra
9:23:00 AM	Nancy Heflin		

Latitude: 18.3247903338971
Longitude: -65.3225533333333

Observation Entry: 372

Barrier:		SoilColor:	Brown
Vegetation:	Mixed Brush and Grasses	Topography:	Steep Slope
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None

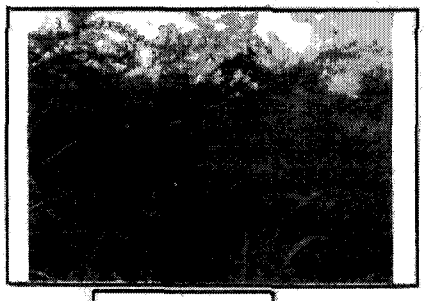
tall grass entering heavy brush

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
9:52:00 AM	Nancy Heflin	Culebra	18.3247815005638	-65.322144	373

Barrier:		SoilColor:	Brown
Vegetation:	Mixed Brush and Grasses	Topography:	Gentle Slope
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
10:02:00 AM	Nancy Heflin	Culebra	18.3254053338971	-65.321372	374

Barrier:		SoilColor:	Brown
Vegetation:	Mixed Brush and Grasses	Topography:	Steep Slope
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None



Time	Team Leader	Property ID
10:11:00 AM	Nancy Heflin	Culebra

Latitude: 18.3254365005638
Longitude: -65.32077

Observation Entry: 375

Barrier:		SoilColor:	Brown
Vegetation:	Grasses	Topography:	Steep Slope
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:	Mixed	MECMD:	None

Time	Team Leader	Property ID
11:41:00 AM	Nancy Heflin	Culebra

Latitude: 18.3069310005633
Longitude: -65.3101176666667

Observation Entry: 376

Barrier:	None	SoilColor:	Brown
Vegetation:	Grasses	Topography:	Steep Slope
Drainage:	None	SurfaceDebris:	None
Road:	Paved	SubSurfaceMetalDetect:	Low Density
SoilType:	Mixed	MECMD:	None

QR conducted near road on right of way in MRS 11 where no ROE was granted. No debris observed.

Time	Team Leader	Property ID	
11:46:00 AM	Nancy Heflin		Culebra

Latitude: 18.3054991672299
Longitude: -65.3094185

Observation Entry: 377

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Grasses	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Mixed	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	
11:48:00 AM	Nancy Heflin		Culebra

Latitude: 18.3048236672299
Longitude: -65.30981083333333

Observation Entry: 378

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Grasses	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Gravel or Rock	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

Newly graded road. No debris observed.

Time	Team Leader	Property ID	Culebra
11:50:00 AM	Nancy Heflin	Latitude: 18.3043856672299	
		Longitude: -65.3095956666667	

Observation Entry: 379

Barrier:	None	**SoilColor:**	Brown
Vegetation:		**Topography:**	Steep Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Gravel or Rock	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

Newly graded road ends. No debris observed.

Time	Team Leader	Property ID	Culebra
11:52:00 AM	Nancy Heflin	Latitude: 18.3044966672299	
		Longitude: -65.309167	

Observation Entry: 380

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Steep Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Gravel or Rock	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

View of Cayo de Luis Pena from roadside. No debris observed.

Time	Team Leader	Property ID	Culebra
11:59:00 AM	Nancy Heflin		

Latitude: 18.3054606672299
Longitude: -65.3103898333333

Observation Entry: 381

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Grasses	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
12:04:00 PM	Nancy Heflin		

Latitude: 18.3039365005632
Longitude: -65.310382

Observation Entry: 382

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Steep Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
12:08:00 PM	Nancy Heflin	Culebra	18.3029405005632	-65.3104295	383

Barrier:	None	SoilColor:	Brown
Vegetation:	Mixed Trees and Brush	Topography:	Broken Terrain
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Rocky	MECMD:	None

QR conducted on scorpion point. No debris observed.

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
12:11:00 PM	Nancy Heflin	Culebra	18.3021336672299	-65.3107268333333	384

Barrier:	None	SoilColor:	Mixed
Vegetation:		Topography:	Flat
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	Low Density
SoilType:	Rocky	MECMD:	None

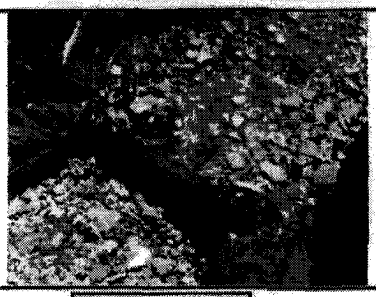
Time	Team Leader	Property ID	Culebra
12:14:00 PM	Nancy Heflin		

Latitude: 18.3013693338965
Longitude: -65.3110441666667

Observation Entry: 385

Barrier:	None	SoilColor:	Mixed
Vegetation:		Topography:	Flat
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	Low Density
SoilType:	Rocky	MECMD:	None

rusty pipe piece



Time	Team Leader	Property ID	Culebra
12:16:00 PM	Nancy Heflin		

Latitude: 18.3011116672298
Longitude: -65.3112018333333

Observation Entry: 386

Barrier:	None	SoilColor:	Brown
Vegetation:		Topography:	Broken Terrain
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	Low Density
SoilType:	Rocky	MECMD:	None

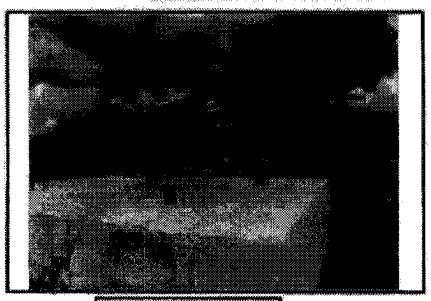
Time	Team Leader	Property ID
12:20:00 PM	Nancy Heflin	Culebra

Latitude: 18.3011060005632
Longitude: -65.3111103333333

Observation Entry: 387

Barrier:	None	SoilColor:	Brown
Vegetation:		Topography:	Gentle Slope
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	Low Density
SoilType:	Rocky	MECMD:	None

concrete pad with bolts at end of scorpion point.



Time	Team Leader	Property ID
12:31:00 PM	Nancy Heflin	Culebra

Latitude: 18.3013750005632
Longitude: -65.3108406666667

Observation Entry: 388

Barrier:	None	SoilColor:	Brown
Vegetation:		Topography:	Broken Terrain
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	Low Density
SoilType:	Rocky	MECMD:	None

Time	Team Leader	Property ID	Culebra
12:36:00 PM	Nancy Heflin		

Latitude: 18.3023311672299
Longitude: -65.3103776666667

Observation Entry: 389

Barrier:	None	**SoilColor:**	Mixed
Vegetation:		**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	Low Density
SoilType:	Rocky	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
12:39:00 PM	Nancy Heflin		

Latitude: 18.3026283338965
Longitude: -65.3102396666667

Observation Entry: 390

Barrier:	None	**SoilColor:**	Mixed
Vegetation:	Mixed Trees and Brush	**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	Low Density
SoilType:	Rocky	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
1:08:00 PM	Nancy Heflin		

Latitude: 18.295663000563
Longitude: -65.29982

Observation Entry: 391

Barrier:	None	**SoilColor:**	Tan
Vegetation:		**Topography:**	Flat
Drainage:	None	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Loam	**MECMD:**	None

QR conducted along Snug Bay. Entered beach area by power substation.

Time	Team Leader	Property ID	Culebra
1:15:00 PM	Nancy Heflin		

Latitude: 18.2970363338964
Longitude: -65.3003046666667

Observation Entry: 392

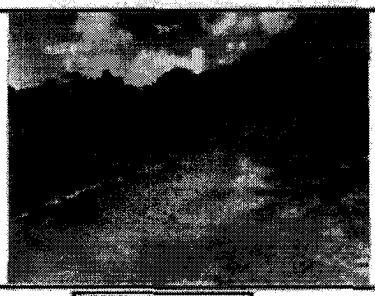
Barrier:	None	**SoilColor:**	Mixed
Vegetation:	Mixed Trees and Brush	**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
1:21:00 PM	Nancy Heflin	Culebra	18.2982858338964	-65.3010041666667	393

Barrier:	None	SoilColor:	Mixed
Vegetation:	Mixed Trees and Brush	Topography:	Flat
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	Medium Density trashy area
SoilType:	Rocky	MECMD:	None

No debris observed.



Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
1:25:00 PM	Nancy Heflin	Culebra	18.2985555005631	-65.3015523333333	394

Barrier:	None	SoilColor:	Mixed
Vegetation:	Mixed Trees and Brush	Topography:	Flat
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	Low Density with beach trash
SoilType:	Rocky	MECMD:	None

Time	Team Leader	Property ID
1:39:00 PM	Nancy Heflin	Culebra

Latitude: 18.2960018338984
Longitude: -65.3006241666667

Observation Entry: 395

Barrier:	None	**SoilColor:**	Mixed
Vegetation:	Mixed Trees and Brush	**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID
1:42:00 PM	Nancy Heflin	Culebra

Latitude: 18.2961206672297
Longitude: -65.3002078333333

Observation Entry: 396

Barrier:	Partial	**SoilColor:**	Tan
Vegetation:	Mixed Brush and Grasses	**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Sand	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
2:20:00 PM	Nancy Heflin		

Latitude: 18.2851203338961
Longitude: -65.2838951666667

Observation Entry: 397

Barrier:	None	SoilColor:	Brown
Vegetation:	Mixed Brush and Grasses	Topography:	Gentle Slope
Drainage:	None	SurfaceDebris:	None
Road:	Paved	SubSurfaceMetalDetect:	No Detect
SoilType:	Mixed	MECMD:	None

QR conducted along side of the road near concha cove near SS-9. View of Concha Cove. Very setep terrain off of east side of the road

Time	Team Leader	Property ID	Culebra
2:24:00 PM	Nancy Heflin		

Latitude: 18.2856060005628
Longitude: -65.2840341666667

Observation Entry: 398

Barrier:	None	SoilColor:	Brown
Vegetation:	Mixed Brush and Grasses	Topography:	Gentle Slope
Drainage:	None	SurfaceDebris:	None
Road:	Paved	SubSurfaceMetalDetect:	No Detect
SoilType:	Mixed	MECMD:	None

Time	Team Leader	Property ID
2:26:00 PM	Nancy Heflin	Culebra

Latitude: 18.2862940005628
Longitude: -65.2844323333334

Observation Entry: 399

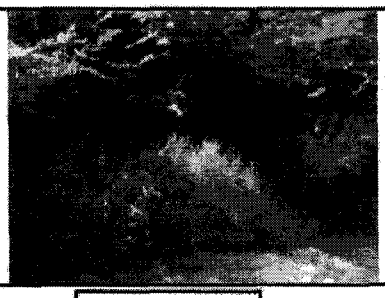
Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

Time	Team Leader	Property ID
2:30:00 PM	Nancy Heflin	Culebra

Latitude: 18.2875956672295
Longitude: -65.285074

Observation Entry: 400

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None



Time	Team Leader	Property ID	Culebra
2:33:00 PM	Nancy Heflin	Latitude:	18.2884755005628
		Longitude:	-65.28541

Observation Entry: 401

Barrier:	Partial	**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Gravel or Rock	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
2:37:00 PM	Nancy Heflin	Latitude:	18.2888138338962
		Longitude:	-65.2858571666667

Observation Entry: 402

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Gravel or Rock	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
2:39:00 PM	Nancy Heflin		

Latitude: 18.2891488338962
Longitude: -65.2864453333333

Observation Entry: 403

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

No debris observed.

Sunday, November 05, 2006

Time	Team Leader	Property ID	Culebra
7:10:00 AM	Nancy Heflin		

Latitude: 18.3254351672305
Longitude: -65.3028316666667

Observation Entry: 404

Barrier:	None	**SoilColor:**	
Vegetation:	Mixed Trees and Brush	**Topography:**	Flat
Drainage:	None	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	None
SoilType:		**MECMD:**	None

QR conducted on trail to Resaca Beach, and on Resaca and Brava Beaches. Parking area before trail to Resaca Beach

Time	Team Leader	Property ID	Observation Entry:
7:14:00 AM	Nancy Heflin	Culebra	405

Latitude: 18.3260078338972
Longitude: -65.3026788333333

Barrier:	None	SoilColor:	Brown
Vegetation:	Mixed Trees and Brush	Topography:	Steep Slope
Drainage:	None	SurfaceDebris:	None
Road:	foot Trail	SubSurfaceMetalDetect:	None
SoilType:	Loam	MECMD:	None

Time	Team Leader	Property ID	Observation Entry:
7:43:00 AM	Nancy Heflin	Culebra	406

Latitude: 18.330833500564
Longitude: -65.30246

Barrier:	None	SoilColor:	Tan
Vegetation:	Dense Trees	Topography:	Flat
Drainage:	Ocean	SurfaceDebris:	None
Road:	foot Trail	SubSurfaceMetalDetect:	None
SoilType:	Sand	MECMD:	None

Time	Team Leader	Property ID	Culebra
7:48:00 AM	Nancy Heflin		

Latitude: 18.331646000564
Longitude: -65.3025183333333

Observation Entry: 407

Barrier:	None	SoilColor:	Tan
Vegetation:	Light Brush	Topography:	Flat
Drainage:	Ocean	SurfaceDebris:	None
Road:	Foot Trail	SubSurfaceMetalDetect:	None
SoilType:	Sand	MECMD:	None

Time	Team Leader	Property ID	Culebra
7:52:00 AM	Nancy Heflin		

Latitude: 18.3320246672307
Longitude: -65.3033338333333

Observation Entry: 408

Barrier:	Partial	SoilColor:	Tan
Vegetation:		Topography:	Flat
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Sand	MECMD:	None

No debris observed.

Time	Team Leader	Property ID	Culebra
7:54:00 AM	Nancy Heflin	Latitude: 18.332184500564	
		Longitude: -65.304158	

Observation Entry: 409

Barrier:	None	**SoilColor:**	Tan
Vegetation:		**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Sand	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
7:57:00 AM	Nancy Heflin	Latitude: 18.331939500564	
		Longitude: -65.304774	

Observation Entry: 410

Barrier:	None	**SoilColor:**	Tan
Vegetation:	Mixed Trees and Brush	**Topography:**	Flat
Drainage:	Wetlands tidal inlet	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Sand	**MECMD:**	None

Wetland or tidal area. No debris observed

Time	Team Leader	Property ID	Culebra
8:01:00 AM	Nancy Heflin		

Latitude: 18.332649500564
Longitude: -65.3052546666667

Observation Entry: 411

Barrier:	None	**SoilColor:**	Tan
Vegetation:		**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Sand	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
8:04:00 AM	Nancy Heflin		

Latitude: 18.3329196672307
Longitude: -65.3057871666667

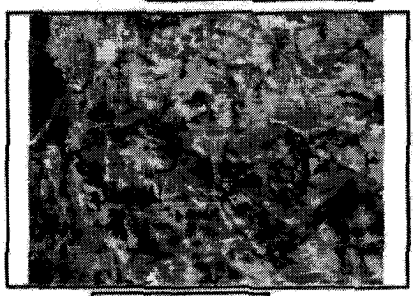
Observation Entry: 412

Barrier:	None	**SoilColor:**	Mixed
Vegetation:		**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
8:08:00 AM	Nancy Heflin	Culebra	18.3333528338974	-65.3062435	413

Barrier:	None	SoilColor:	Mixed
Vegetation:		Topography:	Flat
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Rocky	MECMD:	None

rocky beach with cliffs



Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
8:11:00 AM	Nancy Heflin	Culebra	18.3335901672307	-65.306239	414

Barrier:		SoilColor:	Mixed
Vegetation:		Topography:	Broken Terrain
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Rocky	MECMD:	None

Time	Team Leader	Property ID	Culebra
8:15:00 AM	Nancy Heflin		

Latitude: 18.3339878338974
Longitude: -65.3062911666667

Observation Entry: 415

Barrier:		SoilColor:	Mixed
Vegetation:		Topography:	Broken Terrain
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Rocky	MECMD:	None

View of end point at approximate boundary of Flamenco Point none FUDS property. Cliffs with sea splash.

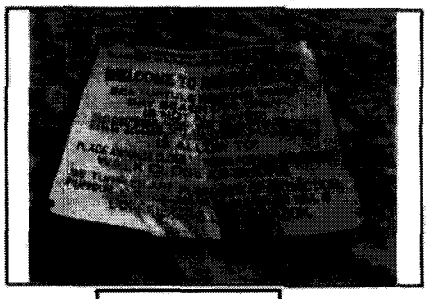
Time	Team Leader	Property ID	Culebra
8:37:00 AM	Nancy Heflin		

Latitude: 18.331280000564
Longitude: -65.300973

Observation Entry: 416

Barrier:	None	SoilColor:	Tan
Vegetation:		Topography:	Flat
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Sand	MECMD:	None

Sign that has blown down at Resaca Beach. Sign indicates to walk close to shore due to endangered sea turtle nesting.



Time	Team Leader	Property ID	Culebra
8:42:00 AM	Nancy Heflin	Latitude:	18.3308356672306
		Longitude:	-65.2993103333333

Observation Entry: 417

Barrier:	None	SoilColor:	Tan
Vegetation:		Topography:	Flat
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Sand	MECMD:	None

View on Resaca beach toward Flamenco Point.

Time	Team Leader	Property ID	Culebra
8:43:00 AM	Nancy Heflin	Latitude:	18.330811000564
		Longitude:	-65.298893

Observation Entry: 418

Barrier:	None	SoilColor:	Tan
Vegetation:		Topography:	Flat
Drainage:	Wetlands tidal	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Sand	MECMD:	None

Time	Team Leader	Property ID	Culebra
8:50:00 AM	Nancy Heflin		

Latitude: 18.3304996672306
Longitude: -65.2966383333333

Observation Entry: 419

Barrier:	None	**SoilColor:**	Tan
Vegetation:		**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Sand	**MECMD:**	None

View facing northeast on Resaca Beach.

Time	Team Leader	Property ID	Culebra
8:55:00 AM	Nancy Heflin		

Latitude: 18.330669500564
Longitude: -65.2952391666667

Observation Entry: 420

Barrier:	None	**SoilColor:**	Tan
Vegetation:		**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Sand	**MECMD:**	None

The end of sand and beginning of rocky beach on Resaca beach toward Matajo Point.

Time	Team Leader	Property ID	Culebra
8:56:00 AM	Nancy Heflin	Latitude:	18.3307751672306
		Longitude:	-65.2950506666667

Observation Entry: 421

Barrier:	None	**SoilColor:**	Mixed
Vegetation:		**Topography:**	Broken Terrain
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
9:00:00 AM	Nancy Heflin	Latitude:	18.3311221672306
		Longitude:	-65.2945418333334

Observation Entry: 422

Barrier:	None	**SoilColor:**	Mixed
Vegetation:		**Topography:**	Broken Terrain
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
9:06:00 AM	Nancy Heflin		

Latitude: 18.331892500564
Longitude: -65.293753

Observation Entry: 423

Barrier:	None	**SoilColor:**	Mixed
Vegetation:		**Topography:**	Broken Terrain
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

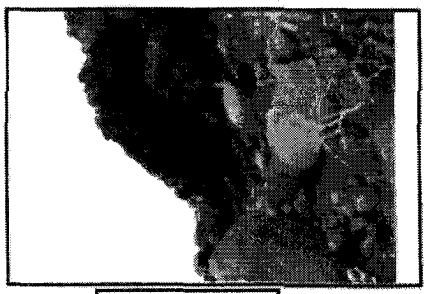
No debris oberved.

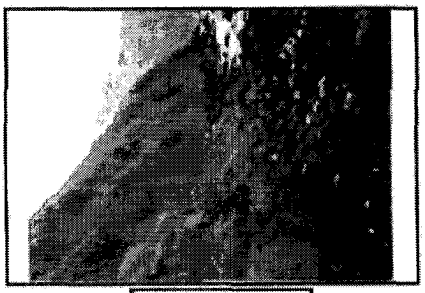
Time	Team Leader	Property ID	Culebra
9:12:00 AM	Nancy Heflin		

Latitude: 18.332742000564
Longitude: -65.293647

Observation Entry: 424

Barrier:	None	**SoilColor:**	Mixed
Vegetation:		**Topography:**	Broken Terrain
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None





Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
9:18:00 AM	Nancy Heflin	Culebra	18.333177000564	-65.2934928333333	425

Barrier:	None	SoilColor:	Mixed
Vegetation:		Topography:	Broken Terrain
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Rocky	MECMD:	None

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
9:27:00 AM	Nancy Heflin	Culebra	18.3346761672307	-65.2928666666667	426

Barrier:	None	SoilColor:	Dark Brown
Vegetation:		Topography:	Broken Terrain
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Rocky	MECMD:	None

Time	Team Leader	Property ID	Culebra
9:35:00 AM	Nancy Heflin		

Latitude: 18.3352755005641
Longitude: -65.2925133333333

Observation Entry: 427

Barrier:	Partial natural barrier	**SoilColor:**	Mixed
Vegetation:		**Topography:**	Broken Terrain
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

View of small cay off Matajo Point between Resaca and Brava Beaches.

Time	Team Leader	Property ID	Culebra
9:41:00 AM	Nancy Heflin		

Latitude: 18.3351698338974
Longitude: -65.2919051666667

Observation Entry: 428

Barrier:	Partial	**SoilColor:**	Mixed
Vegetation:		**Topography:**	Broken Terrain
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
9:50:00 AM	Nancy Heflin	Latitude: 18.3347875005641	
		Longitude: -65.2910685	

Observation Entry: 429

Barrier:	None	**SoilColor:**	Mixed
Vegetation:		**Topography:**	Broken Terrain
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

Rocky shore facing northwest from Brava Beach toward Matajo Point

Time	Team Leader	Property ID	Culebra
9:53:00 AM	Nancy Heflin	Latitude: 18.334339500564	
		Longitude: -65.291104	

Observation Entry: 430

Barrier:	None	**SoilColor:**	Tan
Vegetation:		**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Sand	**MECMD:**	None

Brava beach is litered with debris. No ordnance related debris was observed.

Time	Team Leader	Property ID	Culebra
10:04:00 AM	Nancy Heflin		

Latitude: 18.3320861672307
Longitude: -65.2893896666667

Observation Entry: 431

Barrier:	None	**SoilColor:**	Tan
Vegetation:		**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Sand	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
10:10:00 AM	Nancy Heflin		

Latitude: 18.3307001672306
Longitude: -65.2869118333333

Observation Entry: 432

Barrier:	None	**SoilColor:**	Tan
Vegetation:		**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Sand	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
10:17:00 AM	Nancy Heflin	Latitude:	18.3299046672306
		Longitude:	-65.2843008333333

Observation Entry: 433

Barrier:	None	**SoilColor:**	Tan
Vegetation:		**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Sand	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
10:25:00 AM	Nancy Heflin	Latitude:	18.3296576672306
		Longitude:	-65.2815151666667

Observation Entry: 434

Barrier:	None	**SoilColor:**	Mixed
Vegetation:		**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Rocky	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
12:16:00 PM	Nancy Heflin		

Latitude: 18.3311243338973
Longitude: -65.3027028333333

Observation Entry: 435

Barrier:	None	**SoilColor:**	Tan
Vegetation:	Dense Trees	**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Sand	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
12:18:00 PM	Nancy Heflin		

Latitude: 18.3309011672306
Longitude: -65.3024481666667

Observation Entry: 436

Barrier:	None	**SoilColor:**	Tan
Vegetation:	Dense Trees	**Topography:**	Flat
Drainage:	None	**SurfaceDebris:**	None
Road:	foot Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Sand	**MECMD:**	None

Wood just off of Resaca beach heading toward trail to parking.

Time	Team Leader	Property ID	Culebra
12:22:00 PM	Nancy Heflin		

Latitude: 18.3305360005639
Longitude: -65.3026716666667

Observation Entry: 437

Barrier:	None	**SoilColor:**	Tan
Vegetation:	Dense Trees	**Topography:**	Flat
Drainage:	None	**SurfaceDebris:**	None
Road:	foot Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Sand	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
12:28:00 PM	Nancy Heflin		

Latitude: 18.3299503338973
Longitude: -65.3024131666667

Observation Entry: 438

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Steep Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	foot Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Loam	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
12:34:00 PM	Nancy Heflin		

Latitude: 18.3293991672306
Longitude: -65.3022753333333

Observation Entry: 439

Barrier:	Partial	**SoilColor:**	Mixed
Vegetation:	Mixed Trees and Brush	**Topography:**	Steep Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	foot Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

No debris observed.

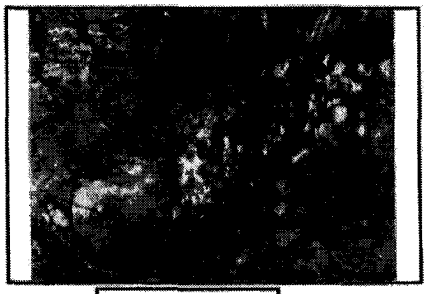
Time	Team Leader	Property ID	Culebra
12:37:00 PM	Nancy Heflin		

Latitude: 18.3290286672306
Longitude: -65.3024446666667

Observation Entry: 440

Barrier:	None	**SoilColor:**	Mixed
Vegetation:	Mixed Trees and Brush	**Topography:**	Steep Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	foot Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

No debris observed.



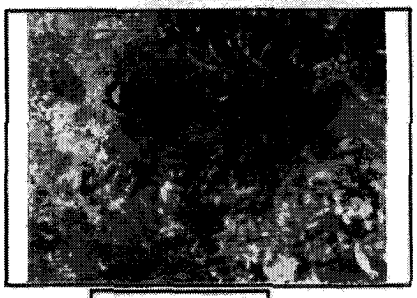
Time	Team Leader	Property ID	Culebra
12:41:00 PM	Nancy Heflin		

Latitude: 18.3284743338972
Longitude: -65.302655

Observation Entry: 441

Barrier:	None	**SoilColor:**	Mixed
Vegetation:	Mixed Trees and Brush	**Topography:**	Steep Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	foot Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

No debris observed.



Time	Team Leader	Property ID	Culebra
12:45:00 PM	Nancy Heflin		

Latitude: 18.3278408338972
Longitude: -65.3025933333333

Observation Entry: 442

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Steep Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	foot Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
12:52:00 PM	Nancy Heflin		

Latitude: 18.3266881672305
Longitude: -65.3023485

Observation Entry: 443

Barrier:	None	**SoilColor:**	Mixed
Vegetation:	Mixed Trees and Brush	**Topography:**	Steep Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	foot Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

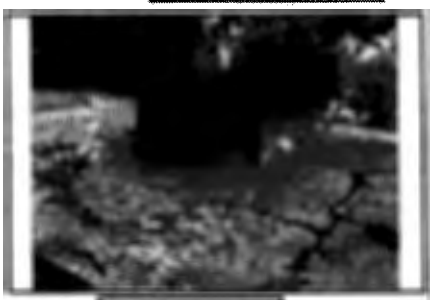
Time	Team Leader	Property ID	Culebra
3:01:00 PM	Nancy Heflin		

Latitude: 18.3067135005633
Longitude: -65.2834811666667

Observation Entry: 444

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Grasses	**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

QR conducted in Lower Town near PR DNR and FWS offices. Small structure in hillside just off of the road Built into hill. Brick wall surrouding hill as a short retaining wall. Building and shed debris inside. Very thick walls.



Time	Team Leader	Property ID	Culebra
3:07:00 PM	Nancy Heflin		

Latitude: 18.3066715005633
Longitude: -65.2830855

Observation Entry: 445

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Grasses	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Loam	**MECMD:**	None

More concrete structure in hillside

Time	Team Leader	Property ID	Culebra
3:13:00 PM	Nancy Heflin		

Latitude: 18.3064938338966
Longitude: -65.2826936666667

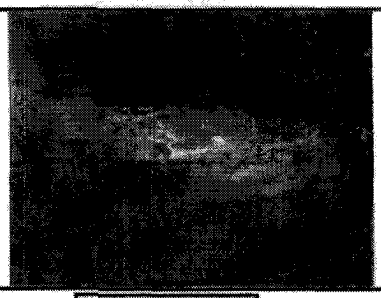
Observation Entry: 446

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Grasses	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Loam	**MECMD:**	None

Another concrete structure in the hillside barrier by brush. Photo of vent sticking up of rounded structure

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
3:15:00 PM	Nancy Heflin	Culebra	18.3064543338966	-65.282632	447

Barrier:	None	SoilColor:	Brown	concrete stairs up hillside buried under brush
Vegetation:	Grasses	Topography:	Gentle Slope	
Drainage:	None	SurfaceDebris:	None	
Road:		SubSurfaceMetalDetect:	No Detect	
SoilType:	Loam	MECMD:	None	



Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
3:24:00 PM	Nancy Heflin	Culebra	18.3068773338967	-65.2820218333333	448

Barrier:	None	SoilColor:	White	
Vegetation:	Mixed Brush and Grasses	Topography:	Flat	
Drainage:	None	SurfaceDebris:	None	
Road:	Gravel or Rock	SubSurfaceMetalDetect:	No Detect	
SoilType:	Loam	MECMD:	None	

Time	Team Leader	Property ID	Culebra
3:29:00 PM	Nancy Heflin	Latitude:	18.3075360005633
		Longitude:	-65.2822891666667

Observation Entry: 449

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Grasses	**Topography:**	Flat
Drainage:	None	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Loam	**MECMD:**	None

concrete pad with large metal door and possible munitions storage building nearby.

Monday, November 06, 2006

Time	Team Leader	Property ID	Culebra
7:54:00 AM	Nancy Heflin	Latitude:	18.318799833897
		Longitude:	-65.2778095

Observation Entry: 450

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Loam	**MECMD:**	None

QR conducted along the side of road past the water treatment area in MRS 05. No debris observed

Time	Team Leader	Property ID	Culebra
7:59:00 AM	Nancy Heflin		

Latitude: 18.3179110005636
Longitude: -65.2778305

Observation Entry: 451

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Loam	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
8:03:00 AM	Nancy Heflin		

Latitude: 18.3165260005636
Longitude: -65.2778616666667

Observation Entry: 452

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Loam	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
8:25:00 AM	Nancy Heflin	Latitude:	18.2988100005631
		Longitude:	-65.2650413333333

Observation Entry: 453

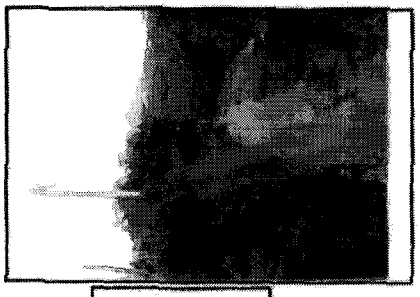
Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Mixed	**MECMD:**	None

Conducted QR along right of way for road in MRS 06.

Time	Team Leader	Property ID	Culebra
8:29:00 AM	Nancy Heflin	Latitude:	18.2990795005631
		Longitude:	-65.2661316666667

Observation Entry: 454

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Steep Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None



Time	Team Leader	Property ID	Culebra
8:34:00 AM	Nancy Heflin		

Latitude: 18.3014000005632
Longitude: -65.2661913333334

Observation Entry: 455

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Steep Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Mixed	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
8:40:00 AM	Nancy Heflin		

Latitude: 18.3020220005632
Longitude: -65.2650813333333

Observation Entry: 456

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Loam	**MECMD:**	None

Time	Team Leader	Property ID	Culebra
8:43:00 AM	Nancy Heflin		

Latitude: 18.3028363338965
Longitude: -65.2651323333334

Observation Entry: 457

Barrier:	None	**SoilColor:**	White
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Paved	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Mixed	**MECMD:**	None

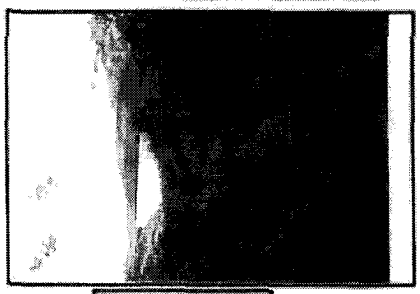
Time	Team Leader	Property ID	Culebra
9:12:00 AM	Nancy Heflin		

Latitude: 18.3074223338967
Longitude: -65.2521173333333

Observation Entry: 458

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Gravel or Rock	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

QR conducted along short stretch of road in MRS 06 near previously conducted QR



Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
9:18:00 AM	Nancy Heflin	Culebra	18.3063308338966	-65.2512298333334	459

Barrier:	None	SoilColor:	Brown
Vegetation:		Topography:	Gentle Slope
Drainage:	Intermittent road flooded d	SurfaceDebris:	None
Road:	Gravel or Rock	SubSurfaceMetalDetect:	No Detect
SoilType:	Mixed	MECMD:	None

Road is flooded. This may be due to high tide.

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
9:21:00 AM	Nancy Heflin	Culebra	18.30696516723	-65.252058	460

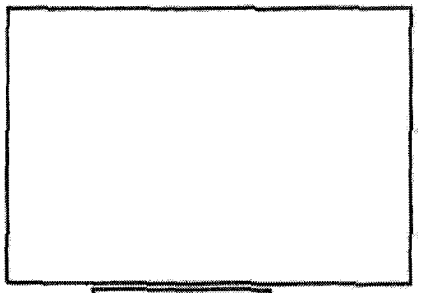
Barrier:	None	SoilColor:	Brown
Vegetation:	Mixed Brush and Grasses	Topography:	Gentle Slope
Drainage:	Ocean	SurfaceDebris:	None
Road:	Gravel or Rock	SubSurfaceMetalDetect:	No Detect
SoilType:	Mixed	MECMD:	None

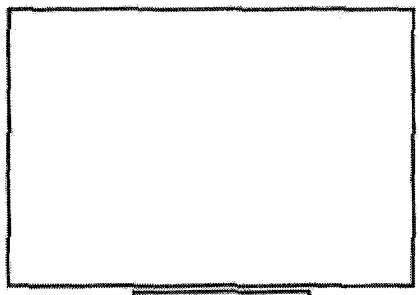
Time	Team Leader	Property ID	Culebra
9:40:00 AM	Nancy Heflin	Latitude:	18.3051696672299
		Longitude:	-65.2447318333333

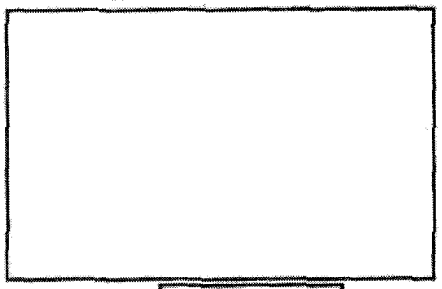
Observation Entry: 461

Barrier:	None	**SoilColor:**	Tan
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	Ocean	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Sand	**MECMD:**	None

Water is too high to walk along the beach near Pt. Negra.





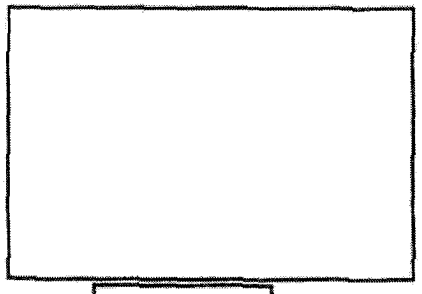


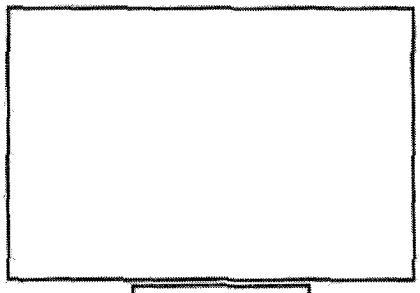
Time	Team Leader	Property ID	Culebra
10:50:00 AM	Nancy Heflin	Latitude:	18.321136833897
		Longitude:	-65.2778638333334

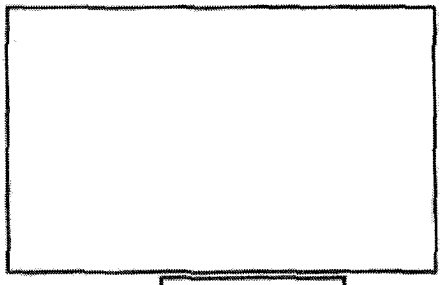
Observation Entry: 462

Barrier:	Partial	**SoilColor:**	Brown
Vegetation:	Mixed Brush and Grasses	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	Low Density
SoilType:	Mixed	**MECMD:**	None

Beginning of QR down to Brava Beach. Parked at house at the end of the road and started QR down an old overgrown jeep road that has been washed out.







Time	Team Leader	Property ID	Culebra
10:51:00 AM	Nancy Heflin		

Latitude: 18.321205333897
Longitude: -65.2777931666667

Observation Entry: 463

Barrier:		SoilColor:	
Vegetation:		Topography:	
Drainage:		SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	None
SoilType:		MECMD:	None

concrete structure debris. small 6 x4 ft

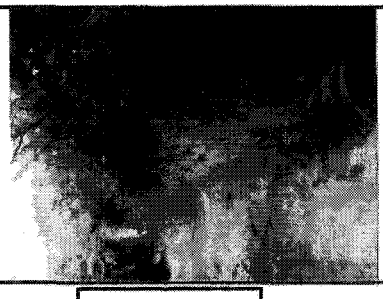
Time	Team Leader	Property ID	Culebra
10:55:00 AM	Nancy Heflin		

Latitude: 18.3226356672304
Longitude: -65.2785948333333

Observation Entry: 464

Barrier:	Partial	SoilColor:	White
Vegetation:	Mixed Brush and Grasses	Topography:	Gentle Slope
Drainage:	None	SurfaceDebris:	None
Road:	4WD Trail	SubSurfaceMetalDetect:	Low Density
SoilType:	Mixed	MECMD:	None

No debris observed.



Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
10:59:00 AM	Nancy Heflin	Culebra	18.3246920005638	-65.2791488333333	465

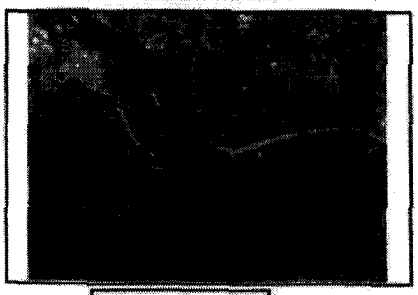
Barrier:	None	SoilColor:	Brown
Vegetation:	Mixed Trees and Brush	Topography:	Gentle Slope
Drainage:	None	SurfaceDebris:	None
Road:	foot Trail	SubSurfaceMetalDetect:	No Detect
SoilType:	Mixed	MECMD:	None

No debris observed.

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
11:04:00 AM	Nancy Heflin	Culebra	18.3259905005638	-65.2787613333333	466

Barrier:	None	SoilColor:	Brown
Vegetation:	Grasses	Topography:	Gentle Slope
Drainage:	None	SurfaceDebris:	None
Road:	foot Trail	SubSurfaceMetalDetect:	No Detect
SoilType:	Rocky	MECMD:	None

No debris observed.



Time	Team Leader	Property ID	Culebra
11:07:00 AM	Nancy Heflin		

Latitude: 18.3259221672305
Longitude: -65.2798843333333

Observation Entry: 467

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	Intermittent	**SurfaceDebris:**	None
Road:	foot Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
11:10:00 AM	Nancy Heflin		

Latitude: 18.3264825005638
Longitude: -65.2810888333333

Observation Entry: 468

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	Intermittent	**SurfaceDebris:**	None
Road:	4WD Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

No debris observed.

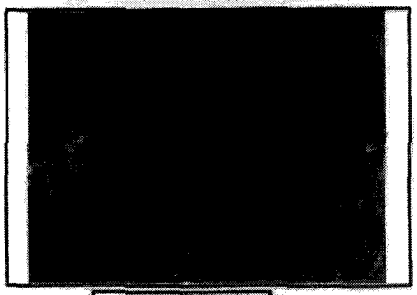
Time	Team Leader	Property ID	Culebra
11:14:00 AM	Nancy Heflin		

Latitude: 18.3276548338972
Longitude: -65.281607

Observation Entry: 469

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	Intermittent storm wash	**SurfaceDebris:**	None
Road:	Game Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Silt	**MECMD:**	None

Deep washout on trail. No debris observed.



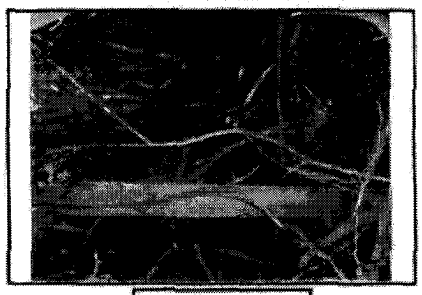
Time	Team Leader	Property ID	Culebra
11:20:00 AM	Nancy Heflin		

Latitude: 18.3283695005639
Longitude: -65.281662

Observation Entry: 470

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Gentle Slope
Drainage:	None	**SurfaceDebris:**	None
Road:	Game Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Silt	**MECMD:**	None

Concrete pillars four with bots on top. ~ 8ft tall.



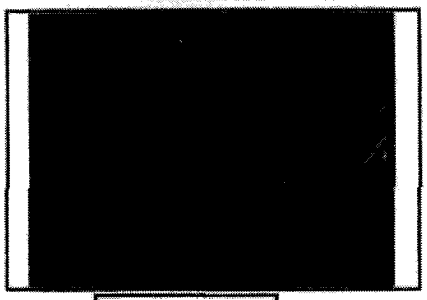
Time	Team Leader	Property ID	Culebra
11:22:00 AM	Nancy Heflin		

Latitude: 18.3285376672306
Longitude: -65.281668

Observation Entry: 471

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Mixed Trees and Brush	**Topography:**	Flat
Drainage:	None	**SurfaceDebris:**	None
Road:	Game Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Mixed	**MECMD:**	None

Four concrete pillars 8 ft tall spacing 10 x 20 ft



Time	Team Leader	Property ID	Culebra
11:26:00 AM	Nancy Heflin		

Latitude: 18.3288615005639
Longitude: -65.2816953333333

Observation Entry: 472

Barrier:	None	**SoilColor:**	
Vegetation:		**Topography:**	
Drainage:		**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	None
SoilType:		**MECMD:**	None

Well ~15 ft diameter and nearby concrete foundation ~2ft by 3ft.

Time	Team Leader	Property ID
11:27:00 AM	Nancy Heflin	Culebra

Latitude: 18.3290973338972
Longitude: -65.2817895

Observation Entry: 473

Barrier:	None	**SoilColor:**	Tan
Vegetation:	Mixed Trees and Brush	**Topography:**	Flat
Drainage:	Intermittent	**SurfaceDebris:**	None
Road:	Game Trail	**SubSurfaceMetalDetect:**	No Detect
SoilType:	Sand	**MECMD:**	None

At the end of the trail it meets up with a shallow tidal inlet.

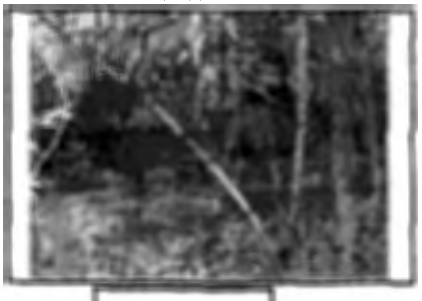
Time	Team Leader	Property ID
11:32:00 AM	Nancy Heflin	Culebra

Latitude: 18.3282935005639
Longitude: -65.2821263333333

Observation Entry: 474

Barrier:		**SoilColor:**	Brown
Vegetation:		**Topography:**	Gentle Slope
Drainage:	Intermittent	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Silt	**MECMD:**	None

No debris observed.



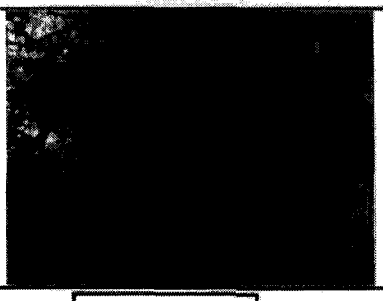
Time	Team Leader	Property ID	Culebra
11:35:00 AM	Nancy Heflin		

Latitude: 18.3281758338972
Longitude: -65.2828616666667

Observation Entry: 475

Barrier:	None	**SoilColor:**	Brown
Vegetation:	Dense Trees	**Topography:**	Flat
Drainage:	Wetlands	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Silt	**MECMD:**	None

No debris observed.



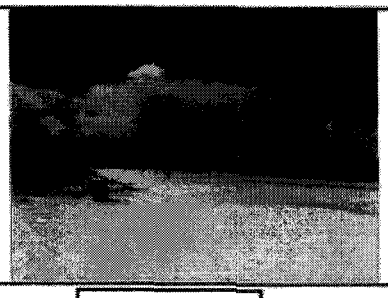
Time	Team Leader	Property ID	Culebra
1:35:00 PM	Nancy Heflin		

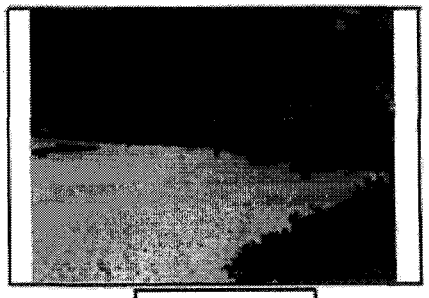
Latitude: 18.3294270005639
Longitude: -65.319903

Observation Entry: 476

Barrier:	None	**SoilColor:**	White
Vegetation:		**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Sand	**MECMD:**	None

QR along Flamenco Beach. No debris observed.





Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
1:38:00 PM	Nancy Heflin	Culebra	18.3287883338972	-65.3189968333333	477

Barrier:	None	SoilColor:	White
Vegetation:		Topography:	Flat
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Sand	MECMD:	None

Time	Team Leader	Property ID	Latitude	Longitude	Observation Entry
1:41:00 PM	Nancy Heflin	Culebra	18.3283725005639	-65.3172735	478

Barrier:	None	SoilColor:	White
Vegetation:		Topography:	Flat
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Sand	MECMD:	None

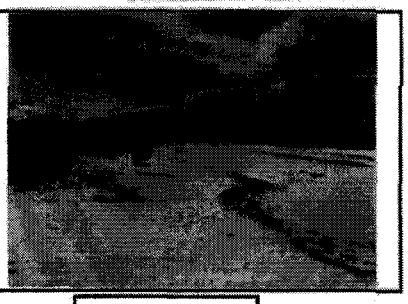
Time	Team Leader	Property ID	Culebra
1:44:00 PM	Nancy Heflin		

Latitude: 18.3283513338972
Longitude: -65.3157538333333

Observation Entry: 479

Barrier:	None	**SoilColor:**	White
Vegetation:		**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Sand	**MECMD:**	None

No debris observed.



Time	Team Leader	Property ID	Culebra
1:47:00 PM	Nancy Heflin		

Latitude: 18.3287190005639
Longitude: -65.3143833333333

Observation Entry: 480

Barrier:	None	**SoilColor:**	White
Vegetation:		**Topography:**	Flat
Drainage:	Ocean	**SurfaceDebris:**	None
Road:		**SubSurfaceMetalDetect:**	No Detect
SoilType:	Sand	**MECMD:**	None

No debris observed.

Time	Team Leader	Property ID	Culebra
1:52:00 PM	Nancy Heflin		

Latitude: 18.3285668338972
Longitude: -65.3169826666667

Observation Entry: 481

Barrier:	None	SoilColor:	White
Vegetation:		Topography:	Flat
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Sand	MECMD:	None

No debris observed.

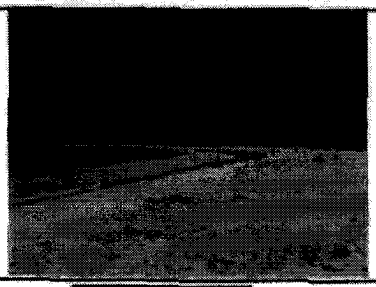
Time	Team Leader	Property ID	Culebra
1:58:00 PM	Nancy Heflin		

Latitude: 18.3303806672306
Longitude: -65.3203138333333

Observation Entry: 482

Barrier:	None	SoilColor:	White
Vegetation:		Topography:	Flat
Drainage:	Ocean	SurfaceDebris:	None
Road:		SubSurfaceMetalDetect:	No Detect
SoilType:	Sand	MECMD:	None

No debris observed



APPENDIX F

ANALYTICAL DATA

The electronic copy is included in the
"Appendix F - Analytical Data" folder on enclosed CD.

APPENDIX G
DATA VALIDATION REPORT

DATA VALIDATION SUMMARY REPORT

for samples collected from

CULEBRA ISLAND

Puerto Rico

Data Validation by: Katherine LaPierre

Parsons - Austin

INTRODUCTION

The following data validation summary report covers surface soil samples collected from Culebra Island, Puerto Rico on October 23 and 24, 2006. Samples were logged in under the following Sample Delivery Group (SDG):

D6J260350

Soil samples were analyzed for explosives and metals. The table below details the requested parameters for each sample. No field quality control (QC) samples were collected in association with this SDG.

All samples were collected by Parsons. All analyses were performed by STL-Denver following the procedures outlined in the Standard Subcontract and the Sampling and Analysis Addendum for the Southeast Region. The samples in this SDG were shipped to the laboratory in one cooler. The cooler was received by the laboratory at a temperature of 4.6°C which is within the 2-6° C range recommended by the Work Plan.

SAMPLE IDs AND REQUESTED PARAMETERS

Sample ID	Matrix	Explosives	Metals	Comments
CUL-05-SS-06-19	S	X	X	
CUL-06-SS-06-21	S	X	X	
CUL-09-SS-06-10	S	X	X	
CUL-14-SS-06-16	S	X	X	Ambient

S = Surface soil

EVALUATION CRITERIA

The data submitted by the laboratory has been reviewed and verified following the guidelines outlined in the Project Work Plan. Information reviewed in the data packages included sample results; field and laboratory quality control results; calibrations; case narratives; raw data; cooler receipt forms, and chain-of-custody (COC) forms. The analyses and findings presented in this report are based on the reviewed information, and whether guidelines in the Work Plan were met.

Due to the flagging requirements of the electronic data deliverable (EDD) software, Automatic Data Review (ADR), the following rule was applied for flagging the data:

If an analyte was detected in the method blank, the associated sample concentrations were examined. If the analyte was detected in a sample at a concentration similar to that found in the blank (five times the blank concentration for most analytes, or ten times the blank concentration for common laboratory contaminants), the reporting limit for that analyte was raised to the detected level and the result was flagged "U" for that particular sample.

Approval was also received from a United States Army Corps of Engineers (USACE) chemist for laboratory to use the historically developed control limits for the explosive analysis. See table below.

Analyte	LCS/MS/MSD Control Limits for Soil	RPD (%) for Soil
HMX	53-115%	30
RDX	70-121%	30
1,3,5-Trinitrobenzene	47-131%	30
1,3-dinitrobenzene	69-128%	30
Nitrobenzene	59-150%	30
Tetryl	10-160%	30
Nitroglycerin	32-135%	30
2,4,6-Trinitrotoluene	58-130%	30
4-Amino-2,6-dinitrotoluene	60-133%	30
2-Amino-4,6-dinitrotoluene	53-141%	30
2,4-Dinitrotoluene	61-128%	30
2,6-Dinitrotoluene	59-134%	30
3-Nitrotoluene	51-153%	30
PETN	28-178%	30
2-Nitrotoluene	55-147%	30
4-Nitrotoluene	65-146%	30

For metals, the control limits for accuracy are 80-120% for LCS, MS, and MSD. The precision control limits for the MS/MSD are RPD $\leq$ 20%.

EXPLOSIVES

General

The explosives portion of this SDG consisted of four (4) surface soil samples. The samples were collected on October 23 and 24, 2006 and were analyzed for the full list of explosives as specified in the Work Plan.

The explosives analyses were performed according to the laboratory's modification of USEPA SW846 Method 8321A. All samples in this SDG were analyzed following the

procedures outlined in the laboratory Standard Operation Procedure (SOP). All samples were prepared and analyzed within the holding time required by the method.

The explosives analyses were performed in a single analytical batch (#6305162) under a single initial calibration (ICAL).

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the laboratory control spike (LCS) sample and the surrogate spikes. No sample from this SDG was designated for MS/MSD analyses.

All LCS recoveries were within the laboratory historically developed control limits, except for the following:

Analyte	LCS %R	Criteria
Nitroglycerin	156	32-135%
HMX	122	53-115%

All samples were non-detect for the non-compliant analytes, so data quality was not affected by the high bias demonstrated by the LCS. The "Q" flags applied by the laboratory were removed.

All surrogate spike recoveries were within the laboratory historically developed control limits.

Precision

Precision could not be evaluated for this SDG because no duplicate analyses were performed.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the Work Plan;
- Comparing actual analytical procedures to those described in the Work Plan;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the Work Plan. All samples were prepared and analyzed within the holding time required by the method and the Work Plan.

- All initial calibration criteria were met.
- All secondary source verification criteria were met.
- All continuing calibration verification (CCV) criteria were met, with a few exceptions. The CCV analyzed prior to the samples in this SDG had PETN recovered above criteria (70-130%) at 135%. In addition, the CCV analyzed after the samples in this SDG had PETN above criteria at 140% and nitroglycerin

above criteria at 131%. All samples were non-detect for these analytes, so the high bias demonstrated by the CCVs did not adversely affect data quality. The "Q" flags applied by the laboratory were removed.

- MDLs were developed within 12 months of sample analyses.

One method blank was associated with the explosives analyses in this SDG. The method blank was compliant.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All explosives results for the samples in this SDG were considered usable. Thus, the completeness for the explosives portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

ICP-AES METALS

General

The ICP-AES portion of this SDG consisted of four (4) surface soil samples. The samples were collected on October 23 and 24, 2006 and were analyzed for aluminum, calcium, iron, magnesium, potassium, sodium, strontium, and titanium.

The ICP-AES metals analyses were performed using USEPA SW846 Method 6010B. The samples in this SDG were analyzed following the procedures outlined in the Work Plan. All samples were prepared and analyzed within the holding time required by the method and the Work Plan.

The ICP-AES metals samples were digested in a single batch (#6304559) and analyzed in two batches under two different ICALs.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS sample and MS/MSD samples. No sample from this SDG was designated for MS/MSD analyses. However, the laboratory analyzed an MS/MSD on sample CUL-14-SS-06-16.

All LCS recoveries were within acceptance criteria.

All MS/MSD recoveries were within acceptance criteria with the following exceptions:

Metal	MS %R	MSD %R	Criteria
Aluminum	7450	3640	80-120%
Iron	2690	3420	80-120%
Titanium	0	(102)	80-120%

It should be noted that the concentrations of all three metals in the parent sample were significantly greater than the amount spiked, resulting in the anomalous recoveries. All non-compliant metals were flagged "J" in the parent sample in accordance with the

SAP.

Precision

Precision was evaluated using the RPD obtained from the MS/MSD samples.

All MS/MSD RPDs were within criteria, with the exception of aluminum and titanium. These analytes were already qualified in the parent sample due to the non-compliant MS/MSD recoveries, so no additional corrective action was necessary.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the Work Plan;
- Comparing actual analytical procedures to those described in the Work Plan;
- Evaluating preservation and holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the Work Plan. All samples were prepared and analyzed within the holding time required by the method and the Work Plan.

- All initial calibration criteria were met.
- All second source verification criteria were met. The initial calibration verification samples were prepared using a secondary source.
- All continuing calibration verification criteria were met.
- All interference check criteria were met.
- All RL check standard criteria were met.
- A dilution test (DT) was analyzed on sample CUL-14-SS-06-16. The DT failed to meet criteria for all metals detected in the parent sample at a concentration of 50 times the MDL or greater:

Metal	%D	Criteria
Aluminum	13	
Calcium	16	
Iron	17	
Magnesium	15	%D ≤ 10
Potassium	11	
Strontium	12	
Titanium	13	

- A post digestion spike (PDS) was analyzed on the same sample as the DT. All metals met criteria with the exception of those in **bold** below:

Metal	%R	Criteria
Aluminum	**-143**	
Calcium	84	
Iron	**-436**	
Magnesium	81	75-125%
Potassium	93	
Strontium	80	
Titanium	**-300**	

The results for aluminum, iron, and titanium were flagged "J" in all samples in this SDG.

One method blank and several calibration blanks were associated with the ICP-AES analyses in this SDG. All blanks were compliant.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All ICP-AES metals results for the samples in this SDG were considered usable. The completeness for the ICP metals portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

ICP/MS METALS

General

The ICP/MS portion of this SDG consisted of four (4) surface soil samples. The samples were collected on October 23 and 24, 2006 and were analyzed for antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc.

The ICP/MS metals analyses were performed using USEPA SW846 Method 6020. The samples were analyzed following the procedures outlined in the Work Plan. All samples were prepared and analyzed within the holding time required by the method and the Work Plan.

The ICP/MS metals samples were digested in a single batch (#6304560) and analyzed in four different batches under four different ICALs. It should be noted that samples CUL-14-SS-06-16 required a 10x dilution for manganese and a 5x dilution for beryllium. In addition, samples CUL-05-SS-06-19, CUL-06-SS-06-21, and CUL-09-SS-06-10 required a 5x dilution for beryllium and manganese. All other analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS sample and MS/MSD samples. No sample from this SDG was designated for MS/MSD analyses. However, the laboratory analyzed an MS/MSD on sample CUL-14-SS-06-16.

All LCS recoveries were within acceptance criteria.

All MS/MSD recoveries were within acceptance criteria with the following exceptions:

Metal	MS %R	MSD %R	Criteria
Antimony	3.8	4.1	80-120%
Arsenic	69	66	80-120%
Barium	448	0	80-120%
Chromium	65	40	80-120%
Cobalt	175	19	80-120%
Copper	342	333	80-120%
Lead	206	0	80-120%
Manganese	12000	0	80-120%
Molybdenum	40	44	80-120%
Nickel	75	79	80-120%
Selenium	58	62	80-120%
Silver	76	78	80-120%
Vanadium	0	0	80-120%
Zinc	272	157	80-120%

It should be noted that the concentrations of barium, cobalt, copper, lead, manganese, vanadium, and zinc in the parent sample were significantly greater than the amount spiked, resulting in the anomalous recoveries. All non-compliant metals were flagged "J" in the parent sample in accordance with the SAP.

Precision

Precision was evaluated using the RPD obtained from the MS/MSD samples.

All MS/MSD RPDs were within acceptance criteria.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the Work Plan;
- Comparing actual analytical procedures to those described in the Work Plan;
- Evaluating preservation and holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the Work Plan. The samples were prepared and analyzed within the holding times required by the method.

- All instrument tune criteria were met.
- All metals met criteria in the RL check standard.

- All second source criteria were met. The ICV was prepared using a secondary source.
- All CCV criteria were met.
- All interference check (ICSA/ICSAB) criteria were met with one exception. Cadmium was detected in the ICSA samples above the RL (1.0µg/L). The ICSA analyzed at the beginning of the batch contained cadmium at 1.8µg/L and the ICSA analyzed at the end of the batch contained cadmium at 1.81µg/L. However, cadmium is a verified trace impurity in the ICSA standard, so no corrective action was necessary.
- A DT was analyzed on sample CUL-14-SS-06-16. The DT met criteria for all metals detected in the parent sample at a concentration of 50 times the MDL or greater, except for those metals in **bold** below:

Metal	%D	Criteria
Arsenic	**19**	%D ≤ 10
Barium	**15**	
Chromium	**21**	
Cobalt	**27**	
Copper	**28**	
Lead	**26**	
Manganese	10	
Nickel	**20**	
Vanadium	**19**	
Zinc	**26**	

- A PDS was analyzed on the same sample as the DT. All metals met criteria in the PDS, except those metals in **bold** below:

Metal	%R	Criteria
Arsenic	86	
Barium	88	
Chromium	82	
Cobalt	80	
Copper	**71**	75-125%
Lead	77	
Nickel	81	
Vanadium	84	
Zinc	80	

The results for copper were flagged "J" in all samples in this SDG.

One method blank and several calibration blanks were associated with the ICP/MS analyses in this SDG. All blanks were compliant.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All ICP/MS results for the samples in this SDG were considered usable. Therefore, the completeness for the ICP/MS portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

MERCURY

General

The mercury portion of this SDG consisted of four (4) surface soil samples. The samples were collected on October 23 and 24, 2006 and were analyzed for mercury.

The mercury analyses were performed using USEPA SW846 Method 7471A. The samples were analyzed following the procedures outlined in the Work Plan. All samples were prepared and analyzed within the holding time required by the method and the Work Plan.

The samples for mercury analysis were digested and analyzed in a single batch (#6314183) under a single ICAL.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS sample and MS/MSD samples. No sample from this SDG was designated for MS/MSD analyses. However, the laboratory analyzed an MS/MSD on sample CUL-14-SS-06-16.

The LCS recovery was within acceptance criteria.

The MS/MSD recoveries were within acceptance criteria.

Precision

Precision was evaluated using the RPD obtained from the MS/MSD samples.

The MS/MSD RPD was within acceptance criteria.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the Work Plan;
- Comparing actual analytical procedures to those described in the Work Plan;
- Evaluating preservation and holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the Work Plan. The samples were prepared and analyzed within the holding times required by the method.

- All initial calibration criteria were met.
- All calibration verification criteria were met.
- All second source verification criteria were met. The ICV sample was prepared using a secondary source.
- A DT was analyzed on sample CUL-14-SS-06-16. The DT failed to meet criteria as follows:

Metal	%D	Criteria
Mercury	23	%D ≤ 10

According to the SAP, the corrective action is to perform MS analysis. Since the result of the MS analysis was compliant, no corrective action was necessary.

One method blank and several calibration blanks were associated with the mercury analyses in this SDG. All blanks were compliant.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All mercury results for the samples in this SDG were considered usable. The completeness for the mercury portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

DATA USABILITY

All calculations were spot checked and verified. All data in this SDG are usable and all DQO requirements were met.

DATA VALIDATION SUMMARY REPORT

for samples collected from

CULEBRA ISLAND

Puerto Rico

Data Validation by: Katherine LaPierre

Parsons - Austin

INTRODUCTION

The following data validation summary report covers soil and sediment samples collected from Culebra Island, Puerto Rico on October 25 and 26, 2006. Samples were logged in under the following Sample Delivery Group (SDG):

D6J280175

Soil and sediment samples were analyzed for explosives and metals. The table below details the requested parameters for each sample. No field quality control (QC) samples were collected in association with this SDG.

All samples were collected by Parsons. All analyses were performed by STL-Denver following the procedures outlined in the Standard Subcontract and the Sampling and Analysis Addendum for the Southeast Region. The samples in this SDG were shipped to the laboratory in one cooler. The cooler was received by the laboratory at a temperature of 3.4°C which is within the 2-6° C range recommended by the Work Plan.

SAMPLE IDs AND REQUESTED PARAMETERS

Sample ID	Matrix	Explosives	Metals	Comments
CUL-05-SS-06-15	S	X	X	
CUL-06-SS-06-20	S	X	X	
CUL-08-SE-06-05	SE	X	X	
CUL-08-SS-06-23	S	X	X	
CUL-08-SS-06-24	S	X	X	
CUL-09-SS-06-09	S	X	X	

S = Soil, SE = Sediment

EVALUATION CRITERIA

The data submitted by the laboratory has been reviewed and verified following the guidelines outlined in the Project Work Plan. Information reviewed in the data packages included sample results; field and laboratory quality control results; calibrations; case narratives; raw data; cooler receipt forms, and chain-of-custody (COC) forms. The analyses and findings presented in this report are based on the reviewed information, and whether guidelines in the Work Plan were met.

Due to the flagging requirements of the electronic data deliverable (EDD) software, Automatic Data Review (ADR), the following rule was applied for flagging the data:

If an analyte was detected in the method blank, the associated sample concentrations were examined. If the analyte was detected in a sample at a concentration similar to that found in the blank (five times the blank concentration for most analytes, or ten times the blank concentration for common laboratory contaminants), the reporting limit for that analyte was raised to the detected level and the result was flagged "U" for that particular sample.

Approval was also received from a United States Army Corps of Engineers (USACE) chemist for laboratory to use the historically developed control limits for the explosive analysis. See table below.

Analyte	LCS/MS/MSD Control Limits for Soil	RPD (%) for Soil
HMX	53-115%	30
RDX	70-121%	30
1,3,5-Trinitrobenzene	47-131%	30
1,3-dinitrobenzene	69-128%	30
Nitrobenzene	59-150%	30
Tetryl	10-160%	30
Nitroglycerin	32-135%	30
2,4,6-Trinitrotoluene	58-130%	30
4-Amino-2,6-dinitrotoluene	60-133%	30
2-Amino-4,6-dinitrotoluene	53-141%	30
2,4-Dinitrotoluene	61-128%	30
2,6-Dinitrotoluene	59-134%	30
3-Nitrotoluene	51-153%	30
PETN	28-178%	30
2-Nitrotoluene	55-147%	30
4-Nitrotoluene	65-146%	30

For metals, the control limits for accuracy are 80-120% for LCS, MS, and MSD. The precision control limits for the MS/MSD are RPD $\leq$ 20%.

EXPLOSIVES

General

The explosives portion of this SDG consisted of five (5) surface soil samples and one (1) sediment sample. The samples were collected on October 25 and 26, 2006 and were analyzed for the full list of explosives as specified in the Work Plan.

The explosives analyses were performed according to the laboratory's modification of USEPA SW846 Method 8321A. All samples in this SDG were analyzed following the procedures outlined in the laboratory Standard Operation Procedure (SOP). All samples were prepared and analyzed within the holding time required by the method.

The explosives analyses were performed in a single analytical batch (#6305162) under a single initial calibration (ICAL).

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the laboratory control spike (LCS) sample and the surrogate spikes. No sample from this SDG was designated for MS/MSD analyses.

All LCS recoveries were within the laboratory historically developed control limits, except for the following:

Analyte	LCS %R	Criteria
Nitroglycerin	156	32-135%
HMX	122	53-115%

All samples were non-detect for the non-compliant analytes, so data quality was not affected by the high bias demonstrated by the LCS. The "Q" flags applied by the laboratory were removed.

All surrogate spike recoveries were within the laboratory historically developed control limits, with the exception noted below:

Sample ID	Surrogate	%R	Criteria
CUL-09-SS-06-09	Nitrobenzene-d5	155	50-150%

All analytes in this sample were non-detect, so data quality was not affected by the high bias demonstrated by the surrogate recovery. The qualifiers applied by the laboratory were removed.

Precision

Precision could not be evaluated for this SDG because no duplicate analyses were performed.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the Work Plan;
- Comparing actual analytical procedures to those described in the Work Plan;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the Work Plan. All samples were prepared and analyzed within the holding time required by the method and the Work Plan.

- All initial calibration criteria were met.
- All secondary source verification criteria were met.
- All continuing calibration verification (CCV) criteria were met, with a few exceptions. The CCV analyzed prior to the samples in this SDG had PETN recovered above criteria (70-130%) at 140% and nitroglycerin above criteria at 131%. In addition, the CCV analyzed after the samples in this SDG had PETN above criteria at 141% and nitroglycerin above criteria at 138%. All samples were non-detect for these analytes, so the high bias demonstrated by the CCVs did not adversely affect data quality. The "Q" flags applied by the laboratory were removed.
- MDLs were developed within 12 months of sample analyses.

One method blank was associated with the explosives analyses in this SDG. The method blank was compliant.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All explosives results for the samples in this SDG were considered usable. Thus, the completeness for the explosives portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

ICP-AES METALS

General

The ICP-AES portion of this SDG consisted of five (5) surface soil samples and one (1) sediment sample. The samples were collected on October 25 and 26, 2006 and were analyzed for aluminum, calcium, iron, magnesium, potassium, sodium, strontium, and titanium.

The ICP-AES metals analyses were performed using USEPA SW846 Method 6010B. The samples in this SDG were analyzed following the procedures outlined in the Work Plan. All samples were prepared and analyzed within the holding time required by the method and the Work Plan.

The ICP-AES metals samples were digested in a single batch (#6307586) and analyzed in two batches under two different ICALs. It should be noted that sample CUL-08-SS-06-24 was analyzed at a 5x dilution only due to matrix interference. All other analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS sample.

All LCS recoveries were within acceptance criteria.

Precision

Precision could not be evaluated for this SDG because no duplicate analyses were performed.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the Work Plan;
- Comparing actual analytical procedures to those described in the Work Plan;
- Evaluating preservation and holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the Work Plan. All samples were prepared and analyzed within the holding time required by the method and the Work Plan.

- All initial calibration criteria were met.
- All second source verification criteria were met. The initial calibration verification samples were prepared using a secondary source.
- All continuing calibration verification criteria were met.
- All interference check criteria were met.
- All RL check standard criteria were met.
- A dilution test (DT) was analyzed on a sample from a different client/site. The DT met criteria for all metals detected in the parent sample at a concentration of 50 times the MDL or greater, with the exception of the metal in **bold** below:

Metal	%D	Criteria
Aluminum	8.8	
Calcium	10	
Iron	3.7	
Potassium	7.8	%D ≤ 10
Magnesium	**11**	
Strontium	10	
Titanium	7.6	

- A post digestion spike (PDS) was analyzed on the same sample as the DT. Magnesium met criteria in the PDS as follows:

Metal	%R	Criteria

Magnesium	85	75-125%

One method blank and several calibration blanks were associated with the ICP-AES analyses in this SDG. All blanks were compliant.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All ICP-AES metals results for the samples in this SDG were considered usable. The completeness for the ICP metals portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

ICP/MS METALS

General

The ICP/MS portion of this SDG consisted of five (5) surface soil samples and one (1) sediment sample. The samples were collected on October 25 and 26, 2006 and were analyzed for antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc.

The ICP/MS metals analyses were performed using USEPA SW846 Method 6020. The samples were analyzed following the procedures outlined in the Work Plan. All samples were prepared and analyzed within the holding time required by the method and the Work Plan.

The ICP/MS metals samples were digested and analyzed in a single batch (#6307584) under a single ICAL. It should be noted that manganese required a dilution in the following samples: CUL-08-SS-06-23 (10x), CUL-05-SS-06-15 (10x), CUL-06-SS-06-20 (10x), CUL-08-SS-06-24 (10x), and CUL-09-SS-06-09 (5x). In addition, sample CUL-05-SS-06-15 required a 10x dilution for barium. All other analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS.

All LCS recoveries were within acceptance criteria.

Precision

Precision could not be evaluated for this SDG because no duplicate analyses were performed.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the Work Plan;
- Comparing actual analytical procedures to those described in the Work Plan;
- Evaluating preservation and holding times; and

- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the Work Plan. The samples were prepared and analyzed within the holding times required by the method.

- All instrument tune criteria were met.
- All metals met criteria in the RL check standard.
- All second source criteria were met. The ICV was prepared using a secondary source.
- All CCV criteria were met.
- All interference check (ICSA/ICSAB) criteria were met with one exception. Cadmium was detected in the ICSA samples above the RL (1.0µg/L). The ICSA analyzed at the beginning of the batch contained cadmium at 1.7µg/L and the ICSA analyzed at the end of the batch contained cadmium at 1.5µg/L. However, cadmium is a verified trace impurity in the ICSA standard, so no corrective action was necessary.
- A DT was analyzed on a sample from a different client/site. The DT met criteria for all metals detected in the parent sample at a concentration of 50 times the MDL or greater, except for those metals in **bold** below:

Metal	%D	Criteria
Arsenic	7.4	%D ≤ 10
Barium	4.0	
Beryllium	9.4	
Cadmium	5.7	
Chromium	9.7	
Cobalt	7.4	
Copper	**13**	
Lead	1.2	
Manganese	6.5	
Molybdenum	0.3	
Nickel	10	
Thallium	2.3	
Vanadium	1.7	
Zinc	**15**	

- A PDS was analyzed on the same sample as the DT. All metals met criteria in the PDS, except those metals in **bold** below:

Metal	%R	Criteria
Copper	80	75-125%

Zinc	**74**	

The results for zinc were flagged "J" in all samples analyzed in the same batch.

One method blank and several calibration blanks were associated with the ICP/MS analyses in this SDG. All blanks were compliant.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All ICP/MS results for the samples in this SDG were considered usable. Therefore, the completeness for the ICP/MS portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

MERCURY

General

The mercury portion of this SDG consisted of five (5) surface soil samples and one (1) sediment sample. The samples were collected on October 25 and 26, 2006 and were analyzed for mercury.

The mercury analyses were performed using USEPA SW846 Method 7471A. The samples were analyzed following the procedures outlined in the Work Plan. All samples were prepared and analyzed within the holding time required by the method and the Work Plan.

The samples for mercury analysis were digested and analyzed in a single batch (#6314186) under a single ICAL.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS sample.

The LCS recovery was within acceptance criteria.

Precision

Precision could not be evaluated for this SDG because no duplicate analyses were performed.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the Work Plan;
- Comparing actual analytical procedures to those described in the Work Plan;
- Evaluating preservation and holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the Work Plan. The samples were prepared and analyzed within the holding times required by the method.

- All initial calibration criteria were met.
- All calibration verification criteria were met.
- All second source verification criteria were met. The ICV sample was prepared using a secondary source.
- A DT was analyzed on a sample from a different client/site. The DT was not applicable because mercury was not detected at 25 times the MDL or greater in the parent sample.

One method blank and several calibration blanks were associated with the mercury analyses in this SDG. All blanks were compliant.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All mercury results for the samples in this SDG were considered usable. The completeness for the mercury portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

DATA USABILITY

All calculations were spot checked and verified. All data in this SDG are usable and all DQO requirements were met.

DATA VALIDATION SUMMARY REPORT

for samples collected from

CULEBRA ISLAND

Puerto Rico

Data Validation by: Katherine LaPierre

Parsons - Austin

INTRODUCTION

The following data validation summary report covers soil and sediment samples collected from Culebra Island, Puerto Rico on October 27 and 28, 2006. Samples were logged in under the following Sample Delivery Group (SDG):

D6J310259

Soil and sediment samples were analyzed for explosives and metals. The table below details the requested parameters for each sample. The field quality control (QC) samples collected in association with this SDG included one matrix spike/matrix spike duplicate (MS/MSD) pair and two field duplicate samples. The field QC samples were analyzed for the same parameters as the associated parent sample.

All samples were collected by Parsons. All analyses were performed by STL-Denver following the procedures outlined in the Standard Subcontract and the Sampling and Analysis Addendum for the Southeast Region. The samples in this SDG were shipped to the laboratory in one cooler. The cooler was received by the laboratory at a temperature of 3.1°C which is within the 2-6° C range recommended by the Work Plan.

SAMPLE IDs AND REQUESTED PARAMETERS

Sample ID	Matrix	Explosives	Metals	Comments
CUL-04-SS-06-11	S	X	X	
CUL-05-SS-06-17	S	X	X	Parent for MS/MSD
CUL-05-SS-06-18	S	X	X	
CUL-06-SS-06-29	S	X	X	FD of CUL-05-SS-06-17
CUL-04-SS-06-30	S	X	X	FD of CUL-04-SS-06-11
CUL-04-SE-06-03	SE	X	X	
CUL-04-SE-06-04	SE	X	X	

S = Soil, SE = Sediment

EVALUATION CRITERIA

The data submitted by the laboratory has been reviewed and verified following the guidelines outlined in the Project Work Plan. Information reviewed in the data packages included sample results; field and laboratory quality control results; calibrations; case narratives; raw data; cooler receipt forms, and chain-of-custody (COC) forms. The

analyses and findings presented in this report are based on the reviewed information, and whether guidelines in the Work Plan were met.

Due to the flagging requirements of the electronic data deliverable (EDD) software, Automatic Data Review (ADR), the following rule was applied for flagging the data:

If an analyte was detected in the method blank, the associated sample concentrations were examined. If the analyte was detected in a sample at a concentration similar to that found in the blank (five times the blank concentration for most analytes, or ten times the blank concentration for common laboratory contaminants), the reporting limit for that analyte was raised to the detected level and the result was flagged "U" for that particular sample.

Approval was also received from a United States Army Corps of Engineers (USACE) chemist for laboratory to use the historically developed control limits for the explosive analysis. See table below.

Analyte	LCS/MS/MSD Control Limits for Soil	RPD (%) for Soil
HMX	53-115%	30
RDX	70-121%	30
1,3,5-Trinitrobenzene	47-131%	30
1,3-dinitrobenzene	69-128%	30
Nitrobenzene	59-150%	30
Tetryl	10-160%	30
Nitroglycerin	32-135%	30
2,4,6-Trinitrotoluene	58-130%	30
4-Amino-2,6-dinitrotoluene	60-133%	30
2-Amino-4,6-dinitrotoluene	53-141%	30
2,4-Dinitrotoluene	61-128%	30
2,6-Dinitrotoluene	59-134%	30
3-Nitrotoluene	51-153%	30
PETN	28-178%	30
2-Nitrotoluene	55-147%	30
4-Nitrotoluene	65-146%	30

For metals, the control limits for accuracy are 80-120% for LCS, MS, and MSD. The precision control limits for the MS/MSD are RPD $\leq$ 20%.

EXPLOSIVES

General

The explosives portion of this SDG consisted of five (5) surface soil samples and two (2) sediment samples. The samples were collected on October 27 and 28, 2006 and were analyzed for the full list of explosives as specified in the Work Plan.

The explosives analyses were performed according to the laboratory's modification of USEPA SW846 Method 8321A. All samples in this SDG were analyzed following the procedures outlined in the laboratory Standard Operation Procedure (SOP). All samples were prepared and analyzed within the holding time required by the method.

The explosives analyses were performed in a single analytical batch (#6307587) under a single initial calibration (ICAL).

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the laboratory control spike (LCS) sample, MS/MSD samples, and the surrogate spikes. Sample CUL-05-SS-06-17 was designated for MS/MSD analyses.

All LCS, MS/MSD, and surrogate spike recoveries were within the laboratory historically developed control limits.

Precision

Precision was evaluated using the relative percent difference (RPD) obtained from the MS/MSD samples. Precision was further assessed by comparing the field duplicate analyte results. Sample CUL-06-SS-06-29 was collected as a field duplicate of sample CUL-05-SS-06-17, and sample CUL-04-SS-06-30 was collected as a field duplicate of sample CUL-04-SS-06-11.

All MS/MSD RPDs were within criteria.

All analytes were non-detect in both the parent and field duplicate sample for both field duplicate pair.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the Work Plan;
- Comparing actual analytical procedures to those described in the Work Plan;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the Work Plan. All samples were prepared and analyzed within the holding time required by the method and the Work Plan.

- All initial calibration criteria were met.

- All secondary source verification criteria were met.
- All initial and continuing calibration verification criteria were met.
- MDLs were developed within 12 months of sample analyses.

One method blank was associated with the explosives analyses in this SDG. The method blank was compliant.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All explosives results for the samples in this SDG were considered usable. Thus, the completeness for the explosives portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

ICP-AES METALS

General

The ICP-AES portion of this SDG consisted of five (5) surface soil samples and two (2) sediment samples. The samples were collected on October 27 and 28, 2006 and were analyzed for aluminum, calcium, iron, magnesium, potassium, sodium, strontium, and titanium.

The ICP-AES metals analyses were performed using USEPA SW846 Method 6010B. The samples in this SDG were analyzed following the procedures outlined in the Work Plan. All samples were prepared and analyzed within the holding time required by the method and the Work Plan.

The ICP-AES metals samples were digested in a single batch (#6308104) and analyzed in two batches under two different ICALs. It should be noted that samples CUL-05-SS-06-17 and CUL-06-SS-06-29 were analyzed at a 2x dilution only due to matrix interference. In addition, calcium and strontium required a 10x dilution for samples CUL-04-SS-06-11 and CUL-04-SS-06-30 due to the high concentration present. All other analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS sample and MS/MSD samples. Sample CUL-05-SS-06-17 was designated for MS/MSD analyses.

All LCS recoveries were within acceptance criteria.

All MS/MSD recoveries were within acceptance criteria with the following exceptions:

Metal	MS %R	MSD %R	Criteria

Aluminum	8090	12300	80-120%
Iron	68500	0	80-120%
Titanium	2020	66	80-120%

It should be noted that the concentrations of all three metals in the parent sample were significantly greater than the amount spiked, resulting in the anomalous recoveries. All non-compliant metals were flagged "J" in the parent sample in accordance with the SAP.

Precision

Precision was evaluated using the RPD obtained from the MS/MSD samples. Precision was further assessed by comparing the field duplicate analyte results. Sample CUL-06-SS-06-29 was collected as a field duplicate of sample CUL-05-SS-06-17, and sample CUL-04-SS-06-30 was collected as a field duplicate of sample CUL-04-SS-06-11.

All MS/MSD RPDs were within criteria.

All metals met criteria in both field duplicate pair as follows:

CUL-05-SS-06-17

Metal	Parent Conc. (mg/kg)	FD Conc. (mg/kg)	RPD	Criteria
Aluminum	39000	34000	14	RPD ≤ 70
Calcium	2200	2000	9.5	
Iron	78000	67000	15	
Magnesium	3000	3000	0	
Potassium	2000	1900	5.1	
Sodium	270	250	7.7	
Strontium	29	27	7.1	
Titanium	2000	1500	29	

CUL-04-SS-06-11

Metal	Parent Conc. (mg/kg)	FD Conc. (mg/kg)	RPD	Criteria
Aluminum	770	750	2.6	RPD ≤ 70
Calcium	300000	300000	0	
Iron	1000	1000	0	
Magnesium	16000	15000	6.5	
Potassium	250	230	8.3	
Sodium	2100	2000	4.9	
Strontium	3300	3400	3.0	
Titanium	48	49	2.1	

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the Work Plan;
- Comparing actual analytical procedures to those described in the Work Plan;
- Evaluating preservation and holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the Work Plan. All samples were prepared and analyzed within the holding time required by the method and the Work Plan.

- All initial calibration criteria were met.
- All second source verification criteria were met. The initial calibration verification samples were prepared using a secondary source.
- All continuing calibration verification criteria were met.
- All interference check criteria were met.
- All RL check standard criteria were met.
- A dilution test (DT) was analyzed on sample CUL-05-SS-06-17. The DT met criteria for all metals detected in the parent sample at a concentration of 50 times the MDL or greater.

Metal	%D	Criteria
Aluminum	9.1	%D ≤ 10
Calcium	2.8	
Iron	10	
Magnesium	9.8	
Strontium	8.4	
Titanium	6.4	

- A post digestion spike (PDS) was not required.

One method blank and several calibration blanks were associated with the ICP-AES analyses in this SDG. All blanks were compliant.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All ICP-AES metals results for the samples in this SDG were considered usable. The completeness for the ICP metals portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

ICP/MS METALS

General

The ICP/MS portion of this SDG consisted of five (5) surface soil samples and two (2) sediment samples. The samples were collected on October 27 and 28, 2006 and were analyzed for antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc.

The ICP/MS metals analyses were performed using USEPA SW846 Method 6020. The samples were analyzed following the procedures outlined in the Work Plan. All samples were prepared and analyzed within the holding time required by the method and the Work Plan.

The ICP/MS metals samples were digested and analyzed in a single batch (#6308103) under a single ICAL. It should be noted that samples CUL-05-SS-06-17, CUL-06-SS-06-29, and CUL-05-SS-06-18 required a 10x dilution for beryllium and manganese. All other analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS sample and MS/MSD samples. Sample CUL-05-SS-06-17 was designated for MS/MSD analyses.

All LCS recoveries were within acceptance criteria.

All MS/MSD recoveries were within acceptance criteria with the following exceptions:

Metal	MS %R	MSD %R	Criteria
Antimony	2.1	1.8	80-120%
Arsenic	61	62	80-120%
Barium	0	217	80-120%
Chromium	128	141	80-120%
Cobalt	(106)	193	80-120%
Copper	49	142	80-120%
Manganese	0	9270	80-120%
Molybdenum	39	40	80-120%
Selenium	60	56	80-120%
Vanadium	0	0	80-120%
Zinc	18	21	80-120%

( ) indicates the recovery met criteria.

It should be noted that the concentrations of barium, cobalt, copper, manganese, vanadium, and zinc in the parent sample were significantly greater than the amount spiked, resulting in the anomalous recoveries. All non-compliant metals were flagged "J" in the parent sample in accordance with the SAP.

Precision

Precision was evaluated using the RPD obtained from the MS/MSD samples. Precision was further assessed by comparing the field duplicate analyte results. Sample CUL-06-SS-06-29 was collected as a field duplicate of sample CUL-05-SS-06-17, and sample CUL-04-SS-06-30 was collected as a field duplicate of sample CUL-04-SS-06-11.

All MS/MSD RPDs were within acceptance criteria.

All metals detected above the RL in both the parent and field duplicate samples met criteria in the field duplicate pair as follows:

CUL-05-SS-06-17

Metal	Parent Conc. (mg/kg)	FD Conc. (mg/kg)	RPD	Criteria
Arsenic	2.3	2.0	14	
Barium	180	170	5.7	
Beryllium	1.4	1.5	6.9	
Cadmium	0.17	0.16	6.1	
Chromium	18	17	5.7	
Cobalt	37	36	2.7	
Copper	160	150	6.5	
Lead	9.4	11	16	RPD ≤ 70
Manganese	1900	1900	0	
Molybdenum	0.45	0.43	4.5	
Nickel	11	9.7	13	
Selenium	2.2	2.1	4.7	
Silver	0.31	0.33	6.3	
Vanadium	360	320	12	
Zinc	66	63	4.7	

CUL-04-SS-06-11

Metal	Parent Conc. (mg/kg)	FD Conc. (mg/kg)	RPD	Criteria
Arsenic	2.0	1.9	5.1	
Barium	12	11	8.7	
Chromium	10	9.5	5.1	
Cobalt	1.3	1.3	0	
Copper	3.6	3.4	5.7	RPD ≤ 70
Lead	1.2	1.2	0	
Manganese	60	59	1.7	
Nickel	4.6	6.1	28	
Vanadium	3.6	3.3	8.7	

Zinc	5.3	5.1	3.8	

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the Work Plan;
- Comparing actual analytical procedures to those described in the Work Plan;
- Evaluating preservation and holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the Work Plan. The samples were prepared and analyzed within the holding times required by the method.

- All instrument tune criteria were met.
- All metals met criteria in the RL check standard, with the exception of selenium which was recovered slightly above criteria (80-120%) at 122%. All sample concentrations were significantly greater than the amount spiked in the RL check standard, so no corrective action was deemed necessary.
- All second source criteria were met. The ICV was prepared using a secondary source.
- All CCV criteria were met.
- All interference check (ICSA/ICSAB) criteria were met with one exception. Cadmium was detected in the ICSA samples above the RL (1.0µg/L). The ICSA analyzed at the beginning of the batch contained cadmium at 1.6µg/L and the ICSA analyzed at the end of the batch contained cadmium at 4.1µg/L. However, cadmium is a verified trace impurity in the ICSA standard, so no corrective action was necessary.
- A DT was analyzed on sample CUL-05-SS-06-17. The DT met criteria for all metals detected in the parent sample at a concentration of 50 times the MDL or greater, except for those metals in **bold** below:

Metal	%D	Criteria
Arsenic	**29**	%D ≤ 10
Barium	10	
Chromium	**16**	

Cobalt	**23**	
Copper	**31**	
Lead	10	
Manganese	0.6	
Nickel	**21**	
Vanadium	**19**	
Zinc	**31**	

- A PDS was analyzed on the same sample as the DT. All metals met criteria in the PDS, except those metals in **bold** below:

Metal	%R	Criteria
Arsenic	79	75-125%
Chromium	85	
Cobalt	92	
Copper	**49**	
Nickel	81	
Vanadium	**60**	
Zinc	**63**	

The results for copper, vanadium, and zinc were flagged "J" in all samples analyzed in the same batch.

One method blank and several calibration blanks were associated with the ICP/MS analyses in this SDG. All blanks were compliant.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All ICP/MS results for the samples in this SDG were considered usable. Therefore, the completeness for the ICP/MS portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

MERCURY

General

The mercury portion of this SDG consisted of five (5) surface soil samples and two (2) sediment samples. The samples were collected on October 27 and 28, 2006 and were analyzed for mercury.

The mercury analyses were performed using USEPA SW846 Method 7471A. The samples were analyzed following the procedures outlined in the Work Plan. All samples were prepared and analyzed within the holding time required by the method and the Work Plan.

The samples for mercury analysis were digested and analyzed in a single batch (#6317513) under a single ICAL.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS sample and MS/MSD samples. Sample CUL-05-SS-06-17 was designated for MS/MSD analyses.

The LCS recovery was within acceptance criteria.

The MS/MSD recoveries were within acceptance criteria.

Precision

Precision was evaluated using the RPD obtained from the MS/MSD samples. Precision was further assessed by comparing the field duplicate analyte results. Sample CUL-06-SS-06-29 was collected as a field duplicate of sample CUL-05-SS-06-17, and sample CUL-04-SS-06-30 was collected as a field duplicate of sample CUL-04-SS-06-11.

The MS/MSD RPD was within acceptance criteria.

Mercury met criteria in both field duplicate pair as follows:

CUL-05-SS-06-17

Metal	Parent Conc. (mg/kg)	FD Conc. (mg/kg)	RPD	Criteria
Mercury	0.049	0.049	0	RPD ≤ 70

CUL-04-SS-06-11

Metal	Parent Conc. (mg/kg)	FD Conc. (mg/kg)	RPD	Criteria
Mercury	0.029	0.029	0	RPD ≤ 70

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the Work Plan;
- Comparing actual analytical procedures to those described in the Work Plan;
- Evaluating preservation and holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the Work Plan. The samples were prepared and analyzed within the holding times required by the method.

- All initial calibration criteria were met.
- All calibration verification criteria were met.

- All second source verification criteria were met. The ICV sample was prepared using a secondary source.
- A DT was analyzed on sample CUL-05-SS-06-17. The DT was not applicable because mercury was not detected at 25 times the MDL or greater in the parent sample.

One method blank and several calibration blanks were associated with the mercury analyses in this SDG. All blanks were compliant.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All mercury results for the samples in this SDG were considered usable. The completeness for the mercury portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

DATA USABILITY

All calculations were spot checked and verified. All data in this SDG are usable and all DQO requirements were met.

DATA VALIDATION SUMMARY REPORT

for samples collected from

CULEBRA ISLAND

Puerto Rico

Data Validation by: Katherine LaPierre

Parsons - Austin

INTRODUCTION

The following data validation summary report covers surface soil and sediment samples collected from Culebra Island, Puerto Rico on October 30 and 31, 2006. Samples were logged in under the following Sample Delivery Group (SDG):

D6K020196

Soil samples were analyzed for explosives and metals. The table below details the requested parameters for each sample. No field quality control (QC) samples were collected in association with this SDG.

All samples were collected by Parsons. All analyses were performed by STL-Denver following the procedures outlined in the Standard Subcontract and the Sampling and Analysis Addendum for the Southeast Region. The samples in this SDG were shipped to the laboratory in one cooler. The cooler was received by the laboratory at a temperature of 3.4°C which is within the 2-6° C range recommended by the Work Plan.

SAMPLE IDs AND REQUESTED PARAMETERS

Sample ID	Matrix	Explosives	Metals	Comments
CUL-05-SE-06-01	SE	X	X	
CUL-10-SS-06-07	S	X	X	
CUL-10-SS-06-08	S	X	X	
CUL-11-SS-06-27	S	X	X	Ambient
CUL-13-SS-06-01	S	X	X	
CUL-13-SS-06-02	S	X	X	

S = Surface soil, SE = Sediment

EVALUATION CRITERIA

The data submitted by the laboratory has been reviewed and verified following the guidelines outlined in the Project Work Plan. Information reviewed in the data packages included sample results; field and laboratory quality control results; calibrations; case narratives; raw data; cooler receipt forms, and chain-of-custody (COC) forms. The analyses and findings presented in this report are based on the reviewed information, and whether guidelines in the Work Plan were met.

Due to the flagging requirements of the electronic data deliverable (EDD) software, Automatic Data Review (ADR), the following rule was applied for flagging the data:

If an analyte was detected in the method blank, the associated sample concentrations were examined. If the analyte was detected in a sample at a concentration similar to that found in the blank (five times the blank concentration for most analytes, or ten times the blank concentration for common laboratory contaminants), the reporting limit for that analyte was raised to the detected level and the result was flagged "U" for that particular sample.

Approval was also received from a United States Army Corps of Engineers (USACE) chemist for laboratory to use the historically developed control limits for the explosive analysis. See table below.

Analyte	LCS/MS/MSD Control Limits for Soil	RPD (%) for Soil
HMX	53-115%	30
RDX	70-121%	30
1,3,5-Trinitrobenzene	47-131%	30
1,3-dinitrobenzene	69-128%	30
Nitrobenzene	59-150%	30
Tetryl	10-160%	30
Nitroglycerin	32-135%	30
2,4,6-Trinitrotoluene	58-130%	30
4-Amino-2,6-dinitrotoluene	60-133%	30
2-Amino-4,6-dinitrotoluene	53-141%	30
2,4-Dinitrotoluene	61-128%	30
2,6-Dinitrotoluene	59-134%	30
3-Nitrotoluene	51-153%	30
PETN	28-178%	30
2-Nitrotoluene	55-147%	30
4-Nitrotoluene	65-146%	30

For metals, the control limits for accuracy are 80-120% for LCS, MS, and MSD. The precision control limits for the MS/MSD are RPD $\leq$ 20%.

EXPLOSIVES

General

The explosives portion of this SDG consisted of five (5) surface soil samples and one (1) sediment sample. The samples were collected on October 30 and 31, 2006 and were analyzed for the full list of explosives as specified in the Work Plan.

The explosives analyses were performed according to the laboratory's modification of USEPA SW846 Method 8321A. All samples in this SDG were analyzed following the procedures outlined in the laboratory Standard Operation Procedure (SOP). All samples were prepared and analyzed within the holding time required by the method.

The explosives analyses were performed in a single analytical batch (#6313210) under a single initial calibration (ICAL).

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the laboratory control spike (LCS) sample and the surrogate spikes. No sample from this SDG was designated for MS/MSD analyses on the COC.

All LCS and surrogate spike recoveries were within the laboratory historically developed control limits.

Precision

Precision could not be evaluated for this SDG because no duplicate analyses were performed.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the Work Plan;
- Comparing actual analytical procedures to those described in the Work Plan;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the Work Plan. All samples were prepared and analyzed within the holding time required by the method and the Work Plan.

- All initial calibration criteria were met.
- All secondary source verification criteria were met.
- All continuing calibration verification (CCV) criteria were met.
- MDLs were developed within 12 months of sample analyses.

One method blank was associated with the explosives analyses in this SDG. The method blank was compliant.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All explosives results for the samples in this SDG were considered usable. Thus, the completeness for the explosives portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

ICP-AES METALS

General

The ICP-AES portion of this SDG consisted of five (5) surface soil samples and one (1) sediment sample. The samples were collected on October 30 and 31, 2006 and were analyzed for aluminum, calcium, iron, magnesium, potassium, sodium, strontium, and titanium.

The ICP-AES metals analyses were performed using USEPA SW846 Method 6010B. The samples in this SDG were analyzed following the procedures outlined in the Work Plan. All samples were prepared and analyzed within the holding time required by the method and the Work Plan.

The ICP-AES metals samples were digested in a single batch (#6314382) and analyzed in one batch under a single ICAL.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS sample. No sample from this SDG was designated for MS/MSD analyses.

All LCS recoveries were within acceptance criteria.

Precision

Precision could not be evaluated for this SDG because no duplicate analyses ewre performed.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the Work Plan;
- Comparing actual analytical procedures to those described in the Work Plan;
- Evaluating preservation and holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the Work Plan. All samples were prepared and analyzed within the holding time required by the method and the Work Plan.

- All initial calibration criteria were met.
- All second source verification criteria were met. The initial calibration verification samples were prepared using a secondary source.
- All continuing calibration verification criteria were met.

- All interference check criteria were met.
- All RL check standard criteria were met.
- A dilution test (DT) was analyzed on sample CUL-07-SS-06-25. The DT failed to meet criteria for all metals detected in the parent sample at a concentration of 50 times the MDL or greater:

Metal	%D	Criteria
Aluminum	**23**	
Calcium	**25**	
Iron	**26**	
Magnesium	**25**	%D ≤ 10
Potassium	**22**	
Strontium	**24**	
Titanium	**21**	

- A post digestion spike (PDS) was analyzed on the same sample as the DT. All metals met criteria with the exception of those in **bold** below:

Metal	%R	Criteria
Aluminum	**-222**	
Calcium	77	
Iron	**-963**	
Magnesium	76	75-125%
Potassium	84	
Strontium	**74**	
Titanium	**-140**	

The results for aluminum, iron, strontium, and titanium were flagged "J" in all samples in this SDG.

One method blank and several calibration blanks were associated with the ICP-AES analyses in this SDG. All blanks were compliant.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All ICP-AES metals results for the samples in this SDG were considered usable. The completeness for the ICP metals portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

ICP/MS METALS

General

The ICP/MS portion of this SDG consisted of five (5) surface soil samples and one (1) sediment sample. The samples were collected on October 30 and 31, 2006 and were

analyzed for antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc.

The ICP/MS metals analyses were performed using USEPA SW846 Method 6020. The samples were analyzed following the procedures outlined in the Work Plan. All samples were prepared and analyzed within the holding time required by the method and the Work Plan.

The ICP/MS metals samples were digested in a single batch (#6314384) and analyzed in two different batches under two different ICALs. It should be noted that several samples required a dilution for the metals noted below:

Sample ID	Metal (dilution)
CUL-05-SE-06-01	Beryllium (5x) Nickel (25x) Vanadium (25x)
CUL-11-SS-06-27	Beryllium (5x) Manganese (25x) Vanadium (25x)
CUL-10-SS-06-07	Beryllium (5x) Manganese (25x)
CUL-10-SS-06-08	Beryllium (5x) Barium (25x) Manganese (25x) Vanadium (25x)
CUL-13-SS-06-01	Beryllium (5x) Manganese (10x)
CUL-13-SS-06-02	Beryllium (5x) Manganese (10x)

All other analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS sample. No sample from this SDG was designated for MS/MSD analyses.

All LCS recoveries were within acceptance criteria.

Precision

Precision could not be evaluated for this SDG because no duplicate analyses were performed.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the Work Plan;

- Comparing actual analytical procedures to those described in the Work Plan;
- Evaluating preservation and holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the Work Plan. The samples were prepared and analyzed within the holding times required by the method.

- All instrument tune criteria were met.
- All metals met criteria in the RL check standard.
- All second source criteria were met. The ICV was prepared using a secondary source.
- All CCV criteria were met.
- All interference check (ICSA/ICSAB) criteria were met with two exceptions. In the batch run December 4th and 5th, Cadmium was detected in the ICSA sample analyzed prior to the samples above the RL (1.0µg/L) at 1.1µg/L. The ICSA analyzed at the end of the batch contained cadmium at 1.7µg/L and contained nickel above the RL (3.5µg/L) at 4.0µg/L. Both of these metals are verified trace impurities in the ICSA standard, so no corrective action was necessary.
- A DT was analyzed on sample CUL-07-SS-06-25 from Culebra SDG D6K040234. The DT met criteria for all metals detected in the parent sample at a concentration of 50 times the MDL or greater, except for those metals in **bold** below:

Metal	%D	Criteria
Arsenic	6.5	%D ≤ 10
Barium	0.9	
Chromium	9.5	
Cobalt	5.9	
Copper	7.4	
Lead	**13**	
Manganese	3.8	
Nickel	**12**	
Vanadium	7.5	
Zinc	**16**	

- A PDS was analyzed on the same sample as the DT. All metals met criteria in the PDS, except those metals in **bold** below:

Metal	%R	Criteria
Lead	90	75-125%
Nickel	83	
Zinc	**72**	

The results for zinc were flagged "J" in all samples in this SDG.

One method blank and several calibration blanks were associated with the ICP/MS analyses in this SDG. All blanks were compliant.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All ICP/MS results for the samples in this SDG were considered usable. Therefore, the completeness for the ICP/MS portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

MERCURY

General

The mercury portion of this SDG consisted of five (5) surface soil samples and one (1) sediment sample. The samples were collected on October 30 and 31, 2006 and were analyzed for mercury.

The mercury analyses were performed using USEPA SW846 Method 7471A. The samples were analyzed following the procedures outlined in the Work Plan. All samples were prepared and analyzed within the holding time required by the method and the Work Plan.

The samples for mercury analysis were digested and analyzed in a single batch (#6317513) under a single ICAL.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS sample. No sample from this SDG was designated for MS/MSD analyses.

The LCS recovery was within acceptance criteria.

Precision

Precision could not be evaluated for this SDG because no duplicate analyses were performed.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the Work Plan;
- Comparing actual analytical procedures to those described in the Work Plan;
- Evaluating preservation and holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the Work Plan. The samples were prepared and analyzed within the holding times required by the method.

- All initial calibration criteria were met.
- All calibration verification criteria were met.
- All second source verification criteria were met. The ICV sample was prepared using a secondary source.
- A DT was analyzed on sample CUL-07-SS-06-25 from Culebra SDG D6K040234. The DT was not applicable because mercury was not detected above 25x the MDL in the parent sample.

One method blank and several calibration blanks were associated with the mercury analyses in this SDG. All blanks were compliant.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All mercury results for the samples in this SDG were considered usable. The completeness for the mercury portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

DATA USABILITY

All calculations were spot checked and verified. All data in this SDG are usable and all DQO requirements were met.

DATA VALIDATION SUMMARY REPORT

for samples collected from

CULEBRA ISLAND

Puerto Rico

Data Validation by: Katherine LaPierre

Parsons - Austin

INTRODUCTION

The following data validation summary report covers surface soil and sediment samples collected from Culebra Island, Puerto Rico on November 1 and 2, 2006. Samples were logged in under the following Sample Delivery Group (SDG):

D6K040234

Soil samples were analyzed for explosives and metals. The table below details the requested parameters for each sample. The field quality control (QC) samples collected in association with this SDG included one field duplicate and one matrix spike/matrix spike duplicate (MS/MSD) pair. The field QC samples were analyzed for the same parameters as the associated field samples.

All samples were collected by Parsons. All analyses were performed by STL-Denver following the procedures outlined in the Standard Subcontract and the Sampling and Analysis Addendum for the Southeast Region. The samples in this SDG were shipped to the laboratory in one cooler. The cooler was received by the laboratory at a temperature of 5.3°C which is within the 2-6° C range recommended by the Work Plan.

SAMPLE IDs AND REQUESTED PARAMETERS

Sample ID	Matrix	Explosives	Metals	Comments
CUL-07-SS-06-22	S	X	X	Ambient
CUL-07-SS-06-25	S	X	X	Parent for MS/MSD
CUL-07-SS-06-26	S	X	X	
CUL-07-SS-06-32	S	X	X	FD of CUL-07-SS-06-25
CUL-07-SE-06-02	SE	X	X	
CUL-11-SS-06-04	S	X	X	
CUL-11-SS-06-05	S	X	X	

S = Surface soil, SE = Sediment

EVALUATION CRITERIA

The data submitted by the laboratory has been reviewed and verified following the guidelines outlined in the Project Work Plan. Information reviewed in the data packages included sample results; field and laboratory quality control results; calibrations; case narratives; raw data; cooler receipt forms, and chain-of-custody (COC) forms. The

analyses and findings presented in this report are based on the reviewed information, and whether guidelines in the Work Plan were met.

Due to the flagging requirements of the electronic data deliverable (EDD) software, Automatic Data Review (ADR), the following rule was applied for flagging the data:

If an analyte was detected in the method blank, the associated sample concentrations were examined. If the analyte was detected in a sample at a concentration similar to that found in the blank (five times the blank concentration for most analytes, or ten times the blank concentration for common laboratory contaminants), the reporting limit for that analyte was raised to the detected level and the result was flagged "U" for that particular sample.

Approval was also received from a United States Army Corps of Engineers (USACE) chemist for laboratory to use the historically developed control limits for the explosive analysis. See table below.

Analyte	LCS/MS/MSD Control Limits for Soil	RPD (%) for Soil
HMX	53-115%	30
RDX	70-121%	30
1,3,5-Trinitrobenzene	47-131%	30
1,3-dinitrobenzene	69-128%	30
Nitrobenzene	59-150%	30
Tetryl	10-160%	30
Nitroglycerin	32-135%	30
2,4,6-Trinitrotoluene	58-130%	30
4-Amino-2,6-dinitrotoluene	60-133%	30
2-Amino-4,6-dinitrotoluene	53-141%	30
2,4-Dinitrotoluene	61-128%	30
2,6-Dinitrotoluene	59-134%	30
3-Nitrotoluene	51-153%	30
PETN	28-178%	30
2-Nitrotoluene	55-147%	30
4-Nitrotoluene	65-146%	30

For metals, the control limits for accuracy are 80-120% for LCS, MS, and MSD. The precision control limits for the MS/MSD are RPD $\leq$ 20%.

EXPLOSIVES

General

The explosives portion of this SDG consisted of six (6) surface soil samples and one (1) sediment sample. The samples were collected on November 1 and 2, 2006 and were analyzed for the full list of explosives as specified in the Work Plan.

The explosives analyses were performed according to the laboratory's modification of USEPA SW846 Method 8321A. All samples in this SDG were analyzed following the procedures outlined in the laboratory Standard Operation Procedure (SOP). All samples were prepared and analyzed within the holding time required by the method.

The explosives analyses were performed in a single analytical batch (#6313211) under a single initial calibration (ICAL).

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the laboratory control spike (LCS) sample, MS/MSD samples, and the surrogate spikes. Sample CUL-07-SS-06-25 from this SDG was designated for MS/MSD analyses on the COC.

All LCS and surrogate spike recoveries were within the laboratory historically developed control limits.

All MS/MSD recoveries were within the laboratory historically developed control limits with the following exceptions:

Analyte	MS %R	MSD %R	Criteria
1,3-Dinitrobenzene	58	(80)	69-128%
2,4,6-Trinitrotoluene	54	(75)	58-130%
2,4-Dinitrotoluene	59	(80)	61-128%
2,6-Dinitrotoluene	57	(78)	59-134%
4-Amino-2,6-dinitrotoluene	48	(68)	60-133%
4-Nitrotoluene	61	(82)	65.146%
HMX	50	(67)	53-115%
RDX	50	68	70-121%

( ) indicates the recovery met criteria.

It appeared that the MS may have been incorrectly spiked by the laboratory because all explosives had recoveries near 60%. All non-compliant analytes were flagged "UJ" in the parent sample in accordance with the SAP.

Precision

Precision was evaluated using the relative percent difference (RPD) obtained from the MS/MSD samples. Precision was further assessed by comparing the field duplicate analyte results. Sample CUL-07-SS-06-32 was collected as a field duplicate of sample CUL-07-SS-06-25.

All MS/MSD RPDs were within criteria, with the following exceptions:

Analyte	RPD	Criteria
1,3,5-Trinitrobenzene	32	RPD ≤ 30
1,3-Dinitrobenzene	31	
2,4,6-Trinitrotoluene	33	
4-Amino-2,6-dinitrotoluene	35	
Nitrobenzene	31	
Nitroglycerin	33	
PETN	33	
Tetryl	32	

All non-compliant samples were qualified "UJ" in the parent sample. The high RPDs are believed to be due to an incorrect spike in the MS as previously noted.

All analytes were non-detect in both the parent and field duplicate sample.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the Work Plan;
- Comparing actual analytical procedures to those described in the Work Plan;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the Work Plan. All samples were prepared and analyzed within the holding time required by the method and the Work Plan.

- All initial calibration criteria were met.
- All secondary source verification criteria were met.
- All continuing calibration verification (CCV) criteria were met.
- MDLs were developed within 12 months of sample analyses.

One method blank was associated with the explosives analyses in this SDG. The method blank was compliant.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All explosives results for the samples in this SDG were considered usable. Thus, the completeness for the explosives portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

ICP-AES METALS

General

The ICP-AES portion of this SDG consisted of six (6) surface soil samples and one (1) sediment sample. The samples were collected on November 1 and 2, 2006 and were analyzed for aluminum, calcium, iron, magnesium, potassium, sodium, strontium, and titanium.

The ICP-AES metals analyses were performed using USEPA SW846 Method 6010B. The samples in this SDG were analyzed following the procedures outlined in the Work Plan. All samples were prepared and analyzed within the holding time required by the method and the Work Plan.

The ICP-AES metals samples were digested in a single batch (#6314382) and analyzed in one batch under a single ICAL. It should be noted that sample CUL-11-SS-06-05 required a 5x dilution for strontium. In addition, sample CUL-07-SE-06-02 required a 5x dilution for calcium, iron, magnesium, potassium, sodium, strontium and titanium. The laboratory case narrative indicated the dilutions were required due to high analyte concentrations and/or matrix interference.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS sample and MS/MSD samples. No sample from this SDG was designated for MS/MSD analyses. However, the laboratory analyzed an MS/MSD on sample CUL-14-SS-06-16.

All LCS recoveries were within acceptance criteria.

All MS/MSD recoveries were within acceptance criteria with the following exceptions:

Metal	MS %R	MSD %R	Criteria
Aluminum	3640	5510	80-120%
Calcium	79	74	80-120%
Iron	1630	454	80-120%
Magnesium	73	71	80-120%
Strontium	76	(83)	80-120%
Titanium	310	(100)	80-120%

( ) indicates the recovery met criteria.

It should be noted that the concentrations of aluminum, iron, and titanium in the parent sample were significantly greater than the amount spiked, resulting in the anomalous recoveries. All non-compliant metals were flagged "J" in the parent sample in accordance with the SAP.

Precision

Precision was evaluated using the RPD obtained from the MS/MSD samples. Precision was further assessed by comparing the field duplicate analyte results. Sample CUL-07-SS-06-32 was collected as a field duplicate of sample CUL-07-SS-06-25.

All MS/MSD RPDs were within criteria.

The RPD for all metals detected in the parent and field duplicate sample above the RL met criteria as follows:

CUL-07-SS-06-25

Metal	Parent Conc. (mg/kg)	FD Conc. (mg/kg)	RPD	Criteria
Aluminum	26000	25000	3.9	RPD ≤ 70
Calcium	4300	4000	7.2	
Iron	53000	53000	0	
Magnesium	2600	5200	7.4	
Potassium	3900	3900	0	
Sodium	260	260	0	
Strontium	36	38	5.4	
Titanium	1300	1300	0	

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the Work Plan;
- Comparing actual analytical procedures to those described in the Work Plan;
- Evaluating preservation and holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the Work Plan. All samples were prepared and analyzed within the holding time required by the method and the Work Plan.

- All initial calibration criteria were met.
- All second source verification criteria were met. The initial calibration verification samples were prepared using a secondary source.
- All continuing calibration verification criteria were met.
- All interference check criteria were met.
- All RL check standard criteria were met.
- A dilution test (DT) was analyzed on sample CUL-07-SS-06-25. The DT failed to meet criteria for all metals detected in the parent sample at a concentration of 50 times the MDL or greater:

Metal	%D	Criteria
Aluminum	**23**	
Calcium	**25**	
Iron	**26**	
Magnesium	**25**	%D ≤ 10
Potassium	**22**	
Strontium	**24**	
Titanium	**21**	

- A post digestion spike (PDS) was analyzed on the same sample as the DT. All metals met criteria with the exception of those in **bold** below:

Metal	%R	Criteria
Aluminum	**-222**	
Calcium	77	
Iron	**-963**	
Magnesium	76	75-125%
Potassium	84	
Strontium	**74**	
Titanium	**-140**	

The results for aluminum, iron, strontium, and titanium were flagged "J" in all samples in this SDG.

One method blank and several calibration blanks were associated with the ICP-AES analyses in this SDG. All blanks were compliant.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All ICP-AES metals results for the samples in this SDG were considered usable. The completeness for the ICP metals portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

ICP/MS METALS

General

The ICP/MS portion of this SDG consisted of six (6) surface soil samples and one (1) sediment sample. The samples were collected on November 1 and 2, 2006 and were analyzed for antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc.

The ICP/MS metals analyses were performed using USEPA SW846 Method 6020. The samples were analyzed following the procedures outlined in the Work Plan. All samples were prepared and analyzed within the holding time required by the method and the Work Plan.

The ICP/MS metals samples were digested in a single batch (#6314384) and analyzed in two different batches under two different ICALs. It should be noted that several samples required a dilution for the metals noted below:

Sample ID	Metal (dilution)
CUL-07-SS-06-26	Beryllium (5x) Manganese (10x)
CUL-07-SS-06-22	Manganese (10x)
CUL-11-SS-06-04	Manganese (10x)
CUL-11-SS-06-05	Manganese (10x)
CUL-07-SS-06-25	Barium (10x) Manganese (10x)
CUL-07-SS-06-32	Copper (10x) Manganese (10x)

All other analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS sample and MS/MSD samples. No sample from this SDG was designated for MS/MSD analyses. However, the laboratory analyzed an MS/MSD on sample CUL-14-SS-06-16.

All LCS recoveries were within acceptance criteria.

All MS/MSD recoveries were within acceptance criteria with the following exceptions:

Metal	MS %R	MSD %R	Criteria
Antimony	3.7	3.1	80-120%
Arsenic	71	69	80-120%
Barium	326	0	80-120%
Beryllium	72	64	80-120%
Chromium	79	(103)	80-120%
Cobalt	0	0	80-120%
Copper	164	242	80-120%
Lead	0	0	80-120%
Manganese	40	44	80-120%
Molybdenum	45	41	80-120%
Selenium	72	74	80-120%
Vanadium	0	469	80-120%
Zinc	0	0	80-120%

It should be noted that the concentrations of barium, cobalt, copper, lead, manganese, vanadium, and zinc in the parent sample were significantly greater than the

amount spiked, resulting in the anomalous recoveries. All non-compliant metals were flagged "J" in the parent sample in accordance with the SAP.

Precision

Precision was evaluated using the RPD obtained from the MS/MSD samples. Precision was further assessed by comparing the field duplicate analyte results. Sample, CUL-07-SS-06-32 was collected as a field duplicate of sample CUL-07-SS-06-25.

All MS/MSD RPDs were within acceptance criteria.

The RPD for all metals detected above the RL in both the parent and field duplicate samples met criteria, with the exception of copper in **bold** below:

CUL-07-SS-06-25

Metal	Parent Conc. (mg/kg)	FD Conc. (mg/kg)	RPD	Criteria
Arsenic	1.7	1.7	0	RPD ≤ 70
Barium	480	420	13	
Beryllium	0.93	0.89	4.4	
Chromium	8.0	8.7	8.4	
Cobalt	37	28	28	
Copper	**200**	**600**	**100**	
Lead	69	72	4.3	
Manganese	1400	1500	6.9	
Molybdenum	0.24	0.27	12	
Nickel	8.9	8.9	0	
Selenium	1.4	1.3	7.4	
Silver	0.29	0.29	0	
Vanadium	210	220	4.7	
Zinc	190	240	23	

Copper was flagged "J" as estimated in the parent and field duplicate samples due to the high degree of variability demonstrated.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the Work Plan;
- Comparing actual analytical procedures to those described in the Work Plan;
- Evaluating preservation and holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the Work Plan. The samples were prepared and analyzed within the holding times required by the method.

- All instrument tune criteria were met.
- All metals met criteria in the RL check standard.
- All second source criteria were met. The ICV was prepared using a secondary source.
- All CCV criteria were met.
- All interference check (ICSA/ICSAB) criteria were met with two exceptions. The ICSA analyzed at the beginning of the batch run December 4th contained cadmium above the RL (1.0µg/L) at 1.1µg/L. The ICSA analyzed at the end of the same batch contained cadmium above the RL at 1.7µg/L, and nickel above the RL (3.5µg/L) at 4.0µg/L. Both cadmium and nickel are verified trace impurities in the ICSA standard, so no corrective action was necessary.
- A DT was analyzed on sample CUL-07-SS-06-25. The DT met criteria for all metals detected in the parent sample at a concentration of 50 times the MDL or greater, except for those metals in **bold** below:

Metal	%D	Criteria
Arsenic	6.5	%D ≤ 10
Barium	0.9	
Chromium	9.5	
Cobalt	5.9	
Copper	7.4	
Lead	**13**	
Manganese	3.8	
Nickel	**12**	
Vanadium	7.5	
Zinc	**16**	

- A PDS was analyzed on the same sample as the DT. All metals met criteria in the PDS, except those metals in **bold** below:

Metal	%R	Criteria
Lead	90	75-125%
Nickel	83	
Zinc	**72**	

The results for zinc were flagged "J" in all samples in this SDG.

One method blank and several calibration blanks were associated with the ICP/MS analyses in this SDG. All blanks were compliant.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All ICP/MS results for the samples in this SDG were considered usable. Therefore, the completeness for the ICP/MS portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

MERCURY

General

The mercury portion of this SDG consisted of six (6) surface soil samples and one (1) sediment sample. The samples were collected on November 1 and 2, 2006 and were analyzed for mercury.

The mercury analyses were performed using USEPA SW846 Method 7471A. The samples were analyzed following the procedures outlined in the Work Plan. All samples were prepared and analyzed within the holding time required by the method and the Work Plan.

The samples for mercury analysis were digested and analyzed in a single batch (#6317514) under a single ICAL.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS sample and MS/MSD samples. No sample from this SDG was designated for MS/MSD analyses. However, the laboratory analyzed an MS/MSD on sample CUL-14-SS-06-16.

The LCS recovery was within acceptance criteria.

The MS/MSD recoveries were within acceptance criteria.

Precision

Precision was evaluated using the RPD obtained from the MS/MSD samples. Precision was further assessed by comparing the field duplicate analyte results. Sample CUL-07-SS-06-32 was collected as a field duplicate of sample CUL-07-SS-06-25.

The MS/MSD RPD was within criteria.

Both the parent and field duplicate sample were below the RL for mercury.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the Work Plan;
- Comparing actual analytical procedures to those described in the Work Plan;
- Evaluating preservation and holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the Work Plan. The samples were prepared and analyzed within the holding times required by the method.

- All initial calibration criteria were met.

- All calibration verification criteria were met.
- All second source verification criteria were met. The ICV sample was prepared using a secondary source.
- A DT was analyzed on sample CUL-07-SS-06-25. The DT was not applicable because mercury was not detected above 25x the MDL in the parent sample.

One method blank and several calibration blanks were associated with the mercury analyses in this SDG. All blanks were compliant.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All mercury results for the samples in this SDG were considered usable. The completeness for the mercury portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

DATA USABILITY

All calculations were spot checked and verified. All data in this SDG are usable and all DQO requirements were met.

DATA VALIDATION SUMMARY REPORT

for samples collected from

CULEBRA ISLAND

Puerto Rico

Data Validation by: Katherine LaPierre

Parsons - Austin

INTRODUCTION

The following data validation summary report covers surface soil and sediment samples collected from Culebra Island, Puerto Rico on November 3 and 4, 2006. Samples were logged in under the following Sample Delivery Group (SDG):

D6K080307

Soil samples were analyzed for explosives and metals. The table below details the requested parameters for each sample. No field quality control (QC) samples were collected in association with this SDG.

All samples were collected by Parsons. All analyses were performed by STL-Denver following the procedures outlined in the Standard Subcontract and the Sampling and Analysis Addendum for the Southeast Region. The samples in this SDG were shipped to the laboratory in one cooler. The cooler was received by the laboratory at a temperature of 1.1°C which is below the 2-6° C range recommended by the Work Plan. However, all samples were received intact (not frozen) so no corrective action was necessary.

SAMPLE IDs AND REQUESTED PARAMETERS

Sample ID	Matrix	Explosives	Metals	Comments
CUL-05-SS-06-12	S	X	X	
CUL-05-SS-06-14	S	X	X	
CUL-11-SS-06-03	S	X	X	
CUL-11-SS-06-06	S	X	X	
CUL-14-SS-06-13	S	X	X	

S = Surface soil

EVALUATION CRITERIA

The data submitted by the laboratory has been reviewed and verified following the guidelines outlined in the Project Work Plan. Information reviewed in the data packages included sample results; field and laboratory quality control results; calibrations; case narratives; raw data; cooler receipt forms, and chain-of-custody (COC) forms. The analyses and findings presented in this report are based on the reviewed information, and whether guidelines in the Work Plan were met.

Due to the flagging requirements of the electronic data deliverable (EDD) software, Automatic Data Review (ADR), the following rule was applied for flagging the data:

If an analyte was detected in the method blank, the associated sample concentrations were examined. If the analyte was detected in a sample at a concentration similar to that found in the blank (five times the blank concentration for most analytes, or ten times the blank concentration for common laboratory contaminants), the reporting limit for that analyte was raised to the detected level and the result was flagged "U" for that particular sample.

Approval was also received from a United States Army Corps of Engineers (USACE) chemist for laboratory to use the historically developed control limits for the explosive analysis. See table below.

Analyte	LCS/MS/MSD Control Limits for Soil	RPD (%) for Soil
HMX	53-115%	30
RDX	70-121%	30
1,3,5-Trinitrobenzene	47-131%	30
1,3-dinitrobenzene	69-128%	30
Nitrobenzene	59-150%	30
Tetryl	10-160%	30
Nitroglycerin	32-135%	30
2,4,6-Trinitrotoluene	58-130%	30
4-Amino-2,6-dinitrotoluene	60-133%	30
2-Amino-4,6-dinitrotoluene	53-141%	30
2,4-Dinitrotoluene	61-128%	30
2,6-Dinitrotoluene	59-134%	30
3-Nitrotoluene	51-153%	30
PETN	28-178%	30
2-Nitrotoluene	55-147%	30
4-Nitrotoluene	65-146%	30

For metals, the control limits for accuracy are 80-120% for LCS, MS, and MSD. The precision control limits for the MS/MSD are RPD $\leq$ 20%.

EXPLOSIVES

General

The explosives portion of this SDG consisted of five (5) surface soil samples. The samples were collected on November 3 and 4, 2006 and were analyzed for the full list of explosives as specified in the Work Plan.

The explosives analyses were performed according to the laboratory's modification of USEPA SW846 Method 8321A. All samples in this SDG were analyzed following the procedures outlined in the laboratory Standard Operation Procedure (SOP). All samples were prepared and analyzed within the holding time required by the method.

The explosives analyses were performed in a single analytical batch (#6319615) under a single initial calibration (ICAL).

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the laboratory control spike (LCS) sample and the surrogate spikes. No sample from this SDG was designated for MS/MSD analyses on the COC.

All LCS and surrogate spike recoveries were within the laboratory historically developed control limits.

Precision

Precision could not be evaluated for the explosives portion of this SDG because no duplicate analyses were performed.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the Work Plan;
- Comparing actual analytical procedures to those described in the Work Plan;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the Work Plan. All samples were prepared and analyzed within the holding time required by the method and the Work Plan.

- All initial calibration criteria were met.
- All secondary source verification criteria were met.
- All continuing calibration verification (CCV) criteria were met.
- MDLs were developed within 12 months of sample analyses.

One method blank was associated with the explosives analyses in this SDG. The method blank was compliant.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All explosives results for the samples in this SDG were considered usable. Thus, the completeness for the explosives portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

ICP-AES METALS

General

The ICP-AES portion of this SDG consisted of five (5) surface soil samples. The samples were collected on November 3 and 4, 2006 and were analyzed for aluminum, calcium, iron, magnesium, potassium, sodium, strontium, and titanium.

The ICP-AES metals analyses were performed using USEPA SW846 Method 6010B. The samples in this SDG were analyzed following the procedures outlined in the Work Plan. All samples were prepared and analyzed within the holding time required by the method and the Work Plan.

The ICP-AES metals samples were digested in a single batch (#6318577) and analyzed in one batch under a single ICAL.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS sample and MS/MSD samples. No sample from this SDG was designated for MS/MSD analyses. However, the laboratory analyzed an MS/MSD on sample CUL-05-SS-06-12.

All LCS recoveries were within acceptance criteria.

All MS/MSD recoveries were within acceptance criteria with the following exceptions:

Metal	MS %R	MSD %R	Criteria
Aluminum	3470	4580	80-120%
Calcium	78	(88)	80-120%
Iron	1230	3140	80-120%
Magnesium	76	(83)	80-120%
Titanium	652	182	80-120%

( ) indicates the recovery met criteria.

It should be noted that the concentrations of aluminum, iron, and titanium in the parent sample were significantly greater than the amount spiked, resulting in the anomalous recoveries. All non-compliant metals were flagged "J" in the parent sample in accordance with the SAP.

Precision

Precision was evaluated using the RPD obtained from the MS/MSD samples.

All MS/MSD RPDs were within criteria.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the Work Plan;
- Comparing actual analytical procedures to those described in the Work Plan;
- Evaluating preservation and holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the Work Plan. All samples were prepared and analyzed within the holding time required by the method and the Work Plan.

- All initial calibration criteria were met.
- All second source verification criteria were met. The initial calibration verification samples were prepared using a secondary source.
- All continuing calibration verification criteria were met.
- All interference check criteria were met.
- All RL check standard criteria were met.
- A dilution test (DT) was analyzed on sample CUL-05-SS-06-12. The DT met criteria for all metals detected in the parent sample at a concentration of 50 times the MDL or greater, except those noted in **bold** below:

Metal	%D	Criteria
Aluminum	**12**	%D ≤ 10
Calcium	**14**	
Iron	**14**	
Magnesium	**15**	
Potassium	7.1	
Strontium	**13**	
Titanium	8.9	

- A post digestion spike (PDS) was analyzed on the same sample as the DT. All metals met criteria with the exception of those in **bold** below:

Metal	%R	Criteria
Aluminum	**-412**	75-125%
Calcium	75	
Iron	**-875**	
Magnesium	**74**	
Strontium	78	

The results for aluminum, iron, and magnesium were flagged "J" in all samples in

this SDG.

One method blank and several calibration blanks were associated with the ICP-AES analyses in this SDG. All blanks were compliant.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All ICP-AES metals results for the samples in this SDG were considered usable. The completeness for the ICP metals portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

ICP/MS METALS

General

The ICP/MS portion of this SDG consisted of five (5) surface soil samples. The samples were collected on November 3 and 4, 2006 and were analyzed for antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc.

The ICP/MS metals analyses were performed using USEPA SW846 Method 6020. The samples were analyzed following the procedures outlined in the Work Plan. All samples were prepared and analyzed within the holding time required by the method and the Work Plan.

The ICP/MS metals samples were digested in a single batch (#6318576) and analyzed in two different batches under two different ICALs. It should be noted that all samples required a 10x dilution for manganese. In addition, sample CUL-14-SS-06-13 required a 10x dilution for barium. All other analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS sample and MS/MSD samples. No sample from this SDG was designated for MS/MSD analyses. However, the laboratory analyzed an MS/MSD on sample CUL-05-SS-06-12.

All LCS recoveries were within acceptance criteria.

All MS/MSD recoveries were within acceptance criteria with the following exceptions:

Metal	MS %R	MSD %R	Criteria
Antimony	2.4	2.2	80-120%
Arsenic	76	76	80-120%
Barium	0	0	80-120%
Beryllium	70	72	80-120%
Copper	43	60	80-120%
Manganese	3680	2750	80-120%
Molybdenum	50	49	80-120%
Selenium	76	76	80-120%
Vanadium	142	139	80-120%
Zinc	0	0	80-120%

It should be noted that the concentrations of barium, manganese, vanadium, and zinc in the parent sample were significantly greater than the amount spiked, resulting in the anomalous recoveries. All non-compliant metals were flagged "J" in the parent sample in accordance with the SAP.

Precision

Precision was evaluated using the RPD obtained from the MS/MSD samples.

All MS/MSD RPDs were within acceptance criteria.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the Work Plan;
- Comparing actual analytical procedures to those described in the Work Plan;
- Evaluating preservation and holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the Work Plan. The samples were prepared and analyzed within the holding times required by the method.

- All instrument tune criteria were met.
- All metals met criteria in the RL check standard.
- All second source criteria were met. The ICV was prepared using a secondary source.
- All CCV criteria were met.
- All interference check (ICSA/ICSAB) criteria were met with two exceptions. The ICSA analyzed at the end of the batch contained cadmium above the RL (1.0µg/L) at 1.7µg/L, and nickel above the RL (3.5µg/L) at 4.0µg/L. Both

cadmium and nickel are verified trace impurities in the ICSA standard, so no corrective action was necessary.

- A DT was analyzed on sample CUL-05-SS-06-12. The DT met criteria for all metals detected in the parent sample at a concentration of 50 times the MDL or greater:

Metal	%D	Criteria
Barium	0.7	
Cobalt	6.5	
Copper	9.2	
Lead	0.9	%D ≤ 10
Manganese	5.3	
Vanadium	1.1	
Zinc	8.4	

- A PDS was not required.

One method blank and several calibration blanks were associated with the ICP/MS analyses in this SDG. All blanks were compliant.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All ICP/MS results for the samples in this SDG were considered usable. Therefore, the completeness for the ICP/MS portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

MERCURY

General

The mercury portion of this SDG consisted of five (5) surface soil samples. The samples were collected on November 3 and 4, 2006 and were analyzed for mercury.

The mercury analyses were performed using USEPA SW846 Method 7471A. The samples were analyzed following the procedures outlined in the Work Plan. All samples were prepared and analyzed within the holding time required by the method and the Work Plan.

The samples for mercury analysis were digested and analyzed in a single batch (#6319536) under a single ICAL.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS sample.

The LCS recovery was within acceptance criteria.

Precision

Precision could not be evaluated for the mercury portion of this SDG because no duplicate analyses were performed.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the Work Plan;
- Comparing actual analytical procedures to those described in the Work Plan;
- Evaluating preservation and holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the Work Plan. The samples were prepared and analyzed within the holding times required by the method.

- All initial calibration criteria were met.
- All calibration verification criteria were met.
- All second source verification criteria were met. The ICV sample was prepared using a secondary source.
- A DT was analyzed on a sample from a different client and/or site. The DT was not applicable because mercury was not detected above 25x the MDL in the parent sample.

One method blank and several calibration blanks were associated with the mercury analyses in this SDG. All blanks were compliant.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All mercury results for the samples in this SDG were considered usable. The completeness for the mercury portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

DATA USABILITY

All calculations were spot checked and verified. All data in this SDG are usable and all DQO requirements were met.

APPENDIX H

GIS DATA

The electronic copy is included in the
"Appendix H - GIS Data" folder on enclosed CD.

APPENDIX I

GEOPHYSICAL DATA

No geophysical data was collected at this site.

APPENDIX J

CONCEPTUAL SITE MODELS

CONCEPTUAL SITE MODEL
CULEBRA ISLAND, PUERTO RICO

Subsite/Range	Acreage*	Suspect Past DoD Activities	Potential MEC/MD Presence	MEC/MD Found Since Closure	Previous Investigation/Clearance Actions	Post-DoD Land Use and Current Land Use	Potential Receptors	Potential Source	Source Receptor Interaction	Field Sampling/ Qualitative Reconnaissance
MUNITIONS RESPONSE SITE (MRS) 02 NORTHWEST PENINSULA, CERRO BALCON, MORTAR RANGE & ADJACENT CAYOS RAC 1										
SHARK ROCK / CAYO TIBURON	1	Training Range; FLEX #2 1936, 75mm Impact Area and Impact Area #1 FLEX #5 1939, Artillery Firing near Mosquito Bay toward Culebrita, Whale Rock, Cayo Botella, Cayo Tiburon and Cayos Geniqui. Fire was not directed at NE Cay;	Mk 82, General Purpose Bomb, 500 lbs; 5-inch, Rocket, Zuni[4] 75mm[5]	None Documented	None	FWS - Wildlife Refuge Protected area for seabirds.	Inaccessible	Unknown	Incomplete: no receptors and unknown source	Area was not accessible. No target or debris was visible from the boat. No QR conducted on site.
PALADA CAY / CAYO GENIQUI	11	Training Range; FLEX #2 1936, 75mm Impact Area and Impact Area #1; FLEX #5 1939, Artillery Firing near Mosquito Bay toward Culebrita, Whale Rock, Cayo Botella, Cayo Tiburon and Cayos Geniqui. Fire was not directed at NE Cay; Impact area for Torpedo Range on north end of Culebrita.	Mk 82, General Purpose Bomb, 500 lbs; 5-inch, Rocket, Zuni; Torpedo, Gen, Navy[4]	ASR Site Visit Team observed an Mk 14/15 bomb fin. Navy divers reported finding a Mk 27 HE torpedo east of Cayos Geniqui in January 1983	1995 ASR site visit 2006 SI QR	FWS - Wildlife Refuge Protected area for Brown and Red Footed Boobies.	FWS employees or researchers	No MEC, MD, or small arms debris was observed during the SI. The ASR team observed munitions debris and MEC has been observed off shore near Cayo Geniqui.	Possible: infrequent receptors and possible source	QR conducted on beach area of Cayo Geniqui.
WHALE ROCK	<1	FLEX #5 1939, Artillery Firing near Mosquito Bay toward Culebrita, Whale Rock, Cayo Botella, Cayo Tiburon and Cayos Geniqui. Fire was not directed at NE Cay;	Unknown	None Documented	None	FWS – Wildlife Refuge	Inaccessible	Unknown	Incomplete: no receptors and unknown source	Area was not accessible. No target or debris was visible from the boat. No QR conducted on site.
PAJARITO CAY	3	Impact Area	Unknown	None Documented	None	FWS – Wildlife Refuge	FWS employees or researchers	Unknown	Possible: infrequent receptors and unknown source	Area was not accessible. No target or debris was visible from the boat. No QR conducted on site.
CROSS CAY / CAYO LOBO	38	Training Range	Small Arms, General; 50 cal. Machine Gun; Mk 81 Mk 82 Mk 83 Mk 84, GP; 20mm HEI, MKI[4]	1997 EE/CA confirmed the presence of MEC. Several MEC items have been identified on surface and detonated.	1997 EE/CA 2006 surface clearance	FWS – Wildlife Refuge	FWS employees or researchers	MEC and MD known to be present and surface and likely remain in the subsurface.	Complete: infrequent receptors and confirmed source	No QR or sampling was conducted due to active surface removal.
BLACK ROCK/ EL MONO	0.3	Unknown - Possible Impact Area	Unknown	None Documented	None	FWS – Wildlife Refuge	Inaccessible	Unknown	Incomplete: no receptors and unknown source	Area was not accessible. No target or debris was visible from the boat. No QR conducted on site.
YERBA CAY	4	Unknown - Possible Impact Area	Unknown	None Documented	None	FWS – Wildlife Refuge	FWS employees or researchers	Unknown	Possible: infrequent receptors and unknown source	Area was not accessible. No target or debris was visible from the boat. No QR conducted on site.
MONO CAY	1	1924 75mm Target Area	75mm[5]	None Documented	None	FWS – Wildlife Refuge	FWS employees or researchers	Unknown	Possible: infrequent receptors and unknown source	Area was not accessible. No target or debris was visible from the boat. No QR conducted on site.

CONCEPTUAL SITE MODEL, CONTINUED

CULEBRA ISLAND, PUERTO RICO

Subsite/Range	Acreage*	Suspect Past DoD Activities	Potential MEC/MD Presence	MEC/MD Found Since Closure	Previous Investigation/Clearance Actions	Post-DoD Land Use and Current Land Use	Potential Receptors	Potential Source	Source Receptor Interaction	Field Sampling/ Qualitative Reconnaissance
TWIN ROCKS / LOS GEMELOS	0.5	Training Range; 1922 7-inch, 8-inch and 3-inch Guns, 155mm, 75mm, 37mm Guns;	Mk 81 Mk 82 Mk 83 Mk 84,GP; 5-inch, Rocket, Zuni; 5-inch, Practice Rocket, Mk 8[4] 7-inch, 8-inch, 3-inch, 155mm, 75mm, 37mm[5]	None Documented	None	FWS – Wildlife Refuge	FWS employees or researchers	Unknown	Possible: infrequent receptors and unknown source	Area was not accessible. No target or debris was visible from the boat. No QR conducted on site.
AGUA CAY / CAYO DE AGUA	6	Training Range;	Mk 81 Mk 82 Mk 83 Mk 84, GP; 2.75-inch, Rockets General[4] MK 76 practice bomb, 76mm projectile, aircraft flare	ASR Site Visit Team found HE bomb fragments. 1997 EE/CA found several MK 76 w/spotting charges and one 76mm projectile. SI SVT found two aircraft flare trays, many expended MK76 practice bombs, and debris from an MK 80s series bomb.	1995 ASR site visit 1997 EE/CA 2003 SI QR	FWS – Wildlife Refuge	FWS employees or researchers	MD was observed during the SI. MD and MEC previously confirmed.	Complete: infrequent receptors and confirmed source	QR was conducted around the perimeter of the cay - No MEC samples were collected.
FUNGY BOWL / ALCARAZZA	7	Training Range; 1922 7-inch, 8-inch and 3-inch Guns, 155mm, 75mm, 37mm Guns;	Mk 81 Mk 82 Mk 83 Mk 84, GP; 5-inch, Rocket, Zuni[4] 7-inch, 8-inch, 3-inch, 155mm, 75mm, 37mm[5]	High density of Ordnance with difficult and dangerous terrain.[7]	None	FWS – Wildlife Refuge Protected area for Masked Boobies, Sooty Terns, Bridled Terns, Noddy Terns, and Zenaida.	Inaccessable	Unknown	Incomplete: no receptors and unknown source	Area was not accessible. No target or debris was visible from the boat. No QR conducted on site.
THE WASHER		1922 7-inch, 8-inch and 6-inch Guns, 155mm, 75mm, 37mm Guns;	7-inch, 8-inch, 3-inch, 155mm, 75mm, 37mm[5]	None Documented	None	FWS – Wildlife Refuge	FWS employees	Unknown	Possible: infrequent receptors and unknown source	Area was not accessible. No target or debris was visible from the boat. No QR conducted on site.
FLAMENCO/ NORTHWEST PENINSULA	572	Naval Gunfire Target Area – Training Range; Air to Ground North – Training Range; Air to Ground South – Training Range; 1934 Fleet Problem XV, .30 cal, 3-inch anti-aircraft, 6-inch gun batteries, 75mm batteries, 6-inch naval weapons; FLEX #1 12-inch AP, 5-inch Flat Nose, 5-inch Com, 5-inch HE, 5-inch Naval, 6-inch flat nose, 4-inch Shrapnel, 3-inch HE, 3-inch Shrapnel; FLEX #2 July 1936 Demolition, 14-inch projectile, and 12-inch shell also demolition of 3-inch shell and 100-lb bomb near Stream Point; FLEX #4 1938 .50 cal and 81mm mortar, HE and practice fired at Stream Point; FLEX #5 1939 Aircraft Bombing and Machine Gun Range; Shore Bombardment at several targets along shoreline, Target 14 located mid-peninsula used for napalm and ariel bombing with inert bombs and rockets.[7]	Naval Gunfire Target--Small Arms, General; .50 cal. Machine Gun; Mk 81 Mk 82 Mk 83 Mk 84,GP; 105mm, HE, M1; 8-inch, AP, Mk 21; 16-inch, AP, Mk 5; 2.75-inch, Rockets General; Rocket, 11.75-inch, Tiny Tim, Mk 1 mod 0.[4] Air to Ground North and South – Small Arms, General; .50 cal. Machine Gun; Mk 82, General Purpose bomb, 500 lbs; 2.75-inch, Rockets General; Rocket, 11.75-inch, Tiny Tim, Mk 1 Mod 0[4] 3-inch, 6-inch and 75mm[5] 12-inch AP, 5-inch flat nose, 5-inch Common, 5-inch HE, 5-inch naval, 6-inch flat nose, 4-inch Shrapnel, 3-inch HE, 3-inch Shrapnel[5] 14-inch projectile, 12-inch shell, 3-inch shell and 100-lb bomb[5] .50 cal and 81mm mortar, HE and practice[5]	ASR Site Visit Team found part of an 11.75-inch Tiny Tim Aerial Rocket and a 5-inch rocket imbedded in the hillside. During Clearance at Flamenco Bay Camp Ground 11 MEC items were located and destroyed including, several 3-inch and 5-inch projectiles, a 25lb practice bombs, and three 40mm. 2001-2002 UXO Construction Support by Ellis recovered 249 MEC items. See Appendix L of SI-Report or complete list of items. 1997 EE/CA confirmed the presence of MEC see Table 4.3 or SI Report	Time Critical Removal Action on 3.66 acres at Flamenco Bay Campground, 1997 EE/CA 2001-2002 UXO Construction Support	FWS – Wildlife Refuge, DNR, campground, and beaches.	Publicly Accessible, Recreational users.	Confirmed MED and MD on surface and in the subsurface.	Complete: frequent receptors and confirmed source	No QR or MC Sampling; Public Law 93-166 (1973) DoD funds can not be used for MEC/ MC decontamination on Northwest Peninsula.

CONCEPTUAL SITE MODEL, CONTINUED

CULEBRA ISLAND, PUERTO RICO

Subsite/Range	Acreage*	Suspect Past DoD Activities	Potential MEC/MD Presence	MEC/MD Found Since Closure	Previous Investigation/Clearance Actions	Post-DoD Land Use and Current Land Use	Potential Receptors	Potential Source	Source Receptor Interaction	Field Sampling/ Qualitative Reconnaissance
DOLPHIN HEAD/ CERRO BALCON	30	FLEX #4 1938 .30, .50 cal and 81mm mortar, HE and practice fired at Surf Bay; direct fire and indirect fire at Combat Range No. 1 and the southern slope of Dolphin Head, and slope of hill northwest of Dolphin Head.	3-inch, Mortar, HE, MK1; 4.2-inch, Mortar, HE, M329A1[4] .30 cal, .50 cal and 81mm mortar, HE and practice[5]	1935 a young boy was killed playing with UXO found at this range. ASR Site Visit Team found fragments of a 3-inch or 4.2-inch mortar round. MEC and MD identified during active removal action.	2006 removal action.	Private ownership, grazing, current and ongoing residential construction.	Publicly Accessible	MD and small arms debris was observed in the vicinity of Cerro Balcon during the SI. MEC and MD have been confirmed on the surface and in the subsurface.	Complete: infrequent receptors and confirmed source	QR conducted near Cerro Balcon but not within active removal area. SS-18 was collected near this site.
MRS 03 FLAMENCO BAY WATER AREA **RAC 1**	195 (water)	FLEX #5 1939 75mm shrapnel firing position south of Flamenco Lagoon to the mouth of Flamenco Bay.	75mm Shrapnel[5]	Errant munitions observed in the bay.	None	Recreational Boating, Scuba Diving, Swimming.	Publicly Accessible	Confirmed MD and possible MEC in bay.	Complete: frequent receptors and confirmed source	No QR or sampling was conducted in this MRS.
MRS 04 FLAMENCO LAGOON MANEUVER AREA **RAC 1**	550	FLEX #4 1938, Combat Range No. 2 direct fire .30 end .50 cal., 81mm mortars, and smoke and indirect fire target at Combat Range #2; FLEX #4 1938 .50 cal and 81mm mortar, HE and practice fired at Surf Bay and Flamenco Beach; FLEX #5 1939 75mm shrapnel firing position south of Flamenco Lagoon to the mouth of Flamenco Bay.	.30 cal, .50 cal, and 81mm mortars[5] .50 cal and 81mm mortar, HE and practice[5] 75mm Shrapnel[5]	None Documented	2006 SI QR	Private ownership, hotel, mostly undeveloped with some residential. Heavy recreational use at beach.	Publicly Accessible	No MEC, MD, or small arms debris was observed during the SI. However, MEC and MD are present in MRS 02 near MRS 04 and presence of MEC or MD is possible.	Possible: frequent receptors and possible source	QR conducted along beach and around Lagoon. SS-11, SE-03, and SE-4 collected.
MRS 05 MORTAR AND COMBAT RANGE AREA **RAC 1**	2812	Possible 1924 Anti-Aircraft Fire on hills 325,310,200, 650, 204,108, and 191; FLEX #4 Target at Combat Range #1 and .50 cal 81mm mortars on beaches F7 and F8 between Carenero Pt. and Pt. Cabras; FLEX #4 1938 .30, .50 cal and 81mm mortar, HE and practice fired at surf Bay; direct fire and indirect fire at Combat Range No. 1 and the southern slope of Dolphin Head, and slope of hill northwest of Dolphin Head; FLEX #5 1939 Combat Range #1 and #2, Anti-Boat Gun Firing at Carenero Point.	.50 cal 81mm mortars(5) .30 cal, .50 cal and 81mm mortar, HE and practice(5) 75mm possible	Interviews indicate that a dud was found in this area that later killed Mr. Ricardo's brother Alberto. (3) Active removal action a Cerro Balcon includes land in MRS 05.	Active removal action at Cerro Balcon outside MRS 02. 2005 SI QR	FWS – Wildlife Refuge, Private ownership, grazing	Publicly Accessible	MD and small arms debris was observed in the vicinity of Cerro Balcon during the SI. MEC and MD have been confirmed in this area.	Complete: frequent receptors and confirmed source	QR conducted throughout MRS 05. Samples SS-12, SS-14, SS-15, SS-17, SS-18, SS-19 and SE-1 collected.
MRS 06 ARTILLERY FIRING AREA **RAC 3**	826	1914 3-inch Battery; FLEX #2 1936, 37mm gun position, Mosquito Bay shoreline; FLEX #5 1939, Artillery Firing near Mosquito Bay toward Culebrita, Whale Rock, Cayo Botella, Cayo Tiburon and Cayos Geniqui. Fire was not directed at NE Cay; Beach Defensive Area #1 and #2 and AA Range into water near Area 06; FLEX #5 1939, 37mm rounds fired from beech at Mosquito Bay to moving target in water between Point Vaca and Snapper Shoals and shrapnel rounds fired at a floating target at Yellow Shoals.	3-inch, 37mm(5)	One stray practice 20mm found on eastern Culebra Island within 1.5 mile radius of Culebrita-20mm Target. (3)	2006 SI QR	Private ownership, light residential	Publicly Accessible	No MEC, MD, or small arms debris was observed during the SI. Single MD item previously identified.	Complete: frequent receptors and confirmed source	QR conducted throughout MRS 06. Samples SS-20, and SS-21 collected.

CONCEPTUAL SITE MODEL, CONTINUED

CULEBRA ISLAND, PUERTO RICO

Subsite/Range	Acreage	Suspect Past DoD Activities	Potential MEC/MD Presence	MEC/MD Found Since Closure	Previous Investigation/Clearance Actions	Post-DoD Land Use and Current Land Use	Potential Receptors	Potential Source	Source Receptor Interaction	Field Sampling/ Qualitative Reconnaissance
MRS 07 CULEBRITA ARTILLERY IMPACT AREA RAC 1	375									
LADRONE CAY / CAYO BOTELLA	N/A	Training Range; 1924 75mm target area; FLEX #2 1936, 75mm Impact Area and Impact Area #1.	Mk 82, General Purpose Bomb, 500 lbs; 5-Inch, Rocket, Zuni[4] 75mm[5]	1973 EOD Search found expended Mk 76 and Mk 106 practice bombs. Items were left in place. 1997 ASR Site Visit Team observed expended practice bomb end fragments from HE bombs. 1997 EE/CA confirmed the presence of MEC.	1973 EOD Clearance 1995 ASR site visit 1997 EE/CA	FWS - Wildlife Refuge	Accessible by persons, unknown frequency.	MEC and MD have been confirmed at this site.	Complete: infrequent receptors and confirmed source	No QR or sampling was conducted in this MRS.
CULEBRITA ISLAND	598	Training Range; FLEX #2 1936, 75mm Impact Area and Impact Area #1; FLEX #5 1939, Artillery Firing near Mosquito Bay toward Culebrita, Whale Rock, Cayo Botella, Cayo Tiburon and Cayos Geniqui. Fire was not directed at NE Cay; Lighthouse on Southern side of the island.	Small Arms, General; .50 cal. Machine Gun; 20mm HEI, Mk1[4] 75mm[5]	1997 EE/CA confirmed the presence of MEC. 2006 SI QR identified a mechanical time fuze.	1995 ASR site visit 1997 EE/CA. 2006 SI QR	FWS - Wildlife Refuge, Recreational boating area, and popular beach.	Publicly Accessible: accessed by boaters, hikers, and FWS employees regularly.	MD was observed during the SI. MEC and MD have been confirmed at this site.	Complete: frequent receptors and confirmed source	QR conducted throughout MRS 06. SS-25, SS-26, and SE-02 collected. Ambient sample SS-22 collected on Culebrita.
MRS 08 CAYO NORTE IMPACT AREA RAC 3	306	FLEX #2 1936, Artillery Impact Area # 2.	Unknown	MEC items seen in the water near the eastern end of Cayo Norte.	2006 SI QR	2 full-time resident eastern side	Residents and visitors	No MEC, MD, or small arms debris was observed during the SI. MEC present off shore on eastern end of Cayo Norte	Possible: infrequent receptors and unknown source	QR conducted throughout MRS 08. SS-23, SS-24, and SE-05 collected.
MRS 09 SOLDADO PT. MORTAR AND BOMBING AREAS RAC 2	328	1914 5-inch battery; FLEX #1 1935, .30, .45 and .50 cal, 37, 75 and 155mm, 3-inch; FLEX #2 1936, 30-lb frag, 100-lb HE, and 1000 lb bombs; Possible 1924 Anti-Aircraft Fire on hill 200; FLEX #5 1939 Marine Defensive Area #1 and Aircraft Bombing and Machine Gun Range; 1938 Mortar Firing from Boats to Shore.	5-inch(5) .30 cal, .45 cal, .50 cal, 37mm, 75mm, 155mm, 3-inch (5) 30-lb frag bomb, 100-lb HE bomb, 1000 lb bomb(5)	2006 SI QR identified a fin set; likely from a mortar.	2006 SI QR	DNR, Residential, Frequent anchoring of boats.	Publicly Accessible	MD was observed during the SI. Extensive historical record of training indicates MEC and MD are probable in this area.	Complete: frequent receptors and likely source	QR conducted throughout MRS 09. SS-10 and SS-09 collected.
Rifle Range South – Undetermined Location (Believed to be located near Coaling Station)	N/A	Small Arms Range	Small Arms, General(4)	None Documented	None	DNR, Residential	Publicly Accessible	No MEC, MD, or small arms debris was observed during the SI.	Incomplete: frequent receptors and no source	QR conducted throughout MRS 09. SS-10 and SS-09 collected.No evidence of small arms identified.
MRS 10 DEFENSIVE FIRING AREA #1 RAC 2	547	Possible 1924 Anti-Aircraft Fire on hill 325; FLEX #5 1939 Marine Defensive Area #1. May heve dropped mortars on beach from high ground.	Unknown	None Documented	2006 SI QR	Residential, Commercial, Industrial	Publicly Accessible	No MEC, MD, or small arms debris was observed during the SI.	Complete: frequent receptors and likely source	QR conducted throughout MRS 10. SS-07 and SS-08 collected.

MEC CONCEPTUAL SITE MODEL, CONTINUED

CULEBRA ISLAND, PUERTO RICO

Subsite/Range	Acreage*	Suspect Past DoD Activities	Potential MEC/MD Presence	MEC/MD Found Since Closure	Previous Investigation/Clearance Actions	Post-DoD Land Use and Current Land Use	Potential Receptors	Potential Source	Source Receptor Interaction	Field Sampling/ Qualitative Reconnaissance
MRS 11 **DEFENSIVE FIRING AREA #2** **RAC 1**	719	1922 155mm gun firing point for fire toward Mono Cay; Possible 1924 Anti-Aircraft Fire on hill 310; FLEX #4 Target at Firewood Bay beach barrage firing; FLEX #5 1939 Marine Defensive Area #2; FLEX #7 1941 Training with 5-inch anti-aircraft projectiles and 6-inch flat nose projectiles at beach targets in Seine Bay and Firewood Bay.	155mm, 5-inch anti-aircraft projectiles, 6-inch flat nose projectiles[5]	Munitions reported in water near Project Area 11 (Project Area 12). 2006 SI QR identified 20mm Shell Casing	2006 SI QR	Residential, Commercial, Industrial, Frequent anchoring of boats.	Publicly Accessible	MD was observed during the SI. Extensive historical record of training indicates MEC and MD are possible in this area.	Complete: frequent receptors and likely source	QR conducted throughout MRS 11. SS-03, SS-04, SS-06, SS-06, and SS-27 collected. No MC identified.
MRS 12 **LUIS PENA CHANNEL WATER AREAS** **RAC 1**	835 (water)	FLEX #5 1939 Marine Defensive Area #2	Unknown	Munitions reported in the channel area. Many imbedded in coral.	None	Recreational Boating, Scuba Diving, Swimming.	Recreational users	MEC and MD confirmed in this area	Complete: receptors present and confirmed source	No QR or sampling was conducted in this MRS.
MRS 13 **CAYO LUIS PENA IMPACT AREA** **RAC 1**	864	1924 Impact Area 155mm GPF and 75mm AA, machine gun tanks, 37mm, 8-inch and 6-inch naval guns, seaplanes; FLEX #5 1939 Aircraft Bombing and Machine Gun Range; Helicopter Pad.	155mm GPF, 75mm AA, 37mm, 8-inch and 6-inch naval[5] Napalm[6]	Ordnance reported in water surrounding Cayo Luis Pena.	2006 SI QR	FWS - Wildlife Refuge Recreational boating	Publicly Accessible: accessed by boaters, hikers, and FWS employees regularly.	MD was observed during the SI. MEC or MD reported in water	Complete: receptors present and confirmed source	QR conducted throughout MRS 13. SS-02 and SS-02 collected.
MRS 14 **AIRPORT AND CAMP AREA** **RAC 3**	416	Airport, Camp, Possible Small Arms Range	Unknown	None Documented	2006 SI QR	Airport Authority and private residential	Publicly Accessible	No MEC, MD, or small arms debris was observed during the SI.	Incomplete: frequent receptors and no source	QR conducted throughout MRS 14. SS-13 and ambient sample SS-16 collected.
AIRFIELD RIFLE RANGE	22	Small Arms Range	Small Arms, General[4]	None Documented	2006 SI QR	Airport Authority	Publicly Accessible	No MEC, MD, or small arms debris was observed during the SI.	Incomplete: frequent receptors and no source	QR conducted throughout MRS 14. SS-13 and ambient sample SS-16 collected.
TOTAL	9460									

*Number represents actual acreage for each individual subsite/range. Total acreage, accounts for overlap of subsite/ranges, and does not include areas in open water.

Source
1 = Private account - nonconfirmed
2 = EOD response
3 = 1995 ASR
4 = 2004 ASR supplement
5 = 2005 Supplemental Archives Search Report (Final)
6 = Revised INPR 2005
7 = April 22,1991- Letter Kelly Wolcott, Refuge Manager to Ivan Acosta, USACE.
8 = Other government correspondence

DNR = Department of Natural Resources
DoD = Department of Defense
EE/CA = Engineering Evaluation / Cost Analysis
EOD = Explosives Ordnance Disposal
FWS = U.S. Fish and Wildlife Service
HE = High explosive

HEI = High explosive incendiary
MEC = Munitions and explosives of concern
ASR= Archives Search Report
SI = Site Inspection
UXO = Unexploded Ordnance

MC CONCEPTUAL SITE EXPOSURE MODEL

Site: Culebra Island, PR
MRS 02 Northwest Peninsula, Cerro Balcon, Mortar Range, and Adjacent Cayos

Completed By: Parsons
Date Completed: 2-May-07

(1) Check the media that could be directly affected by the release.

(2) For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Briefly list other mechanisms or reference the report for details.

(3) Check exposure media identified in (2).

(4) Check exposure pathways that are complete or need further evaluation.

(5) Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, or "C/F" for both current and future receptors.

Media	Transport Mechanisms	Exposure Media	Exposure Pathways	Current & Future Receptors: Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or occasional users	Construction workers	Ecological
☑ Surface Soil (0-2 inches)	Direct release to surface soil → check soil ☑ Migration or leaching to subsurface → check soil ☑ Migration or leaching to groundwater → check groundwater ☐ Volatilization → check air ☑ Runoff or erosion → check surface water ☑ Uptake by plants or animals → check biota ☑ Other (list): Fugitive Dust[b]	☑ soil	☑ Incidental Soil Ingestion		C/F	C/F	C/F	C/F
			☑ Dermal Absorption of Contaminants from Soil		C/F	C/F	C/F	C/F
☑ Subsurface Soil	Direct release to subsurface soil → check soil ☑ Migration to groundwater → check groundwater ☐ Volatilization → check air ☐ Other (list):	☑ groundwater[a]	☐ Ingestion of Groundwater					
			☐ Dermal Absorption of Contaminants in Groundwater					
☐ Groundwater	Direct release to groundwater → check groundwater ☐ Volatilization → check air ☐ Flow to surface water body → check surface water ☐ Flow to sediment → check sediment ☐ Uptake by plants or animals → check biota ☐ Other (list):	☐ air[b]	☐ Inhalation of Outdoor Air					
			☐ Inhalation of Indoor Air					
			☐ Inhalation of Fugitive Dust					
☐ Surface Water	Direct release to surface water → check surface water ☐ Volatilization → check air ☐ Sedimentation → check sediment ☐ Uptake by plants or animals → check biota ☐ Other (list):	☑ surface water[a]	☑ Ingestion of Surface Water					C/F
			☑ Dermal Absorption of Contaminants in Surface Water					C/F
☐ Sediment	Direct release to sediment → check sediment ☐ Resuspension, runoff, or erosion → check surface water ☐ Uptake by plants or animals → check biota ☐ Other (list):	☑ sediment	☑ Direct Contact with Sediment		C/F	C/F	C/F	C/F
		☐ biota[a]	☑ Ingestion of Wild Foods					C/F

(a) This media was not evaluated for MC during the SI; however, it is a secondary media contaminated only by transport of MC from a primary media.
(b) The air pathway is addressed under the soil SLRA. Soil screening level include inhibition of fugitive dust.

MC CONCEPTUAL SITE EXPOSURE MODEL

Site: Culebra Island, PR
MRS 03 Flamenco Bay Water Area

Completed By: Parsons
Date Completed: 2-May-07

(1) Check the media that could be directly affected by the release.

(2) For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Briefly list other mechanisms or reference the report for details.

(3) Check exposure media identified in (2).

(4) Check exposure pathways that are complete or need further evaluation.

(5) Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, or "C/F" for both current and future receptors.

Media	Transport Mechanisms	Exposure Media	Exposure Pathways	Current & Future Receptors: Residents (adults or children)	Commercial or Industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Ecological
☐ Surface Soil (0-2 inches)	☐ Migration or leaching to subsurface → check soil ☐ Migration or leaching to groundwater → check groundwater ☐ Volatilization → check air ☐ Runoff or erosion → check surface water ☐ Uptake by plants or animals → check biota ☐ Other (list): Fugitive Dust	☐ soil	☐ Incidental Soil Ingestion ☐ Dermal Absorption of Contaminants from Soil					
☐ Subsurface Soil	☐ Migration to groundwater → check groundwater ☐ Volatilization → check air ☐ Other (list):	☐ groundwater	☐ Ingestion of Groundwater ☐ Dermal Absorption of Contaminants in Groundwater					
☐ Groundwater	☐ Volatilization → check air ☐ Flow to surface water body → check surface water ☐ Flow to sediment → check sediment ☐ Uptake by plants or animals → check biota ☐ Other (list):	☐ air	☐ Inhalation of Outdoor Air ☐ Inhalation of Indoor Air ☐ Inhalation of Fugitive Dust					
☐ Surface Water	☐ Volatilization → check air ☐ Sedimentation → check sediment ☐ Uptake by plants or animals → check biota ☐ Other (list):	☐ surface water	☐ Ingestion of Surface Water ☐ Dermal Absorption of Contaminants in Surface Water					
☐ Sediment(a)	☐ Resuspension, runoff, or erosion → check surface water ☐ Uptake by plants or animals → check biota ☐ Other (list):	☐ sediment	☐ Direct Contact with Sediment					
		☐ biota	☐ Ingestion of Wild Foods					

(a) The constant movement and exposure of the sand to ocean water greatly reduces the likelihood that MC remains in the soil/sediment at this MRS.

MC CONCEPTUAL SITE EXPOSURE MODEL

Site: Culebra Island, PR
MRS 04 Flamenco Lagoon Maneuver Area

Completed By: Persons
Date Completed: 2-May-07

(1) Check the media that could be directly affected by the release.

(2) For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Briefly list other mechanisms or reference the report for details.

(3) Check exposure media identified in (2).

(4) Check exposure pathways that are complete or need further evaluation.

(5) Identify the receptors potentially affected by each exposure pathway. Enter "C" for current receptors, "F" for future receptors, or "C/F" for both current and future receptors.

Media	Transport Mechanisms	Exposure Media	Exposure Pathways	Current & Future Receptors: Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Ecological
☑ Surface Soil (0-2 inches)	☐ Direct release to surface soil (check soil) ☑ Migration or leaching to subsurface (check soil) ☑ Migration or leaching to groundwater (check groundwater) ☐ Volatilization (check air) ☑ Runoff or erosion (check surface water) ☑ Uptake by plants or animals (check biota) ☑ Other (list): Fugitive Dust[b]	☑ soil	☑ Incidental Soil Ingestion ☑ Dermal Absorption of Contaminants from Soil	C/F C/F	C/F C/F	C/F C/F	C/F C/F	C/F C/F
☐ Subsurface Soil	☐ Direct release to subsurface soil (check soil) ☐ Migration to groundwater (check groundwater) ☐ Volatilization (check air) ☐ Other (list):	☐ groundwater[a]	☐ Ingestion of Groundwater ☐ Dermal Absorption of Contaminants in Groundwater					
☐ Groundwater	☐ Direct release to groundwater (check groundwater) ☐ Volatilization (check air) ☐ Flow to surface water body (check surface water) ☐ Flow to sediment (check sediment) ☐ Uptake by plants or animals (check biota) ☐ Other (list):	☐ air[b]	☐ Inhalation of Outdoor Air ☐ Inhalation of Indoor Air ☐ Inhalation of Fugitive Dust					
☑ Surface Water	☐ Direct release to surface water (check surface water) ☐ Volatilization (check air) ☑ Sedimentation (check sediment) ☑ Uptake by plants or animals (check biota) ☐ Other (list):	☑ surface water	☑ Ingestion of Surface Water ☑ Dermal Absorption of Contaminants in Surface Water	C/F C/F	C/F C/F	C/F C/F	C/F C/F	C/F C/F
☑ Sediment	☐ Direct release to sediment (check sediment) ☑ Resuspension, runoff, or erosion (check surface water) ☑ Uptake by plants or animals (check biota) ☐ Other (list):	☑ sediment	☑ Direct Contact with Sediment	C/F	C/F	C/F	C/F	C/F
		☑ biota[a]	☑ Ingestion of Wild Foods					C/F

(a) This media was not evaluated for MC during the SI; however, it is a secondary media contaminated only by transport of MC from a primary media.
(b) The air pathway is addressed under the soil SLRA. Soil screening level include inhilation of fugitive dust.

MC CONCEPTUAL SITE EXPOSURE MODEL

Site: Culebra Island, PR
MRS 05 Mortar and Combat Range Area

Completed By: Parsons
Date Completed: 2-May-07

(1) Check the media that could be directly affected by the release.

(2) For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Briefly list other mechanisms or reference the report for details.

(3) Check exposure media identified in (2).

(4) Check exposure pathways that are complete or need further evaluation.

(5) Identify the receptors potentially affected by each exposure pathway. Enter "C" for current receptors, "F" for future receptors, or "C/F" for both current and future receptors.

Media	Transport Mechanisms	Exposure Media	Exposure Pathways	Current & Future Receptors: Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Ecological
☑ Surface Soil (0-2 inches)	☑ Migration or leaching to subsurface → check soil ☑ Migration or leaching to groundwater → check groundwater ☐ Volatilization → check air ☑ Runoff or erosion → check surface water ☑ Uptake by plants or animals → check biota ☑ Other (list): Fugitive Dust[b]	☑ soil	☑ Incidental Soil Ingestion ☑ Dermal Absorption of Contaminants from Soil	C/F C/F	C/F C/F	C/F C/F	C/F C/F	C/F C/F
☑ Subsurface Soil	☑ Migration to groundwater → check groundwater ☐ Volatilization → check air ☐ Other (list):	☑ groundwater[a]	☐ Ingestion of Groundwater ☐ Dermal Absorption of Contaminants in Groundwater					
☐ Groundwater	☐ Volatilization → check air ☐ Flow to surface water body → check surface water ☐ Flow to sediment → check sediment ☐ Uptake by plants or animals → check biota ☐ Other (list):	☐ air[b]	☐ Inhalation of Outdoor Air ☐ Inhalation of Indoor Air ☐ Inhalation of Fugitive Dust					
☐ Surface Water	☐ Volatilization → check air ☐ Sedimentation → check sediment ☐ Uptake by plants or animals → check biota ☐ Other (list):	☑ surface water	☑ Ingestion of Surface Water ☑ Dermal Absorption of Contaminants in Surface Water	C/F C/F	C/F C/F	C/F C/F	C/F C/F	C/F C/F
☐ Sediment	☐ Resuspension, runoff, or erosion → check surface water ☐ Uptake by plants or animals → check biota ☐ Other (list):	☑ sediment	☑ Direct Contact with Sediment	C/F	C/F	C/F	C/F	C/F
		☑ biota[a]	☑ Ingestion of Wild Foods					C/F

(a) This media was not evaluated for MC during the SI; however, it is a secondary media contaminated only by transport of MC from a primary media.
(b) The air pathway is addressed under the soil SLRA. Soil screening level include inhilation of fugitive dust.

MC CONCEPTUAL SITE EXPOSURE MODEL

Site: Culebra Island, PR
MRS 06 Artillery Firing Area

Completed By: Parsons
Date Completed: 2-May-07

(1) Check the media that could be directly affected by the release.

(2) For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Briefly list other mechanisms or reference the report for details.

(3) Check exposure media identified in (2).

(4) Check exposure pathways that are complete or need further evaluation.

(5) Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, or "C/F" for both current and future receptors.

Media	Transport Mechanisms	Exposure Media	Exposure Pathways	Current & Future Receptors: Residents (adults or children)	Commercial or Industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Ecological
☑ Surface Soil (0-2 inches)	Direct release to surface soil — check soil ☑ Migration or leaching to subsurface — check soil ☑ Migration or leaching to groundwater — check groundwater ☐ Volatilization — check air ☑ Runoff or erosion — check surface water ☑ Uptake by plants or animals — check biota ☐ Other (list): Fugitive Dust[c]	☑ soil	☑ Incidental Soil Ingestion	C/F	C/F	C/F	C/F	C/F
			☑ Dermal Absorption of Contaminants from Soil	C/F	C/F	C/F	C/F	C/F
☑ Subsurface Soil	Direct release to subsurface soil — check soil ☑ Migration to groundwater — check groundwater ☐ Volatilization — check air ☐ Other (list):	☑ groundwater[a]	☐ Ingestion of Groundwater					
			☐ Dermal Absorption of Contaminants in Groundwater					
☐ Groundwater	Direct release to groundwater — check groundwater ☐ Volatilization — check air ☐ Flow to surface water body — check surface water ☐ Flow to sediment — check sediment ☐ Uptake by plants or animals — check biota ☐ Other (list):	☐ air[a]	☐ Inhalation of Outdoor Air					
			☐ Inhalation of Indoor Air					
			☐ Inhalation of Fugitive Dust					
☑ Surface Water	Direct release to surface water — check surface water ☐ Volatilization — check air ☑ Sedimentation — check sediment ☑ Uptake by plants or animals — check biota ☐ Other (list):	☑ surface water[b]	☑ Ingestion of Surface Water	C/F	C/F	C/F	C/F	C/F
			☑ Dermal Absorption of Contaminants in Surface Water	C/F	C/F	C/F	C/F	C/F
☑ Sediment	Direct release to sediment — check sediment ☑ Resuspension, runoff, or erosion — check surface water ☑ Uptake by plants or animals — check biota ☐ Other (list):	☑ sediment[b]	☑ Direct Contact with Sediment	C/F	C/F	C/F	C/F	C/F
		☑ biota[c]	☑ Ingestion of Wild Foods					C/F

(a) This media was not evaluated for MC during the SI; however, it is a secondary media contaminated only by transport of MC from a primary media.
(b) This media was not evaluated for MC during the SI; however, it is a primary media that may have been contaminated by direct fire.
(c) The air pathway is addressed under the soil SLRA. Soil screening level include inhalation of fugitive dust.

MC CONCEPTUAL SITE EXPOSURE MODEL

Site: Culebra Island, PR
MRS 07 Culebrita Artillery Impact Area

Completed By: Parsons
Date Completed: 2-May-07

(1) Check the media that could be directly affected by the release.

(2) For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Briefly list other mechanisms or reference the report for details.

(3) Check exposure media identified in (2).

(4) Check exposure pathways that are complete or need further evaluation.

(5) Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, or "C/F" for both current and future receptors.

Media	Transport Mechanisms	Exposure Media	Exposure Pathways	Current & Future Receptors: Residents (adults or children)	Commercial or Industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Ecological
☑ Surface Soil (0-2 inches)	☑ Direct release to surface soil → check soil ☑ Migration or leaching to subsurface → check soil ☑ Migration or leaching to groundwater → check groundwater ☐ Volatilization → check air ☑ Runoff or erosion → check surface water ☑ Uptake by plants or animals → check biota ☑ Other (list): Fugitive Dust[b]	☑ soil	☑ Incidental Soil Ingestion	C/F	C/F	C/F	C/F	C/F
			☑ Dermal Absorption of Contaminants from Soil	C/F	C/F	C/F	C/F	C/F
☑ Subsurface Soil	☑ Direct release to subsurface soil → check soil ☑ Migration to groundwater → check groundwater ☐ Volatilization → check air ☐ Other (list):	☑ groundwater[a]	☐ Ingestion of Groundwater					
			☐ Dermal Absorption of Contaminants in Groundwater					
☐ Groundwater	☐ Direct release to groundwater → check groundwater ☐ Volatilization → check air ☐ Flow to surface water body → check surface water ☐ Flow to sediment → check sediment ☐ Uptake by plants or animals → check biota ☐ Other (list):	☐ air[a]	☐ Inhalation of Outdoor Air					
			☐ Inhalation of Indoor Air					
			☐ Inhalation of Fugitive Dust					
☑ Surface Water	☑ Direct release to surface water → check surface water ☐ Volatilization → check air ☑ Sedimentation → check sediment ☑ Uptake by plants or animals → check biota ☐ Other (list):	☑ surface water	☑ Ingestion of Surface Water	C/F	C/F	C/F	C/F	C/F
			☑ Dermal Absorption of Contaminants in Surface Water	C/F	C/F	C/F	C/F	C/F
☑ Sediment	☑ Direct release to sediment → check sediment ☑ Resuspension, runoff, or erosion → check surface water ☑ Uptake by plants or animals → check biota ☐ Other (list):	☑ sediment	☑ Direct Contact with Sediment	C/F	C/F	C/F	C/F	C/F
		☑ biota[b]	☑ Ingestion of Wild Foods					C/F

(a) This media was not evaluated for MC during the SI; however, it is a secondary media contaminated only by transport of MC from a primary media.
(b) The air pathway is addressed under the soil SLRA. Soil screening level include inhilation of fugitive dust.

MC CONCEPTUAL SITE EXPOSURE MODEL

Site: Culebra Island, PR
MRS 08 Cayo Norte Impact Area

Completed By: Parsons
Date Completed: 2-May-07

(1) Check the media that could be directly affected by the release.

(2) For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Briefly list other mechanisms or reference the report for details.

(3) Check exposure media identified in (2).

(4) Check exposure pathways that are complete or need further evaluation.

(5) Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, or "C/F" for both current and future receptors.

Media	Transport Mechanisms	Exposure Media	Exposure Pathways	Current & Future Receptors: Residents (adults or children)	Commercial or Industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Ecological
☑ Surface Soil (0-2 inches)	Direct release to surface soil → check soil ☑ Migration or leaching to subsurface → check soil ☑ Migration or leaching to groundwater → check groundwater ☐ Volatilization → check air ☑ Runoff or erosion → check surface water ☑ Uptake by plants or animals → check biota ☑ Other (list): Fugitive Dust[b]	☑ soil	☑ Incidental Soil Ingestion ☑ Dermal Absorption of Contaminants from Soil	C/F C/F	C/F C/F	C/F C/F	C/F C/F	C/F C/F
☑ Subsurface Soil	Direct release to subsurface soil → check soil ☑ Migration to groundwater → check groundwater ☐ Volatilization → check air ☐ Other (list):	☑ groundwater[a]	☐ Ingestion of Groundwater ☐ Dermal Absorption of Contaminants in Groundwater					
☐ Groundwater	Direct release to groundwater → check groundwater ☐ Volatilization → check air ☐ Flow to surface water body → check surface water ☐ Flow to sediment → check sediment ☐ Uptake by plants or animals → check biota ☐ Other (list):	☐ air[a]	☐ Inhalation of Outdoor Air ☐ Inhalation of Indoor Air ☐ Inhalation of Fugitive Dust					
☐ Surface Water	Direct release to surface water → check surface water ☐ Volatilization → check air ☐ Sedimentation → check sediment ☐ Uptake by plants or animals → check biota ☐ Other (list):	☑ surface water	☑ Ingestion of Surface Water ☑ Dermal Absorption of Contaminants in Surface Water	C/F C/F	C/F C/F	C/F C/F	C/F C/F	C/F C/F
☐ Sediment	Direct release to sediment → check sediment ☐ Resuspension, runoff, or erosion → check surface water ☐ Uptake by plants or animals → check biota ☐ Other (list):	☑ sediment	☐ Direct Contact with Sediment	C/F	C/F	C/F	C/F	C/F
		☑ biota[a]	☐ Ingestion of Wild Foods					C/F

(a) This media was not evaluated for MC during the SI; however, it is a secondary media contaminated only by transport of MC from a primary media.
(b) The air pathway is addressed under the soil SLRA. Soil screening level include inhalation of fugitive dust.

MC CONCEPTUAL SITE EXPOSURE MODEL

Site: Culebra Island, PR
MRS 09 Soldado Point Mortar and Bombing Areas

Completed By: Parsons
Date Completed: 2-May-07

(1) Check the media that could be directly affected by the release.

(2) For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Briefly list other mechanisms *or reference the report for details.*

(3) Check exposure media identified in (2).

(4) Check exposure pathways that are complete or need further evaluation.

(5) Identify the receptors potentially affected by each exposure pathway. Enter "C" for current receptors, "F" for future receptors, or "C/F" for both current and future receptors.

Media	Transport Mechanisms	Exposure Media	Exposure Pathways	Current & Future Receptors: Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Ecological
☑ Surface Soil (0-2 inches)	Direct release to surface soil → check soil ☑ Migration or leaching to subsurface → check soil ☑ Migration or leaching to groundwater → check groundwater ☐ Volatilization → check air ☑ Runoff or erosion → check surface water ☑ Uptake by plants or animals → check biota ☐ Other (list): Fugitive Dust[c]	☑ soil	☑ Incidental Soil Ingestion	C/F	C/F	C/F	C/F	C/F
			☑ Dermal Absorption of Contaminants from Soil	C/F	C/F	C/F	C/F	C/F
☑ Subsurface Soil	Direct release to subsurface soil → check soil ☑ Migration to groundwater → check groundwater ☐ Volatilization → check air ☐ Other (list):	☑ groundwater[a]	☐ Ingestion of Groundwater					
			☐ Dermal Absorption of Contaminants in Groundwater					
☐ Groundwater	Direct release to groundwater → check groundwater ☐ Volatilization → check air ☐ Flow to surface water body → check surface water ☐ Flow to sediment → check sediment ☐ Uptake by plants or animals → check biota ☐ Other (list):	☐ air[c]	☐ Inhalation of Outdoor Air					
			☐ Inhalation of Indoor Air					
			☐ Inhalation of Fugitive Dust					
☑ Surface Water	Direct release to surface water → check surface water ☐ Volatilization → check air ☑ Sedimentation → check sediment ☑ Uptake by plants or animals → check biota ☐ Other (list):	☑ surface water[a]	☑ Ingestion of Surface Water	C/F	C/F	C/F	C/F	C/F
			☑ Dermal Absorption of Contaminants in Surface Water	C/F	C/F	C/F	C/F	C/F
☑ Sediment	Direct release to sediment → check sediment ☑ Resuspension, runoff, or erosion → check surface water ☑ Uptake by plants or animals → check biota ☐ Other (list):	☑ sediment[b]	☑ Direct Contact with Sediment	C/F	C/F	C/F	C/F	C/F
		☑ biota[a]	☑ Ingestion of Wild Foods					C/F

(a) This media was not evaluated for MC during the SI; however, it is a secondary media contaminated only by transport of MC from a primary media.
(b) This media was not evaluated for MC during the SI; however, it is a primary media that may have been contaminated by direct fire.
(c) The air pathway is addressed under the soil SLRA. Soil screening level include inhilation of fugitive dust.

MC CONCEPTUAL SITE EXPOSURE MODEL

Site: Culebra Island, PR
MRS 10 Defensive Firing Area #1

Completed By: Parsons
Date Completed: 2-May-07

(1) Check the media that could be directly affected by the release.

(2) For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Briefly list other mechanisms or reference the report for details.

(3) Check exposure media identified in (2).

(4) Check exposure pathways that are complete or need further evaluation.

(5) Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, or "C/F" for both current and future receptors.

Media	Transport Mechanisms	Exposure Media	Exposure Pathways	Current & Future Receptors: Residents (adults or children)	Commercial or Industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Ecological
☑ Surface Soil (0-2 inches)	☑ Migration or leaching to subsurface → check soil ☑ Migration or leaching to groundwater → check groundwater ☐ Volatilization → check air ☑ Runoff or erosion → check surface water ☑ Uptake by plants or animals → check biota ☑ Other (list): Fugitive Dust[b]	☑ soil	☑ Incidental Soil Ingestion ☑ Dermal Absorption of Contaminants from Soil	C/F C/F	C/F C/F	C/F C/F	C/F C/F	C/F C/F
☑ Subsurface Soil	☑ Migration to groundwater → check groundwater ☐ Volatilization → check air ☐ Other (list):	☑ groundwater[a]	☐ Ingestion of Groundwater ☐ Dermal Absorption of Contaminants in Groundwater					
☐ Groundwater	☐ Volatilization → check air ☐ Flow to surface water body → check surface water ☐ Flow to sediment → check sediment ☐ Uptake by plants or animals → check biota ☐ Other (list):	☐ air[a]	☐ Inhalation of Outdoor Air ☐ Inhalation of Indoor Air ☐ Inhalation of Fugitive Dust					
☐ Surface Water	☐ Volatilization → check air ☐ Sedimentation → check sediment ☐ Uptake by plants or animals → check biota ☐ Other (list):	☑ surface water[a]	☑ Ingestion of Surface Water ☑ Dermal Absorption of Contaminants in Surface Water					C/F C/F
☐ Sediment	☐ Resuspension, runoff, or erosion → check surface water ☐ Uptake by plants or animals → check biota ☐ Other (list):	☑ sediment[a]	☑ Direct Contact with Sediment					C/F
		☑ biota[a]	☑ Ingestion of Wild Foods					C/F

(a) This media was not evaluated for MC during the SI; however, it is a secondary media contaminated only by transport of MC from a primary media.
(b) The air pathway is addressed under the soil SLRA. Soil screening level include inhalation of fugitive dust.

MC CONCEPTUAL SITE EXPOSURE MODEL

Site: Culebra Island, PR
MRS 11 Defensive Firing Area #2

Completed By: Parsons
Date Completed: 2-May-07

(1) Check the media that could be directly affected by the release.

(2) For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Briefly list other mechanisms or reference the report for details.

(3) Check exposure media identified in (2).

(4) Check exposure pathways that are complete or need further evaluation.

(5) Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, or "C/F" for both current and future receptors.

Media	Transport Mechanisms	Exposure Media	Exposure Pathways	Current & Future Receptors: Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Ecological
☑ Surface Soil (0-2 inches)	Direct release to surface soil → check soil ☑ Migration or leaching to subsurface → check soil ☑ Migration or leaching to groundwater → check groundwater ☐ Volatilization → check air ☑ Runoff or erosion → check surface water ☑ Uptake by plants or animals → check biota ☑ Other (list): Fugitive Dust[b]	☑ soil	☑ Incidental Soil Ingestion	C/F	C/F	C/F	C/F	C/F
			☑ Dermal Absorption of Contaminants from Soil	C/F	C/F	C/F	C/F	C/F
☑ Subsurface Soil	Direct release to subsurface soil → check soil ☑ Migration to groundwater → check groundwater ☐ Volatilization → check air ☐ Other (list):	☐ groundwater[a]	☐ Ingestion of Groundwater					
			☐ Dermal Absorption of Contaminants in Groundwater					
☐ Groundwater	Direct release to groundwater → check groundwater ☐ Volatilization → check air ☐ Flow to surface water body → check surface water ☐ Flow to sediment → check sediment ☐ Uptake by plants or animals → check biota ☐ Other (list):	☐ air[a]	☐ Inhalation of Outdoor Air					
			☐ Inhalation of Indoor Air					
			☐ Inhalation of Fugitive Dust					
☐ Surface Water	Direct release to surface water → check surface water ☐ Volatilization → check air ☐ Sedimentation → check sediment ☐ Uptake by plants or animals → check biota ☐ Other (list):	☑ surface water[a]	☑ Ingestion of Surface Water	C/F	C/F	C/F	C/F	C/F
			☑ Dermal Absorption of Contaminants in Surface Water	C/F	C/F	C/F	C/F	C/F
☐ Sediment	Direct release to sediment → check sediment ☐ Resuspension, runoff, or erosion → check surface water ☐ Uptake by plants or animals → check biota ☐ Other (list):	☑ sediment[a]	☑ Direct Contact with Sediment	C/F	C/F	C/F	C/F	C/F
		☑ biota[a]	☑ Ingestion of Wild Foods					C/F

(a) This media was not evaluated for MC during the SI; however, it is a secondary media contaminated only by transport of MC from a primary media.
(b) The air pathway is addressed under the soil SLRA. Soil screening level include inhalation of fugitive dust.

MC CONCEPTUAL SITE EXPOSURE MODEL

Site: Culebra Island, PR
MRS 12 Luis Pena Channel Water Area

Completed By: Parsons
Date Completed: 2-May-07

(1) Check the media that could be directly affected by the release.

(2) For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Briefly list other mechanisms or reference the report for details.

(3) Check exposure media identified in (2).

(4) Check exposure pathways that are complete or need further evaluation.

(5) Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, or "C/F" for both current and future receptors.

Media	Transport Mechanisms	Exposure Media	Exposure Pathways	Current & Future Receptors: Residents (adults or children)	Commercial or Industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Ecological
☐ Surface Soil (0-2 inches)	Direct release to surface soil — check soil ☐ Migration or leaching to subsurface — check soil ☐ Migration or leaching to groundwater — check groundwater ☐ Volatilization — check air ☐ Runoff or erosion — check surface water ☐ Uptake by plants or animals — check biota ☐ Other (list): Fugitive Dust	☐ soil	☐ Incidental Soil Ingestion ☐ Dermal Absorption of Contaminants from Soil					
☐ Subsurface Soil	Direct release to subsurface soil — check soil ☐ Migration to groundwater — check groundwater ☐ Volatilization — check air ☐ Other (list):	☐ groundwater	☐ Ingestion of Groundwater ☐ Dermal Absorption of Contaminants in Groundwater					
☐ Groundwater	Direct release to groundwater — check groundwater ☐ Volatilization — check air ☐ Flow to surface water body — check surface water ☐ Flow to sediment — check sediment ☐ Uptake by plants or animals — check biota ☐ Other (list):	☐ air	☐ Inhalation of Outdoor Air ☐ Inhalation of Indoor Air ☐ Inhalation of Fugitive Dust					
☐ Surface Water	Direct release to surface water — check surface water ☐ Volatilization — check air ☐ Sedimentation — check sediment ☐ Uptake by plants or animals — check biota ☐ Other (list):	☐ surface water	☐ Ingestion of Surface Water ☐ Dermal Absorption of Contaminants in Surface Water					
☐ Sediment(a)	Direct release to sediment — check sediment ☐ Resuspension, runoff, or erosion — check surface water ☐ Uptake by plants or animals — check biota ☐ Other (list):	☐ sediment	☐ Direct Contact with Sediment					
		☐ biota	☐ Ingestion of Wild Foods					

(a) The constant movement and exposure of the sand to ocean water greatly reduces the likelihood that MC remains in the soil/sediment at this MRS.

MC CONCEPTUAL SITE EXPOSURE MODEL

Site: Culebra Island, PR
MRS 13 Cayo Luis Pena Impact Area

Completed By: Parsons
Date Completed: 2-May-07

(1) Check the media that could be directly affected by the release.

(2) For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Briefly list other mechanisms or reference the report for details.

(3) Check exposure media identified in (2).

(4) Check exposure pathways that are complete or need further evaluation.

(5) Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, or "C/F" for both current and future receptors.

Media	Transport Mechanisms	Exposure Media	Exposure Pathways	Current & Future Receptors: Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Ecological
☑ Surface Soil (0-2 inches)	Direct release to surface soil → check soil ☑ Migration or leaching to subsurface → check soil ☑ Migration or leaching to groundwater → check groundwater ☐ Volatilization → check air ☑ Runoff or erosion → check surface water ☑ Uptake by plants or animals → check biota ☒ Other (list): Fugitive Dust[b]	☑ soil	☑ Incidental Soil Ingestion		C/F	C/F	C/F	C/F
			☑ Dermal Absorption of Contaminants from Soil		C/F	C/F	C/F	C/F
☑ Subsurface Soil	Direct release to subsurface soil → check soil ☑ Migration to groundwater → check groundwater ☐ Volatilization → check air ☐ Other (list):	☑ groundwater[a]	☐ Ingestion of Groundwater					
			☐ Dermal Absorption of Contaminants in Groundwater					
☐ Groundwater	Direct release to groundwater → check groundwater ☐ Volatilization → check air ☐ Flow to surface water body → check surface water ☐ Flow to sediment → check sediment ☐ Uptake by plants or animals → check biota ☐ Other (list):	☐ air[a]	☐ Inhalation of Outdoor Air					
			☐ Inhalation of Indoor Air					
			☐ Inhalation of Fugitive Dust					
☐ Surface Water	Direct release to surface water → check surface water ☐ Volatilization → check air ☐ Sedimentation → check sediment ☐ Uptake by plants or animals → check biota ☐ Other (list):	☑ surface water[a]	☐ Ingestion of Surface Water					C/F
			☐ Dermal Absorption of Contaminants in Surface Water					C/F
☐ Sediment	Direct release to sediment → check sediment ☐ Resuspension, runoff, or erosion → check surface water ☐ Uptake by plants or animals → check biota ☐ Other (list):	☑ sediment[a]	☑ Direct Contact with Sediment					C/F
		☑ biota[a]	☑ Ingestion of Wild Foods					C/F

(a) This media was not evaluated for MC during the SI; however, it is a secondary media contaminated only by transport of MC from a primary media.
(b) The air pathway is addressed under the soil SLRA. Soil screening level include inhilation of fugitive dust.

MC CONCEPTUAL SITE EXPOSURE MODEL

Site: Culebra Island, PR
MRS 14 Airport and Camp Area

Completed By: Parsons
Date Completed: 2-May-07

(1) Check the media that could be directly affected by the release.

(2) For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Briefly list other mechanisms or reference the report for details.

(3) Check exposure media identified in (2).

(4) Check exposure pathways that are complete or need further evaluation.

(5) Identify the receptors potentially affected by each exposure pathway. Enter "C" for current receptors, "F" for future receptors, or "C/F" for both current and future receptors.

Media	Transport Mechanisms	Exposure Media	Exposure Pathways	Current & Future Receptors: Residents (adults or children)	Commercial or Industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Ecological
☑ Surface Soil (0-2 inches)	☑ Migration or leaching to subsurface → check soil ☑ Migration or leaching to groundwater → check groundwater ☐ Volatilization → check air ☑ Runoff or erosion → check surface water ☑ Uptake by plants or animals → check biota ☑ Other (list): Fugitive Dust[b]	☑ soil	☑ Incidental Soil Ingestion ☑ Dermal Absorption of Contaminants from Soil	C/F C/F	C/F C/F	C/F C/F	C/F C/F	C/F C/F
☑ Subsurface Soil	☑ Migration to groundwater → check groundwater ☐ Volatilization → check air ☐ Other (list):	☑ groundwater[a]	☐ Ingestion of Groundwater ☐ Dermal Absorption of Contaminants in Groundwater					
☐ Groundwater	☐ Volatilization → check air ☐ Flow to surface water body → check surface water ☐ Flow to sediment → check sediment ☐ Uptake by plants or animals → check biota ☐ Other (list):	☐ air[a]	☐ Inhalation of Outdoor Air ☐ Inhalation of Indoor Air ☐ Inhalation of Fugitive Dust					
☐ Surface Water	☐ Volatilization → check air ☐ Sedimentation → check sediment ☐ Uptake by plants or animals → check biota ☐ Other (list):	☑ surface water[a]	☑ Ingestion of Surface Water ☑ Dermal Absorption of Contaminants in Surface Water	C/F C/F	C/F C/F	C/F C/F	C/F C/F	C/F C/F
☐ Sediment	☐ Resuspension, runoff, or erosion → check surface water ☐ Uptake by plants or animals → check biota ☐ Other (list):	☑ sediment[a]	☑ Direct Contact with Sediment	C/F	C/F	C/F	C/F	C/F
		☐ biota[a]	☐ Ingestion of Wild Foods					C/F

(a) This media was not evaluated for MC during the SI; however, it is a secondary media contaminated only by transport of MC from a primary media.
(b) The air pathway is addressed under the soil SLRA. Soil screening level include inhilation of fugitive dust.

APPENDIX K
MRSPP EVALUATION

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MRSPP Evaluation

MRS 02

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Table A
MRS Background Information

DIRECTIONS: Record the background information below for the MRS to be evaluated. Much of this information is available from DoD databases, such as RMIS. If the MRS is located on a FUDS property, the suitable FUDS property information should be substituted. In the MRS summary, briefly describe the UXO, DMM, or MC that are known or suspected to be present, the exposure setting (the MRS's physical environment), any other incidental non-munitions related contaminants found at the MRS (e.g., benzene, trichloroethylene), and any potentially exposed human and ecological receptors. Include a map of the MRS, if one is available.

Munitions Response Site Name: MRS-02 Northwest Peninsula, Cerro Balcon, and Adjacent Cayos

Component: US Navy and US Marines

Installation/Property Name: Culebra Island

Location (City, County, State):Culebra, Puerto Rico

Site Name (RMIS ID)/Project Name (Project No.): MRS 2 Northwest Peninsula, Cerro Balcon, and Adjacent Cayos (I02PR006802)

Date Information Entered/Updated: January 2007/April 2007

Point of Contact (Name/Phone): Mr. Charles D. Fales, Florida FUDS Manager / (904) 232-1017

Project Phase (check only one):

❑ PA	✓SI	❑ RI	❑ FS	❑ RD
❑ RA-C	❑ RIP	❑ RA-O	❑ RC	❑ LTM

Media Evaluated (check all that apply):

❑Groundwater	❑Sediment (human receptor)
✓ Surface soil	❑ Surface Water (ecological receptor)
❑Sediment (ecological receptor)	❑ Surface Water (human receptor)

MRS Summary:

MRS Description: Describe the munitions-related activities that occurred at the installation, the dates of operation, and the UXO, DMM (by type of munition, if known) or munitions constituents (by type, if known) known or suspected to be present):

Culebra Island and the surrounding cays and cayos was used for aerial bombing, maneuvers, artillery firing, and amphibious training by the US Navy and Marines between 1902 and 1975. Many different training operations were conducted at this site and complete records are not available to designate specific ranges or range complexes. As such, the Island of Culebra and surrounding cays and cayos were divided into 14 munitions response sites (MRS) based on the islands geography and historic military use. MRS 02, consisting of approximately 660 acres, is comprised of the Northwest Peninsula, Cerro Balcon, Mortar Range and Adjacent Cayos. The Navy conducted Fleet Maneuvers and Fleet Landing Exercises (FLEX) on MRS 02 between 1923 and 1941. During these exercises Northwest Peninsula and the surrounding cays were heavily bombarded with High Explosive (HE) bombs, projectiles, and rockets, as well as illumination and practice rounds.

Description of Pathways for Human and Ecological Receptors:

Surface Soil was investigated. Pathways are complete as access to the surface soil is unrestricted, although natural barriers are present.

Description of Receptors (Human and Ecological):
MRS 02 includes a USFWS refuge which contains nesting areas for protected seabirds and sensitive habitats. Private homes, hotels, a campground and public beaches are also present.

Table 1

EHE Module: Munitions Type Data Element Table

DIRECTIONS: Below are 11 classifications of munitions and their descriptions. Circle the score(s) that correspond with **all** munitions types known or suspected to be present at the MRS.

Note: The terms *practice munitions, small arms, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Sensitive	All UXO that are considered likely to function upon any interaction with exposed persons [e.g., submunitions, 40mm high-explosive (HE) grenades, white phosphorus (WP) munitions, high-explosive antitank (HEAT) munitions, and practice munitions with sensitive fuzes, but excluding all other practice munitions]. All hand grenades containing energetic filler. Bulk primary explosives, or mixtures of these with environmental media, such that the mixture poses an explosive hazard.	***30***
High explosive (used or damaged)	All UXO containing a high-explosive filler (e.g., RDX, Composition B), that are not considered "sensitive." All DMM containing a high-explosive filler that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	***25***
Pyrotechnic (used or damaged)	All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades). All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	***20***
High explosive (unused)	All DMM containing a high explosive filler that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	15
Propellant	All UXO containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor). All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are: ▪ Damaged by burning or detonation ▪ Deteriorated to the point of instability.	***15***
Bulk secondary high explosives, pyrotechnics, or propellant	All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor), that are deteriorated. Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture poses an explosive hazard.	10
Pyrotechnic (*not* used or damaged)	All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	10
Practice	All UXO that are practice munitions that are not associated with a sensitive fuze. All DMM that are practice munitions that are not associated with a sensitive fuze and that have not: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	***5***
Riot control	All UXO or DMM containing a riot control agent filler (e.g., tear gas).	3
Small arms	All used munitions or DMM that are categorized as small arms ammunition [Physical evidence or historical evidence that no other types of munitions (e.g., grenades, subcaliber training rockets, demolition charges) were used or are present on the MRS is required for selection of this category.].	***2***
Evidence of no munitions	Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0
MUNITIONS TYPE	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).	***30***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Munitions Type*** classifications in the space provided.

Munitions include HE bombs, various mortars rockets, illumination rounds, and artillery. Mortars and 75 mm artillery are rated sensitive because some models contain white phosphorus fillers. (Sections 2.4.1.1 and 4.2, and Appendix J of the 2007 SI.)

Table 2

EHE Module: Source of Hazard Data Element Table

DIRECTIONS: Below are 11 classifications describing sources of explosive hazards. Circle the score(s) that correspond with **all** sources of explosive hazards known or suspected to be present at the MRS.

Note: The terms *former range, practice munitions, small arms, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	***10***
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former military range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, where the firing point is delineated as an MRS separate from the rest of a former military range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a military range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms ammunition was used [There must be evidence that no other types of munitions (e.g., grenades) were used or are present to place an MRS into this category.].	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0
SOURCE OF HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).	***10***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Source of Hazard*** classifications in the space provided.

Section 2.4.1.1 of the 2007 SI.

Table 3

EHE Module: Location of Munitions Data Element Table

DIRECTIONS: Below are eight classifications of munitions locations and their descriptions. Circle the score(s) that correspond with **all** locations where munitions are located or suspected of being found at the MRS.

Note: The terms *surface, subsurface, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Confirmed surface	◆ Physical evidence indicates that there are UXO or DMM on the surface of the MRS ◆ Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	***25***
Confirmed subsurface, active	◆ Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS, and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM. ◆ Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM.	***20***
Confirmed subsurface, stable	◆ Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed. ◆ Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	◆ There is physical evidence (e.g., munitions debris, such fragments, penetrators, projectiles, shell casings, links, fins), other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	◆ There is historical evidence indicating that UXO or DMM may be present at the MRS.	5
Subsurface, physical constraint	◆ There is physical or historical evidence indicating that UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	◆ The presence of small arms ammunition is confirmed or suspected, regardless of other factors such as geological stability [There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to place an MRS into this category.].	1
Evidence of no munitions	◆ Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0
LOCATION OF MUNITIONS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 25).	***25***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Location of Munitions*** classifications in the space provided.
Section 4.2.1 and Tables 4.2 and 4.3 of the 2007 SI.

Table 4

EHE Module: Ease of Access Data Element Table

DIRECTIONS: Below are four classifications of barrier types that can surround an MRS and their descriptions. The barrier type is directly related to the ease of public access to any explosive materiel. Circle the score that corresponds with the ease of access to the MRS.

Note: The term *barrier* is defined in Appendix C of the Primer.

Classification	Description	Score
No barrier	• There is no barrier preventing access to any part of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS, but not the entire MRS.	***8***
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
EASE OF ACCESS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).	***8***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ease of Access*** classification in the space provided.

Section 4.2 of the 2007 SI notes steep cliffs that impeded access to parts of the MRS.

Table 5

EHE Module: Status of Property Data Element Table

DIRECTIONS: Below are three classifications of the status of a property within the Department of Defense (DoD) and their descriptions. Circle the score that corresponds with the status of property at the MRS.

Classification	Description	Score
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by DoD. Examples are privately owned land or water bodies; land or water bodies owned or controlled by state, tribal, or local governments; and land or water bodies managed by other federal agencies.	***5***
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD, and DoD plans to transfer that land or water body to the control of another entity (e.g., a state, tribal, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD. With respect to property that is leased or otherwise possessed, DoD must control access to the MRS 24 hours per day, every day of the calendar year.	0
STATUS OF PROPERTY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Status of Property*** classification in the space provided.

Section 2.3 of the 2007 SI notes that all of the land acquired by the military on Culebra and the surrounding cays and cayos was excessed to the Department of the Interior or transferred to the government of Puerto Rico. The lands are currently managed by USFWS, Puerto Rico Dept. of Natural Resources or the Municipality of Culebra.

Table 6

EHE Module: Population Density Data Element Table

DIRECTIONS: Below are three classifications of population density and their descriptions. Determine the population density per square mile in the vicinity of the MRS and circle the score that corresponds with the associated population density.

Note: If an MRS is located in more than one county, use the largest population density value among the counties. If the MRS is within or borders a city or town, use the population density for the city or town, rather than that of the county.

Classification	Description	Score
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	***1***
POPULATION DENSITY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***1***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Density*** classification in the space provided.

Section 2.2.7 of the 2007 SI notes that the population density of the municipality of Culebra is 71.8 persons per mile, as obtained from Census 2000.

Table 7

EHE Module: Population Near Hazard Data Element Table

DIRECTIONS: Below are six classifications describing the number of inhabited structures near the MRS. The number of inhabited buildings relates to the population near the hazard. Determine the number of inhabited structures within two miles of the MRS boundary and circle the score that corresponds with the associated population near the known or suspected hazard.

Note: The term *inhabited structures* is defined in Appendix C of the Primer.

Classification	Description	Score
26 or more inhabited structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	***5***
16 to 25 inhabited structures	• There are 16 to 25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15 inhabited structures	• There are 11 to 15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10 inhabited structures	• There are 6 to 10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5 inhabited structures	• There are 1 to 5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0 inhabited structures	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
POPULATION NEAR HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Near Hazard*** classification in the space provided.

MRS 2 is located within a two-mile radius surrounding the Municipality of Culebra which has just fewer than 2,000 residents and many visitors throughout the year. (2007 SI Section 2.2.7 and Table 2.2).

Table 8

EHE Module: Types of Activities/Structures Data Element Table

DIRECTIONS: Below are five classifications of activities and/or inhabited structures near the hazard and their descriptions. Review the types of activities that occur and/or structures that are present within two miles of the MRS and circle the score(s) that correspond with **all** the activities/structure classifications at the MRS.

Note: The term *inhabited structure* is defined in Appendix C of the Primer.

Classification	Description	Score
Residential, educational, commercial, or subsistence	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	***5***
Parks and recreational areas	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with parks, nature preserves, or other recreational uses.	***4***
Agricultural, forestry	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with industrial activities or warehousing.	***2***
No known or recurring activities	• There are no known or recurring activities occurring up to two miles from the MRS's boundary or within the MRS's boundary.	1
TYPES OF ACTIVITIES/STRUCTURES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Types of Activities/Structures*** classifications in the space provided.

MRS 2 is located on the island of Culebra. The island has schools, residential areas, a clinic, an airport, restaurants, hotels, shops, and a few industrial companies. Beaches within a two mile radius are managed by the USFWS or PR DNR for wildlife conservation and recreational use. (2007 SI Report Sections 2.2.7 and 2.2.8)

Table 9

EHE Module: Ecological and/or Cultural Resources Data Element Table

DIRECTIONS: Below are four classifications of ecological and/or cultural resources and their descriptions. Review the types of resources present and circle the score that corresponds with the ecological and/or cultural resource classifications at the MRS.

Note: The terms *ecological resources* and *cultural resources* are defined in Appendix C of the Primer.

Classification	Description	Score
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	***3***
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0
ECOLOGICAL AND/OR CULTURAL RESOURCES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***3***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ecological and/or Cultural Resources*** classification in the space provided.

MRS 2 is a FWS wildlife refuge, protected area for seabirds. No cultural resources are documented on MRS 02 per the 2007 SI (Section 2.2.6) and the 2006 SSWP.

Table 10
Determining the EHE Module Rating

DIRECTIONS:

1. From Tables 1–9, record the data element scores in the **Score** boxes to the right.
2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.
3. Add the three **Value** boxes and record this number in the **EHE Module Total** box below.
4. Circle the appropriate range for the **EHE Module Total** below.
5. Circle the **EHE Module Rating** that corresponds to the range selected and record this value in the **EHE Module Rating** box found at the bottom of the table.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

	Source	Score	Value
Explosive Hazard Factor Data Elements			
Munitions Type	Table 1	30	40
Source of Hazard	Table 2	10	
Accessibility Factor Data Elements			
Location of Munitions	Table 3	25	38
Ease of Access	Table 4	8	
Status of Property	Table 5	5	
Receptor Factor Data Elements			
Population Density	Table 6	1	14
Population Near Hazard	Table 7	5	
Types of Activities/ Structures	Table 8	5	
Ecological and /or Cultural Resources	Table 9	3	
EHE MODULE TOTAL			92

EHE Module Total	EHE Module Rating
92 to 100	*A*
82 to 91	B
71 to 81	C
60 to 70	D
48 to 59	E
38 to 47	F
less than 38	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected Explosive Hazard
EHE MODULE RATING	***A***

Table 11

CHE Module: CWM Configuration Data Element Table

DIRECTIONS: Below are seven classifications of CWM configuration and their descriptions. Circle the score(s) that correspond to **all** CWM configurations known or suspected to be present at the MRS.

Note: The terms *CWM/UXO, CWM/DMM, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
CWM, explosive configuration either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is: • Explosively configured CWM that are UXO (i.e., CWM/UXO). • Explosively configured CWM that are DMM (i.e., CWM/DMM) that have been damaged.	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged, or nonexplosively configured CWM/DMM, or CWM not configured as a munition, that are commingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are undamaged DMM	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is: • Nonexplosively configured CWM/DMM. • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• Only CAIS, other than CAIS K941 and K942, are known or suspected of being present at the MRS.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	***0***
CWM CONFIGURATION	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).	***0***

DIRECTIONS: Document any MRS-specific data used in selecting the ***CWM Configuration*** classifications in the space provided.

There is no historical or anecdotal evidence that CWM were ever used on this MRS. (Sections 2.5 and 4.2 of the 2007 SI Report). Tables 12-19 have been omitted.

Table 20
Determining the CHE Module Rating

DIRECTIONS:

1. From Tables 11–19, record the data element scores in the **Score** boxes to the right.
2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.
3. Add the three **Value** boxes and record this number in the **CHE Module Total** box below.
4. Circle the appropriate range for the **CHE Module Total** below.
5. Circle the **CHE Module Rating** that corresponds to the range selected and record this value in the **CHE Module Rating** box found at the bottom of the table.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

	Source	Score	Value
CWM Hazard Factor Data Elements			
CWM Configuration	Table 11	0	0
Sources of CWM	Table 12	0	
Accessibility Factor Data Elements			
Location of CWM	Table 13	0	0
Ease of Access	Table 14	0	
Status of Property	Table 15	0	
Receptor Factor Data Elements			
Population Density	Table 16	0	0
Population Near Hazard	Table 17	0	
Types of Activities/ Structures	Table 18	0	
Ecological and /or Cultural Resources	Table 19	0	
CHE MODULE TOTAL			0

CHE Module Total	CHE Module Rating
92 to 100	A
82 to 91	B
71 to 81	C
60 to 70	D
48 to 59	E
38 to 47	F
less than 38	**G**
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected CWM Hazard
CHE MODULE RATING	***No Known or Suspected CWM Hazard***

Table 21

HHE Module: Groundwater Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's groundwater and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the groundwater, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$
100 > CHF > 2	M (Medium)	
2 > CHF	L (Low)	

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the groundwater is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in groundwater has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the groundwater to a potential point of exposure (possibly due to geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater receptors at the MRS.

Classification	Description	Value
Identified	There is a threatened water supply well downgradient of the source and the groundwater is a current source of drinking water or source of water for other beneficial uses such as irrigation/agriculture (equivalent to Class I or IIA aquifer).	H
Potential	There is no threatened water supply well downgradient of the source and the groundwater is currently or potentially usable for drinking water, irrigation, or agriculture (equivalent to Class I, IIA, or IIB aquifer).	M
Limited	There is no potentially threatened water supply well downgradient of the source and the groundwater is not considered a potential source of drinking water and is of limited beneficial use (equivalent to Class IIIA or IIIB aquifer, or where perched aquifer exists only).	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Groundwater MC Hazard

Per TPP concurrence, no groundwater samples were collected as part of the SI.

Table 22

HHE Module: Surface Water – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for human endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF Scale	CHF Value	Sum The Ratios	
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L

MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L

RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Surface Water (Human Endpoint) MC Hazard

Per TPP concurrence, no surface water samples were collected as part of the SI

Table 23

HHE Module: Sediment – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the site's sediment and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value.** If there is no known or suspected MC hazard for human endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios

CHF Scale	CHF Value	Sum The Ratios	
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right maximum value = H).		

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Sediment (Human Endpoint) MC Hazard

Per TPP concurrence, no sediment samples were collected at this site as part of the SI

Table 24

HHE Module: Surface Water – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF Scale	CHF Value	Sum the Ratios
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$
100 > CHF > 2	M (Medium)	
2 > CHF	L (Low)	

CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L
RECEPTOR FACTOR	DIRECTIONS: Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Surface Water (Ecological Endpoint) MC Hazard

Per TPP concurrence, no surface water samples were collected as part of the SI

Table 25

HHE Module: Sediment – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's sediment and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios

CHF Scale	CHF Value	Sum the Ratios	
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L

MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L

RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Sediment (Ecological Endpoint) MC Hazard

Per TPP concurrence, no sediment samples were collected at this site as part of the SI

Table 26

HHE Module: Surface Soil Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface soil and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the surface soil, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratio
Aluminum	32000	77000	0.42
Iron	83000	23000	3.6
Strontium	50	46000	0.0010
Zinc	150	23000	0.0065
CHF Scale	**CHF Value**	**Sum the Ratios**	**4.02**
CHF > 100	**H (High)**	$CHF = \sum$ [Maximum Concentration of Contaminant] / [Comparison Value for Contaminant]	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	***M***

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface soil migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface soil is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface soil has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface soil to a potential point of exposure (possibly due to presence of geological structures or physical controls).	***L***
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	**L**

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface soil receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface soil to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface soil to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface soil to which contamination has moved or can move.	***L***
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	**L**

No Known or Suspected Surface Soil MC Hazard	t

Soil samples are from Cayo Lobo and Cerro Balcon collected by Ellis Environmental. (SI Report Section 4.2.2.5). Ambient soil samples collected are used to for metals comparison per TPP concurrence. Contaminants that are attributable to DoD activities (per Table 4.1 2007 SI Report), with comparison values developed, that exceed the metals comparison values contribute to the score.

Pathway and receptor values are rated low given that iron may be attributable to volcanic rocks on the site. 2007 SI 5.1.3.2).

Table 27

HHE Module: Supplemental Contaminant Hazard Factor Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: **Only use this table if there are more than five contaminants present at the MRS.** This is a supplemental table designed to hold information about contaminants that do not fit in the previous tables. Indicate the **media** in which these contaminants are present. Then record all **contaminants**, their **maximum concentrations** and their **comparison values** (from Appendix B) in the table below. Calculate and record the **ratio** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the CHF for each medium on the appropriate media-specific tables.

Note: Remember not to add ratios from different media.

Media	Contaminant	Maximum Concentration	Comparison Value	Ratio

Table 28

Determining the HHE Module Rating

DIRECTIONS:

1. Record the letter values (H, M, L) for the **Contaminant Hazard, Migration Pathway, and Receptor Factors** for the media (from Tables 21–26) in the corresponding boxes below.
2. Record the media's three-letter combinations in the **Three-Letter Combination** boxes below (three-letter combinations are arranged from Hs to Ms to Ls).
3. Using the reference provided below, determine each media's rating (A–G) and record the letter in the corresponding **Media Rating** box below.

Media (Source)	Contaminant Hazard Factor Value	Migratory Pathway Factor Value	Receptor Factor Value		Three-Letter Combination (Hs-Ms-Ls)		Media Rating (A-G)
Groundwater (Table 21)							
Surface Water/Human Endpoint (Table 22)	-	-	-		-		-
Sediment/Human Endpoint (Table 23)	-	-	-		-		-
Surface Water/Ecological Endpoint (Table 24)	-	-	-		-		-
Sediment/Ecological Endpoint (Table 25)	-	-	-		-		-
Surface Soil (Table 26)	M	L	L		MLL		F

DIRECTIONS (cont.):

4. Select the single highest Media Rating (A is highest; G is lowest) and enter the letter in the **HHE Module Rating** box below.

Note:

An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more media, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

HHE MODULE RATING	*F*

HHE Ratings (for reference only)

Combination	Rating
HHH	A
HHM	B
HHL	C
HMM	C
HML	D
MMM	D
HLL	E
MML	E
MLL	F
LLL	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected MC Hazard

Table 29
MRS Priority

DIRECTIONS: In the chart below, circle the letter **rating** for each module recorded in Table 10 (EHE), Table 20 (CHE), and Table 28 (HHE). Circle the corresponding numerical **priority** for each module. If information to determine the module rating is not available, choose the appropriate alternative module rating. The MRS priority is the single highest priority; record this number in the **MRS or Alternative Priority** box at the bottom of the table.

Note: An MRS assigned Priority 1 has the highest relative priority; an MRS assigned Priority 8 has the lowest relative priority. Only an MRS with CWM known or suspected to be present can be assigned Priority 1; an MRS that has CWM known or suspected to be present cannot be assigned Priority 8.

EHE Rating	Priority	CHE Rating	Priority	HHE Rating	Priority
		A	1		
A	***2***	B	2	A	2
B	3	C	3	B	3
C	4	D	4	C	4
D	5	E	5	D	5
E	6	F	6	E	6
F	7	G	7	***F***	***7***
G	8			G	8
Evaluation Pending		Evaluation Pending		Evaluation Pending	
No Longer Required		No Longer Required		No Longer Required	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		No Known or Suspected MC Hazard	
MRS or ALTERNATIVE PRIORITY				***2***	

MRSPP Evaluation

MRS 03

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Table A
MRS Background Information

DIRECTIONS: Record the background information below for the MRS to be evaluated. Much of this information is available from DoD databases, such as RMIS. If the MRS is located on a FUDS property, the suitable FUDS property information should be substituted. In the MRS summary, briefly describe the UXO, DMM, or MC that are known or suspected to be present, the exposure setting (the MRS's physical environment), any other incidental non-munitions related contaminants found at the MRS (e.g., benzene, trichloroethylene), and any potentially exposed human and ecological receptors. Include a map of the MRS, if one is available.

Munitions Response Site Name: MRS 03- Flamenco Bay Water Area

Component: US Navy and US Marines

Installation/Property Name: Culebra Island

Location (City, County, State):Culebra, Puerto Rico

Site Name (RMIS ID)/Project Name (Project No.): MRS 3 Flamenco Bay Water Area (I02PR006803)

Date Information Entered/Updated: January 2007/September 2007

Point of Contact (Name/Phone): Mr. Charles D. Fales, Florida FUDS Manager / (904) 232-1017

Project Phase (check only one):

❑ PA	✓SI	❑ RI	❑ FS	❑ RD
❑ RA-C	❑ RIP	❑ RA-O	❑ RC	❑ LTM

Media Evaluated (check all that apply):

❑Groundwater	❑Sediment (human receptor)
❑ Surface soil	❑ Surface Water (ecological receptor)
❑Sediment (ecological receptor)	❑ Surface Water (human receptor)

MRS Summary:

MRS Description: Describe the munitions-related activities that occurred at the installation, the dates of operation, and the UXO, DMM (by type of munition, if known) or munitions constituents (by type, if known) known or suspected to be present):

Culebra Island and the surrounding cays and cayos was used for aerial bombing, maneuvers, artillery firing, and amphibious training by the US Navy and Marines between 1902 and 1975. Many different training operations were conducted at this site and complete records are not available to designate specific ranges or range complexes. As such, the Island of Culebra and surrounding cays and cayos were divided into 14 munitions response sites (MRS) based on the islands geography and historic military use. MRS 03, consists of approximately 195 acres of shallow water in Flamenco Bay extending midway up the east side of Northwest Peninsula to midway up the west side of Flamenco Point. This area was used by the military for amphibious training and ordnance was fired in the bay. Records show that Fleet Maneuvers and Fleet Landing Exercises (FLEX) were conducted in the area in 1939 and involved firing of 75mm shrapnel projectiles at the mouth of the bay.

Description of Pathways for Human and Ecological Receptors:

MRS 03 is an underwater MRS that is hydrologically connected to the Atlantic Ocean. The mouth of the Bay is wide and there are no tidal restrictions. The ocean would dilute MC.

Description of Receptors (Human and Ecological):
MRS 03 is a shallow bay with heavy use for recreational swimming, snorkeling and diving.

Table 1

EHE Module: Munitions Type Data Element Table

DIRECTIONS: Below are 11 classifications of munitions and their descriptions. Circle the score(s) that correspond with **all** munitions types known or suspected to be present at the MRS.

Note: The terms *practice munitions, small arms, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Sensitive	All UXO that are considered likely to function upon any interaction with exposed persons [e.g., submunitions, 40mm high-explosive (HE) grenades, white phosphorus (WP) munitions, high-explosive antitank (HEAT) munitions, and practice munitions with sensitive fuzes, but excluding all other practice munitions]. All hand grenades containing energetic filler. Bulk primary explosives, or mixtures of these with environmental media, such that the mixture poses an explosive hazard.	30
High explosive (used or damaged)	All UXO containing a high-explosive filler (e.g., RDX, Composition B), that are not considered "sensitive." All DMM containing a high-explosive filler that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	***25***
Pyrotechnic (used or damaged)	All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades). All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	20
High explosive (unused)	All DMM containing a high explosive filler that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	15
Propellant	All UXO containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor). All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are: ▪ Damaged by burning or detonation ▪ Deteriorated to the point of instability.	15
Bulk secondary high explosives, pyrotechnics, or propellant	All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor), that are deteriorated. Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture poses an explosive hazard.	10
Pyrotechnic (not used or damaged)	All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	10
Practice	All UXO that are practice munitions that are not associated with a sensitive fuze. All DMM that are practice munitions that are not associated with a sensitive fuze and that have not: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	5
Riot control	All UXO or DMM containing a riot control agent filler (e.g., tear gas).	3
Small arms	All used munitions or DMM that are categorized as small arms ammunition [Physical evidence or historical evidence that no other types of munitions (e.g., grenades, subcaliber training rockets, demolition charges) were used or are present on the MRS is required for selection of this category.].	2
Evidence of no munitions	Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0
MUNITIONS TYPE	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).	***25***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Munitions Type*** classifications in the space provided.

The site was used for firing 75 mm shrapnel projectiles at the mouth of the bay, no WP is suspected. (Section 2.4.1.2 and Appendix J of the 2007 SI.)

Table 2

EHE Module: Source of Hazard Data Element Table

DIRECTIONS: Below are 11 classifications describing sources of explosive hazards. Circle the score(s) that correspond with **all** sources of explosive hazards known or suspected to be present at the MRS.

Note: The terms *former range, practice munitions, small arms, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	***10***
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former military range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, where the firing point is delineated as an MRS separate from the rest of a former military range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a military range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms ammunition was used [There must be evidence that no other types of munitions (e.g., grenades) were used or are present to place an MRS into this category.].	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0
SOURCE OF HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).	***10***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Source of Hazard*** classifications in the space provided.

Section 2.4.1.2 of the 2007 SI.

Table 3

EHE Module: Location of Munitions Data Element Table

DIRECTIONS: Below are eight classifications of munitions locations and their descriptions. Circle the score(s) that correspond with **all** locations where munitions are located or suspected of being found at the MRS.

Note: The terms *surface, subsurface, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Confirmed surface	◆ Physical evidence indicates that there are UXO or DMM on the surface of the MRS ◆ Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	***25***
Confirmed subsurface, active	◆ Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS, and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM. ◆ Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM.	***20***
Confirmed subsurface, stable	◆ Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed. ◆ Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	◆ There is physical evidence (e.g., munitions debris, such fragments, penetrators, projectiles, shell casings, links, fins), other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	◆ There is historical evidence indicating that UXO or DMM may be present at the MRS.	5
Subsurface, physical constraint	◆ There is physical or historical evidence indicating that UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	◆ The presence of small arms ammunition is confirmed or suspected, regardless of other factors such as geological stability [There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to place an MRS into this category.].	1
Evidence of no munitions	◆ Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0
LOCATION OF MUNITIONS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 25).	***25***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Location of Munitions*** classifications in the space provided.

Section 4.3.1 and Appendix J of the 2007 SI indicates that errant munitions were confirmed at Flamenco Bay by a local diver.

Table 4

EHE Module: Ease of Access Data Element Table

DIRECTIONS: Below are four classifications of barrier types that can surround an MRS and their descriptions. The barrier type is directly related to the ease of public access to any explosive materiel. Circle the score that corresponds with the ease of access to the MRS.

Note: The term *barrier* is defined in Appendix C of the Primer.

Classification	Description	Score
No barrier	• There is no barrier preventing access to any part of the MRS (i.e., all parts of the MRS are accessible).	***10***
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS, but not the entire MRS.	8
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
EASE OF ACCESS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).	***8***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ease of Access*** classification in the space provided.

Due to boat anchoring and recreational diving in this MRS there are no barriers to access. (2007 SI Report Section 5.3.3).

Table 5

EHE Module: Status of Property Data Element Table

DIRECTIONS: Below are three classifications of the status of a property within the Department of Defense (DoD) and their descriptions. Circle the score that corresponds with the status of property at the MRS.

Classification	Description	Score
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by DoD. Examples are privately owned land or water bodies; land or water bodies owned or controlled by state, tribal, or local governments; and land or water bodies managed by other federal agencies.	***5***
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD, and DoD plans to transfer that land or water body to the control of another entity (e.g., a state, tribal, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD. With respect to property that is leased or otherwise possessed, DoD must control access to the MRS 24 hours per day, every day of the calendar year.	0
STATUS OF PROPERTY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Status of Property*** classification in the space provided.

Section 2.3 of the 2007 SI notes that all of the land acquired by the military on Culebra and the surrounding cays and cayos was excessed to the Department of the Interior or transferred to the government of Puerto Rico. The lands are currently managed by USFWS, Puerto Rico Dept. of Natural Resources or the Municipality of Culebra.

Table 6

EHE Module: Population Density Data Element Table

DIRECTIONS: Below are three classifications of population density and their descriptions. Determine the population density per square mile in the vicinity of the MRS and circle the score that corresponds with the associated population density.

Note: If an MRS is located in more than one county, use the largest population density value among the counties. If the MRS is within or borders a city or town, use the population density for the city or town, rather than that of the county.

Classification	Description	Score
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	***1***
POPULATION DENSITY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***1***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Density*** classification in the space provided.

Section 2.2.7 of the 2007 SI notes that the population density of the municipality of Culebra is 71.8 persons per mile, as obtained from Census 2000.

Table 7

EHE Module: Population Near Hazard Data Element Table

DIRECTIONS: Below are six classifications describing the number of inhabited structures near the MRS. The number of inhabited buildings relates to the population near the hazard. Determine the number of inhabited structures within two miles of the MRS boundary and circle the score that corresponds with the associated population near the known or suspected hazard.

Note: The term *inhabited structures* is defined in Appendix C of the Primer.

Classification	Description	Score
26 or more inhabited structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	***5***
16 to 25 inhabited structures	• There are 16 to 25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15 inhabited structures	• There are 11 to 15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10 inhabited structures	• There are 6 to 10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5 inhabited structures	• There are 1 to 5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0 inhabited structures	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
POPULATION NEAR HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Near Hazard*** classification in the space provided.

MRS 3 is located within a two-mile radius surrounding the Municipality of Culebra which has just under 2,000 residents and many visitors throughout the year. (2007 SI Section 2.2.7 and Table 2.2).

Table 8

EHE Module: Types of Activities/Structures Data Element Table

DIRECTIONS: Below are five classifications of activities and/or inhabited structures near the hazard and their descriptions. Review the types of activities that occur and/or structures that are present within two miles of the MRS and circle the score(s) that correspond with **all** the activities/structure classifications at the MRS.

Note: The term *inhabited structure* is defined in Appendix C of the Primer.

Classification	Description	Score
Residential, educational, commercial, or subsistence	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	***5***
Parks and recreational areas	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with parks, nature preserves, or other recreational uses.	***4***
Agricultural, forestry	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with industrial activities or warehousing.	***2***
No known or recurring activities	• There are no known or recurring activities occurring up to two miles from the MRS's boundary or within the MRS's boundary.	1
TYPES OF ACTIVITIES/STRUCTURES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Types of Activities/Structures*** classifications in the space provided.

MRS 3 is located on the island of Culebra. The island has schools, residential areas, a clinic, an airport, restaurants, hotels, shops, and a few industrial companies. Beaches within a two mile radius are managed by the USFWS or PR DNR for wildlife conservation and recreational use. (2007 SI Report Sections 2.2.7 and 2.2.8)

Table 9

EHE Module: Ecological and/or Cultural Resources Data Element Table

DIRECTIONS: Below are four classifications of ecological and/or cultural resources and their descriptions. Review the types of resources present and circle the score that corresponds with the ecological and/or cultural resource classifications at the MRS.

Note: The terms *ecological resources* and *cultural resources* are defined in Appendix C of the Primer.

Classification	Description	Score
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	***3***
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0
ECOLOGICAL AND/OR CULTURAL RESOURCES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***3***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ecological and/or Cultural Resources*** classification in the space provided.

MRS 3 is used for recreational purposes; areas within the vicinity of the site are FWS refuge areas. No cultural resources are documented on the site per the 2007 SI (Section 2.2.6) and the 2006 SSWP.

Table 10
Determining the EHE Module Rating

DIRECTIONS:

1. From Tables 1–9, record the data element scores in the **Score** boxes to the right.
2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.
3. Add the three **Value** boxes and record this number in the **EHE Module Total** box below.
4. Circle the appropriate range for the **EHE Module Total** below.
5. Circle the **EHE Module Rating** that corresponds to the range selected and record this value in the **EHE Module Rating** box found at the bottom of the table.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

	Source	Score	Value
Explosive Hazard Factor Data Elements			
Munitions Type	Table 1	25	35
Source of Hazard	Table 2	10	
Accessibility Factor Data Elements			
Location of Munitions	Table 3	25	40
Ease of Access	Table 4	10	
Status of Property	Table 5	5	
Receptor Factor Data Elements			
Population Density	Table 6	1	14
Population Near Hazard	Table 7	5	
Types of Activities/ Structures	Table 8	5	
Ecological and /or Cultural Resources	Table 9	3	
EHE MODULE TOTAL			89

EHE Module Total	EHE Module Rating
92 to 100	A
82 to 91	***B***
71 to 81	C
60 to 70	D
48 to 59	E
38 to 47	F
less than 38	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected Explosive Hazard
EHE MODULE RATING	***B***

Table 11

CHE Module: CWM Configuration Data Element Table

DIRECTIONS: Below are seven classifications of CWM configuration and their descriptions. Circle the score(s) that correspond to **all** CWM configurations known or suspected to be present at the MRS.

Note: The terms *CWM/UXO, CWM/DMM, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
CWM, explosive configuration either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is: • Explosively configured CWM that are UXO (i.e., CWM/UXO). • Explosively configured CWM that are DMM (i.e., CWM/DMM) that have been damaged.	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged, or nonexplosively configured CWM/DMM, or CWM not configured as a munition, that are commingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are undamaged DMM	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is: • Nonexplosively configured CWM/DMM. • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• Only CAIS, other than CAIS K941 and K942, are known or suspected of being present at the MRS.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	***0***
CWM CONFIGURATION	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).	***0***

DIRECTIONS: Document any MRS-specific data used in selecting the ***CWM Configuration*** classifications in the space provided.

There is no historical or anecdotal evidence that CWM were ever used on this MRS. (Sections 2.5 and 4.2 of the 2007 SI Report.). Tables 12-19 have been omitted.

Table 20
Determining the CHE Module Rating

DIRECTIONS:

1. From Tables 11–19, record the data element scores in the **Score** boxes to the right.
2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.
3. Add the three **Value** boxes and record this number in the **CHE Module Total** box below.
4. Circle the appropriate range for the **CHE Module Total** below.
5. Circle the **CHE Module Rating** that corresponds to the range selected and record this value in the **CHE Module Rating** box found at the bottom of the table.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

	Source	Score	Value
CWM Hazard Factor Data Elements			
CWM Configuration	Table 11	0	0
Sources of CWM	Table 12	0	
Accessibility Factor Data Elements			
Location of CWM	Table 13	0	0
Ease of Access	Table 14	0	
Status of Property	Table 15	0	
Receptor Factor Data Elements			
Population Density	Table 16	0	0
Population Near Hazard	Table 17	0	
Types of Activities/ Structures	Table 18	0	
Ecological and /or Cultural Resources	Table 19	0	
CHE MODULE TOTAL			0

CHE Module Total	CHE Module Rating
92 to 100	A
82 to 91	B
71 to 81	C
60 to 70	D
48 to 59	E
38 to 47	F
less than 38	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected CWM Hazard
CHE MODULE RATING	***No Known or Suspected CWM Hazard***

Table 21

HHE Module: Groundwater Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's groundwater and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the groundwater, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$
100 > CHF > 2	M (Medium)	
2 > CHF	L (Low)	

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the groundwater is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in groundwater has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the groundwater to a potential point of exposure (possibly due to geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater receptors at the MRS.

Classification	Description	Value
Identified	There is a threatened water supply well downgradient of the source and the groundwater is a current source of drinking water or source of water for other beneficial uses such as irrigation/agriculture (equivalent to Class I or IIA aquifer).	H
Potential	There is no threatened water supply well downgradient of the source and the groundwater is currently or potentially usable for drinking water, irrigation, or agriculture (equivalent to Class I, IIA, or IIB aquifer).	M
Limited	There is no potentially threatened water supply well downgradient of the source and the groundwater is not considered a potential source of drinking water and is of limited beneficial use (equivalent to Class IIIA or IIIB aquifer, or where perched aquifer exists only).	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Groundwater MC Hazard ✓

Table 22

HHE Module: Surface Water – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for human endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF Scale	CHF Value	Sum The Ratios
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$
100 > CHF > 2	M (Medium)	
2 > CHF	L (Low)	

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Surface Water (Human Endpoint) MC Hazard	✓

Table 23

HHE Module: Sediment – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the site's sediment and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for human endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios

CHF Scale	CHF Value	Sum The Ratios	
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Sediment (Human Endpoint) MC Hazard ✓

Table 24

HHE Module: Surface Water – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
CHF Scale	**CHF Value**	**Sum the Ratios**	
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record the CHF Value from above in the box to the right (maximum value = H).		

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record the single highest value from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record the single highest value from above in the box to the right (maximum value = H).	

No Known or Suspected Surface Water (Ecological Endpoint) MC Hazard ✓

Table 25

HHE Module: Sediment – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's sediment and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios

CHF Scale	CHF Value	Sum the Ratios	
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Sediment (Ecological Endpoint) MC Hazard	✓

Table 26

HHE Module: Surface Soil Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface soil and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the surface soil, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratio

CHF Scale	CHF Value	Sum the Ratios
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$
100 > CHF > 2	M (Medium)	
2 > CHF	L (Low)	

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface soil migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface soil is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface soil has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface soil to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface soil receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface soil to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface soil to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface soil to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Sediment (Ecological Endpoint) MC Hazard ✓

Table 27

HHE Module: Supplemental Contaminant Hazard Factor Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: **Only use this table if there are more than five contaminants present at the MRS.** This is a supplemental table designed to hold information about contaminants that do not fit in the previous tables. Indicate the **media** in which these contaminants are present. Then record all **contaminants**, their **maximum concentrations** and their **comparison values** (from Appendix B) in the table below. Calculate and record the **ratio** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** for each medium on the appropriate media-specific tables.

Note: Remember not to add ratios from different media.

Media	Contaminant	Maximum Concentration	Comparison Value	Ratio

Table 28

Determining the HHE Module Rating

DIRECTIONS:

1. Record the letter values (H, M, L) for the **Contaminant Hazard, Migration Pathway, and Receptor Factors** for the media (from Tables 21–26) in the corresponding boxes below.
2. Record the media's three-letter combinations in the **Three-Letter Combination** boxes below (three-letter combinations are arranged from Hs to Ms to Ls).

Using the reference provided below, determine each media's rating (A–G) and record the letter in the corresponding Media Rating box below.

Media (Source)	Contaminant Hazard Factor Value	Migratory Pathway Factor Value	Receptor Factor Value		Three-Letter Combination (Hs-Ms-Ls)		Media Rating (A-G)
Groundwater (Table 21)							
Surface Water/Human Endpoint (Table 22)	-	-	-		-		-
Sediment/Human Endpoint (Table 23)	-	-	-		-		-
Surface Water/Ecological Endpoint (Table 24)	-	-	-		-		-
Sediment/Ecological Endpoint (Table 25)	-	-	-		-		-
Surface Soil (Table 26)							

DIRECTIONS (cont.):

3. Select the single highest Media Rating (A is highest; G is lowest) and enter the letter in the **HHE Module Rating** box below.

Note:

An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more media, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

HHE MODULE RATING	

HHE Ratings (for reference only)

Combination	Rating
HHH	A
HHM	B
HHL	C
HMM	C
HML	D
MMM	D
HLL	E
MML	E
MLL	F
LLL	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected MC Hazard

MRS 03 is an underwater MRS that is hydrologically connected to the Atlantic Ocean. The mouth of the Bay is wide and there are no tidal restrictions. The ocean would dilute MC; therefore, an MC hazard cannot exist in this area

Table 29
MRS Priority

DIRECTIONS: In the chart below, circle the letter **rating** for each module recorded in Table 10 (EHE), Table 20 (CHE), and Table 28 (HHE). Circle the corresponding numerical **priority** for each module. If information to determine the module rating is not available, choose the appropriate alternative module rating. The MRS priority is the single highest priority; record this number in the **MRS or Alternative Priority** box at the bottom of the table.

Note: An MRS assigned Priority 1 has the highest relative priority; an MRS assigned Priority 8 has the lowest relative priority. Only an MRS with CWM known or suspected to be present can be assigned Priority 1; an MRS that has CWM known or suspected to be present cannot be assigned Priority 8.

EHE Rating	Priority	CHE Rating	Priority	HHE Rating	Priority
		A	1		
A	2	B	2	A	2
B	***3***	C	3	B	3
C	4	D	4	C	4
D	5	E	5	D	5
E	6	F	6	E	6
F	7	G	7	F	7
G	8			G	8
Evaluation Pending		Evaluation Pending		Evaluation Pending	
No Longer Required		No Longer Required		No Longer Required	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		**No Known or Suspected MC Hazard**	
MRS or ALTERNATIVE PRIORITY				***3***	

MRSPP Evaluation

MRS 04

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Table A

MRS Background Information

DIRECTIONS: Record the background information below for the MRS to be evaluated. Much of this information is available from DoD databases, such as RMIS. If the MRS is located on a FUDS property, the suitable FUDS property information should be substituted. In the MRS summary, briefly describe the UXO, DMM, or MC that are known or suspected to be present, the exposure setting (the MRS's physical environment), any other incidental non-munitions related contaminants found at the MRS (e.g., benzene, trichloroethylene), and any potentially exposed human and ecological receptors. Include a map of the MRS, if one is available.

Munitions Response Site Name: MRS 04 - Flamenco Lagoon Maneuver Area

Component: US Navy and US Marines

Installation/Property Name: Culebra Island

Location (City, County, State):Culebra, Puerto Rico

Site Name (RMIS ID)/Project Name (Project No.): MRS 4 Flamenco Lagoon Maneuver Area (I02PR006804)

Date Information Entered/Updated: January 2007/ April 2007

Point of Contact (Name/Phone): Mr. Charles D. Fales, Florida FUDS Manager / (904) 232-1017

Project Phase (check only one):

❑ PA	✓SI	❑ RI	❑ FS	❑ RD
❑ RA-C	❑ RIP	❑ RA-O	❑ RC	❑ LTM

Media Evaluated (check all that apply):

❑Groundwater	✓Sediment (human receptor)
✓ Surface soil	❑ Surface Water (ecological receptor)
✓Sediment (ecological receptor)	❑ Surface Water (human receptor)

MRS Summary:

MRS Description: Describe the munitions-related activities that occurred at the installation, the dates of operation, and the UXO, DMM (by type of munition, if known) or munitions constituents (by type, if known) known or suspected to be present):

Culebra Island and the surrounding cays and cayos was used for aerial bombing, maneuvers, artillery firing, and amphibious training by the US Navy and Marines between 1902 and 1975. Many different training operations were conducted at this site and complete records are not available to designate specific ranges or range complexes. As such, the Island of Culebra and surrounding cays and cayos were divided into 14 munitions response sites (MRS) based on the islands geography and historic military use. MRS 04, consisting of approximately 550 acres includes Flamenco Lagoon and the hillside east of the lagoon. This area was used for direct and indirect fire of small arms, mortars and 75mm projectiles.

Description of Pathways for Human and Ecological Receptors:

Soils and sediment from Flamenco Lagoon were sampled as these are considered the most likely location for MC. Access to the site is unrestricted.

Description of Receptors (Human and Ecological):
A public beach and wildlife refuge are nearby.

Table 1

EHE Module: Munitions Type Data Element Table

DIRECTIONS: Below are 11 classifications of munitions and their descriptions. Circle the score(s) that correspond with **all** munitions types known or suspected to be present at the MRS.

Note: The terms *practice munitions, small arms, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Sensitive	All UXO that are considered likely to function upon any interaction with exposed persons [e.g., submunitions, 40mm high-explosive (HE) grenades, white phosphorus (WP) munitions, high-explosive antitank (HEAT) munitions, and practice munitions with sensitive fuzes, but excluding all other practice munitions]. All hand grenades containing energetic filler. Bulk primary explosives, or mixtures of these with environmental media, such that the mixture poses an explosive hazard.	***30***
High explosive (used or damaged)	All UXO containing a high-explosive filler (e.g., RDX, Composition B), that are not considered "sensitive." All DMM containing a high-explosive filler that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	***25***
Pyrotechnic (used or damaged)	All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades). All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	20
High explosive (unused)	All DMM containing a high explosive filler that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	15
Propellant	All UXO containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor). All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are: ▪ Damaged by burning or detonation ▪ Deteriorated to the point of instability.	***15***
Bulk secondary high explosives, pyrotechnics, or propellant	All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor), that are deteriorated. Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture poses an explosive hazard.	10
Pyrotechnic (not used or damaged)	All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	10
Practice	All UXO that are practice munitions that are not associated with a sensitive fuze. All DMM that are practice munitions that are not associated with a sensitive fuze and that have not: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	5
Riot control	All UXO or DMM containing a riot control agent filler (e.g., tear gas).	3
Small arms	All used munitions or DMM that are categorized as small arms ammunition [Physical evidence or historical evidence that no other types of munitions (e.g., grenades, subcaliber training rockets, demolition charges) were used or are present on the MRS is required for selection of this category.].	2
Evidence of no munitions	Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0
MUNITIONS TYPE	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).	***30***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Munitions Type*** classifications in the space provided.

The MRS was used for direct and indirect fire of small arms and 81mm mortars. Firing positions for 75 mm mortars were also located on the MRS. 81 mm is rated sensitive as they may contain WP fillers. (Section 2.4.1.3 and Appendix J of the 2007 SI)

Table 2

EHE Module: Source of Hazard Data Element Table

DIRECTIONS: Below are 11 classifications describing sources of explosive hazards. Circle the score(s) that correspond with **all** sources of explosive hazards known or suspected to be present at the MRS.

Note: The terms *former range, practice munitions, small arms, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	***10***
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former military range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, where the firing point is delineated as an MRS separate from the rest of a former military range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a military range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms ammunition was used [There must be evidence that no other types of munitions (e.g., grenades) were used or are present to place an MRS into this category.].	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0
SOURCE OF HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).	***10***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Source of Hazard*** classifications in the space provided.

Section 2.4.1.3 of the 2007 SI.

Table 3

EHE Module: Location of Munitions Data Element Table

DIRECTIONS: Below are eight classifications of munitions locations and their descriptions. Circle the score(s) that correspond with **all** locations where munitions are located or suspected of being found at the MRS.

Note: The terms *surface, subsurface, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Confirmed surface	• Physical evidence indicates that there are UXO or DMM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS, and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence (e.g., munitions debris, such fragments, penetrators, projectiles, shell casings, links, fins), other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	***5***
Subsurface, physical constraint	• There is physical or historical evidence indicating that UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	• The presence of small arms ammunition is confirmed or suspected, regardless of other factors such as geological stability [There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to place an MRS into this category.].	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0
LOCATION OF MUNITIONS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 25).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Location of Munitions*** classifications in the space provided.

Section 4.4 and Appendix J of the 2007 SI there is no record of MEC being found on the MRS. MEC is suspected based on the historical use of the MRS.

Table 4

EHE Module: Ease of Access Data Element Table

DIRECTIONS: Below are four classifications of barrier types that can surround an MRS and their descriptions. The barrier type is directly related to the ease of public access to any explosive materiel. Circle the score that corresponds with the ease of access to the MRS.

Note: The term *barrier* is defined in Appendix C of the Primer.

Classification	Description	Score
No barrier	• There is no barrier preventing access to any part of the MRS (i.e., all parts of the MRS are accessible).	***10***
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS, but not the entire MRS.	8
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
EASE OF ACCESS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).	***10***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ease of Access*** classification in the space provided.

The 2007 SI team indicated that there are no access restrictions (2007 SI Section 5.4.3.1).

Table 5

EHE Module: Status of Property Data Element Table

DIRECTIONS: Below are three classifications of the status of a property within the Department of Defense (DoD) and their descriptions. Circle the score that corresponds with the status of property at the MRS.

Classification	Description	Score
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by DoD. Examples are privately owned land or water bodies; land or water bodies owned or controlled by state, tribal, or local governments; and land or water bodies managed by other federal agencies.	*5*
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD, and DoD plans to transfer that land or water body to the control of another entity (e.g., a state, tribal, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD. With respect to property that is leased or otherwise possessed, DoD must control access to the MRS 24 hours per day, every day of the calendar year.	0
STATUS OF PROPERTY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	*5*

DIRECTIONS: Document any MRS-specific data used in selecting the ***Status of Property*** classification in the space provided.

Section 2.3 of the 2007 SI notes that all of the land acquired by the military on Culebra and the surrounding cays and cayos was excessed to the Department of the Interior or transferred to the government of Puerto Rico. The lands are currently managed by USFWS, Puerto Rico Dept. of Natural Resources, the Municipality of Culebra, or by private owners.

Table 6

EHE Module: Population Density Data Element Table

DIRECTIONS: Below are three classifications of population density and their descriptions. Determine the population density per square mile in the vicinity of the MRS and circle the score that corresponds with the associated population density.

Note: If an MRS is located in more than one county, use the largest population density value among the counties. If the MRS is within or borders a city or town, use the population density for the city or town, rather than that of the county.

Classification	Description	Score
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	***1***
POPULATION DENSITY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***1***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Density*** classification in the space provided.

Section 2.2.7 of the 2007 SI notes that the population density of the municipality of Culebra is 71.8 persons per mile, as obtained from Census 2000.

Table 7

EHE Module: Population Near Hazard Data Element Table

DIRECTIONS: Below are six classifications describing the number of inhabited structures near the MRS. The number of inhabited buildings relates to the population near the hazard. Determine the number of inhabited structures within two miles of the MRS boundary and circle the score that corresponds with the associated population near the known or suspected hazard.

Note: The term *inhabited structures* is defined in Appendix C of the Primer.

Classification	Description	Score
26 or more inhabited structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	***5***
16 to 25 inhabited structures	• There are 16 to 25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15 inhabited structures	• There are 11 to 15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10 inhabited structures	• There are 6 to 10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5 inhabited structures	• There are 1 to 5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0 inhabited structures	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
POPULATION NEAR HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Near Hazard*** classification in the space provided.

MRS 4 is located within a two-mile radius surrounding the Municipality of Culebra which has just fewer than 2,000 residents and many visitors throughout the year. (2007 SI Section 2.2.7 and Table 2.2).

Table 8

EHE Module: Types of Activities/Structures Data Element Table

DIRECTIONS: Below are five classifications of activities and/or inhabited structures near the hazard and their descriptions. Review the types of activities that occur and/or structures that are present within two miles of the MRS and circle the score(s) that correspond with **all** the activities/structure classifications at the MRS.

Note: The term *inhabited structure* is defined in Appendix C of the Primer.

Classification	Description	Score
Residential, educational, commercial, or subsistence	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	***5***
Parks and recreational areas	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with parks, nature preserves, or other recreational uses.	***4***
Agricultural, forestry	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with industrial activities or warehousing.	*2*
No known or recurring activities	• There are no known or recurring activities occurring up to two miles from the MRS's boundary or within the MRS's boundary.	1
TYPES OF ACTIVITIES/STRUCTURES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Types of Activities/Structures*** classifications in the space provided.

MRS 4 is located on the island of Culebra. The island has schools, residential areas, a clinic, an airport, restaurants, hotels, shops, and a few industrial companies. Beaches within a two mile radius are managed by the USFWS or PR DNR for wildlife conservation and recreational use. (2007 SI Report Sections 2.2.7 and 2.2.8)

Table 9

EHE Module: Ecological and/or Cultural Resources Data Element Table

DIRECTIONS: Below are four classifications of ecological and/or cultural resources and their descriptions. Review the types of resources present and circle the score that corresponds with the ecological and/or cultural resource classifications at the MRS.

Note: The terms *ecological resources* and *cultural resources* are defined in Appendix C of the Primer.

Classification	Description	Score
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	***3***
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0
ECOLOGICAL AND/OR CULTURAL RESOURCES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***3***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ecological and/or Cultural Resources*** classification in the space provided.

MRS 04 is used for recreational purposes; areas within the vicinity of the site are FWS refuge areas. No cultural resources are documented on the site per the 2007 SI (Section 2.2.6) and the 2006 SSWP.

Table 10
Determining the EHE Module Rating

DIRECTIONS:

1. From Tables 1–9, record the data element scores in the **Score** boxes to the right.
2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.
3. Add the three **Value** boxes and record this number in the **EHE Module Total** box below.
4. Circle the appropriate range for the **EHE Module Total** below.
5. Circle the **EHE Module Rating** that corresponds to the range selected and record this value in the **EHE Module Rating** box found at the bottom of the table.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

	Source	Score	Value
Explosive Hazard Factor Data Elements			
Munitions Type	Table 1	30	40
Source of Hazard	Table 2	10	
Accessibility Factor Data Elements			
Location of Munitions	Table 3	5	20
Ease of Access	Table 4	10	
Status of Property	Table 5	5	
Receptor Factor Data Elements			
Population Density	Table 6	1	14
Population Near Hazard	Table 7	5	
Types of Activities/ Structures	Table 8	5	
Ecological and /or Cultural Resources	Table 9	3	
EHE MODULE TOTAL			74

EHE Module Total	EHE Module Rating
92 to 100	A
82 to 91	B
71 to 81	C
60 to 70	D
48 to 59	E
38 to 47	F
less than 38	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected Explosive Hazard
EHE MODULE RATING	***C***

Table 11

CHE Module: CWM Configuration Data Element Table

DIRECTIONS: Below are seven classifications of CWM configuration and their descriptions. Circle the score(s) that correspond to **all** CWM configurations known or suspected to be present at the MRS.

Note: The terms *CWM/UXO, CWM/DMM, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
CWM, explosive configuration either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is: • Explosively configured CWM that are UXO (i.e., CWM/UXO). • Explosively configured CWM that are DMM (i.e., CWM/DMM) that have been damaged.	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged, or nonexplosively configured CWM/DMM, or CWM not configured as a munition, that are commingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are undamaged DMM	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is: • Nonexplosively configured CWM/DMM. • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• Only CAIS, other than CAIS K941 and K942, are known or suspected of being present at the MRS.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	***0***
CWM CONFIGURATION	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).	***0***

DIRECTIONS: Document any MRS-specific data used in selecting the ***CWM Configuration*** classifications in the space provided.

There is no historical or anecdotal evidence that CWM were ever used on this MRS. (Sections 2.5 and 4.2 of the 2007 SI Report.). Tables 12-19 have been omitted.

Table 20
Determining the CHE Module Rating

DIRECTIONS:

1. From Tables 11–19, record the data element scores in the **Score** boxes to the right.
2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.
3. Add the three **Value** boxes and record this number in the **CHE Module Total** box below.
4. Circle the appropriate range for the **CHE Module Total** below.
5. Circle the **CHE Module Rating** that corresponds to the range selected and record this value in the **CHE Module Rating** box found at the bottom of the table.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

	Source	Score	Value
CWM Hazard Factor Data Elements			
CWM Configuration	Table 11	0	0
Sources of CWM	Table 12	0	
Accessibility Factor Data Elements			
Location of CWM	Table 13	0	0
Ease of Access	Table 14	0	
Status of Property	Table 15	0	
Receptor Factor Data Elements			
Population Density	Table 16	0	0
Population Near Hazard	Table 17	0	
Types of Activities/ Structures	Table 18	0	
Ecological and /or Cultural Resources	Table 19	0	
CHE MODULE TOTAL			0

CHE Module Total	CHE Module Rating
92 to 100	A
82 to 91	B
71 to 81	C
60 to 70	D
48 to 59	E
38 to 47	F
less than 38	**G**
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected CWM Hazard
CHE MODULE RATING	***No Known or Suspected CWM Hazard***

Table 21

HHE Module: Groundwater Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's groundwater and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the groundwater, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).		

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the groundwater is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in groundwater has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the groundwater to a potential point of exposure (possibly due to geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater receptors at the MRS.

Classification	Description	Value
Identified	There is a threatened water supply well downgradient of the source and the groundwater is a current source of drinking water or source of water for other beneficial uses such as irrigation/agriculture (equivalent to Class I or IIA aquifer).	H
Potential	There is no threatened water supply well downgradient of the source and the groundwater is currently or potentially usable for drinking water, irrigation, or agriculture (equivalent to Class I, IIA, or IIB aquifer).	M
Limited	There is no potentially threatened water supply well downgradient of the source and the groundwater is not considered a potential source of drinking water and is of limited beneficial use (equivalent to Class IIIA or IIIB aquifer, or where perched aquifer exists only).	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Groundwater MC Hazard

Per TPP concurrence, no groundwater samples were collected as part of the SI.

Table 22

HHE Module: Surface Water – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for human endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF Scale	CHF Value	Sum The Ratios
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$
100 > CHF > 2	M (Medium)	
2 > CHF	L (Low)	

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Surface Water (Human Endpoint) MC Hazard

Per TPP concurrence, no surface water samples were collected as part of the SI

Table 23

HHE Module: Sediment – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the site's sediment and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for human endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
Aluminum	21000	77000	0.27
Barium	81	5300	0.015
Beryllium	0.58	14	0.041
Copper	93	2800	0.03
CHF Scale	**CHF Value**	**Sum The Ratios**	2.13
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right maximum value = H).	***M***

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	***M***
Confined	*Information indicates a low potential for contaminant migration from the source via the sediment to a* potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***M***

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	***H***
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***H***

No Known or Suspected Sediment (Human Endpoint) MC Hazard

Background concentrations for sediment are not available. Contaminants that are attributable to DoD activities (per Table 4.1 2007 SI Report), with comparison values developed contribute to the score. MPF is rated M given existing information. RF is rated high given the recreational use of the area.

Table 24

HHE Module: Surface Water – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF Scale	CHF Value	Sum the Ratios
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$
100 > CHF > 2	M (Medium)	
2 > CHF	L (Low)	

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L

MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L

RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Surface Water (Ecological Endpoint) MC Hazard

Per TPP concurrence, no surface water samples were collected as part of the SI

Table 25

HHE Module: Sediment – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's sediment and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
Copper	93	16	5.8
Iron	40000	20000	2
Lead	12	31	0.387
Manganese	550	460	1.19
Mercury	0.040	0.2	0.2
CHF Scale	**CHF Value**	**Sum the Ratios**	**10.20**
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).		***M***

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	***M***
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***M***

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	***H***
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***H***

No Known or Suspected Sediment (Ecological Endpoint) MC Hazard

Background concentrations for sediment are not available. Contaminants that are attributable to DoD activities (per Table 4.1 2007 SI Report), with comparison values developed contribute to the score. MPF is rated M given existing information. RF is rated high given the ecological resources in the area.

Table 26

HHE Module: Surface Soil Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface soil and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the surface soil, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratio
Strontium	3400	46000	0.07
CHF Scale	**CHF Value**	**Sum the Ratios**	**0.07**
CHF > 100	H (High)	$CHF = \sum$ [Maximum Concentration of Contaminant] / [Comparison Value for Contaminant]	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).		***L***

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface soil migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface soil is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface soil has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface soil to a potential point of exposure (possibly due to presence of geological structures or physical controls).	*L*
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***L***

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface soil receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface soil to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface soil to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface soil to which contamination has moved or can move.	*L*
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***L***

No Known or Suspected Sediment (Ecological Endpoint) MC Hazard

Contaminants that are attributable to DoD activities (per Table 4.1 2007 SI Report), with comparison values developed, that exceed the metals comparison values contribute to the score.
Pathway and receptor factors are rated low given the lack of contamination measured in the soil.

Table 27

HHE Module: Supplemental Contaminant Hazard Factor Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Only use this table if there are more than five contaminants present at the MRS. This is a supplemental table designed to hold information about contaminants that do not fit in the previous tables. Indicate the **media** in which these contaminants are present. Then record all **contaminants**, their **maximum concentrations** and their **comparison values** (from Appendix B) in the table below. Calculate and record the **ratio** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** for each medium on the appropriate media-specific tables.

Note: Remember not to add ratios from different media.

Media	Contaminant	Maximum Concentration	Comparison Value	Ratio
Sediment	Iron	40000	23000	1.74
Sediment	Lead	12	400	0.03
Sediment	Mercury	0.040	23	0.002
Sediment	Molybdenum	0.27	380	0.0007
Sediment	Strontium	210	46000	0.005
Sediment	Zinc	74	23000	0.0032
Sediment Ecological Endpoint	Zinc	74	120	0.62

Table 28

Determining the HHE Module Rating

DIRECTIONS:

1. Record the letter values (H, M, L) for the **Contaminant Hazard, Migration Pathway, and Receptor Factors** for the media (from Tables 21–26) in the corresponding boxes below.
2. Record the media's three-letter combinations in the **Three-Letter Combination** boxes below (three-letter combinations are arranged from Hs to Ms to Ls).
3. Using the reference provided below, determine each media's rating (A–G) and record the letter in the corresponding Media Rating box below.

Media (Source)	Contaminant Hazard Factor Value	Migratory Pathway Factor Value	Receptor Factor Value	Three-Letter Combination (Hs-Ms-Ls)	Media Rating (A-G)
Groundwater (Table 21)					
Surface Water/Human Endpoint (Table 22)	-	-	-	-	-
Sediment/Human Endpoint (Table 23)	M	M	H	HMM	C
Surface Water/Ecological Endpoint (Table 24)	-	-	-	-	-
Sediment/Ecological Endpoint (Table 25)	M	M	H	HMM	C
Surface Soil (Table 26)	L	L	L	LLL	G

DIRECTIONS (cont.):

4. Select the single highest Media Rating (A is highest; G is lowest) and enter the letter in the **HHE Module Rating** box below.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more media, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

HHE MODULE RATING	*C*

HHE Ratings (for reference only)

Combination	Rating
HHH	A
HHM	B
HHL	C
HMM	C
HML	D
MMM	D
HLL	E
MML	E
MLL	F
LLL	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected MC Hazard

Table 29
MRS Priority

DIRECTIONS: In the chart below, circle the letter **rating** for each module recorded in Table 10 (EHE), Table 20 (CHE), and Table 28 (HHE). Circle the corresponding numerical **priority** for each module. If information to determine the module rating is not available, choose the appropriate alternative module rating. The MRS priority is the single highest priority; record this number in the **MRS or Alternative Priority** box at the bottom of the table.

Note: An MRS assigned Priority 1 has the highest relative priority; an MRS assigned Priority 8 has the lowest relative priority. Only an MRS with CWM known or suspected to be present can be assigned Priority 1; an MRS that has CWM known or suspected to be present cannot be assigned Priority 8.

EHE Rating	Priority	CHE Rating	Priority	HHE Rating	Priority
		A	1		
A	2	B	2	A	2
B	3	C	3	B	3
C	***4***	D	4	***C***	***4***
D	5	E	5	D	5
E	6	F	6	E	6
F	7	G	7	F	7
G	8			G	8
Evaluation Pending		Evaluation Pending		Evaluation Pending	
No Longer Required		No Longer Required		No Longer Required	
No Known or Suspected Explosive Hazard		***No Known or Suspected CWM Hazard***		No Known or Suspected MC Hazard	
MRS or ALTERNATIVE PRIORITY				***4***	

MRSPP Evaluation

MRS 05

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Table A
MRS Background Information

DIRECTIONS: Record the background information below for the MRS to be evaluated. Much of this information is available from DoD databases, such as RMIS. If the MRS is located on a FUDS property, the suitable FUDS property information should be substituted. In the MRS summary, briefly describe the UXO, DMM, or MC that are known or suspected to be present, the exposure setting (the MRS's physical environment), any other incidental non-munitions related contaminants found at the MRS (e.g., benzene, trichloroethylene), and any potentially exposed human and ecological receptors. Include a map of the MRS, if one is available.

Munitions Response Site Name: MRS 05 – Combat and Mortar Range

Component: US Marine Corps

Installation/Property Name: Culebra Island

Location (City, County, State):Culebra, Puerto Rico

Site Name (RMIS ID)/Project Name (Project No.): MRS 5 Combat and Mortar Range (I02PR006805)

Date Information Entered/Updated: January 2007/ April 2007

Point of Contact (Name/Phone): Mr. Charles D. Fales, Florida FUDS Manager / (904) 232-1017

Project Phase (check only one):

❑ PA	✓SI	❑ RI	❑ FS	❑ RD
❑ RA-C	❑ RIP	❑ RA-O	❑ RC	❑ LTM

Media Evaluated (check all that apply):

❑Groundwater	✓Sediment (human receptor)
✓ Surface soil	❑ Surface Water (ecological receptor)
✓Sediment (ecological receptor)	❑ Surface Water (human receptor)

MRS Summary:

MRS Description: Describe the munitions-related activities that occurred at the installation, the dates of operation, and the UXO, DMM (by type of munition, if known) or munitions constituents (by type, if known) known or suspected to be present):

Culebra Island and the surrounding cays and cayos was used for aerial bombing, maneuvers, artillery firing, and amphibious training by the US Navy and Marines between 1902 and 1975. Many different training operations were conducted at this site and complete records are not available to designate specific ranges or range complexes. As such, the Island of Culebra and surrounding cays and cayos were divided into 14 munitions response sites (MRS) based on the islands geography and historic military use. MRS 05, consisting of approximately 2,842 acres, includes most of the landmass between Resaca Beach and Carenero Point. This area was the main on-island area used by the Marine Corps for mortar, small arms and some artillery training from 1922 through the late 1940s. MRS 05 includes 2 1936 Combat Training Areas leased with the intent of combat, target and sweep of fire range training. A 1924 standing barrage training area is also present in the MRS. Historical Records indicate that 1,500 acres of land within MRS 05 and part of MRS 06 were leased in 1924 for gun emplacements and other possible camp sites

Description of Pathways for Human and Ecological Receptors:

Soils and sediment from a pond on the site were sampled as these are considered the most likely location for MC. Access to the site is unrestricted.

Description of Receptors (Human and Ecological):
Public beaches, residences, and fish and wildlife refuge are located in the area.

Table 1

EHE Module: Munitions Type Data Element Table

DIRECTIONS: Below are 11 classifications of munitions and their descriptions. Circle the score(s) that correspond with **all** munitions types known or suspected to be present at the MRS.

Note: The terms *practice munitions, small arms, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Sensitive	All UXO that are considered likely to function upon any interaction with exposed persons [e.g., submunitions, 40mm high-explosive (HE) grenades, white phosphorus (WP) munitions, high-explosive antitank (HEAT) munitions, and practice munitions with sensitive fuzes, but excluding all other practice munitions]. All hand grenades containing energetic filler. Bulk primary explosives, or mixtures of these with environmental media, such that the mixture poses an explosive hazard.	***30***
High explosive (used or damaged)	All UXO containing a high-explosive filler (e.g., RDX, Composition B), that are not considered "sensitive." All DMM containing a high-explosive filler that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	***25***
Pyrotechnic (used or damaged)	All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades). All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	20
High explosive (unused)	All DMM containing a high explosive filler that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	15
Propellant	All UXO containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor). All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are: ▪ Damaged by burning or detonation ▪ Deteriorated to the point of instability.	15
Bulk secondary high explosives, pyrotechnics, or propellant	All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor), that are deteriorated. Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture poses an explosive hazard.	10
Pyrotechnic (not used or damaged)	All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	10
Practice	All UXO that are practice munitions that are not associated with a sensitive fuze. All DMM that are practice munitions that are not associated with a sensitive fuze and that have not: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	***5***
Riot control	All UXO or DMM containing a riot control agent filler (e.g., tear gas).	3
Small arms	All used munitions or DMM that are categorized as small arms ammunition [Physical evidence or historical evidence that no other types of munitions (e.g., grenades, subcaliber training rockets, demolition charges) were used or are present on the MRS is required for selection of this category.].	***2***
Evidence of no munitions	Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0
MUNITIONS TYPE	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).	***30***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Munitions Type*** classifications in the space provided.

HE and practice mortars and small arms were used at the MRS (Section 2.4.1.4 and Appendix J of the 2007 SI). HE mortars are rated sensitive as the models used may contain white phosphorus fillers.

Table 2

EHE Module: Source of Hazard Data Element Table

DIRECTIONS: Below are 11 classifications describing sources of explosive hazards. Circle the score(s) that correspond with **all** sources of explosive hazards known or suspected to be present at the MRS.

Note: The terms *former range, practice munitions, small arms, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	***10***
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former military range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, where the firing point is delineated as an MRS separate from the rest of a former military range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a military range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms ammunition was used [There must be evidence that no other types of munitions (e.g., grenades) were used or are present to place an MRS into this category.].	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0
SOURCE OF HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).	***10***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Source of Hazard*** classifications in the space provided.

Section 2.4.1.4 of the 2007 SI.

Table 3

EHE Module: Location of Munitions Data Element Table

DIRECTIONS: Below are eight classifications of munitions locations and their descriptions. Circle the score(s) that correspond with **all** locations where munitions are located or suspected of being found at the MRS.

Note: The terms *surface, subsurface, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Confirmed surface	◆ Physical evidence indicates that there are UXO or DMM on the surface of the MRS ◆ Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	***25***
Confirmed subsurface, active	◆ Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS, and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM. ◆ Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM.	***20***
Confirmed subsurface, stable	◆ Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed. ◆ Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	◆ There is physical evidence (e.g., munitions debris, such fragments, penetrators, projectiles, shell casings, links, fins), other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	◆ There is historical evidence indicating that UXO or DMM may be present at the MRS.	5
Subsurface, physical constraint	◆ There is physical or historical evidence indicating that UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	◆ The presence of small arms ammunition is confirmed or suspected, regardless of other factors such as geological stability [There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to place an MRS into this category.].	1
Evidence of no munitions	◆ Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0
LOCATION OF MUNITIONS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 25).	***25***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Location of Munitions*** classifications in the space provided.

Sections. 2.4.1.4 of the SI Report notes that MEC has been identified on portions of the property.

Table 4

EHE Module: Ease of Access Data Element Table

DIRECTIONS: Below are four classifications of barrier types that can surround an MRS and their descriptions. The barrier type is directly related to the ease of public access to any explosive materiel. Circle the score that corresponds with the ease of access to the MRS.

Note: The term *barrier* is defined in Appendix C of the Primer.

Classification	Description	Score
No barrier	• There is no barrier preventing access to any part of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS, but not the entire MRS.	***8***
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
EASE OF ACCESS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).	***8***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ease of Access*** classification in the space provided.

There are no fences or barriers to the MRS, however vegetation is extremely dense and restricts access to much of the northern portion of the MRS (2007 SI Report, Section 5.5.3.1).

Table 5

EHE Module: Status of Property Data Element Table

DIRECTIONS: Below are three classifications of the status of a property within the Department of Defense (DoD) and their descriptions. Circle the score that corresponds with the status of property at the MRS.

Classification	Description	Score
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by DoD. Examples are privately owned land or water bodies; land or water bodies owned or controlled by state, tribal, or local governments; and land or water bodies managed by other federal agencies.	*5*
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD, and DoD plans to transfer that land or water body to the control of another entity (e.g., a state, tribal, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD. With respect to property that is leased or otherwise possessed, DoD must control access to the MRS 24 hours per day, every day of the calendar year.	0
STATUS OF PROPERTY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	*5*

DIRECTIONS: Document any MRS-specific data used in selecting the ***Status of Property*** classification in the space provided.

Section 2.3 of the 2007 SI notes that all of the land acquired by the military on Culebra and the surrounding cays and cayos was excessed to the Department of the Interior or transferred to the government of Puerto Rico. The lands are currently managed by USFWS, Puerto Rico Dept. of Natural Resources, the Municipality of Culebra or are privately owned.

Table 6

EHE Module: Population Density Data Element Table

DIRECTIONS: Below are three classifications of population density and their descriptions. Determine the population density per square mile in the vicinity of the MRS and circle the score that corresponds with the associated population density.

Note: If an MRS is located in more than one county, use the largest population density value among the counties. If the MRS is within or borders a city or town, use the population density for the city or town, rather than that of the county.

Classification	Description	Score
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	***1***
POPULATION DENSITY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***1***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Density*** classification in the space provided.

Section 2.2.4 of the 2007 SI notes that the population density of the municipality of Culebra is 71.8 persons per mile, as obtained from Census 2000.

Table 7

EHE Module: Population Near Hazard Data Element Table

DIRECTIONS: Below are six classifications describing the number of inhabited structures near the MRS. The number of inhabited buildings relates to the population near the hazard. Determine the number of inhabited structures within two miles of the MRS boundary and circle the score that corresponds with the associated population near the known or suspected hazard.

Note: The term *inhabited structures* is defined in Appendix C of the Primer.

Classification	Description	Score
26 or more inhabited structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	***5***
16 to 25 inhabited structures	• There are 16 to 25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15 inhabited structures	• There are 11 to 15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10 inhabited structures	• There are 6 to 10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5 inhabited structures	• There are 1 to 5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0 inhabited structures	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
POPULATION NEAR HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Near Hazard*** classification in the space provided.

According to the US Census there are approximately 550 residents on site and within ¼ mile of the MRS (Table 2.2). In addition, the MRS is located within a two-mile radius of the municipality of Culebra, which has just under 2,000 residents (2007 SI Report Section 2.2.7 and Table 2.2).

Table 8

EHE Module: Types of Activities/Structures Data Element Table

DIRECTIONS: Below are five classifications of activities and/or inhabited structures near the hazard and their descriptions. Review the types of activities that occur and/or structures that are present within two miles of the MRS and circle the score(s) that correspond with **all** the activities/structure classifications at the MRS.

Note: The term *inhabited structure* is defined in Appendix C of the Primer.

Classification	Description	Score
Residential, educational, commercial, or subsistence	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	***5***
Parks and recreational areas	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with parks, nature preserves, or other recreational uses.	***4***
Agricultural, forestry	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with industrial activities or warehousing.	***2***
No known or recurring activities	• There are no known or recurring activities occurring up to two miles from the MRS's boundary or within the MRS's boundary.	1
TYPES OF ACTIVITIES/STRUCTURES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Types of Activities/Structures*** classifications in the space provided.

MRS 5 is located on the island of Culebra. The island has schools, residential areas, a clinic, an airport, restaurants, hotels, shops, and a few industrial companies. Beaches within a two mile radius are managed by the USFWS or PR DNR for wildlife conservation and recreational use. (2007 SI Report Sections 2.2.7 and 2.2.8)

Table 9

EHE Module: Ecological and/or Cultural Resources Data Element Table

DIRECTIONS: Below are four classifications of ecological and/or cultural resources and their descriptions. Review the types of resources present and circle the score that corresponds with the ecological and/or cultural resource classifications at the MRS.

Note: The terms *ecological resources* and *cultural resources* are defined in Appendix C of the Primer.

Classification	Description	Score
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	***3***
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0
ECOLOGICAL AND/OR CULTURAL RESOURCES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***3***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ecological and/or Cultural Resources*** classification in the space provided.

MRS 05 is used for recreational purposes, areas within the vicinity of the site are FWS refuge areas. No cultural resources are documented on the site per the 2007 SI (Section 2.2.6) and the 2006 SSWP.

Table 10
Determining the EHE Module Rating

DIRECTIONS:

1. From Tables 1–9, record the data element scores in the **Score** boxes to the right.
2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.
3. Add the three **Value** boxes and record this number in the **EHE Module Total** box below.
4. Circle the appropriate range for the **EHE Module Total** below.
5. Circle the **EHE Module Rating** that corresponds to the range selected and record this value in the **EHE Module Rating** box found at the bottom of the table.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

	Source	Score	Value
Explosive Hazard Factor Data Elements			
Munitions Type	Table 1	30	40
Source of Hazard	Table 2	10	
Accessibility Factor Data Elements			
Location of Munitions	Table 3	25	38
Ease of Access	Table 4	8	
Status of Property	Table 5	5	
Receptor Factor Data Elements			
Population Density	Table 6	1	14
Population Near Hazard	Table 7	5	
Types of Activities/ Structures	Table 8	5	
Ecological and /or Cultural Resources	Table 9	3	
EHE MODULE TOTAL			92

EHE Module Total	EHE Module Rating
92 to 100	**A**
82 to 91	B
71 to 81	C
60 to 70	D
48 to 59	E
38 to 47	F
less than 38	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected Explosive Hazard
EHE MODULE RATING	***A***

Table 11

CHE Module: CWM Configuration Data Element Table

DIRECTIONS: Below are seven classifications of CWM configuration and their descriptions. Circle the score(s) that correspond to **all** CWM configurations known or suspected to be present at the MRS.

Note: The terms *CWM/UXO, CWM/DMM, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
CWM, explosive configuration either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is: • Explosively configured CWM that are UXO (i.e., CWM/UXO). • Explosively configured CWM that are DMM (i.e., CWM/DMM) that have been damaged.	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged, or nonexplosively configured CWM/DMM, or CWM not configured as a munition, that are commingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are undamaged DMM	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is: • Nonexplosively configured CWM/DMM. • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• Only CAIS, other than CAIS K941 and K942, are known or suspected of being present at the MRS.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	***0***
CWM CONFIGURATION	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).	***0***

DIRECTIONS: Document any MRS-specific data used in selecting the ***CWM Configuration*** classifications in the space provided.

There is no historical or anecdotal evidence that CWM were ever used on this MRS. (Sections 2.5 and 4.2 of the 2007 SI Report). Tables 12-19 have been omitted. Sections 2.5 and 4.4 of the 2007 SI.

Table 20
Determining the CHE Module Rating

DIRECTIONS:

1. From Tables 11–19, record the data element scores in the **Score** boxes to the right.
2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.
3. Add the three **Value** boxes and record this number in the **CHE Module Total** box below.
4. Circle the appropriate range for the **CHE Module Total** below.
5. Circle the **CHE Module Rating** that corresponds to the range selected and record this value in the **CHE Module Rating** box found at the bottom of the table.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

	Source	Score	Value
CWM Hazard Factor Data Elements			
CWM Configuration	Table 11	0	0
Sources of CWM	Table 12	0	
Accessibility Factor Data Elements			
Location of CWM	Table 13	0	0
Ease of Access	Table 14	0	
Status of Property	Table 15	0	
Receptor Factor Data Elements			
Population Density	Table 16	0	0
Population Near Hazard	Table 17	0	
Types of Activities/ Structures	Table 18	0	
Ecological and /or Cultural Resources	Table 19	0	
CHE MODULE TOTAL			0

CHE Module Total	CHE Module Rating
92 to 100	A
82 to 91	B
71 to 81	C
60 to 70	D
48 to 59	E
38 to 47	F
less than 38	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected CWM Hazard
CHE MODULE RATING	***No Known or Suspected CWM Hazard***

Table 21

HHE Module: Groundwater Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's groundwater and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the CHF by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the groundwater, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$
100 > CHF > 2	M (Medium)	
2 > CHF	L (Low)	

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the groundwater is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in groundwater has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the groundwater to a potential point of exposure (possibly due to geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater receptors at the MRS.

Classification	Description	Value
Identified	There is a threatened water supply well downgradient of the source and the groundwater is a current source of drinking water or source of water for other beneficial uses such as irrigation/agriculture (equivalent to Class I or IIA aquifer).	H
Potential	There is no threatened water supply well downgradient of the source and the groundwater is currently or potentially usable for drinking water, irrigation, or agriculture (equivalent to Class I, IIA, or IIB aquifer).	M
Limited	There is no potentially threatened water supply well downgradient of the source and the groundwater is not considered a potential source of drinking water and is of limited beneficial use (equivalent to Class IIIA or IIIB aquifer, or where perched aquifer exists only).	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Groundwater MC Hazard

Per TPP concurrence, no groundwater samples were collected as part of the SI.

Table 22

HHE Module: Surface Water – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for human endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF Scale	CHF Value	Sum The Ratios	
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).		

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Surface Water (Human Endpoint) MC Hazard

Per TPP concurrence, no surface water samples were collected as part of the SI

Table 23

HHE Module: Sediment – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the site's sediment and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for human endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
Aluminum	14000	77000	0.18
Barium	29	5300	0.005
Beryllium	0.28	14	0.02
Copper	22	2800	0.007
CHF Scale	**CHF Value**	**Sum The Ratios**	1.1
CHF > 100	**H (High)**	$CHF = \sum$ [Maximum Concentration of Contaminant] / [Comparison Value for Contaminant]	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right maximum value = H).	***L***

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	***M***
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***M***

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	***L***
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***L***

No Known or Suspected Sediment (Human Endpoint) MC Hazard

Background concentrations for sediment are not available. Contaminants that are attributable to DoD activities (per Table 4.1 2007 SI Report), with comparison values developed contribute to the score. MPF is rated M given existing information. RF is rated low given the low concentration of contaminants attributable to DoD activity.

Table 24

HHE Module: Surface Water – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF Scale	CHF Value	Sum the Ratios	
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).		

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Surface Water (Ecological Endpoint) MC Hazard

Per TPP concurrence, no surface water samples were collected as part of the SI

Table 25

HHE Module: Sediment – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's sediment and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
Copper	22	16	1.375
Iron	19000	20000	0.95
Lead	2.5	31	0.08
Mercury	0.013	0.2	0.065
Zinc	32	120	0.27
CHF Scale	**CHF Value**	**Sum the Ratios**	2.74
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).		***M***

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	***M***
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***M***

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	***H***
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***H***

No Known or Suspected Sediment (Ecological Endpoint) MC Hazard

Background concentrations for sediment are not available. Contaminants that are attributable to DoD activities (per Table 4.1 2007 SI Report), with comparison values developed contribute to the score. MPF is rated M given existing information. RF is rated high given the ecological resources in the area.

Table 26

HHE Module: Surface Soil Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface soil and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the surface soil, select the box at the bottom of the table. .

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratio
Aluminum	39000	77000	0.51
Copper	160	2800	0.057
Strontium	50	46000	0.001
Zinc	120	23000	0.005
CHF Scale	**CHF Value**	**Sum the Ratios**	**0.57**
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).		***L***

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface soil migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface soil is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface soil has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface soil to a potential point of exposure (possibly due to presence of geological structures or physical controls).	***L***
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***L***

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface soil receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface soil to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface soil to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface soil to which contamination has moved or can move.	***L***
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***L***

No Known or Suspected Sediment (Ecological Endpoint) MC Hazard

Contaminants that are attributable to DoD activities (per Table 4.1 2007 SI Report), with comparison values developed, that exceed the metals comparison values contribute to the score.
Pathway and receptor factors are rated low given the lack of contamination measured in the soil.

Table 27

HHE Module: Supplemental Contaminant Hazard Factor Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Only use this table if there are more than five contaminants present at the MRS. This is a supplemental table designed to hold information about contaminants that do not fit in the previous tables. Indicate the **media** in which these contaminants are present. Then record **all contaminants**, their **maximum concentrations** and their **comparison values** (from Appendix B) in the table below. Calculate and record the ratio for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** for each medium on the appropriate media-specific tables.

Note: Remember not to add ratios from different media.

Media	Contaminant	Maximum Concentration	Comparison Value	Ratio
Sediment	Iron	19000	23000	0.83
Sediment	Lead	2.5	400	0.006
Sediment	Mercury	0.013	23	0.0006
Sediment	Molybdenum	0.23	380	0.0006
Sediment	Strontium	2400	46000	0.052
Sediment	Zinc	32	23000	0.001

Table 28

Determining the HHE Module Rating

DIRECTIONS:

1. Record the letter values (H, M, L) for the **Contaminant Hazard, Migration Pathway, and Receptor Factors** for the media (from Tables 21–26) in the corresponding boxes below.
2. Record the media's three-letter combinations in the **Three-Letter Combination** boxes below (three-letter combinations are arranged from Hs to Ms to Ls).
3. Using the reference provided below, determine each media's rating (A–G) and record the letter in the corresponding Media Rating box below.

Media (Source)	Contaminant Hazard Factor Value	Migratory Pathway Factor Value	Receptor Factor Value	Three-Letter Combination (Hs-Ms-Ls)	Media Rating (A-G)
Groundwater (Table 21)					
Surface Water/Human Endpoint (Table 22)	-	-	-	-	-
Sediment/Human Endpoint (Table 23)	L	M	L	MLL	**F**
Surface Water/Ecological Endpoint (Table 24)	-	-	-	-	-
Sediment/Ecological Endpoint (Table 25)	M	M	H	HMM	**C**
Surface Soil (Table 26)	L	L	L	LLL	**G**

DIRECTIONS (cont.):

4. Select the single highest Media Rating (A is highest; G is lowest) and enter the letter in the **HHE Module Rating** box below.

Note:

An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more media, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

HHE MODULE RATING	***C***

HHE Ratings (for reference only)

Combination	Rating
HHH	A
HHM	B
HHL	C
HMM	C
HML	D
MMM	D
HLL	E
MML	E
MLL	F
LLL	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected MC Hazard

Table 29
MRS Priority

DIRECTIONS: In the chart below, circle the letter **rating** for each module recorded in Table 10 (EHE), Table 20 (CHE), and Table 28 (HHE). Circle the corresponding numerical **priority** for each module. If information to determine the module rating is not available, choose the appropriate alternative module rating. The MRS priority is the single highest priority; record this number in the **MRS or Alternative Priority** box at the bottom of the table.

Note: An MRS assigned Priority 1 has the highest relative priority; an MRS assigned Priority 8 has the lowest relative priority. Only an MRS with CWM known or suspected to be present can be assigned Priority 1; an MRS that has CWM known or suspected to be present cannot be assigned Priority 8.

EHE Rating	Priority	CHE Rating	Priority	HHE Rating	Priority
		A	1		
A	***2***	B	2	A	2
B	3	C	3	B	3
C	4	D	4	***C***	***4***
D	5	E	5	D	5
E	6	F	6	E	6
F	7	G	7	F	7
G	8			G	8
Evaluation Pending		Evaluation Pending		Evaluation Pending	
No Longer Required		No Longer Required		No Longer Required	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		No Known or Suspected MC Hazard	
MRS or ALTERNATIVE PRIORITY				***2***	

MRSPP Evaluation

MRS 06

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Table A

MRS Background Information

DIRECTIONS: Record the background information below for the MRS to be evaluated. Much of this information is available from DoD databases, such as RMIS. If the MRS is located on a FUDS property, the suitable FUDS property information should be substituted. In the MRS summary, briefly describe the UXO, DMM, or MC that are known or suspected to be present, the exposure setting (the MRS's physical environment), any other incidental non-munitions related contaminants found at the MRS (e.g., benzene, trichloroethylene), and any potentially exposed human and ecological receptors. Include a map of the MRS, if one is available.

Munitions Response Site Name: MRS 06 – Artillery Firing Area
Component: US Marine Corps
Installation/Property Name: Culebra Island
Location (City, County, State):Culebra, Puerto Rico
Site Name (RMIS ID)/Project Name (Project No.): MRS 06 Artillery Firing Area (I02PR006806)

Date Information Entered/Updated: January 2007/ April 2007

Point of Contact (Name/Phone): Mr. Charles D. Fales, Florida FUDS Manager / (904) 232-1017

Project Phase (check only one):

❑ PA	✓SI	❑ RI	❑ FS	❑ RD
❑ RA-C	❑ RIP	❑ RA-O	❑ RC	❑ LTM

Media Evaluated (check all that apply):

❑Groundwater	❑Sediment (human receptor)
✓ Surface soil	❑ Surface Water (ecological receptor)
❑Sediment (ecological receptor)	❑ Surface Water (human receptor)

MRS Summary:

MRS Description: Describe the munitions-related activities that occurred at the installation, the dates of operation, and the UXO, DMM (by type of munition, if known) or munitions constituents (by type, if known) known or suspected to be present):

Culebra Island and the surrounding cays and cayos was used for aerial bombing, maneuvers, artillery firing, and amphibious training by the US Navy and Marines between 1902 and 1975. Many different training operations were conducted at this site and complete records are not available to designate specific ranges or range complexes. As such, the Island of Culebra and surrounding cays and cayos were divided into 14 munitions response sites (MRS) based on the islands geography and historic military use. MRS 06 consists of approximately 826 acres, located on the eastern end of Culebra from a point at the most northern tip of Mosquito Bay, northeast to a point just west of Duck Point, and east to the end of the island. It was used by the Marine Corps for artillery firing points for exercises conducted between 1922 and the 1940s. Exercises involving small arms, stokes mortars, 75mm pack howitzers, 3-inch mortars, and 37mm HE rounds were conducted in Mosquito bay in 1936. Beginning in 1936 the Marines fired 75mm projectiles from a firing point inland of Mangrove Bay at weather channel near Culebrita. In 1939 the Marines fired from 1000 yards northeast of Mosquito Bay toward the cays to the east. 37mm rounds were fire from Mosquito bay west to water targets between Point Vaca and Snapper Shoal. Portions of MRS 06 and MRS 05were leased in 1924 for gun emplacements and other possible camp sites.

Description of Pathways for Human and Ecological Receptors:

Soils at the site were sampled as these are considered the most likely location for MC. Access to the site is unrestricted and residential areas are located in the area.

Description of Receptors (Human and Ecological):
Residents are located on the MRS.

Table 1

EHE Module: Munitions Type Data Element Table

DIRECTIONS: Below are 11 classifications of munitions and their descriptions. Circle the score(s) that correspond with **all** munitions types known or suspected to be present at the MRS.

Note: The terms *practice munitions, small arms, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Sensitive	All UXO that are considered likely to function upon any interaction with exposed persons [e.g., submunitions, 40mm high-explosive (HE) grenades, white phosphorus (WP) munitions, high-explosive antitank (HEAT) munitions, and practice munitions with sensitive fuzes, but excluding all other practice munitions]. All hand grenades containing energetic filler. Bulk primary explosives, or mixtures of these with environmental media, such that the mixture poses an explosive hazard.	30
High explosive (used or damaged)	All UXO containing a high-explosive filler (e.g., RDX, Composition B), that are not considered "sensitive." All DMM containing a high-explosive filler that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	***25***
Pyrotechnic (used or damaged)	All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades). All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	20
High explosive (unused)	All DMM containing a high explosive filler that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	15
Propellant	All UXO containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor). All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are: ▪ Damaged by burning or detonation ▪ Deteriorated to the point of instability.	15
Bulk secondary high explosives, pyrotechnics, or propellant	All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor), that are deteriorated. Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture poses an explosive hazard.	10
Pyrotechnic (not used or damaged)	All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	10
Practice	All UXO that are practice munitions that are not associated with a sensitive fuze. All DMM that are practice munitions that are not associated with a sensitive fuze and that have not: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	***5***
Riot control	All UXO or DMM containing a riot control agent filler (e.g., tear gas).	3
Small arms	All used munitions or DMM that are categorized as small arms ammunition [Physical evidence or historical evidence that no other types of munitions (e.g., grenades, subcaliber training rockets, demolition charges) were used or are present on the MRS is required for selection of this category.].	***2***
Evidence of no munitions	Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0
MUNITIONS TYPE	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).	***25***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Munitions Type*** classifications in the space provided.

Munitions include mortars, HE rounds and various small arms. (Section 2.4.1.5 and Appendix J of the 2007 SI Report.) Area was used for artillery firing points into water, no WP is suspected.

Table 2

EHE Module: Source of Hazard Data Element Table

DIRECTIONS: Below are 11 classifications describing sources of explosive hazards. Circle the score(s) that correspond with **all** sources of explosive hazards known or suspected to be present at the MRS.

Note: The terms *former range, practice munitions, small arms, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	***10***
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former military range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, where the firing point is delineated as an MRS separate from the rest of a former military range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a military range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms ammunition was used [There must be evidence that no other types of munitions (e.g., grenades) were used or are present to place an MRS into this category.].	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0
SOURCE OF HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).	***10***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Source of Hazard*** classifications in the space provided.

Section 2.4.1.5 of the 2007 SI Report.

Table 3

EHE Module: Location of Munitions Data Element Table

DIRECTIONS: Below are eight classifications of munitions locations and their descriptions. Circle the score(s) that correspond with **all** locations where munitions are located or suspected of being found at the MRS.

Note: The terms *surface, subsurface, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Confirmed surface	◆ Physical evidence indicates that there are UXO or DMM on the surface of the MRS ◆ Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	◆ Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS, and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM. ◆ Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	◆ Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed. ◆ Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	◆ There is physical evidence (e.g., munitions debris, such fragments, penetrators, projectiles, shell casings, links, fins), other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	◆ There is historical evidence indicating that UXO or DMM may be present at the MRS.	***5***
Subsurface, physical constraint	◆ There is physical or historical evidence indicating that UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	◆ The presence of small arms ammunition is confirmed or suspected, regardless of other factors such as geological stability [There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to place an MRS into this category.].	1
Evidence of no munitions	◆ Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0
LOCATION OF MUNITIONS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 25).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the Location of Munitions classifications in the space provided.

There is no record of MEC or MD being found in this MRS; however, military use of this portion of the island did occur, The 2007 SI field team did not report any MEC or MD findings. (2007 SI Report Section 4.6).

Table 4

EHE Module: Ease of Access Data Element Table

DIRECTIONS: Below are four classifications of barrier types that can surround an MRS and their descriptions. The barrier type is directly related to the ease of public access to any explosive materiel. Circle the score that corresponds with the ease of access to the MRS.

Note: The term *barrier* is defined in Appendix C of the Primer.

Classification	Description	Score
No barrier	• There is no barrier preventing access to any part of the MRS (i.e., all parts of the MRS are accessible).	***10***
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS, but not the entire MRS.	8
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
EASE OF ACCESS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).	***10***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ease of Access*** classification in the space provided.

There are no fences or access barriers on the MRS. Although vegetation restricts access to some areas, access is not prevented. (2007 SI Report paragraph 5.6.3.1).

Table 5

EHE Module: Status of Property Data Element Table

DIRECTIONS: Below are three classifications of the status of a property within the Department of Defense (DoD) and their descriptions. Circle the score that corresponds with the status of property at the MRS.

Classification	Description	Score
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by DoD. Examples are privately owned land or water bodies; land or water bodies owned or controlled by state, tribal, or local governments; and land or water bodies managed by other federal agencies.	*5*
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD, and DoD plans to transfer that land or water body to the control of another entity (e.g., a state, tribal, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD. With respect to property that is leased or otherwise possessed, DoD must control access to the MRS 24 hours per day, every day of the calendar year.	0
STATUS OF PROPERTY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	*5*

DIRECTIONS: Document any MRS-specific data used in selecting the ***Status of Property*** classification in the space provided.

Section 2.4.1.5 of the 2007 SI notes that this MRS is almost entirely privately owned except for the water line which is owned by the PR DNR and FWS.

Table 6

EHE Module: Population Density Data Element Table

DIRECTIONS: Below are three classifications of population density and their descriptions. Determine the population density per square mile in the vicinity of the MRS and circle the score that corresponds with the associated population density.

Note: If an MRS is located in more than one county, use the largest population density value among the counties. If the MRS is within or borders a city or town, use the population density for the city or town, rather than that of the county.

Classification	Description	Score
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	***1***
POPULATION DENSITY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***1***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Density*** classification in the space provided.

Section 2.2.7 of the 2007 SI notes that the population density of the municipality of Culebra is 71.8 persons per mile, as obtained from Census 2000.

Table 7

EHE Module: Population Near Hazard Data Element Table

DIRECTIONS: Below are six classifications describing the number of inhabited structures near the MRS. The number of inhabited buildings relates to the population near the hazard. Determine the number of inhabited structures within two miles of the MRS boundary and circle the score that corresponds with the associated population near the known or suspected hazard.

Note: The term *inhabited structures* is defined in Appendix C of the Primer.

Classification	Description	Score
26 or more inhabited structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	***5***
16 to 25 inhabited structures	• There are 16 to 25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15 inhabited structures	• There are 11 to 15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10 inhabited structures	• There are 6 to 10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5 inhabited structures	• There are 1 to 5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0 inhabited structures	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
POPULATION NEAR HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Near Hazard*** classification in the space provided.

MRS 6 is located within a two-mile radius surrounding the Municipality of Culebra which has just fewer than 2,000 residents and many visitors throughout the year. (2007 SI Section 2.2.7 and Table 2.2).

Table 8

EHE Module: Types of Activities/Structures Data Element Table

DIRECTIONS: Below are five classifications of activities and/or inhabited structures near the hazard and their descriptions. Review the types of activities that occur and/or structures that are present within two miles of the MRS and circle the score(s) that correspond with **all** the activities/structure classifications at the MRS.

Note: The term *inhabited structure* is defined in Appendix C of the Primer.

Classification	Description	Score
Residential, educational, commercial, or subsistence	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	***5***
Parks and recreational areas	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with parks, nature preserves, or other recreational uses.	***4***
Agricultural, forestry	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with industrial activities or warehousing.	***2***
No known or recurring activities	• There are no known or recurring activities occurring up to two miles from the MRS's boundary or within the MRS's boundary.	1
TYPES OF ACTIVITIES/STRUCTURES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Types of Activities/Structures*** classifications in the space provided.

MRS 6 is located on the island of Culebra. The island has schools, residential areas, a clinic, an airport, restaurants, hotels, shops, and a few industrial companies. Beaches within a two mile radius are managed by the USFWS or PR DNR for wildlife conservation and recreational use. (2007 SI Report Sections 2.2.7 and 2.2.8)

Table 9

EHE Module: Ecological and/or Cultural Resources Data Element Table

DIRECTIONS: Below are four classifications of ecological and/or cultural resources and their descriptions. Review the types of resources present and circle the score that corresponds with the ecological and/or cultural resource classifications at the MRS.

Note: The terms *ecological resources* and *cultural resources* are defined in Appendix C of the Primer.

Classification	Description	Score
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	***3***
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0
ECOLOGICAL AND/OR CULTURAL RESOURCES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***3***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ecological and/or Cultural Resources*** classification in the space provided.

MRS 06 is used for recreational purposes; areas within the vicinity of the site are FWS refuge areas. No cultural resources are documented on the site per the 2007 SI (Section 2.2.6) and the 2006 SSWP.

Table 10
Determining the EHE Module Rating

DIRECTIONS:

1. From Tables 1–9, record the data element scores in the **Score** boxes to the right.
2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.
3. Add the three **Value** boxes and record this number in the **EHE Module Total** box below.
4. Circle the appropriate range for the **EHE Module Total** below.
5. Circle the **EHE Module Rating** that corresponds to the range selected and record this value in the **EHE Module Rating** box found at the bottom of the table.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

	Source	Score	Value
Explosive Hazard Factor Data Elements			
Munitions Type	Table 1	25	35
Source of Hazard	Table 2	10	
Accessibility Factor Data Elements			
Location of Munitions	Table 3	5	20
Ease of Access	Table 4	10	
Status of Property	Table 5	5	
Receptor Factor Data Elements			
Population Density	Table 6	1	14
Population Near Hazard	Table 7	5	
Types of Activities/ Structures	Table 8	5	
Ecological and /or Cultural Resources	Table 9	3	
EHE MODULE TOTAL			69

EHE Module Total	EHE Module Rating
92 to 100	A
82 to 91	B
71 to 81	C
60 to 70	***D***
48 to 59	E
38 to 47	F
less than 38	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected Explosive Hazard
EHE MODULE RATING	***D***

Table 11

CHE Module: CWM Configuration Data Element Table

DIRECTIONS: Below are seven classifications of CWM configuration and their descriptions. Circle the score(s) that correspond to **all** CWM configurations known or suspected to be present at the MRS.

Note: The terms *CWM/UXO, CWM/DMM, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
CWM, explosive configuration either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is: • Explosively configured CWM that are UXO (i.e., CWM/UXO). • Explosively configured CWM that are DMM (i.e., CWM/DMM) that have been damaged.	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged, or nonexplosively configured CWM/DMM, or CWM not configured as a munition, that are commingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are undamaged DMM	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is: • Nonexplosively configured CWM/DMM. • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• Only CAIS, other than CAIS K941 and K942, are known or suspected of being present at the MRS.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	***0***
CWM CONFIGURATION	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).	***0***

DIRECTIONS: Document any MRS-specific data used in selecting the ***CWM Configuration*** classifications in the space provided.

There is no historical or anecdotal evidence that CWM were ever used on this MRS. (Sections 2.5 and 4.2 of the 2007 SI Report). Tables 12-19 have been omitted.

Table 20
Determining the CHE Module Rating

DIRECTIONS:

1. From Tables 11–19, record the data element scores in the **Score** boxes to the right.
2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.
3. Add the three **Value** boxes and record this number in the **CHE Module Total** box below.
4. Circle the appropriate range for the **CHE Module Total** below.
5. Circle the **CHE Module Rating** that corresponds to the range selected and record this value in the **CHE Module Rating** box found at the bottom of the table.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

	Source	Score	Value
CWM Hazard Factor Data Elements			
CWM Configuration	Table 11	0	0
Sources of CWM	Table 12	0	
Accessibility Factor Data Elements			
Location of CWM	Table 13	0	0
Ease of Access	Table 14	0	
Status of Property	Table 15	0	
Receptor Factor Data Elements			
Population Density	Table 16	0	0
Population Near Hazard	Table 17	0	
Types of Activities/ Structures	Table 18	0	
Ecological and /or Cultural Resources	Table 19	0	
CHE MODULE TOTAL			0

CHE Module Total	CHE Module Rating
92 to 100	A
82 to 91	B
71 to 81	C
60 to 70	D
48 to 59	E
38 to 47	F
less than 38	**G**
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected CWM Hazard
CHE MODULE RATING	***No Known or Suspected CWM Hazard***

Table 21

HHE Module: Groundwater Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's groundwater and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the CHF by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the groundwater, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$
100 > CHF > 2	M (Medium)	
2 > CHF	L (Low)	

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the groundwater is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in groundwater has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the groundwater to a potential point of exposure (possibly due to geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater receptors at the MRS.

Classification	Description	Value
Identified	There is a threatened water supply well downgradient of the source and the groundwater is a current source of drinking water or source of water for other beneficial uses such as irrigation/agriculture (equivalent to Class I or IIA aquifer).	H
Potential	There is no threatened water supply well downgradient of the source and the groundwater is currently or potentially usable for drinking water, irrigation, or agriculture (equivalent to Class I, IIA, or IIB aquifer).	M
Limited	There is no potentially threatened water supply well downgradient of the source and the groundwater is not considered a potential source of drinking water and is of limited beneficial use (equivalent to Class IIIA or IIIB aquifer, or where perched aquifer exists only).	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Groundwater MC Hazard

Per TPP concurrence, no groundwater samples were collected as part of the SI.

Table 22

HHE Module: Surface Water – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for human endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF Scale	CHF Value	Sum The Ratios
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$
100 > CHF > 2	M (Medium)	
2 > CHF	L (Low)	

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Surface Water (Human Endpoint) MC Hazard

Per TPP concurrence, no surface water samples were collected as part of the SI

Table 23

HHE Module: Sediment – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the site's sediment and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for human endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios

CHF Scale	CHF Value	Sum The Ratios
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant}}$
100 > CHF > 2	M (Medium)	
2 > CHF	L (Low)	

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Sediment (Human Endpoint) MC Hazard

Per TPP concurrence, no sediment samples were collected as part of the SI.

Table 24

HHE Module: Surface Water – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF Scale	CHF Value	Sum the Ratios	
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L

MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L

RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Surface Water (Ecological Endpoint) MC Hazard

Per TPP concurrence, no surface water samples were collected as part of the SI

Table 25

HHE Module: Sediment – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's sediment and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios

CHF Scale	CHF Value	Sum the Ratios
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$
100 > CHF > 2	M (Medium)	
2 > CHF	L (Low)	

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Sediment (Ecological Endpoint) MC Hazard

Per TPP concurrence, no sediment samples were collected as part of the SI.

Table 26

HHE Module: Surface Soil Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface soil and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the surface soil, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratio
Aluminum	31000	77000	0.40
Copper	130	2800	0.046
Molybdenum	0.99	380	0.003
Strontium	270	46000	0.006
CHF Scale	**CHF Value**	**Sum the Ratios**	**0.45**
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).		***L***

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface soil migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface soil is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface soil has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface soil to a potential point of exposure (possibly due to presence of geological structures or physical controls).	*L*
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***L***

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface soil receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface soil to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface soil to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface soil to which contamination has moved or can move.	*L*
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***L***

No Known or Suspected Sediment (Ecological Endpoint) MC Hazard

Ambient soil samples collected are used to for metals comparison per TPP concurrence. Contaminants that are attributable to DoD activities (per Table 4.1 2007 SI Report), with comparison values developed, that exceed the metals comparison values contribute to the score.
Pathways and Receptors are rated low given the lack of contamination detected.

Table 27

HHE Module: Supplemental Contaminant Hazard Factor Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: ***Only use this table if there are more than five contaminants present at the MRS.*** *This is a supplemental table designed to hold information about contaminants that do not fit in the previous tables. Indicate the* **media** *in which these contaminants are present. Then record all* **contaminants**, *their* **maximum concentrations** *and their* **comparison values** *(from Appendix B) in the table below. Calculate and record the* **ratio** *for each contaminant by dividing the* **maximum concentration** *by the* **comparison value**. *Determine the* **CHF** *for each medium on the appropriate media-specific tables.*

Note: *Remember not to add ratios from different media.*

Media	Contaminant	Maximum Concentration	Comparison Value	Ratio

Table 28

Determining the HHE Module Rating

DIRECTIONS:

1. Record the letter values (H, M, L) for the **Contaminant Hazard, Migration Pathway, and Receptor Factors** for the media (from Tables 21–26) in the corresponding boxes below.
2. Record the media's three-letter combinations in the **Three-Letter Combination** boxes below (three-letter combinations are arranged from Hs to Ms to Ls).
3. Using the reference provided below, determine each media's rating (A–G) and record the letter in the corresponding Media Rating box below.

Media (Source)	Contaminant Hazard Factor Value	Migratory Pathway Factor Value	Receptor Factor Value		Three-Letter Combination (Hs-Ms-Ls)		Media Rating (A-G)
Groundwater (Table 21)							
Surface Water/Human Endpoint (Table 22)	-	-	-		-		-
Sediment/Human Endpoint (Table 23)	-	-	-		-		-
Surface Water/Ecological Endpoint (Table 24)	-	-	-		-		-
Sediment/Ecological Endpoint (Table 25)	-	-	-		-		-
Surface Soil (Table 26)	L	L	L		LLL		G

DIRECTIONS (cont.):

4. Select the single highest Media Rating (A is highest; G is lowest) and enter the letter in the **HHE Module Rating** box below.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more media, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

HHE MODULE RATING	G

HHE Ratings (for reference only)

Combination	Rating
HHH	A
HHM	B
HHL	C
HMM	C
HML	D
MMM	D
HLL	E
MML	E
MLL	F
LLL	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected MC Hazard

Table 29
MRS Priority

DIRECTIONS: In the chart below, circle the letter **rating** for each module recorded in Table 10 (EHE), Table 20 (CHE), and Table 28 (HHE). Circle the corresponding numerical **priority** for each module. If information to determine the module rating is not available, choose the appropriate alternative module rating. The MRS priority is the single highest priority; record this number in the **MRS or Alternative Priority** box at the bottom of the table.

Note: An MRS assigned Priority 1 has the highest relative priority; an MRS assigned Priority 8 has the lowest relative priority. Only an MRS with CWM known or suspected to be present can be assigned Priority 1; an MRS that has CWM known or suspected to be present cannot be assigned Priority 8.

EHE Rating	Priority	CHE Rating	Priority	HHE Rating	Priority
		A	1		
A	2	B	2	A	2
B	3	C	3	B	3
C	4	D	4	C	4
D	***5***	E	5	D	5
E	6	F	6	E	6
F	7	G	7	F	7
G	8			***G***	***8***
Evaluation Pending		Evaluation Pending		Evaluation Pending	
No Longer Required		No Longer Required		No Longer Required	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		No Known or Suspected MC Hazard	
MRS or ALTERNATIVE PRIORITY				***5***	

MRSPP Evaluation

MRS 07

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Table A
MRS Background Information

DIRECTIONS: Record the background information below for the MRS to be evaluated. Much of this information is available from DoD databases, such as RMIS. If the MRS is located on a FUDS property, the suitable FUDS property information should be substituted. In the MRS summary, briefly describe the UXO, DMM, or MC that are known or suspected to be present, the exposure setting (the MRS's physical environment), any other incidental non-munitions related contaminants found at the MRS (e.g., benzene, trichloroethylene), and any potentially exposed human and ecological receptors. Include a map of the MRS, if one is available.

Munitions Response Site Name: MRS 07 – Culebrita Artillery Impact Area

Component: US Navy and US Marines

Installation/Property Name: Culebra Island

Location (City, County, State):Culebra, Puerto Rico

Site Name (RMIS ID)/Project Name (Project No.): MRS 07 Culebrita Artillery Impact Area a (I02PR006807)

Date Information Entered/Updated: January 2007/ April 2007

Point of Contact (Name/Phone): Mr. Charles D. Fales, Florida FUDS Manager / (904) 232-1017

Project Phase (check only one):

❑ PA	✓SI	❑ RI	❑ FS	❑ RD
❑ RA-C	❑ RIP	❑ RA-O	❑ RC	❑ LTM

Media Evaluated (check all that apply):

❑Groundwater	✓Sediment (human receptor)
✓ Surface soil	❑ Surface Water (ecological receptor)
✓Sediment (ecological receptor)	❑ Surface Water (human receptor)

MRS Summary:

MRS Description: Describe the munitions-related activities that occurred at the installation, the dates of operation, and the UXO, DMM (by type of munition, if known) or munitions constituents (by type, if known) known or suspected to be present):

Culebra Island and the surrounding cays and cayos was used for aerial bombing, maneuvers, artillery firing, and amphibious training by the US Navy and Marines between 1902 and 1975. Many different training operations were conducted at this site and complete records are not available to designate specific ranges or range complexes. As such, the Island of Culebra and surrounding cays and cayos were divided into 14 munitions response sites (MRS) based on the islands geography and historic military use. MRS 07, consisting of approximately 375 acres, includes the northern portion of Culebrita as well as Cayo Botella. Culebrita was used as an artillery impact area, torpedo range, and strafing target and Cayo Botella was used as an aerial target.

Description of Pathways for Human and Ecological Receptors:

Soils on the MRS and sediment from a lagoon on the MRS were sampled as these are considered the most likely location for MC. Access to the site is unrestricted.

Description of Receptors (Human and Ecological):
A wildlife refuge is nearby and the area is heavily used for recreational boating.

Table 1

EHE Module: Munitions Type Data Element Table

DIRECTIONS: Below are 11 classifications of munitions and their descriptions. Circle the score(s) that correspond with **all** munitions types known or suspected to be present at the MRS.

Note: The terms *practice munitions, small arms, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Sensitive	All UXO that are considered likely to function upon any interaction with exposed persons [e.g., submunitions, 40mm high-explosive (HE) grenades, white phosphorus (WP) munitions, high-explosive antitank (HEAT) munitions, and practice munitions with sensitive fuzes, but excluding all other practice munitions]. All hand grenades containing energetic filler. Bulk primary explosives, or mixtures of these with environmental media, such that the mixture poses an explosive hazard.	***30***
High explosive (used or damaged)	All UXO containing a high-explosive filler (e.g., RDX, Composition B), that are not considered "sensitive." All DMM containing a high-explosive filler that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	***25***
Pyrotechnic (used or damaged)	All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades). All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	***20***
High explosive (unused)	All DMM containing a high explosive filler that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	15
Propellant	All UXO containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor). All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are: ▪ Damaged by burning or detonation ▪ Deteriorated to the point of instability.	15
Bulk secondary high explosives, pyrotechnics, or propellant	All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor), that are deteriorated. Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture poses an explosive hazard.	10
Pyrotechnic (not used or damaged)	All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	10
Practice	All UXO that are practice munitions that are not associated with a sensitive fuze. All DMM that are practice munitions that are not associated with a sensitive fuze and that have not: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	5
Riot control	All UXO or DMM containing a riot control agent filler (e.g., tear gas).	3
Small arms	All used munitions or DMM that are categorized as small arms ammunition [Physical evidence or historical evidence that no other types of munitions (e.g., grenades, subcaliber training rockets, demolition charges) were used or are present on the MRS is required for selection of this category.].	2
Evidence of no munitions	Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0
MUNITIONS TYPE	**DIRECTIONS:** Record **the single highest score** from above in the box to the *right* (*maximum score* = 30).	***30***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Munitions Type*** classifications in the space provided.

Munitions used include rockets with suspected WP warheads, flares, and up to 500lb bombs (Section 2.4.1.6 and Appendix J of the 2007 SI Report.

Table 2

EHE Module: Source of Hazard Data Element Table

DIRECTIONS: Below are 11 classifications describing sources of explosive hazards. Circle the score(s) that correspond with **all** sources of explosive hazards known or suspected to be present at the MRS.

Note: The terms *former range, practice munitions, small arms, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	***10***
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former military range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, where the firing point is delineated as an MRS separate from the rest of a former military range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a military range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms ammunition was used [There must be evidence that no other types of munitions (e.g., grenades) were used or are present to place an MRS into this category.].	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0
SOURCE OF HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).	***10***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Source of Hazard*** classifications in the space provided.

Section 2.4.1.6 and 4.7.1 of the 2007 SI Report.

Table 3

EHE Module: Location of Munitions Data Element Table

DIRECTIONS: Below are eight classifications of munitions locations and their descriptions. Circle the score(s) that correspond with **all** locations where munitions are located or suspected of being found at the MRS.

Note: The terms *surface, subsurface, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Confirmed surface	◆ Physical evidence indicates that there are UXO or DMM on the surface of the MRS ◆ Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	***25***
Confirmed subsurface, active	◆ Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS, and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM. ◆ Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM.	***20***
Confirmed subsurface, stable	◆ Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed. ◆ Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	◆ There is physical evidence (e.g., munitions debris, such fragments, penetrators, projectiles, shell casings, links, fins), other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	◆ There is historical evidence indicating that UXO or DMM may be present at the MRS.	5
Subsurface, physical constraint	◆ There is physical or historical evidence indicating that UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	◆ The presence of small arms ammunition is confirmed or suspected, regardless of other factors such as geological stability [There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to place an MRS into this category.].	1
Evidence of no munitions	◆ Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0
LOCATION OF MUNITIONS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 25).	***25***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Location of Munitions*** classifications in the space provided.

Sections 2.4.1.6 and 4.7 and Tables 4.2 and 4.3 of the 2007 SI

Table 4

EHE Module: Ease of Access Data Element Table

DIRECTIONS: Below are four classifications of barrier types that can surround an MRS and their descriptions. The barrier type is directly related to the ease of public access to any explosive materiel. Circle the score that corresponds with the ease of access to the MRS.

Note: The term *barrier* is defined in Appendix C of the Primer.

Classification	Description	Score
No barrier	• There is no barrier preventing access to any part of the MRS (i.e., all parts of the MRS are accessible).	***10***
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS, but not the entire MRS.	8
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
EASE OF ACCESS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).	***10***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ease of Access*** classification in the space provided.

Culebrita beaches are regularly accessed by boat. Although access is obstructed by dense vegetation, it is not restricted. Trails are present across the area. (2007 SI Report Paragraph 5.7.3.1.)

Table 5

EHE Module: Status of Property Data Element Table

DIRECTIONS: Below are three classifications of the status of a property within the Department of Defense (DoD) and their descriptions. Circle the score that corresponds with the status of property at the MRS.

Classification	Description	Score
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by DoD. Examples are privately owned land or water bodies; land or water bodies owned or controlled by state, tribal, or local governments; and land or water bodies managed by other federal agencies.	***5***
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD, and DoD plans to transfer that land or water body to the control of another entity (e.g., a state, tribal, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD. With respect to property that is leased or otherwise possessed, DoD must control access to the MRS 24 hours per day, every day of the calendar year.	0
STATUS OF PROPERTY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Status of Property*** classification in the space provided.

Section 2.4.1.6 of the 2007 SI Report notes the MRS is managed by the USFWS.

Table 6

EHE Module: Population Density Data Element Table

DIRECTIONS: Below are three classifications of population density and their descriptions. Determine the population density per square mile in the vicinity of the MRS and circle the score that corresponds with the associated population density.

Note: If an MRS is located in more than one county, use the largest population density value among the counties. If the MRS is within or borders a city or town, use the population density for the city or town, rather than that of the county.

Classification	Description	Score
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	***1***
POPULATION DENSITY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***1***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Density*** classification in the space provided.

Section 2.2.7 of the 2007 SI notes that the population density of the municipality of Culebra is 71.8 persons per mile, as obtained from Census 2000.

Table 7

EHE Module: Population Near Hazard Data Element Table

DIRECTIONS: Below are six classifications describing the number of inhabited structures near the MRS. The number of inhabited buildings relates to the population near the hazard. Determine the number of inhabited structures within two miles of the MRS boundary and circle the score that corresponds with the associated population near the known or suspected hazard.

Note: The term *inhabited structures* is defined in Appendix C of the Primer.

Classification	Description	Score
26 or more inhabited structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	***5***
16 to 25 inhabited structures	• There are 16 to 25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15 inhabited structures	• There are 11 to 15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10 inhabited structures	• There are 6 to 10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5 inhabited structures	• There are 1 to 5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0 inhabited structures	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
POPULATION NEAR HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Near Hazard*** classification in the space provided.

Several residents within MRS 06 and MRS 05 are within a 2 mile radius of MRS 07. (2007 SI Section 2.2.7 and Table 2.2).

Table 8

EHE Module: Types of Activities/Structures Data Element Table

DIRECTIONS: Below are five classifications of activities and/or inhabited structures near the hazard and their descriptions. Review the types of activities that occur and/or structures that are present within two miles of the MRS and circle the score(s) that correspond with **all** the activities/structure classifications at the MRS.

Note: The term *inhabited structure* is defined in Appendix C of the Primer.

Classification	Description	Score
Residential, educational, commercial, or subsistence	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	***5***
Parks and recreational areas	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with parks, nature preserves, or other recreational uses.	***4***
Agricultural, forestry	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with industrial activities or warehousing.	***2***
No known or recurring activities	• There are no known or recurring activities occurring up to two miles from the MRS's boundary or within the MRS's boundary.	1
TYPES OF ACTIVITIES/STRUCTURES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Types of Activities/Structures*** classifications in the space provided.

MRS 7 is located within two miles of the island of Culebra. The island has schools, residential areas, a clinic, an airport, restaurants, hotels, shops, and a few industrial companies. Beaches within a two mile radius are managed by the USFWS or PR DNR for wildlife conservation and recreational use. (2007 SI Report Sections 2.2.7 and 2.2.8)

Table 9

EHE Module: Ecological and/or Cultural Resources Data Element Table

DIRECTIONS: Below are four classifications of ecological and/or cultural resources and their descriptions. Review the types of resources present and circle the score that corresponds with the ecological and/or cultural resource classifications at the MRS.

Note: The terms *ecological resources* and *cultural resources* are defined in Appendix C of the Primer.

Classification	Description	Score
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	***3***
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0
ECOLOGICAL AND/OR CULTURAL RESOURCES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***3***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ecological and/or Cultural Resources*** classification in the space provided.

The 2007 SI, Appendix J notes that a FWS refuge area is located on the MRS. A historic lighthouse is located on the southern side of the island, outside of the MRS boundary.(Section 2.2.3 of the 2007 SI Report)

Table 10
Determining the EHE Module Rating

DIRECTIONS:

1. From Tables 1–9, record the data element scores in the **Score** boxes to the right.
2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.
3. Add the three **Value** boxes and record this number in the **EHE Module Total** box below.
4. Circle the appropriate range for the **EHE Module Total** below.
5. Circle the **EHE Module Rating** that corresponds to the range selected and record this value in the **EHE Module Rating** box found at the bottom of the table.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

	Source	Score	Value
Explosive Hazard Factor Data Elements			
Munitions Type	Table 1	30	40
Source of Hazard	Table 2	10	
Accessibility Factor Data Elements			
Location of Munitions	Table 3	25	40
Ease of Access	Table 4	10	
Status of Property	Table 5	5	
Receptor Factor Data Elements			
Population Density	Table 6	1	14
Population Near Hazard	Table 7	5	
Types of Activities/ Structures	Table 8	5	
Ecological and /or Cultural Resources	Table 9	3	
EHE MODULE TOTAL			94

EHE Module Total	EHE Module Rating
92 to 100	A
82 to 91	B
71 to 81	C
60 to 70	D
48 to 59	E
38 to 47	F
less than 38	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected Explosive Hazard
EHE MODULE RATING	***A***

Table 11

CHE Module: CWM Configuration Data Element Table

DIRECTIONS: Below are seven classifications of CWM configuration and their descriptions. Circle the score(s) that correspond to **all** CWM configurations known or suspected to be present at the MRS.

Note: The terms *CWM/UXO, CWM/DMM, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
CWM, explosive configuration either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is: • Explosively configured CWM that are UXO (i.e., CWM/UXO). • Explosively configured CWM that are DMM (i.e., CWM/DMM) that have been damaged.	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged, or nonexplosively configured CWM/DMM, or CWM not configured as a munition, that are commingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are undamaged DMM	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is: • Nonexplosively configured CWM/DMM. • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• Only CAIS, other than CAIS K941 and K942, are known or suspected of being present at the MRS.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	***0***
CWM CONFIGURATION	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).	***0***

DIRECTIONS: Document any MRS-specific data used in selecting the ***CWM Configuration*** classifications in the space provided.

There is no historical or anecdotal evidence that CWM were ever used on this MRS. (Sections 2.5 and 4.2 of the 2007 SI Report). Tables 12-19 have been omitted.

Table 20
Determining the CHE Module Rating

DIRECTIONS:

1. From Tables 11–19, record the data element scores in the **Score** boxes to the right.
2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.
3. Add the three **Value** boxes and record this number in the **CHE Module Total** box below.
4. Circle the appropriate range for the **CHE Module Total** below.
5. Circle the **CHE Module Rating** that corresponds to the range selected and record this value in the **CHE Module Rating** box found at the bottom of the table.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

	Source	Score	Value
CWM Hazard Factor Data Elements			
CWM Configuration	Table 11	0	0
Sources of CWM	Table 12	0	
Accessibility Factor Data Elements			
Location of CWM	Table 13	0	0
Ease of Access	Table 14	0	
Status of Property	Table 15	0	
Receptor Factor Data Elements			
Population Density	Table 16	0	0
Population Near Hazard	Table 17	0	
Types of Activities/ Structures	Table 18	0	
Ecological and /or Cultural Resources	Table 19	0	
CHE MODULE TOTAL			0

CHE Module Total	CHE Module Rating
92 to 100	A
82 to 91	B
71 to 81	C
60 to 70	D
48 to 59	E
38 to 47	F
less than 38	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected CWM Hazard
CHE MODULE RATING	***No Known or Suspected CWM Hazard***

Table 21

HHE Module: Groundwater Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's groundwater and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the groundwater, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$
100 > CHF > 2	M (Medium)	
2 > CHF	L (Low)	

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the groundwater is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in groundwater has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the groundwater to a potential point of exposure (possibly due to geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater receptors at the MRS.

Classification	Description	Value
Identified	There is a threatened water supply well downgradient of the source and the groundwater is a current source of drinking water or source of water for other beneficial uses such as irrigation/agriculture (equivalent to Class I or IIA aquifer).	H
Potential	There is no threatened water supply well downgradient of the source and the groundwater is currently or potentially usable for drinking water, irrigation, or agriculture (equivalent to Class I, IIA, or IIB aquifer).	M
Limited	There is no potentially threatened water supply well downgradient of the source and the groundwater is not considered a potential source of drinking water and is of limited beneficial use (equivalent to Class IIIA or IIIB aquifer, or where perched aquifer exists only).	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Groundwater MC Hazard

Per TPP concurrence, no groundwater samples were collected as part of the SI.

Table 22

HHE Module: Surface Water – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for human endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF Scale	CHF Value	Sum The Ratios	
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).		

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Surface Water (Human Endpoint) MC Hazard

Per TPP concurrence, no surface water samples were collected as part of the SI

Table 23

HHE Module: Sediment – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the site's sediment and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for human endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
Aluminum	17000	77000	0.220
Barium	16	5300	0.003
Copper	6.7	2800	0.002
Iron	1900	23000	0.08
CHF Scale	**CHF Value**	**Sum The Ratios**	**0.46**
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right maximum value = H).		***L***

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	*Information indicates a low potential for contaminant migration from the source via the sediment to a* potential point of exposure (possibly due to presence of geological structures or physical controls).	**L**
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***L***

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	**L**
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***L***

No Known or Suspected Sediment (Human Endpoint) MC Hazard

Background concentrations for sediment are not available. Contaminants that are attributable to DoD activities (per Table 4.1 2007 SI Report), with comparison values developed contribute to the score. MPF and RF are rated L given the low concentration of contaminants attributable to DoD Activity.

Table 24

HHE Module: Surface Water – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF Scale	CHF Value	Sum the Ratios	
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Surface Water (Ecological Endpoint) MC Hazard

Per TPP concurrence, no surface water samples were collected as part of the SI

Table 25

HHE Module: Sediment – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's sediment and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
Copper	6.7	16	0.42
Iron	1900	20000	0.095
Lead	1.9	31	0.06
Zinc	5.0	120	0.042
CHF Scale	**CHF Value**	**Sum the Ratios**	0.62
CHF > 100	H (High)	$CHF = \sum$ [Maximum Concentration of Contaminant] / [Comparison Value for Contaminant]	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).		*L*

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to presence of geological structures or physical controls).	*L*
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	*L*

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	*L*
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	*L*

No Known or Suspected Sediment (Ecological Endpoint) MC Hazard

Background concentrations for sediment are not available. Contaminants that are attributable to DoD activities (per Table 4.1 2007 SI Report), with comparison values developed contribute to the score. Pathways and receptors are rated low given the low level of contamination detected in the sediment.

Table 26

HHE Module: Surface Soil Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface soil and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the surface soil, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratio
Barium	480	5300	0.091
Copper	600	2800	0.21
Strontium	88	46000	0.0019
Zinc	240	23000	0.010
CHF Scale	**CHF Value**	**Sum the Ratios**	**0.31**
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	***L***

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface soil migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface soil is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface soil has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface soil to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***L***

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface soil receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface soil to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface soil to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface soil to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***L***

No Known or Suspected Sediment (Ecological Endpoint) MC Hazard

Contaminants that are attributable to DoD activities (per Table 4.1 2007 SI Report), with comparison values developed, that exceed the metals comparison values contribute to the score.
Pathway and receptor factors are rated low given the lack of contamination measured in the soil.

Table 27

HHE Module: Supplemental Contaminant Hazard Factor Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: **Only use this table if there are more than five contaminants present at the MRS.** This is a supplemental table designed to hold information about contaminants that do not fit in the previous tables. Indicate the **media** in which these contaminants are present. Then record all **contaminants**, their **maximum concentrations** and their **comparison values** (from Appendix B) in the table below. Calculate and record the **ratio** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** for each medium on the appropriate media-specific tables.

Note: Remember not to add ratios from different media.

Media	Contaminant	Maximum Concentration	Comparison Value	Ratio
Sediment	Lead	1.9	400	0.005
Sediment	Molybdenum	0.086	380	0.0002
Sediment	Strontium	7000	46000	0.15
Sediment	Zinc	5.0	23000	0.0002

Table 28

Determining the HHE Module Rating

DIRECTIONS:

1. Record the letter values (H, M, L) for the **Contaminant Hazard, Migration Pathway, and Receptor Factors** for the media (from Tables 21–26) in the corresponding boxes below.
2. Record the media's three-letter combinations in the **Three-Letter Combination** boxes below (three-letter combinations are arranged from Hs to Ms to Ls).
3. Using the reference provided below, determine each media's rating (A–G) and record the letter in the corresponding Media Rating box below.

Media (Source)	Contaminant Hazard Factor Value	Migratory Pathway Factor Value	Receptor Factor Value	Three-Letter Combination (Hs-Ms-Ls)	Media Rating (A-G)
Groundwater (Table 21)					
Surface Water/Human Endpoint (Table 22)	-	-	-	-	-
Sediment/Human Endpoint (Table 23)	L	L	L	LLL	G
Surface Water/Ecological Endpoint (Table 24)	-	-	-	-	-
Sediment/Ecological Endpoint (Table 25)	L	L	L	LLL	G
Surface Soil (Table 26)	L	L	L	LLL	G

DIRECTIONS (cont.):

4. Select the single highest Media Rating (A is highest; G is lowest) and enter the letter in the **HHE Module Rating** box below.

Note:

An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more media, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

HHE MODULE RATING	*G*

HHE Ratings (for reference only)

Combination	Rating
HHH	A
HHM	B
HHL	C
HMM	C
HML	D
MMM	D
HLL	E
MML	E
MLL	F
LLL	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected MC Hazard

Table 29
MRS Priority

DIRECTIONS: In the chart below, circle the letter **rating** for each module recorded in Table 10 (EHE), Table 20 (CHE), and Table 28 (HHE). Circle the corresponding numerical **priority** for each module. If information to determine the module rating is not available, choose the appropriate alternative module rating. The MRS priority is the single highest priority; record this number in the **MRS or Alternative Priority** box at the bottom of the table.

Note: An MRS assigned Priority 1 has the highest relative priority; an MRS assigned Priority 8 has the lowest relative priority. Only an MRS with CWM known or suspected to be present can be assigned Priority 1; an MRS that has CWM known or suspected to be present cannot be assigned Priority 8.

EHE Rating	Priority	CHE Rating	Priority	HHE Rating	Priority
		A	1		
A	***2***	B	2	A	2
B	3	C	3	B	3
C	4	D	4	C	4
D	5	E	5	D	5
E	6	F	6	E	6
F	7	G	7	F	7
G	8			***G***	***8***
Evaluation Pending		Evaluation Pending		Evaluation Pending	
No Longer Required		No Longer Required		No Longer Required	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		No Known or Suspected MC Hazard	
MRS or ALTERNATIVE PRIORITY				***2***	

MRSPP Evaluation

MRS 08

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Table A

MRS Background Information

DIRECTIONS: Record the background information below for the MRS to be evaluated. Much of this information is available from DoD databases, such as RMIS. If the MRS is located on a FUDS property, the suitable FUDS property information should be substituted. In the MRS summary, briefly describe the UXO, DMM, or MC that are known or suspected to be present, the exposure setting (the MRS's physical environment), any other incidental non-munitions related contaminants found at the MRS (e.g., benzene, trichloroethylene), and any potentially exposed human and ecological receptors. Include a map of the MRS, if one is available.

Munitions Response Site Name: MRS 08 – Cayo Norte Impact Area

Component: US Marines

Installation/Property Name: Culebra Island

Location (City, County, State):Culebra, Puerto Rico

Site Name (RMIS ID)/Project Name (Project No.): MRS 08 Cayo Norte Impact Area (I02PR006808)

Date Information Entered/Updated: January 2007/April 2007

Point of Contact (Name/Phone): Mr. Charles D. Fales, Florida FUDS Manager / (904) 232-1017

Project Phase (check only one):

❑ PA	✓SI	❑ RI	❑ FS	❑ RD
❑ RA-C	❑ RIP	❑ RA-O	❑ RC	❑ LTM

Media Evaluated (check all that apply):

❑Groundwater	✓Sediment (human receptor)
✓ Surface soil	❑ Surface Water (ecological receptor)
✓Sediment (ecological receptor)	❑ Surface Water (human receptor)

MRS Summary:

MRS Description: Describe the munitions-related activities that occurred at the installation, the dates of operation, and the UXO, DMM (by type of munition, if known) or munitions constituents (by type, if known) known or suspected to be present):

Culebra Island and the surrounding cays and cayos was used for aerial bombing, maneuvers, artillery firing, and amphibious training by the US Navy and Marines between 1902 and 1975. Many different training operations were conducted at this site and complete records are not available to designate specific ranges or range complexes. As such, the Island of Culebra and surrounding cays and cayos were divided into 14 munitions response sites (MRS) based on the islands geography and historic military use. MRS 08, consisting Cayo Norte, is approximately 306 acres in size. Cayo Norte was leased by the Marines for training however it can not be determined from records whether the site was ever used for training, however was within the impact area of heavy artillery guns and within the safety fan of several aerial targets on the surrounding cays.

Description of Pathways for Human and Ecological Receptors:

Soils on the MRS and sediment from a lagoon on the MRS were sampled as these are considered the most likely location for MC. Access to the site is unrestricted.

Description of Receptors (Human and Ecological):
A wildlife refuge is nearby and the area is heavily used for recreational boating.

Table 1

EHE Module: Munitions Type Data Element Table

DIRECTIONS: Below are 11 classifications of munitions and their descriptions. Circle the score(s) that correspond with **all** munitions types known or suspected to be present at the MRS.

Note: The terms *practice munitions, small arms, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Sensitive	All UXO that are considered likely to function upon any interaction with exposed persons [e.g., submunitions, 40mm high-explosive (HE) grenades, white phosphorus (WP) munitions, high-explosive antitank (HEAT) munitions, and practice munitions with sensitive fuzes, but excluding all other practice munitions]. All hand grenades containing energetic filler. Bulk primary explosives, or mixtures of these with environmental media, such that the mixture poses an explosive hazard.	***30***
High explosive (used or damaged)	All UXO containing a high-explosive filler (e.g., RDX, Composition B), that are not considered "sensitive." All DMM containing a high-explosive filler that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	***25***
Pyrotechnic (used or damaged)	All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades). All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	***20***
High explosive (unused)	All DMM containing a high explosive filler that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	15
Propellant	All UXO containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor). All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are: ▪ Damaged by burning or detonation ▪ Deteriorated to the point of instability.	15
Bulk secondary high explosives, pyrotechnics, or propellant	All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor), that are deteriorated. Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture poses an explosive hazard.	10
Pyrotechnic (not used or damaged)	All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	10
Practice	All UXO that are practice munitions that are not associated with a sensitive fuze. All DMM that are practice munitions that are not associated with a sensitive fuze and that have not: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	5
Riot control	All UXO or DMM containing a riot control agent filler (e.g., tear gas).	3
Small arms	All used munitions or DMM that are categorized as small arms ammunition [Physical evidence or historical evidence that no other types of munitions (e.g., grenades, subcaliber training rockets, demolition charges) were used or are present on the MRS is required for selection of this category.].	2
Evidence of no munitions	Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0
MUNITIONS TYPE	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).	***30***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Munitions Type*** classifications in the space provided.

Section 4.8.1 and Appendix J of the 2007 SI Report notes the area was leased for artillery training. Munitions noted in the 2005 INPR include 20mm HEI projectiles, and explosives. In addition, munitions used are assumed to be similar to those used at surrounding artillery impact areas. The heavy artillery is rated sensitive as it could potentially contain white phosphorus. .

Table 2

EHE Module: Source of Hazard Data Element Table

DIRECTIONS: Below are 11 classifications describing sources of explosive hazards. Circle the score(s) that correspond with **all** sources of explosive hazards known or suspected to be present at the MRS.

Note: The terms *former range, practice munitions, small arms, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	***10***
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former military range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, where the firing point is delineated as an MRS separate from the rest of a former military range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a military range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms ammunition was used [There must be evidence that no other types of munitions (e.g., grenades) were used or are present to place an MRS into this category.].	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0
SOURCE OF HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).	***10***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Source of Hazard*** classifications in the space provided.

Section 2.4.1.7 of the 2007 SI Report.

Table 3

EHE Module: Location of Munitions Data Element Table

DIRECTIONS: Below are eight classifications of munitions locations and their descriptions. Circle the score(s) that correspond with **all** locations where munitions are located or suspected of being found at the MRS.

Note: The terms *surface, subsurface, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Confirmed surface	◆ Physical evidence indicates that there are UXO or DMM on the surface of the MRS ◆ Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	~~5~~ ~~25~~ 0
Confirmed subsurface, active (* no physical evidence (see MMRP record search summary) 7 May 2008 dlp)	Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS, and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM. ◆ Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM.	~~20~~ 0
Confirmed subsurface, stable	◆ Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed. ◆ Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed.	~~15~~ 0
Suspected (physical evidence)	◆ There is physical evidence (e.g., munitions debris, such fragments, penetrators, projectiles, shell casings, links, fins), other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	0 ~~10~~
Suspected (historical evidence)	◆ There is historical evidence indicating that UXO or DMM may be present at the MRS.	(5)
Subsurface, physical constraint	◆ There is physical or historical evidence indicating that UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	◆ The presence of small arms ammunition is confirmed or suspected, regardless of other factors such as geological stability [There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to place an MRS into this category.].	1
Evidence of no munitions	◆ Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0
LOCATION OF MUNITIONS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 25).	~~5~~ ~~25~~

DIRECTIONS: Document any MRS-specific data used in selecting the ***Location of Munitions*** classifications in the space provided.

Section 4.8 of the 2007 SI states that ordnance has been found in the surrounding waters.

Table 4

EHE Module: Ease of Access Data Element Table

DIRECTIONS: Below are four classifications of barrier types that can surround an MRS and their descriptions. The barrier type is directly related to the ease of public access to any explosive materiel. Circle the score that corresponds with the ease of access to the MRS.

Note: The term *barrier* is defined in Appendix C of the Primer.

Classification	Description	Score
No barrier	• There is no barrier preventing access to any part of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS, but not the entire MRS.	8
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	***0***
EASE OF ACCESS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).	***0***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ease of Access*** classification in the space provided.

Paragraph 5.8.3.1 of the 2007 SI Report notes that the RS is privately owned and is not accessible to the public. A security guard is present and trespassing is prohibited. Vegetation is very restrictive and there are no trails or roads.

Table 5

EHE Module: Status of Property Data Element Table

DIRECTIONS: Below are three classifications of the status of a property within the Department of Defense (DoD) and their descriptions. Circle the score that corresponds with the status of property at the MRS.

Classification	Description	Score
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by DoD. Examples are privately owned land or water bodies; land or water bodies owned or controlled by state, tribal, or local governments; and land or water bodies managed by other federal agencies.	***5***
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD, and DoD plans to transfer that land or water body to the control of another entity (e.g., a state, tribal, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD. With respect to property that is leased or otherwise possessed, DoD must control access to the MRS 24 hours per day, every day of the calendar year.	0
STATUS OF PROPERTY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Status of Property*** classification in the space provided.

Section 2.4.1.7 notes the MRS is privately owned.

Table 6

EHE Module: Population Density Data Element Table

DIRECTIONS: Below are three classifications of population density and their descriptions. Determine the population density per square mile in the vicinity of the MRS and circle the score that corresponds with the associated population density.

Note: If an MRS is located in more than one county, use the largest population density value among the counties. If the MRS is within or borders a city or town, use the population density for the city or town, rather than that of the county.

Classification	Description	Score
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	***1***
POPULATION DENSITY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***1***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Density*** classification in the space provided.

Section 2.2.7 of the 2007 SI notes that the population density of the municipality of Culebra is 71.8 persons per mile, as obtained from Census 2000.

Table 7

EHE Module: Population Near Hazard Data Element Table

DIRECTIONS: Below are six classifications describing the number of inhabited structures near the MRS. The number of inhabited buildings relates to the population near the hazard. Determine the number of inhabited structures within two miles of the MRS boundary and circle the score that corresponds with the associated population near the known or suspected hazard.

Note: The term *inhabited structures* is defined in Appendix C of the Primer.

Classification	Description	Score
26 or more inhabited structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	***5***
16 to 25 inhabited structures	• There are 16 to 25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15 inhabited structures	• There are 11 to 15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10 inhabited structures	• There are 6 to 10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5 inhabited structures	• There are 1 to 5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0 inhabited structures	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
POPULATION NEAR HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Near Hazard*** classification in the space provided.

MRS 8 is located within a two-mile radius surrounding the Municipality of Culebra which has just fewer than 2,000 residents and many visitors throughout the year. (2007 SI Section 2.2.7 and Table 2.2).

Table 8

EHE Module: Types of Activities/Structures Data Element Table

DIRECTIONS: Below are five classifications of activities and/or inhabited structures near the hazard and their descriptions. Review the types of activities that occur and/or structures that are present within two miles of the MRS and circle the score(s) that correspond with **all** the activities/structure classifications at the MRS.

Note: The term *inhabited structure* is defined in Appendix C of the Primer.

Classification	Description	Score
Residential, educational, commercial, or subsistence	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	***5***
Parks and recreational areas	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with parks, nature preserves, or other recreational uses.	***4***
Agricultural, forestry	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with industrial activities or warehousing.	***2***
No known or recurring activities	• There are no known or recurring activities occurring up to two miles from the MRS's boundary or within the MRS's boundary.	1
TYPES OF ACTIVITIES/STRUCTURES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Types of Activities/Structures*** classifications in the space provided.

MRS 2 is located on the island of Culebra. The island has schools, residential areas, a clinic, an airport, restaurants, hotels, shops, and a few industrial companies. Beaches within a two mile radius are managed by the USFWS or PR DNR for wildlife conservation and recreational use. (2007 SI Report Sections 2.2.7 and 2.2.8)

Table 9

EHE Module: Ecological and/or Cultural Resources Data Element Table

DIRECTIONS: Below are four classifications of ecological and/or cultural resources and their descriptions. Review the types of resources present and circle the score that corresponds with the ecological and/or cultural resource classifications at the MRS.

Note: The terms *ecological resources* and *cultural resources* are defined in Appendix C of the Primer.

Classification	Description	Score
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	***3***
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0
ECOLOGICAL AND/OR CULTURAL RESOURCES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***3***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ecological and/or Cultural Resources*** classification in the space provided.

The MRS is near the USFWS refuges that are utilized by various species of birds. While it is not part of the refuge birds do nest in the area. No cultural resources are reported on the site (2007 SI (Section 2.2.7) and the 2007 SSWP.)

Table 10
Determining the EHE Module Rating

DIRECTIONS:

1. From Tables 1–9, record the data element scores in the **Score** boxes to the right.
2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.
3. Add the three **Value** boxes and record this number in the **EHE Module Total** box below.
4. Circle the appropriate range for the **EHE Module Total** below.
5. Circle the **EHE Module Rating** that corresponds to the range selected and record this value in the **EHE Module Rating** box found at the bottom of the table.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

	Source	Score	Value
Explosive Hazard Factor Data Elements			
Munitions Type	Table 1	30	40
Source of Hazard	Table 2	10	
Accessibility Factor Data Elements			
Location of Munitions	Table 3	~~25~~ 5	~~26~~ 10
Ease of Access	Table 4	0	
Status of Property	Table 5	5	
Receptor Factor Data Elements			
Population Density	Table 6	1	14
Population Near Hazard	Table 7	5	
Types of Activities/ Structures	Table 8	5	
Ecological and /or Cultural Resources	Table 9	3	
EHE MODULE TOTAL			~~84~~ 64

EHE Module Total	EHE Module Rating
92 to 100	A
82 to 91	B
71 to 81	C
60 to 70	(D)
48 to 59	E
38 to 47	F
less than 38	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected Explosive Hazard
EHE MODULE RATING	~~B~~ D

Table 11

CHE Module: CWM Configuration Data Element Table

DIRECTIONS: Below are seven classifications of CWM configuration and their descriptions. Circle the score(s) that correspond to **all** CWM configurations known or suspected to be present at the MRS.

Note: The terms *CWM/UXO, CWM/DMM, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
CWM, explosive configuration either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is: • Explosively configured CWM that are UXO (i.e., CWM/UXO). • Explosively configured CWM that are DMM (i.e., CWM/DMM) that have been damaged.	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged, or nonexplosively configured CWM/DMM, or CWM not configured as a munition, that are commingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are undamaged DMM	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is: • Nonexplosively configured CWM/DMM. • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• Only CAIS, other than CAIS K941 and K942, are known or suspected of being present at the MRS.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	***0***
CWM CONFIGURATION	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).	***0***

DIRECTIONS: Document any MRS-specific data used in selecting the ***CWM Configuration*** classifications in the space provided.

There is no historical or anecdotal evidence that CWM were ever used on this MRS. (Sections 2.5 and 4.2 of the 2007 SI Report). Tables 12-19 have been omitted.

Table 20
Determining the CHE Module Rating

DIRECTIONS:

1. From Tables 11–19, record the data element scores in the **Score** boxes to the right.
2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.
3. Add the three **Value** boxes and record this number in the **CHE Module Total** box below.
4. Circle the appropriate range for the **CHE Module Total** below.
5. Circle the **CHE Module Rating** that corresponds to the range selected and record this value in the **CHE Module Rating** box found at the bottom of the table.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

	Source	Score	Value
CWM Hazard Factor Data Elements			
CWM Configuration	Table 11	0	0
Sources of CWM	Table 12	0	
Accessibility Factor Data Elements			
Location of CWM	Table 13	0	0
Ease of Access	Table 14	0	
Status of Property	Table 15	0	
Receptor Factor Data Elements			
Population Density	Table 16	0	0
Population Near Hazard	Table 17	0	
Types of Activities/ Structures	Table 18	0	
Ecological and /or Cultural Resources	Table 19	0	
CHE MODULE TOTAL			0

CHE Module Total	CHE Module Rating
92 to 100	A
82 to 91	B
71 to 81	C
60 to 70	D
48 to 59	E
38 to 47	F
less than 38	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected CWM Hazard
CHE MODULE RATING	***No Known or Suspected CWM Hazard***

Table 21

HHE Module: Groundwater Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's groundwater and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the groundwater, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).		

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the groundwater is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in groundwater has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	*Information indicates a low potential for contaminant migration from the source via the* groundwater to a potential point of exposure (possibly due to geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater receptors at the MRS.

Classification	Description	Value
Identified	There is a threatened water supply well downgradient of the source and the groundwater is a current source of drinking water or source of water for other beneficial uses such as irrigation/agriculture (equivalent to Class I or IIA aquifer).	H
Potential	There is no threatened water supply well downgradient of the source and the groundwater is currently or potentially usable for drinking water, irrigation, or agriculture (equivalent to Class I, IIA, or IIB aquifer).	M
Limited	There is no potentially threatened water supply well downgradient of the source and the groundwater is not considered a potential source of drinking water and is of limited beneficial use (equivalent to Class IIIA or IIIB aquifer, or where perched aquifer exists only).	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Groundwater MC Hazard

Per TPP concurrence, no groundwater samples were collected as part of the SI.

Table 22

HHE Module: Surface Water – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for human endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF Scale	CHF Value	Sum The Ratios	
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L

MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L

RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Surface Water (Human Endpoint) MC Hazard

Per TPP concurrence, no surface water samples were collected as part of the SI

Table 23

HHE Module: Sediment – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the site's sediment and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for human endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
Aluminum	17000	77000	0.220
Barium	140	5300	0.03
Copper	19	2800	0.0068
Iron	39000	23000	1.70
Lead	5.9	400	0.015
CHF Scale	**CHF Value**	**Sum The Ratios**	**1.98**
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right maximum value = H).		***L***

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to presence of geological structures or physical controls).	*L*
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***L***

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***L***

No Known or Suspected Sediment (Human Endpoint) MC Hazard

Background concentrations for sediment are not available. Contaminants that are attributable to DoD activities (per Table 4.1 2007 SI Report), with comparison values developed contribute to the score. MPF and RF are rated L given the low concentration of contaminants attributable to DoD activities.

Table 24

HHE Module: Surface Water – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value.** Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF Scale	CHF Value	Sum the Ratios	
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L

MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L

RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Surface Water (Ecological Endpoint) MC Hazard

Per TPP concurrence, no surface water samples were collected as part of the SI

Table 25

HHE Module: Sediment – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's sediment and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
Copper	19	16	1.18
Iron	39000	20000	1.95
Lead	5.9	31	0.19
Mercury	0.011	0.2	0.055
Zinc	61	120	0.51
CHF Scale	**CHF Value**	**Sum the Ratios**	**3.88**
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).		***M***

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	***M***
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***M***

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	***H***
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***H***

No Known or Suspected Sediment (Ecological Endpoint) MC Hazard

Background concentrations for sediment are not available. Contaminants that are attributable to DoD activities (per Table 4.1 2007 SI Report), with comparison values developed contribute to the score. MPF is rated M given existing information. RF is rated high given the ecological resources in the area.

Table 26

HHE Module: Surface Soil Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface soil and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the surface soil, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratio
Strontium	51	46000	0.001
Zinc	90	23000	0.004
CHF Scale	**CHF Value**	**Sum the Ratios**	**0.005**
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).		***L***

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface soil migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface soil is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface soil has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface soil to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***L***

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface soil receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface soil to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface soil to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface soil to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***L***

No Known or Suspected Sediment (Ecological Endpoint) MC Hazard

Contaminants that are attributable to DoD activities (per Table 4.1 2007 SI Report), with comparison values developed, that exceed the metals comparison values contribute to the score.
Pathway and receptor factors are rated low given the lack of contamination measured in the soil.

Table 27

HHE Module: Supplemental Contaminant Hazard Factor Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: **Only use this table if there are more than five contaminants present at the MRS.** This is a supplemental table designed to hold information about contaminants that do not fit in the previous tables. Indicate the **media** in which these contaminants are present. Then record all **contaminants**, their **maximum concentrations** and their **comparison values** (from Appendix B) in the table below. Calculate and record the **ratio** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** for each medium on the appropriate media-specific tables.

Note: Remember not to add ratios from different media.

Media	Contaminant	Maximum Concentration	Comparison Value	Ratio
Sediment	Mercury	0.011	23	0.0005
Sediment	Molybdenum	0.085	380	0.0002
Sediment	Silver	0.13	3800	0.0003
Sediment	Strontium	30	46000	0.006
Sediment	Zinc	61	23000	0.003

Table 28

Determining the HHE Module Rating

DIRECTIONS:

1. Record the letter values (H, M, L) for the **Contaminant Hazard, Migration Pathway, and Receptor Factors** for the media (from Tables 21–26) in the corresponding boxes below.
2. Record the media's three-letter combinations in the **Three-Letter Combination** boxes below (three-letter combinations are arranged from Hs to Ms to Ls).
3. Using the reference provided below, determine each media's rating (A–G) and record the letter in the corresponding Media Rating box below.

Media (Source)	Contaminant Hazard Factor Value	Migratory Pathway Factor Value	Receptor Factor Value	Three-Letter Combination (Hs-Ms-Ls)	Media Rating (A-G)
Groundwater (Table 21)					
Surface Water/Human Endpoint (Table 22)	-	-	-	-	-
Sediment/Human Endpoint (Table 23)	L	L	L	LLL	G
Surface Water/Ecological Endpoint (Table 24)	-	-	-	-	-
Sediment/Ecological Endpoint (Table 25)	M	M	H	HMM	F
Surface Soil (Table 26)	L	L	L	LLL	G

DIRECTIONS (cont.):

4. Select the single highest Media Rating (A is highest; G is lowest) and enter the letter in the **HHE Module Rating** box below.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more media, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

HHE MODULE RATING	*F*

HHE Ratings (for reference only)

Combination	Rating
HHH	A
HHM	B
HHL	C
HMM	C
HML	D
MMM	D
HLL	E
MML	E
MLL	F
LLL	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected MC Hazard

Table 29
MRS Priority

DIRECTIONS: In the chart below, circle the letter **rating** for each module recorded in Table 10 (EHE), Table 20 (CHE), and Table 28 (HHE). Circle the corresponding numerical **priority** for each module. If information to determine the module rating is not available, choose the appropriate alternative module rating. The MRS priority is the single highest priority; record this number in the **MRS or Alternative Priority** box at the bottom of the table.

Note: An MRS assigned Priority 1 has the highest relative priority; an MRS assigned Priority 8 has the lowest relative priority. Only an MRS with CWM known or suspected to be present can be assigned Priority 1; an MRS that has CWM known or suspected to be present cannot be assigned Priority 8.

EHE Rating	Priority	CHE Rating	Priority	HHE Rating	Priority
		A	1		
A	2	B	2	A	2
~~B~~	3	C	3	B	3
C	4	D	4	C	4
(D)	(5)	E	5	D	5
E	6	F	6	E	6
F	7	G	7	F	7
G	8			G	8
Evaluation Pending		Evaluation Pending		Evaluation Pending	
No Longer Required		No Longer Required		No Longer Required	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		No Known or Suspected MC Hazard	
MRS or ALTERNATIVE PRIORITY				~~3~~ 5	

MRSPP Evaluation

MRS 09

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Table A

MRS Background Information

DIRECTIONS: Record the background information below for the MRS to be evaluated. Much of this information is available from DoD databases, such as RMIS. If the MRS is located on a FUDS property, the suitable FUDS property information should be substituted. In the MRS summary, briefly describe the UXO, DMM, or MC that are known or suspected to be present, the exposure setting (the MRS's physical environment), any other incidental non-munitions related contaminants found at the MRS (e.g., benzene, trichloroethylene), and any potentially exposed human and ecological receptors. Include a map of the MRS, if one is available.

Munitions Response Site Name: MRS 09 – Soladado Point Mortar and Bombing Areas

Component: US Marines

Installation/Property Name: Culebra Island

Location (City, County, State):Culebra, Puerto Rico

Site Name (RMIS ID)/Project Name (Project No.): MRS 09 Soladado Point Mortar and Bombing Areas (I02PR006809)

Date Information Entered/Updated: January 2007/ April 2007

Point of Contact (Name/Phone): Mr. Charles D. Fales, Florida FUDS Manager / (904) 232-1017

Project Phase (check only one):

❑ PA	✓SI	❑ RI	❑ FS	❑ RD
❑ RA-C	❑ RIP	❑ RA-O	❑ RC	❑ LTM

Media Evaluated (check all that apply):

❑Groundwater	❑Sediment (human receptor)
✓ Surface soil	❑ Surface Water (ecological receptor)
❑Sediment (ecological receptor)	❑ Surface Water (human receptor)

MRS Summary:

MRS Description: Describe the munitions-related activities that occurred at the installation, the dates of operation, and the UXO, DMM (by type of munition, if known) or munitions constituents (by type, if known) known or suspected to be present):

Culebra Island and the surrounding cays and cayos was used for aerial bombing, maneuvers, artillery firing, and amphibious training by the US Navy and Marines between 1902 and 1975. Many different training operations were conducted at this site and complete records are not available to designate specific ranges or range complexes. As such, the Island of Culebra and surrounding cays and cayos were divided into 14 munitions response sites (MRS) based on the islands geography and historic military use. MRS 09 consists of 328 acres on the very southeast tip of the Southeastern peninsula of Culebra. In 1914, a 5-inch battery was established on Soldado Point. Several training exercises including mortar firing, aerial bombing and strafing were conducted on Soldado point and the bay northwest of Soldado point during the 1930s and 40s. One report mentions 30 and 1000lb. bombs were dropped in this area.

Description of Pathways for Human and Ecological Receptors:

Soils on the MRS were sampled as this is considered the most likely location for MC. Access to the site is unrestricted.

Description of Receptors (Human and Ecological):

The island was used for livestock grazing. The area is managed for recreational use. USFW refuge areas are located in the area.

Table 1

EHE Module: Munitions Type Data Element Table

DIRECTIONS: Below are 11 classifications of munitions and their descriptions. Circle the score(s) that correspond with **all** munitions types known or suspected to be present at the MRS.

Note: The terms *practice munitions, small arms, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Sensitive	All UXO that are considered likely to function upon any interaction with exposed persons [e.g., submunitions, 40mm high-explosive (HE) grenades, white phosphorus (WP) munitions, high-explosive antitank (HEAT) munitions, and practice munitions with sensitive fuzes, but excluding all other practice munitions]. All hand grenades containing energetic filler. Bulk primary explosives, or mixtures of these with environmental media, such that the mixture poses an explosive hazard.	***30***
High explosive (used or damaged)	All UXO containing a high-explosive filler (e.g., RDX, Composition B), that are not considered "sensitive." All DMM containing a high-explosive filler that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	***25***
Pyrotechnic (used or damaged)	All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades). All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	***20***
High explosive (unused)	All DMM containing a high explosive filler that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	15
Propellant	All UXO containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor). All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are: ▪ Damaged by burning or detonation ▪ Deteriorated to the point of instability.	15
Bulk secondary high explosives, pyrotechnics, or propellant	All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor), that are deteriorated. Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture poses an explosive hazard.	10
Pyrotechnic (not used or damaged)	All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	10
Practice	All UXO that are practice munitions that are not associated with a sensitive fuze. All DMM that are practice munitions that are not associated with a sensitive fuze and that have not: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	***5***
Riot control	All UXO or DMM containing a riot control agent filler (e.g., tear gas).	3
Small arms	All used munitions or DMM that are categorized as small arms ammunition [Physical evidence or historical evidence that no other types of munitions (e.g., grenades, subcaliber training rockets, demolition charges) were used or are present on the MRS is required for selection of this category.].	***2***
Evidence of no munitions	Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0
MUNITIONS TYPE	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).	***30***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Munitions Type*** classifications in the space provided.

Munitions suspected at this site include with potential WP fillers (HE bombs) 75 mm projectiles and signal rockets. (Sections. 2.4.1.8, and Appendix J of the 2007 SI Report)

Table 2

EHE Module: Source of Hazard Data Element Table

DIRECTIONS: Below are 11 classifications describing sources of explosive hazards. Circle the score(s) that correspond with **all** sources of explosive hazards known or suspected to be present at the MRS.

Note: The terms *former range, practice munitions, small arms, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	***10***
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former military range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, where the firing point is delineated as an MRS separate from the rest of a former military range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a military range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms ammunition was used [There must be evidence that no other types of munitions (e.g., grenades) were used or are present to place an MRS into this category.].	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0
SOURCE OF HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).	***10***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Source of Hazard*** classifications in the space provided.

Section 2.4.1.8 of the 2007 SI Report.

Table 3

EHE Module: Location of Munitions Data Element Table

DIRECTIONS: Below are eight classifications of munitions locations and their descriptions. Circle the score(s) that correspond with **all** locations where munitions are located or suspected of being found at the MRS.

Note: The terms *surface, subsurface, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Confirmed surface	◆ Physical evidence indicates that there are UXO or DMM on the surface of the MRS ◆ Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	◆ Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS, and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM. ◆ Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	◆ Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed. ◆ Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	◆ There is physical evidence (e.g., munitions debris, such fragments, penetrators, projectiles, shell casings, links, fins), other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	***10***
Suspected (historical evidence)	◆ There is historical evidence indicating that UXO or DMM may be present at the MRS.	5
Subsurface, physical constraint	◆ There is physical or historical evidence indicating that UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	◆ The presence of small arms ammunition is confirmed or suspected, regardless of other factors such as geological stability [There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to place an MRS into this category.].	1
Evidence of no munitions	◆ Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0
LOCATION OF MUNITIONS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 25).	***10***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Location of Munitions*** classifications in the space provided.

Section 4.9 of the 2007 SI Report states that MD was found on the site.

Table 4

EHE Module: Ease of Access Data Element Table

DIRECTIONS: Below are four classifications of barrier types that can surround an MRS and their descriptions. The barrier type is directly related to the ease of public access to any explosive materiel. Circle the score that corresponds with the ease of access to the MRS.

Note: The term *barrier* is defined in Appendix C of the Primer.

Classification	Description	Score
No barrier	• There is no barrier preventing access to any part of the MRS (i.e., all parts of the MRS are accessible).	***10***
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS, but not the entire MRS.	8
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
EASE OF ACCESS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).	***10***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ease of Access*** classification in the space provided.

The beach is publicly accessible. Although vegetation is restrictive, there are no access restrictions to the MRS (2007 SI Report Paragraph 5.9.3.1).

Table 5

EHE Module: Status of Property Data Element Table

DIRECTIONS: Below are three classifications of the status of a property within the Department of Defense (DoD) and their descriptions. Circle the score that corresponds with the status of property at the MRS.

Classification	Description	Score
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by DoD. Examples are privately owned land or water bodies; land or water bodies owned or controlled by state, tribal, or local governments; and land or water bodies managed by other federal agencies.	***5***
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD, and DoD plans to transfer that land or water body to the control of another entity (e.g., a state, tribal, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD. With respect to property that is leased or otherwise possessed, DoD must control access to the MRS 24 hours per day, every day of the calendar year.	0
STATUS OF PROPERTY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Status of Property*** classification in the space provided.

Section 2.3 of the 2007 SI Report notes that all of the land acquired by the military on Culebra and the surrounding cays and cayos was excessed to the Department of the Interior or transferred to the government of Puerto Rico. The lands are currently managed by USFWS, Puerto Rico Dept. of Natural Resources or the Municipality of Culebra. Section 2.4.1.8 notes the MRS is managed by PR DNR

Table 6

EHE Module: Population Density Data Element Table

DIRECTIONS: Below are three classifications of population density and their descriptions. Determine the population density per square mile in the vicinity of the MRS and circle the score that corresponds with the associated population density.

Note: If an MRS is located in more than one county, use the largest population density value among the counties. If the MRS is within or borders a city or town, use the population density for the city or town, rather than that of the county.

Classification	Description	Score
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	***1***
POPULATION DENSITY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***1***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Density*** classification in the space provided.

Section 2.2.7 of the 2007 SI Report notes that the population density of the municipality of Culebra is 71.8 persons per mile, as obtained from Census 2000.

Table 7

EHE Module: Population Near Hazard Data Element Table

DIRECTIONS: Below are six classifications describing the number of inhabited structures near the MRS. The number of inhabited buildings relates to the population near the hazard. Determine the number of inhabited structures within two miles of the MRS boundary and circle the score that corresponds with the associated population near the known or suspected hazard.

Note: The term *inhabited structures* is defined in Appendix C of the Primer.

Classification	Description	Score
26 or more inhabited structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	***5***
16 to 25 inhabited structures	• There are 16 to 25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15 inhabited structures	• There are 11 to 15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10 inhabited structures	• There are 6 to 10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5 inhabited structures	• There are 1 to 5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0 inhabited structures	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
POPULATION NEAR HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Near Hazard*** classification in the space provided.

MRS 9 is located within a two-mile radius surrounding the Municipality of Culebra which has just fewer than 2,000 residents and many visitors throughout the year. (2007 SI Section 2.2.7 and Table 2.2).

Table 8

EHE Module: Types of Activities/Structures Data Element Table

DIRECTIONS: Below are five classifications of activities and/or inhabited structures near the hazard and their descriptions. Review the types of activities that occur and/or structures that are present within two miles of the MRS and circle the score(s) that correspond with **all** the activities/structure classifications at the MRS.

Note: The term *inhabited structure* is defined in Appendix C of the Primer.

Classification	Description	Score
Residential, educational, commercial, or subsistence	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	***5***
Parks and recreational areas	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with parks, nature preserves, or other recreational uses.	***4***
Agricultural, forestry	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with industrial activities or warehousing.	***2***
No known or recurring activities	• There are no known or recurring activities occurring up to two miles from the MRS's boundary or within the MRS's boundary.	1
TYPES OF ACTIVITIES/STRUCTURES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Types of Activities/Structures*** classifications in the space provided.

MRS 9 is located on the island of Culebra. The island has schools, residential areas, a clinic, an airport, restaurants, hotels, shops, and a few industrial companies. Beaches within a two mile radius are managed by the USFWS or PR DNR for wildlife conservation and recreational use. (2007 SI Report Sections 2.2.7 and 2.2.8)

Table 9

EHE Module: Ecological and/or Cultural Resources Data Element Table

DIRECTIONS: Below are four classifications of ecological and/or cultural resources and their descriptions. Review the types of resources present and circle the score that corresponds with the ecological and/or cultural resource classifications at the MRS.

Note: The terms *ecological resources* and *cultural resources* are defined in Appendix C of the Primer.

Classification	Description	Score
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	***3***
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0
ECOLOGICAL AND/OR CULTURAL RESOURCES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***3***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ecological and/or Cultural Resources*** classification in the space provided.

The MRS is in an area that contains USFWS refuges that are utilized by various species of birds. No cultural resources are reported on the site (2007 SI (Section 2.2.6) and the 2007 SSWP.)

Table 10
Determining the EHE Module Rating

DIRECTIONS:

1. From Tables 1–9, record the data element scores in the **Score** boxes to the right.
2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.
3. Add the three **Value** boxes and record this number in the **EHE Module Total** box below.
4. Circle the appropriate range for the **EHE Module Total** below.
5. Circle the **EHE Module Rating** that corresponds to the range selected and record this value in the **EHE Module Rating** box found at the bottom of the table.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

	Source	Score	Value
Explosive Hazard Factor Data Elements			
Munitions Type	Table 1	30	40
Source of Hazard	Table 2	10	
Accessibility Factor Data Elements			
Location of Munitions	Table 3	10	25
Ease of Access	Table 4	10	
Status of Property	Table 5	5	
Receptor Factor Data Elements			
Population Density	Table 6	1	14
Population Near Hazard	Table 7	5	
Types of Activities/ Structures	Table 8	5	
Ecological and /or Cultural Resources	Table 9	3	
EHE MODULE TOTAL			79

EHE Module Total	EHE Module Rating
92 to 100	A
82 to 91	B
71 to 81	C
60 to 70	D
48 to 59	E
38 to 47	F
less than 38	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected Explosive Hazard
EHE MODULE RATING	***C***

Table 11

CHE Module: CWM Configuration Data Element Table

DIRECTIONS: Below are seven classifications of CWM configuration and their descriptions. Circle the score(s) that correspond to **all** CWM configurations known or suspected to be present at the MRS.

Note: The terms *CWM/UXO, CWM/DMM, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
CWM, explosive configuration either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is: • Explosively configured CWM that are UXO (i.e., CWM/UXO). • Explosively configured CWM that are DMM (i.e., CWM/DMM) that have been damaged.	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged, or nonexplosively configured CWM/DMM, or CWM not configured as a munition, that are commingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are undamaged DMM	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is: • Nonexplosively configured CWM/DMM. • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• Only CAIS, other than CAIS K941 and K942, are known or suspected of being present at the MRS.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	***0***
CWM CONFIGURATION	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).	***0***

DIRECTIONS: Document any MRS-specific data used in selecting the ***CWM Configuration*** classifications in the space provided.

There is no historical or anecdotal evidence that CWM were ever used on this MRS. (Sections 2.5 and 4.2 of the 2007 SI Report). Tables 12-19 have been omitted.

Table 20
Determining the CHE Module Rating

DIRECTIONS:

1. From Tables 11–19, record the data element scores in the **Score** boxes to the right.
2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.
3. Add the three **Value** boxes and record this number in the **CHE Module Total** box below.
4. Circle the appropriate range for the **CHE Module Total** below.
5. Circle the **CHE Module Rating** that corresponds to the range selected and record this value in the **CHE Module Rating** box found at the bottom of the table.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

	Source	Score	Value
CWM Hazard Factor Data Elements			
CWM Configuration	Table 11	0	0
Sources of CWM	Table 12	0	
Accessibility Factor Data Elements			
Location of CWM	Table 13	0	0
Ease of Access	Table 14	0	
Status of Property	Table 15	0	
Receptor Factor Data Elements			
Population Density	Table 16	0	0
Population Near Hazard	Table 17	0	
Types of Activities/ Structures	Table 18	0	
Ecological and /or Cultural Resources	Table 19	0	
CHE MODULE TOTAL			0

CHE Module Total	CHE Module Rating
92 to 100	A
82 to 91	B
71 to 81	C
60 to 70	D
48 to 59	E
38 to 47	F
less than 38	**G**
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected CWM Hazard
CHE MODULE RATING	***No Known or Suspected CWM Hazard***

Table 21

HHE Module: Groundwater Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's groundwater and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the groundwater, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the groundwater is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in groundwater has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the groundwater to a potential point of exposure (possibly due to geological structures or physical controls).	L

MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater receptors at the MRS.

Classification	Description	Value
Identified	There is a threatened water supply well downgradient of the source and the groundwater is a current source of drinking water or source of water for other beneficial uses such as irrigation/agriculture (equivalent to Class I or IIA aquifer).	H
Potential	There is no threatened water supply well downgradient of the source and the groundwater is currently or potentially usable for drinking water, irrigation, or agriculture (equivalent to Class I, IIA, or IIB aquifer).	M
Limited	There is no potentially threatened water supply well downgradient of the source and the groundwater is not considered a potential source of drinking water and is of limited beneficial use (equivalent to Class IIIA or IIIB aquifer, or where perched aquifer exists only).	L

RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Groundwater MC Hazard

Per TPP concurrence, no groundwater samples were collected as part of the SI.

Table 22

HHE Module: Surface Water – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for human endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF Scale	CHF Value	Sum The Ratios	
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Surface Water (Human Endpoint) MC Hazard

Per TPP concurrence, no surface water samples were collected as part of the SI

Table 23

HHE Module: Sediment – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the site's sediment and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for human endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios

CHF Scale	CHF Value	Sum The Ratios
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant}}$
100 > CHF > 2	M (Medium)	
2 > CHF	L (Low)	

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Sediment (Human Endpoint) MC Hazard

Per TPP concurrence no sediment samples were collected as part of the SI.

Table 24

HHE Module: Surface Water – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
CHF Scale	**CHF Value**	**Sum the Ratios**	
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).		

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Surface Water (Ecological Endpoint) MC Hazard

Per TPP concurrence, no surface water samples were collected as part of the SI

Table 25

HHE Module: Sediment – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's sediment and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
CHF Scale	**CHF Value**	**Sum the Ratios**	
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).		

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Sediment (Ecological Endpoint) MC Hazard

Per TPP concurrence, no sediment samples were collected as part of the SI.

Table 26

HHE Module: Surface Soil Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface soil and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the surface soil, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratio
Aluminum	34000	77000	0.44
Chromium	19	300	0.063
Strontium	81	46000	0.002
CHF Scale	**CHF Value**	**Sum the Ratios**	**0.50**
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	***L***

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface soil migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface soil is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface soil has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface soil to a potential point of exposure (possibly due to presence of geological structures or physical controls).	***L***
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***L***

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface soil receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface soil to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface soil to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface soil to which contamination has moved or can move.	***L***
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***L***

No Known or Suspected Sediment (Ecological Endpoint) MC Hazard

Contaminants that are attributable to DoD activities (per Table 4.1 2007 SI Report), with comparison values developed, that exceed the metals comparison values contribute to the score.
Pathway and receptor factors are rated low given the lack of contamination measured in the soil.

Table 27

HHE Module: Supplemental Contaminant Hazard Factor Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: **Only use this table if there are more than five contaminants present at the MRS.** This is a supplemental table designed to hold information about contaminants that do not fit in the previous tables. Indicate the **media** in which these contaminants are present. Then record all **contaminants**, their **maximum concentrations** and their **comparison values** (from Appendix B) in the table below. Calculate and record the ratio for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** for each medium on the appropriate media-specific tables.

Note: Remember not to add ratios from different media.

Media	Contaminant	Maximum Concentration	Comparison Value	Ratio

Table 28

Determining the HHE Module Rating

DIRECTIONS:

1. Record the letter values (H, M, L) for the **Contaminant Hazard, Migration Pathway, and Receptor Factors** for the media (from Tables 21–26) in the corresponding boxes below.
2. Record the media's three-letter combinations in the **Three-Letter Combination** boxes below (three-letter combinations are arranged from Hs to Ms to Ls).
3. Using the reference provided below, determine each media's rating (A–G) and record the letter in the corresponding Media Rating box below.

Media (Source)	Contaminant Hazard Factor Value	Migratory Pathway Factor Value	Receptor Factor Value	Three-Letter Combination (Hs-Ms-Ls)	Media Rating (A-G)
Groundwater (Table 21)					
Surface Water/Human Endpoint (Table 22)	-	-	-	-	-
Sediment/Human Endpoint (Table 23)	-	-	-	-	-
Surface Water/Ecological Endpoint (Table 24)	-	-	-	-	-
Sediment/Ecological Endpoint (Table 25)	-	-	-	-	-
Surface Soil (Table 26)	L	L	L	LLL	G

DIRECTIONS (cont.):

4. Select the single highest Media Rating (A is highest; G is lowest) and enter the letter in the **HHE Module Rating** box below.

Note:

An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more media, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

HHE MODULE RATING	*G*

HHE Ratings (for reference only)

Combination	Rating
HHH	A
HHM	B
HHL	C
HMM	
HML	D
MMM	
HLL	E
MML	
MLL	F
LLL	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected MC Hazard

Table 29
MRS Priority

DIRECTIONS: In the chart below, circle the letter **rating** for each module recorded in Table 10 (EHE), Table 20 (CHE), and Table 28 (HHE). Circle the corresponding numerical **priority** for each module. If information to determine the module rating is not available, choose the appropriate alternative module rating. The MRS priority is the single highest priority; record this number in the **MRS or Alternative Priority** box at the bottom of the table.

Note: An MRS assigned Priority 1 has the highest relative priority; an MRS assigned Priority 8 has the lowest relative priority. Only an MRS with CWM known or suspected to be present can be assigned Priority 1; an MRS that has CWM known or suspected to be present cannot be assigned Priority 8.

EHE Rating	Priority	CHE Rating	Priority	HHE Rating	Priority
		A	1		
A	2	B	2	A	2
B	3	C	3	B	3
C	***4***	D	4	C	4
D	5	E	5	D	5
E	6	F	6	E	6
F	7	G	7	F	7
G	8			***G***	***8***
Evaluation Pending		Evaluation Pending		Evaluation Pending	
No Longer Required		No Longer Required		No Longer Required	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		No Known or Suspected MC Hazard	
MRS or ALTERNATIVE PRIORITY				***4***	

MRSPP Evaluation

MRS 10

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Table A
MRS Background Information

DIRECTIONS: Record the background information below for the MRS to be evaluated. Much of this information is available from DoD databases, such as RMIS. If the MRS is located on a FUDS property, the suitable FUDS property information should be substituted. In the MRS summary, briefly describe the UXO, DMM, or MC that are known or suspected to be present, the exposure setting (the MRS's physical environment), any other incidental non-munitions related contaminants found at the MRS (e.g., benzene, trichloroethylene), and any potentially exposed human and ecological receptors. Include a map of the MRS, if one is available.

Munitions Response Site Name: MRS 10 – Defensive Firing Area #1

Component: US Marines and US Navy

Installation/Property Name: Culebra Island

Location (City, County, State):Culebra, Puerto Rico

Site Name (RMIS ID)/Project Name (Project No.): MRS 10 Defensive Firing Area #1 (I02PR006810)

Date Information Entered/Updated: January 2007/April 2007

Point of Contact (Name/Phone): Mr. Charles D. Fales, Florida FUDS Manager / (904) 232-1017

Project Phase (check only one):

❑ PA	✓SI	❑ RI	❑ FS	❑ RD
❑ RA-C	❑ RIP	❑ RA-O	❑ RC	❑ LTM

Media Evaluated (check all that apply):

❑Groundwater	❑Sediment (human receptor)
✓ Surface soil	❑ Surface Water (ecological receptor)
❑Sediment (ecological receptor)	❑ Surface Water (human receptor)

MRS Summary:

MRS Description: Describe the munitions-related activities that occurred at the installation, the dates of operation, and the UXO, DMM (by type of munition, if known) or munitions constituents (by type, if known) known or suspected to be present):

Culebra Island and the surrounding cays and cayos was used for aerial bombing, maneuvers, artillery firing, and amphibious training by the US Navy and Marines between 1902 and 1975. Many different training operations were conducted at this site and complete records are not available to designate specific ranges or range complexes. As such, the Island of Culebra and surrounding cays and cayos were divided into 14 munitions response sites (MRS) based on the islands geography and historic military use. MRS 10 consists of 547 acres on the southwest peninsula of Culebra, south of the town of Dewey. Marines conducted amphibious landing and ground maneuver training on the beaches and hills in this area from the 1920s through the 1940s. MRS 10 has many residents and business. Most of the development is near the town of Dewey on the north end of the site; however, houses are scattered throughout this area. This MRS is almost entirely privately owned except for municipality lands such as the police and fire stations

Description of Pathways for Human and Ecological Receptors:

Soils on the MRS were sampled as this is considered the most likely location for MC. Access to the site is unrestricted.

Description of Receptors (Human and Ecological):
The island was used for livestock grazing. The area is managed for recreational use. USFW refuge areas are located in the area. .

Table 1

EHE Module: Munitions Type Data Element Table

DIRECTIONS: Below are 11 classifications of munitions and their descriptions. Circle the score(s) that correspond with **all** munitions types known or suspected to be present at the MRS.

Note: The terms *practice munitions, small arms, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Sensitive	All UXO that are considered likely to function upon any interaction with exposed persons [e.g., submunitions, 40mm high-explosive (HE) grenades, white phosphorus (WP) munitions, high-explosive antitank (HEAT) munitions, and practice munitions with sensitive fuzes, but excluding all other practice munitions]. All hand grenades containing energetic filler. Bulk primary explosives, or mixtures of these with environmental media, such that the mixture poses an explosive hazard.	***30***
High explosive (used or damaged)	All UXO containing a high-explosive filler (e.g., RDX, Composition B), that are not considered "sensitive." All DMM containing a high-explosive filler that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	***25***
Pyrotechnic (used or damaged)	All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades). All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	***20***
High explosive (unused)	All DMM containing a high explosive filler that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	15
Propellant	All UXO containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor). All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are: ▪ Damaged by burning or detonation ▪ Deteriorated to the point of instability.	15
Bulk secondary high explosives, pyrotechnics, or propellant	All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor), that are deteriorated. Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture poses an explosive hazard.	10
Pyrotechnic (not used or damaged)	All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	10
Practice	All UXO that are practice munitions that are not associated with a sensitive fuze. All DMM that are practice munitions that are not associated with a sensitive fuze and that have not: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	5
Riot control	All UXO or DMM containing a riot control agent filler (e.g., tear gas).	3
Small arms	All used munitions or DMM that are categorized as small arms ammunition [Physical evidence or historical evidence that no other types of munitions (e.g., grenades, subcaliber training rockets, demolition charges) were used or are present on the MRS is required for selection of this category.].	2
Evidence of no munitions	Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0
MUNITIONS TYPE	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).	***30***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Munitions Type*** classifications in the space provided.

The area was used for ground maneuvers and amphibious training. Mortars may have been dropped on the beach from higher ground (Section 2.4.1.9 and Appendix J of the 2007 SI Report) Mortars are rated sensitive as they could have potentially contained white phosphorus.

Table 2

EHE Module: Source of Hazard Data Element Table

DIRECTIONS: Below are 11 classifications describing sources of explosive hazards. Circle the score(s) that correspond with **all** sources of explosive hazards known or suspected to be present at the MRS.

Note: The terms *former range, practice munitions, small arms, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	***10***
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former military range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, where the firing point is delineated as an MRS separate from the rest of a former military range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a military range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms ammunition was used [There must be evidence that no other types of munitions (e.g., grenades) were used or are present to place an MRS into this category.].	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0
SOURCE OF HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).	***10***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Source of Hazard*** classifications in the space provided.

Section 2.4.1.9 of the 2007 SI Report.

Table 3

EHE Module: Location of Munitions Data Element Table

DIRECTIONS: Below are eight classifications of munitions locations and their descriptions. Circle the score(s) that correspond with **all** locations where munitions are located or suspected of being found at the MRS.

Note: The terms *surface, subsurface, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Confirmed surface	◆ Physical evidence indicates that there are UXO or DMM on the surface of the MRS ◆ Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	◆ Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS, and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM. ◆ Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	◆ Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed. ◆ Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	◆ There is physical evidence (e.g., munitions debris, such fragments, penetrators, projectiles, shell casings, links, fins), other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	◆ There is historical evidence indicating that UXO or DMM may be present at the MRS.	***5***
Subsurface, physical constraint	◆ There is physical or historical evidence indicating that UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	◆ The presence of small arms ammunition is confirmed or suspected, regardless of other factors such as geological stability [There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to place an MRS into this category.].	1
Evidence of no munitions	◆ Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0
LOCATION OF MUNITIONS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 25).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Location of Munitions*** classifications in the space provided.

Section 4.10 of the 2007 SI Report states that there is no record of any MEC or MD being discovered on the site.

Table 4

EHE Module: Ease of Access Data Element Table

DIRECTIONS: Below are four classifications of barrier types that can surround an MRS and their descriptions. The barrier type is directly related to the ease of public access to any explosive materiel. Circle the score that corresponds with the ease of access to the MRS.

Note: The term *barrier* is defined in Appendix C of the Primer.

Classification	Description	Score
No barrier	• There is no barrier preventing access to any part of the MRS (i.e., all parts of the MRS are accessible).	***10***
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS, but not the entire MRS.	8
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
EASE OF ACCESS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).	***10***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ease of Access*** classification in the space provided.

There are no fences or physical barriers to the site, although vegetation impedes travel off established trails (2007 SI Report paragraph 5.10.3.1)

Table 5

EHE Module: Status of Property Data Element Table

DIRECTIONS: Below are three classifications of the status of a property within the Department of Defense (DoD) and their descriptions. Circle the score that corresponds with the status of property at the MRS.

Classification	Description	Score
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by DoD. Examples are privately owned land or water bodies; land or water bodies owned or controlled by state, tribal, or local governments; and land or water bodies managed by other federal agencies.	***5***
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD, and DoD plans to transfer that land or water body to the control of another entity (e.g., a state, tribal, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD. With respect to property that is leased or otherwise possessed, DoD must control access to the MRS 24 hours per day, every day of the calendar year.	0
STATUS OF PROPERTY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Status of Property*** classification in the space provided.

Section 2.4.1.9 of the 2007 SI Report notes the MRS is privately owned.

Table 6

EHE Module: Population Density Data Element Table

DIRECTIONS: Below are three classifications of population density and their descriptions. Determine the population density per square mile in the vicinity of the MRS and circle the score that corresponds with the associated population density.

Note: If an MRS is located in more than one county, use the largest population density value among the counties. If the MRS is within or borders a city or town, use the population density for the city or town, rather than that of the county.

Classification	Description	Score
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	***1***
POPULATION DENSITY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***1***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Density*** classification in the space provided.

Section 2.2.7 of the 2007 SI notes that the population density of the municipality of Culebra is 71.8 persons per mile, as obtained from Census 2000.

Table 7

EHE Module: Population Near Hazard Data Element Table

DIRECTIONS: Below are six classifications describing the number of inhabited structures near the MRS. The number of inhabited buildings relates to the population near the hazard. Determine the number of inhabited structures within two miles of the MRS boundary and circle the score that corresponds with the associated population near the known or suspected hazard.

Note: The term *inhabited structures* is defined in Appendix C of the Primer.

Classification	Description	Score
26 or more inhabited structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	***5***
16 to 25 inhabited structures	• There are 16 to 25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15 inhabited structures	• There are 11 to 15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10 inhabited structures	• There are 6 to 10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5 inhabited structures	• There are 1 to 5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0 inhabited structures	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
POPULATION NEAR HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Near Hazard*** classification in the space provided.

MRS 10 is located within a two-mile radius surrounding the Municipality of Culebra which has just fewer than 2,000 residents and many visitors throughout the year. (2007 SI Section 2.2.7 and Table 2.2).

Table 8

EHE Module: Types of Activities/Structures Data Element Table

DIRECTIONS: Below are five classifications of activities and/or inhabited structures near the hazard and their descriptions. Review the types of activities that occur and/or structures that are present within two miles of the MRS and circle the score(s) that correspond with **all** the activities/structure classifications at the MRS.

Note: The term *inhabited structure* is defined in Appendix C of the Primer.

Classification	Description	Score
Residential, educational, commercial, or subsistence	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	***5***
Parks and recreational areas	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with parks, nature preserves, or other recreational uses.	***4***
Agricultural, forestry	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with industrial activities or warehousing.	***2***
No known or recurring activities	• There are no known or recurring activities occurring up to two miles from the MRS's boundary or within the MRS's boundary.	1
TYPES OF ACTIVITIES/STRUCTURES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Types of Activities/Structures*** classifications in the space provided.

MRS 2 is located on the island of Culebra. The island has schools, residential areas, a clinic, an airport, restaurants, hotels, shops, and a few industrial companies. Beaches within a two mile radius are managed by the USFWS or PR DNR for wildlife conservation and recreational use. (2007 SI Report Sections 2.2.7 and 2.2.8)

Table 9

EHE Module: Ecological and/or Cultural Resources Data Element Table

DIRECTIONS: Below are four classifications of ecological and/or cultural resources and their descriptions. Review the types of resources present and circle the score that corresponds with the ecological and/or cultural resource classifications at the MRS.

Note: The terms *ecological resources* and *cultural resources* are defined in Appendix C of the Primer.

Classification	Description	Score
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	***3***
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0
ECOLOGICAL AND/OR CULTURAL RESOURCES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***3***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ecological and/or Cultural Resources*** classification in the space provided.

The MRS is in an area that contains USFWS refuges that are utilized by various species of birds. No cultural resources are reported on the site (2007 SI Section 2.2.7) and the 2006 SSWP.

Table 10
Determining the EHE Module Rating

DIRECTIONS:

1. From Tables 1–9, record the data element scores in the **Score** boxes to the right.
2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.
3. Add the three **Value** boxes and record this number in the **EHE Module Total** box below.
4. Circle the appropriate range for the **EHE Module Total** below.
5. Circle the **EHE Module Rating** that corresponds to the range selected and record this value in the **EHE Module Rating** box found at the bottom of the table.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

	Source	Score	Value
Explosive Hazard Factor Data Elements			
Munitions Type	Table 1	30	40
Source of Hazard	Table 2	10	
Accessibility Factor Data Elements			
Location of Munitions	Table 3	5	20
Ease of Access	Table 4	10	
Status of Property	Table 5	5	
Receptor Factor Data Elements			
Population Density	Table 6	1	14
Population Near Hazard	Table 7	5	
Types of Activities/ Structures	Table 8	5	
Ecological and /or Cultural Resources	Table 9	3	
EHE MODULE TOTAL			74

EHE Module Total	EHE Module Rating
92 to 100	A
82 to 91	B
71 to 81	*C*
60 to 70	D
48 to 59	E
38 to 47	F
less than 38	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected Explosive Hazard
EHE MODULE RATING	***C***

Table 11

CHE Module: CWM Configuration Data Element Table

DIRECTIONS: Below are seven classifications of CWM configuration and their descriptions. Circle the score(s) that correspond to **all** CWM configurations known or suspected to be present at the MRS.

Note: The terms *CWM/UXO, CWM/DMM, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
CWM, explosive configuration either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is: • Explosively configured CWM that are UXO (i.e., CWM/UXO). • Explosively configured CWM that are DMM (i.e., CWM/DMM) that have been damaged.	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged, or nonexplosively configured CWM/DMM, or CWM not configured as a munition, that are commingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are undamaged DMM	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is: • Nonexplosively configured CWM/DMM. • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• Only CAIS, other than CAIS K941 and K942, are known or suspected of being present at the MRS.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	***0***
CWM CONFIGURATION	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).	***0***

DIRECTIONS: Document any MRS-specific data used in selecting the ***CWM Configuration*** classifications in the space provided.

There is no historical or anecdotal evidence that CWM were ever used on this MRS. (Sections 2.5 and 4.2 of the 2007 SI Report). Tables 12-19 have been omitted.

Table 20
Determining the CHE Module Rating

DIRECTIONS:

1. From Tables 11–19, record the data element scores in the **Score** boxes to the right.
2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.
3. Add the three **Value** boxes and record this number in the **CHE Module Total** box below.
4. Circle the appropriate range for the **CHE Module Total** below.
5. Circle the **CHE Module Rating** that corresponds to the range selected and record this value in the **CHE Module Rating** box found at the bottom of the table.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

	Source	Score	Value
CWM Hazard Factor Data Elements			
CWM Configuration	Table 11	0	0
Sources of CWM	Table 12	0	
Accessibility Factor Data Elements			
Location of CWM	Table 13	0	0
Ease of Access	Table 14	0	
Status of Property	Table 15	0	
Receptor Factor Data Elements			
Population Density	Table 16	0	0
Population Near Hazard	Table 17	0	
Types of Activities/ Structures	Table 18	0	
Ecological and /or Cultural Resources	Table 19	0	
CHE MODULE TOTAL			0

CHE Module Total	CHE Module Rating
92 to 100	A
82 to 91	B
71 to 81	C
60 to 70	D
48 to 59	E
38 to 47	F
less than 38	**G**
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected CWM Hazard
CHE MODULE RATING	***No Known or Suspected CWM Hazard***

Table 21

HHE Module: Groundwater Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's groundwater and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the groundwater, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$
100 > CHF > 2	M (Medium)	
2 > CHF	L (Low)	

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (*maximum* value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the groundwater is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in groundwater has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the groundwater to a potential point of exposure (possibly due to geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater receptors at the MRS.

Classification	Description	Value
Identified	There is a threatened water supply well downgradient of the source and the groundwater is a current source of drinking water or source of water for other beneficial uses such as irrigation/agriculture (equivalent to Class I or IIA aquifer).	H
Potential	There is no threatened water supply well downgradient of the source and the groundwater is currently or potentially usable for drinking water, irrigation, or agriculture (equivalent to Class I, IIA, or IIB aquifer).	M
Limited	There is no potentially threatened water supply well downgradient of the source and the groundwater is not considered a potential source of drinking water and is of limited beneficial use (equivalent to Class IIIA or IIIB aquifer, or where perched aquifer exists only).	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Groundwater MC Hazard

Per TPP concurrence, no groundwater samples were collected as part of the SI.

Table 22

HHE Module: Surface Water – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for human endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF Scale	CHF Value	Sum The Ratios
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$
100 > CHF > 2	M (Medium)	
2 > CHF	L (Low)	

CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L

MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L

RECEPTOR FACTOR	DIRECTIONS: Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Surface Water (Human Endpoint) MC Hazard

Per TPP concurrence, no surface water samples were collected as part of the SI

Table 23

HHE Module: Sediment – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the site's sediment and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for human endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios

CHF Scale	CHF Value	Sum The Ratios
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant}}$
100 > CHF > 2	M (Medium)	
2 > CHF	L (Low)	

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***H***

No Known or Suspected Sediment (Human Endpoint) MC Hazard

Per TPP concurrence no sediment samples were collected as part of the SI.

Table 24

HHE Module: Surface Water – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
CHF Scale	**CHF Value**	**Sum the Ratios**	
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).		

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Surface Water (Ecological Endpoint) MC Hazard

Per TPP concurrence, no surface water samples were collected as part of the SI

Table 25

HHE Module: Sediment – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's sediment and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
CHF Scale	**CHF Value**	**Sum the Ratios**	
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).		

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Sediment (Ecological Endpoint) MC Hazard

Per TPP concurrence, no sediment samples were collected as part of the SI.

Table 26

HHE Module: Surface Soil Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface soil and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the surface soil, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratio
Aluminum	44000	77000	0.57
Copper	230	2800	0.082
Iron	84000	23000	3.65
Strontium	100	46000	0.0022
Zinc	130	23000	0.0056
CHF Scale	**CHF Value**	**Sum the Ratios**	**4.31**
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	***M***

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface soil migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface soil is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface soil has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	***M***
Confined	Information indicates a low potential for contaminant migration from the source via the surface soil to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***M***

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface soil receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface soil to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface soil to which contamination has moved or can move.	***M***
Limited	Little or no potential for receptors to have access to surface soil to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***M***

No Known or Suspected Sediment (Ecological Endpoint) MC Hazard

Ambient soil samples collected are used to for metals comparison per TPP concurrence. Contaminants that are attributable to DoD activities (per Table 4.1 2007 SI Report), with comparison values developed, that exceed the metals comparison values contribute to the score. MPF and RF are rated M to reflect potential contaminant migration and receptor access.

Table 27

HHE Module: Supplemental Contaminant Hazard Factor Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: **Only use this table if there are more than five contaminants present at the MRS.** This is a supplemental table designed to hold information about contaminants that do not fit in the previous tables. Indicate the **media** in which these contaminants are present. Then record all **contaminants**, their **maximum concentrations** and their **comparison values** (from Appendix B) in the table below. Calculate and record the **ratio** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** for each medium on the appropriate media-specific tables.

Note: Remember not to add ratios from different media.

Media	Contaminant	Maximum Concentration	Comparison Value	Ratio

Table 28

Determining the HHE Module Rating

DIRECTIONS:

1. Record the letter values (H, M, L) for the **Contaminant Hazard, Migration Pathway, and Receptor Factors** for the media (from Tables 21–26) in the corresponding boxes below.
2. Record the media's three-letter combinations in the **Three-Letter Combination** boxes below (three-letter combinations are arranged from Hs to Ms to Ls).
3. Using the reference provided below, determine each media's rating (A–G) and record the letter in the corresponding Media Rating box below.

Media (Source)	Contaminant Hazard Factor Value	Migratory Pathway Factor Value	Receptor Factor Value	Three-Letter Combination (Hs-Ms-Ls)	Media Rating (A-G)
Groundwater (Table 21)					
Surface Water/Human Endpoint (Table 22)	-	-	-	-	-
Sediment/Human Endpoint (Table 23)	-	-	-	-	-
Surface Water/Ecological Endpoint (Table 24)	-	-	-	-	-
Sediment/Ecological Endpoint (Table 25)	-	-	-	-	-
Surface Soil (Table 26)	M	M	M	MMM	D

DIRECTIONS (cont.):

4. Select the single highest Media Rating (A is highest; G is lowest) and enter the letter in the **HHE Module Rating** box below.

Note:

An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more media, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

HHE MODULE RATING	*D*

HHE Ratings (for reference only)

Combination	Rating
HHH	A
HHM	B
HHL	C
HMM	C
HML	D
MMM	D
HLL	E
MML	E
MLL	F
LLL	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected MC Hazard

Table 29
MRS Priority

DIRECTIONS: In the chart below, circle the letter **rating** for each module recorded in Table 10 (EHE), Table 20 (CHE), and Table 28 (HHE). Circle the corresponding numerical **priority** for each module. If information to determine the module rating is not available, choose the appropriate alternative module rating. The MRS priority is the single highest priority; record this number in the **MRS or Alternative Priority** box at the bottom of the table.

Note: An MRS assigned Priority 1 has the highest relative priority; an MRS assigned Priority 8 has the lowest relative priority. Only an MRS with CWM known or suspected to be present can be assigned Priority 1; an MRS that has CWM known or suspected to be present cannot be assigned Priority 8.

EHE Rating	Priority	CHE Rating	Priority	HHE Rating	Priority
		A	1		
A	2	B	2	A	2
B	3	C	3	B	3
C	***4***	D	4	C	4
D	5	E	5	***D***	***5***
E	6	F	6	E	6
F	7	G	7	F	7
G	8			G	8
Evaluation Pending		Evaluation Pending		Evaluation Pending	
No Longer Required		No Longer Required		No Longer Required	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		No Known or Suspected MC Hazard	
		MRS or ALTERNATIVE PRIORITY		***4***	

MRSPP Evaluation

MRS 11

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Table A
MRS Background Information

DIRECTIONS: Record the background information below for the MRS to be evaluated. Much of this information is available from DoD databases, such as RMIS. If the MRS is located on a FUDS property, the suitable FUDS property information should be substituted. In the MRS summary, briefly describe the UXO, DMM, or MC that are known or suspected to be present, the exposure setting (the MRS's physical environment), any other incidental non-munitions related contaminants found at the MRS (e.g., benzene, trichloroethylene), and any potentially exposed human and ecological receptors. Include a map of the MRS, if one is available.

Munitions Response Site Name: MRS 11 – Defensive Firing Area #2

Component: US Marines and US Navy

Installation/Property Name: Culebra Island

Location (City, County, State):Culebra, Puerto Rico

Site Name (RMIS ID)/Project Name (Project No.): MRS 11 Defensive Firing Area #2 (I02PR006811)

Date Information Entered/Updated: January 2007/ April 2007

Point of Contact (Name/Phone): Mr. Charles D. Fales, Florida FUDS Manager / (904) 232-1017

Project Phase (check only one):

❑ PA	✓SI	❑ RI	❑ FS	❑ RD
❑ RA-C	❑ RIP	❑ RA-O	❑ RC	❑ LTM

Media Evaluated (check all that apply):

❑Groundwater	❑Sediment (human receptor)
✓ Surface soil	❑ Surface Water (ecological receptor)
❑Sediment (ecological receptor)	❑ Surface Water (human receptor)

MRS Summary:

MRS Description: Describe the munitions-related activities that occurred at the installation, the dates of operation, and the UXO, DMM (by type of munition, if known) or munitions constituents (by type, if known) known or suspected to be present):

Culebra Island and the surrounding cays and cayos was used for aerial bombing, maneuvers, artillery firing, and amphibious training by the US Navy and Marines between 1902 and 1975. Many different training operations were conducted at this site and complete records are not available to designate specific ranges or range complexes. As such, the Island of Culebra and surrounding cays and cayos were divided into 14 munitions response sites (MRS) based on the islands geography and historic military use. MRS 11 consists of 719 acres located on the west side of Culebra between Northwest Peninsula and the town of Dewey. The area was leased from a private landowner in Nov. 1923, and several training exercises were conducted in this area including 75mm and 155mm firing from Firewood Bay at Mono Cay and portions of Cayo de Luis Pena in 1924, FLEX #4 including firing of small arms and 81mm mortars in 1936, and FLEX #7 in 1941 with boat to beach firing of 5-inch and 6-inch projectiles. MRS 11 has been extensively developed for residential use, and is privately owned except for municipality lands such as the police and fire stations

Description of Pathways for Human and Ecological Receptors:

Soils on the MRS were sampled as this is considered the most likely location for MC. Access to the site is unrestricted.

Description of Receptors (Human and Ecological):
The area is developed for residential use and the beaches are used by recreational boaters. USFW refuge areas are located in the area.

Table 1

EHE Module: Munitions Type Data Element Table

DIRECTIONS: Below are 11 classifications of munitions and their descriptions. Circle the score(s) that correspond with **all** munitions types known or suspected to be present at the MRS.

Note: The terms *practice munitions, small arms, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Sensitive	All UXO that are considered likely to function upon any interaction with exposed persons [e.g., submunitions, 40mm high-explosive (HE) grenades, white phosphorus (WP) munitions, high-explosive antitank (HEAT) munitions, and practice munitions with sensitive fuzes, but excluding all other practice munitions]. All hand grenades containing energetic filler. Bulk primary explosives, or mixtures of these with environmental media, such that the mixture poses an explosive hazard.	***30***
High explosive (used or damaged)	All UXO containing a high-explosive filler (e.g., RDX, Composition B), that are not considered "sensitive." All DMM containing a high-explosive filler that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	***25***
Pyrotechnic (used or damaged)	All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades). All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	20
High explosive (unused)	All DMM containing a high explosive filler that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	15
Propellant	All UXO containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor). All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are: ▪ Damaged by burning or detonation ▪ Deteriorated to the point of instability.	15
Bulk secondary high explosives, pyrotechnics, or propellant	All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor), that are deteriorated. Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture poses an explosive hazard.	10
Pyrotechnic (not used or damaged)	All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	10
Practice	All UXO that are practice munitions that are not associated with a sensitive fuze. All DMM that are practice munitions that are not associated with a sensitive fuze and that have not: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	***5***
Riot control	All UXO or DMM containing a riot control agent filler (e.g., tear gas).	3
Small arms	All used munitions or DMM that are categorized as small arms ammunition [Physical evidence or historical evidence that no other types of munitions (e.g., grenades, subcaliber training rockets, demolition charges) were used or are present on the MRS is required for selection of this category.].	***2***
Evidence of no munitions	Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0
MUNITIONS TYPE	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).	***30***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Munitions Type*** classifications in the space provided.

Munitions used include 75mm and 155mm, small arms, 81mm mortars, and boat to beach firing of 5-inch and 6-inch projectiles (Appendix J of the 2007 SI Report). Munitions are rated sensitive given the potential for the mortars and heavy artillery to contain white phosphorus fillers.

Table 2

EHE Module: Source of Hazard Data Element Table

DIRECTIONS: Below are 11 classifications describing sources of explosive hazards. Circle the score(s) that correspond with **all** sources of explosive hazards known or suspected to be present at the MRS.

Note: The terms *former range, practice munitions, small arms, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	***10***
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former military range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, where the firing point is delineated as an MRS separate from the rest of a former military range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a military range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms ammunition was used [There must be evidence that no other types of munitions (e.g., grenades) were used or are present to place an MRS into this category.].	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0
SOURCE OF HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).	***10***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Source of Hazard*** classifications in the space provided.

Section 4.11.1 of the 2007 SI Report.

Table 3

EHE Module: Location of Munitions Data Element Table

DIRECTIONS: Below are eight classifications of munitions locations and their descriptions. Circle the score(s) that correspond with **all** locations where munitions are located or suspected of being found at the MRS.

Note: The terms *surface, subsurface, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Confirmed surface	◆ Physical evidence indicates that there are UXO or DMM on the surface of the MRS ◆ Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	◆ Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS, and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM. ◆ Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	◆ Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed. ◆ Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	◆ There is physical evidence (e.g., munitions debris, such fragments, penetrators, projectiles, shell casings, links, fins), other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	***10***
Suspected (historical evidence)	◆ There is historical evidence indicating that UXO or DMM may be present at the MRS.	***5***
Subsurface, physical constraint	◆ There is physical or historical evidence indicating that UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	◆ The presence of small arms ammunition is confirmed or suspected, regardless of other factors such as geological stability [There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to place an MRS into this category.].	1
Evidence of no munitions	◆ Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0
LOCATION OF MUNITIONS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 25).	***10***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Location of Munitions*** classifications in the space provided.

Table 4.2 of the 2007 SI Report notes finding a discarded 20 mm shell casing during the site visit.

Table 4

EHE Module: Ease of Access Data Element Table

DIRECTIONS: Below are four classifications of barrier types that can surround an MRS and their descriptions. The barrier type is directly related to the ease of public access to any explosive materiel. Circle the score that corresponds with the ease of access to the MRS.

Note: The term *barrier* is defined in Appendix C of the Primer.

Classification	Description	Score
No barrier	• There is no barrier preventing access to any part of the MRS (i.e., all parts of the MRS are accessible).	***10***
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS, but not the entire MRS.	8
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
EASE OF ACCESS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).	***10***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ease of Access*** classification in the space provided.

Although dense vegetation impedes access to parts of the MRS, there are no barriers preventing access (2007 SI Report Paragraph 5.11.3.1).

Table 5

EHE Module: Status of Property Data Element Table

DIRECTIONS: Below are three classifications of the status of a property within the Department of Defense (DoD) and their descriptions. Circle the score that corresponds with the status of property at the MRS.

Classification	Description	Score
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by DoD. Examples are privately owned land or water bodies; land or water bodies owned or controlled by state, tribal, or local governments; and land or water bodies managed by other federal agencies.	***5***
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD, and DoD plans to transfer that land or water body to the control of another entity (e.g., a state, tribal, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD. With respect to property that is leased or otherwise possessed, DoD must control access to the MRS 24 hours per day, every day of the calendar year.	0
STATUS OF PROPERTY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Status of Property*** classification in the space provided.

Section 2.4.1.10 notes the MRS is privately owned.

Table 6

EHE Module: Population Density Data Element Table

DIRECTIONS: Below are three classifications of population density and their descriptions. Determine the population density per square mile in the vicinity of the MRS and circle the score that corresponds with the associated population density.

Note: If an MRS is located in more than one county, use the largest population density value among the counties. If the MRS is within or borders a city or town, use the population density for the city or town, rather than that of the county.

Classification	Description	Score
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	***1***
POPULATION DENSITY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***1***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Density*** classification in the space provided.

Section 2.2.7 of the 2007 SI notes that the population density of the municipality of Culebra is 71.8 persons per mile, as obtained from Census 2000.

Table 7

EHE Module: Population Near Hazard Data Element Table

DIRECTIONS: Below are six classifications describing the number of inhabited structures near the MRS. The number of inhabited buildings relates to the population near the hazard. Determine the number of inhabited structures within two miles of the MRS boundary and circle the score that corresponds with the associated population near the known or suspected hazard.

Note: The term *inhabited structures* is defined in Appendix C of the Primer.

Classification	Description	Score
26 or more inhabited structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	***5***
16 to 25 inhabited structures	• There are 16 to 25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15 inhabited structures	• There are 11 to 15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10 inhabited structures	• There are 6 to 10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5 inhabited structures	• There are 1 to 5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0 inhabited structures	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
POPULATION NEAR HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Near Hazard*** classification in the space provided.

MRS 11 is located within a two-mile radius surrounding the Municipality of Culebra which has just fewer than 2,000 residents and many visitors throughout the year. (2007 SI Section 2.2.7 and Table 2.2).

Table 8

EHE Module: Types of Activities/Structures Data Element Table

DIRECTIONS: Below are five classifications of activities and/or inhabited structures near the hazard and their descriptions. Review the types of activities that occur and/or structures that are present within two miles of the MRS and circle the score(s) that correspond with **all** the activities/structure classifications at the MRS.

Note: The term *inhabited structure* is defined in Appendix C of the Primer.

Classification	Description	Score
Residential, educational, commercial, or subsistence	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	***5***
Parks and recreational areas	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with parks, nature preserves, or other recreational uses.	***4***
Agricultural, forestry	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with industrial activities or warehousing.	***2***
No known or recurring activities	• There are no known or recurring activities occurring up to two miles from the MRS's boundary or within the MRS's boundary.	1
TYPES OF ACTIVITIES/STRUCTURES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Types of Activities/Structures*** classifications in the space provided.

MRS 11 is located on the island of Culebra. The island has schools, residential areas, a clinic, an airport, restaurants, hotels, shops, and a few industrial companies. Beaches within a two mile radius are managed by the USFWS or PR DNR for wildlife conservation and recreational use. (2007 SI Report Sections 2.2.7 and 2.2.8)

Table 9

EHE Module: Ecological and/or Cultural Resources Data Element Table

DIRECTIONS: Below are four classifications of ecological and/or cultural resources and their descriptions. Review the types of resources present and circle the score that corresponds with the ecological and/or cultural resource classifications at the MRS.

Note: The terms *ecological resources* and *cultural resources* are defined in Appendix C of the Primer.

Classification	Description	Score
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	***3***
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0
ECOLOGICAL AND/OR CULTURAL RESOURCES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***3***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ecological and/or Cultural Resources*** classification in the space provided.

The MRS is in an area that contains USFWS refuges that are utilized by various species of birds. No cultural resources are reported on the site (2007 SI Section 2.2.6) and the 2006 SSWP.

Table 10
Determining the EHE Module Rating

DIRECTIONS:

1. From Tables 1–9, record the data element scores in the **Score** boxes to the right.
2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.
3. Add the three **Value** boxes and record this number in the **EHE Module Total** box below.
4. Circle the appropriate range for the **EHE Module Total** below.
5. Circle the **EHE Module Rating** that corresponds to the range selected and record this value in the **EHE Module Rating** box found at the bottom of the table.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

	Source	Score	Value
Explosive Hazard Factor Data Elements			
Munitions Type	Table 1	30	40
Source of Hazard	Table 2	10	
Accessibility Factor Data Elements			
Location of Munitions	Table 3	10	25
Ease of Access	Table 4	10	
Status of Property	Table 5	5	
Receptor Factor Data Elements			
Population Density	Table 6	1	14
Population Near Hazard	Table 7	5	
Types of Activities/ Structures	Table 8	5	
Ecological and /or Cultural Resources	Table 9	3	
EHE MODULE TOTAL			79

EHE Module Total	EHE Module Rating
92 to 100	A
82 to 91	B
71 to 81	C
60 to 70	D
48 to 59	E
38 to 47	F
less than 38	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected Explosive Hazard
EHE MODULE RATING	**C**

Table 11

CHE Module: CWM Configuration Data Element Table

DIRECTIONS: Below are seven classifications of CWM configuration and their descriptions. Circle the score(s) that correspond to **all** CWM configurations known or suspected to be present at the MRS.

Note: The terms *CWM/UXO, CWM/DMM, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
CWM, explosive configuration either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is: • Explosively configured CWM that are UXO (i.e., CWM/UXO). • Explosively configured CWM that are DMM (i.e., CWM/DMM) that have been damaged.	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged, or nonexplosively configured CWM/DMM, or CWM not configured as a munition, that are commingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are undamaged DMM	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is: • Nonexplosively configured CWM/DMM. • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• Only CAIS, other than CAIS K941 and K942, are known or suspected of being present at the MRS.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	***0***
CWM CONFIGURATION	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).	***0***

DIRECTIONS: Document any MRS-specific data used in selecting the ***CWM Configuration*** classifications in the space provided.

There is no historical or anecdotal evidence that CWM were ever used on this MRS. (Sections 2.5 and 4.2 of the 2007 SI Report). Tables 12-19 have been omitted.

Table 20
Determining the CHE Module Rating

DIRECTIONS:

1. From Tables 11–19, record the data element scores in the **Score** boxes to the right.
2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.
3. Add the three **Value** boxes and record this number in the **CHE Module Total** box below.
4. Circle the appropriate range for the **CHE Module Total** below.
5. Circle the **CHE Module Rating** that corresponds to the range selected and record this value in the **CHE Module Rating** box found at the bottom of the table.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

	Source	Score	Value
CWM Hazard Factor Data Elements			
CWM Configuration	Table 11	0	0
Sources of CWM	Table 12	0	
Accessibility Factor Data Elements			
Location of CWM	Table 13	0	0
Ease of Access	Table 14	0	
Status of Property	Table 15	0	
Receptor Factor Data Elements			
Population Density	Table 16	0	0
Population Near Hazard	Table 17	0	
Types of Activities/ Structures	Table 18	0	
Ecological and /or Cultural Resources	Table 19	0	
CHE MODULE TOTAL			0

CHE Module Total	CHE Module Rating
92 to 100	A
82 to 91	B
71 to 81	C
60 to 70	D
48 to 59	E
38 to 47	F
less than 38	**G**
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected CWM Hazard
CHE MODULE RATING	***No Known or Suspected CWM Hazard***

Table 21

HHE Module: Groundwater Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's groundwater and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the groundwater, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
CHF > 100	H (High)	$CHF = \sum$ [Maximum Concentration of Contaminant] / [Comparison Value for Contaminant]	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).		

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the groundwater is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in groundwater has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the groundwater to a potential point of exposure (possibly due to geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater receptors at the MRS.

Classification	Description	Value
Identified	There is a threatened water supply well downgradient of the source and the groundwater is a current source of drinking water or source of water for other beneficial uses such as irrigation/agriculture (equivalent to Class I or IIA aquifer).	H
Potential	There is no threatened water supply well downgradient of the source and the groundwater is currently or potentially usable for drinking water, irrigation, or agriculture (equivalent to Class I, IIA, or IIB aquifer).	M
Limited	There is no potentially threatened water supply well downgradient of the source and the groundwater is not considered a potential source of drinking water and is of limited beneficial use (equivalent to Class IIIA or IIIB aquifer, or where perched aquifer exists only).	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Groundwater MC Hazard

Per TPP concurrence, no groundwater samples were collected as part of the SI.

Table 22

HHE Module: Surface Water – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for human endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF Scale	CHF Value	Sum The Ratios
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$
100 > CHF > 2	M (Medium)	
2 > CHF	L (Low)	

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Surface Water (Human Endpoint) MC Hazard

Per TPP concurrence, no surface water samples were collected as part of the SI

Table 23

HHE Module: Sediment – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the site's sediment and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for human endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios

CHF Scale	CHF Value	Sum The Ratios
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant}}$
100 > CHF > 2	M (Medium)	
2 > CHF	L (Low)	

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***H***

No Known or Suspected Sediment (Human Endpoint) MC Hazard

Per TPP concurrence no sediment samples were collected as part of the SI.

Table 24

HHE Module: Surface Water – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value.** Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF Scale	CHF Value	Sum the Ratios	
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Surface Water (Ecological Endpoint) MC Hazard

Per TPP concurrence, no surface water samples were collected as part of the SI

Table 25

HHE Module: Sediment – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's sediment and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
CHF Scale	**CHF Value**	**Sum the Ratios**	
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).		

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Sediment (Ecological Endpoint) MC Hazard

Per TPP concurrence, no sediment samples were collected as part of the SI.

Table 26

HHE Module: Surface Soil Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface soil and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value.** If there is no known or suspected MC hazard present in the surface soil, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratio
Aluminum	31000	77000	0.40
Strontium	2900	46000	0.063
CHF Scale	**CHF Value**	**Sum the Ratios**	**0.463**
CHF > 100	**H (High)**	$CHF = \sum$ [Maximum Concentration of Contaminant] / [Comparison Value for Contaminant]	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = **H**).	***L***

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface soil migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface soil is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface soil has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface soil to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***L***

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface soil receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface soil to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface soil to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface soil to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***L***

No Known or Suspected Sediment (Ecological Endpoint) MC Hazard

Ambient soil samples collected are used to for metals comparison per TPP concurrence. Contaminants that are attributable to DoD activities (per Table 4.1 2007 SI Report), with comparison values developed, that exceed the metals comparison values contribute to the score. MPF and RF are rated low given the lack of contamination measured in the soil.

Table 27

HHE Module: Supplemental Contaminant Hazard Factor Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: **Only use this table if there are more than five contaminants present at the MRS.** This is a supplemental table designed to hold information about contaminants that do not fit in the previous tables. Indicate the **media** in which these contaminants are present. Then record all **contaminants**, their **maximum concentrations** and their **comparison values** (from Appendix B) in the table below. Calculate and record the **ratio** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** for each medium on the appropriate media-specific tables.

Note: Remember not to add ratios from different media.

Media	Contaminant	Maximum Concentration	Comparison Value	Ratio

Table 28

Determining the HHE Module Rating

DIRECTIONS:

1. Record the letter values (H, M, L) for the **Contaminant Hazard, Migration Pathway, and Receptor Factors** for the media (from Tables 21–26) in the corresponding boxes below.
2. Record the media's three-letter combinations in the **Three-Letter Combination** boxes below (three-letter combinations are arranged from Hs to Ms to Ls).
3. Using the reference provided below, determine each media's rating (A–G) and record the letter in the corresponding Media Rating box below.

Media (Source)	Contaminant Hazard Factor Value	Migratory Pathway Factor Value	Receptor Factor Value	Three-Letter Combination (Hs-Ms-Ls)	Media Rating (A-G)
Groundwater (Table 21)					
Surface Water/Human Endpoint (Table 22)	-	-	-	-	-
Sediment/Human Endpoint (Table 23)	-	-	-	-	-
Surface Water/Ecological Endpoint (Table 24)	-	-	-	-	-
Sediment/Ecological Endpoint (Table 25)	-	-	-	-	-
Surface Soil (Table 26)	L	L	L	LLL	G

DIRECTIONS (cont.):

4. Select the single highest Media Rating (A is highest; G is lowest) and enter the letter in the **HHE Module Rating** box below.

Note:

An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more media, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

HHE MODULE RATING	*G*

HHE Ratings (for reference only)

Combination	Rating
HHH	A
HHM	B
HHL	C
HMM	C
HML	D
MMM	D
HLL	E
MML	E
MLL	F
LLL	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected MC Hazard

Table 29
MRS Priority

DIRECTIONS: In the chart below, circle the letter **rating** for each module recorded in Table 10 (EHE), Table 20 (CHE), and Table 28 (HHE). Circle the corresponding numerical **priority** for each module. If information to determine the module rating is not available, choose the appropriate alternative module rating. The MRS priority is the single highest priority; record this number in the **MRS or Alternative Priority** box at the bottom of the table.

Note: An MRS assigned Priority 1 has the highest relative priority; an MRS assigned Priority 8 has the lowest relative priority. Only an MRS with CWM known or suspected to be present can be assigned Priority 1; an MRS that has CWM known or suspected to be present cannot be assigned Priority 8.

EHE Rating	Priority	CHE Rating	Priority	HHE Rating	Priority
		A	1		
A	2	B	2	A	2
B	3	C	3	B	3
C	***4***	D	4	C	4
D	5	E	5	D	5
E	6	F	6	E	6
F	7	G	7	F	7
G	8			***G***	***8***
Evaluation Pending		Evaluation Pending		Evaluation Pending	
No Longer Required		No Longer Required		No Longer Required	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		No Known or Suspected MC Hazard	
		MRS or ALTERNATIVE PRIORITY		***4***	

MRSPP Evaluation

MRS 12

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Table A
MRS Background Information

DIRECTIONS: Record the background information below for the MRS to be evaluated. Much of this information is available from DoD databases, such as RMIS. If the MRS is located on a FUDS property, the suitable FUDS property information should be substituted. In the MRS summary, briefly describe the UXO, DMM, or MC that are known or suspected to be present, the exposure setting (the MRS's physical environment), any other incidental non-munitions related contaminants found at the MRS (e.g., benzene, trichloroethylene), and any potentially exposed human and ecological receptors. Include a map of the MRS, if one is available.

Munitions Response Site Name: MRS 12 – Luis Pena Channel Water Areas

Component: US Navy and US Marines

Installation/Property Name: Culebra Island

Location (City, County, State):Culebra, Puerto Rico

Site Name (RMIS ID)/Project Name (Project No.): MRS 12 Luis Pena Channel Water Areas (I02PR006812)

Date Information Entered/Updated: January 2007/ September 2007

Point of Contact (Name/Phone): Mr. Charles D. Fales, Florida FUDS Manager / (904) 232-1017

Project Phase (check only one):

❑ PA	✓SI	❑ RI	❑ FS	❑ RD
❑ RA-C	❑ RIP	❑ RA-O	❑ RC	❑ LTM

Media Evaluated (check all that apply):

❑Groundwater	❑Sediment (human receptor)
❑ Surface soil	❑ Surface Water (ecological receptor)
❑Sediment (ecological receptor)	❑ Surface Water (human receptor)

MRS Summary:

MRS Description: Describe the munitions-related activities that occurred at the installation, the dates of operation, and the UXO, DMM (by type of munition, if known) or munitions constituents (by type, if known) known or suspected to be present):

Culebra Island and the surrounding cays and cayos was used for aerial bombing, maneuvers, artillery firing, and amphibious training by the US Navy and Marines between 1902 and 1975. Many different training operations were conducted at this site and complete records are not available to designate specific ranges or range complexes. As such, the Island of Culebra and surrounding cays and cayos were divided into 14 munitions response sites (MRS) based on the islands geography and historic military use. MRS 12 consists of approximately 835 acres of water along the west coast of Culebra from the Northwest Peninsula to Scorpion Point. The MRS is located adjacent to locations that were used for ordnance activities on the west site of Culebra. These activities include training exercises with live fire, amphibious landing exercises, boat to beach artillery, and direct artillery fire from Firewood Bay to the northern portion of Cao de Luis Pena.

Description of Pathways for Human and Ecological Receptors:

MRS 12 is an underwater MRS that is hydrologically connected to the Atlantic Ocean. The ocean would dilute MC.

Description of Receptors (Human and Ecological):
MRS 12 includes all of the area that makes up the Luis Pena Water Refuge. The site is heavily used for recreational activities. .

Table 1

EHE Module: Munitions Type Data Element Table

DIRECTIONS: Below are 11 classifications of munitions and their descriptions. Circle the score(s) that correspond with **all** munitions types known or suspected to be present at the MRS.

Note: The terms *practice munitions, small arms, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Sensitive	All UXO that are considered likely to function upon any interaction with exposed persons [e.g., submunitions, 40mm high-explosive (HE) grenades, white phosphorus (WP) munitions, high-explosive antitank (HEAT) munitions, and practice munitions with sensitive fuzes, but excluding all other practice munitions]. All hand grenades containing energetic filler. Bulk primary explosives, or mixtures of these with environmental media, such that the mixture poses an explosive hazard.	***30***
High explosive (used or damaged)	All UXO containing a high-explosive filler (e.g., RDX, Composition B), that are not considered "sensitive." All DMM containing a high-explosive filler that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	***25***
Pyrotechnic (used or damaged)	All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades). All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	20
High explosive (unused)	All DMM containing a high explosive filler that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	15
Propellant	All UXO containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor). All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are: ▪ Damaged by burning or detonation ▪ Deteriorated to the point of instability.	15
Bulk secondary high explosives, pyrotechnics, or propellant	All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor), that are deteriorated. Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture poses an explosive hazard.	10
Pyrotechnic (not used or damaged)	All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	10
Practice	All UXO that are practice munitions that are not associated with a sensitive fuze. All DMM that are practice munitions that are not associated with a sensitive fuze and that have not: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	***5***
Riot control	All UXO or DMM containing a riot control agent filler (e.g., tear gas).	3
Small arms	All used munitions or DMM that are categorized as small arms ammunition [Physical evidence or historical evidence that no other types of munitions (e.g., grenades, subcaliber training rockets, demolition charges) were used or are present on the MRS is required for selection of this category.].	2
Evidence of no munitions	Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0
MUNITIONS TYPE	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).	***30***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Munitions Type*** classifications in the space provided.

MRS is a water area where potential munitions used include mortars, explosive bombs and projectiles (Appendix J of the 2007 SI Report). The munitions are rated as sensitive given the potential for the mortars to contain white phosphorus fillers.

Table 2

EHE Module: Source of Hazard Data Element Table

DIRECTIONS: Below are 11 classifications describing sources of explosive hazards. Circle the score(s) that correspond with **all** sources of explosive hazards known or suspected to be present at the MRS.

Note: The terms *former range, practice munitions, small arms, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	***10***
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former military range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, where the firing point is delineated as an MRS separate from the rest of a former military range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a military range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms ammunition was used [There must be evidence that no other types of munitions (e.g., grenades) were used or are present to place an MRS into this category.].	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0
SOURCE OF HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).	***10***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Source of Hazard*** classifications in the space provided.

Section 2.4.1.11 of the 2007 SI Report.

Table 3

EHE Module: Location of Munitions Data Element Table

DIRECTIONS: Below are eight classifications of munitions locations and their descriptions. Circle the score(s) that correspond with **all** locations where munitions are located or suspected of being found at the MRS.

Note: The terms *surface, subsurface, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Confirmed surface	• Physical evidence indicates that there are UXO or DMM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS, and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM.	***20***
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence (e.g., munitions debris, such fragments, penetrators, projectiles, shell casings, links, fins), other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating that UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	• The presence of small arms ammunition is confirmed or suspected, regardless of other factors such as geological stability [There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to place an MRS into this category.].	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0
LOCATION OF MUNITIONS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 25).	***20***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Location of Munitions*** classifications in the space provided.

Underwater ordnance items have been reported, it is not known weather these are MEC or MD (Sections 4.12.1 and Appendix J of the 2007 SI Report).

Table 4

EHE Module: Ease of Access Data Element Table

DIRECTIONS: Below are four classifications of barrier types that can surround an MRS and their descriptions. The barrier type is directly related to the ease of public access to any explosive materiel. Circle the score that corresponds with the ease of access to the MRS.

Note: The term *barrier* is defined in Appendix C of the Primer.

Classification	Description	Score
No barrier	• There is no barrier preventing access to any part of the MRS (i.e., all parts of the MRS are accessible).	***10***
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS, but not the entire MRS.	8
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
EASE OF ACCESS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).	***8***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ease of Access*** classification in the space provided.

Due to boat anchoring and recreational diving in this MRS there are no barriers to access.(2007 SI Report Paragraph 5.12.3.1)

Table 5

EHE Module: Status of Property Data Element Table

DIRECTIONS: Below are three classifications of the status of a property within the Department of Defense (DoD) and their descriptions. Circle the score that corresponds with the status of property at the MRS.

Classification	Description	Score
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by DoD. Examples are privately owned land or water bodies; land or water bodies owned or controlled by state, tribal, or local governments; and land or water bodies managed by other federal agencies.	***5***
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD, and DoD plans to transfer that land or water body to the control of another entity (e.g., a state, tribal, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD. With respect to property that is leased or otherwise possessed, DoD must control access to the MRS 24 hours per day, every day of the calendar year.	0
STATUS OF PROPERTY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Status of Property*** classification in the space provided.

Section 2.3 of the 2007 SI notes that all of the land acquired by the military on Culebra and the surrounding cays and cayos was excessed to the Department of the Interior or transferred to the government of Puerto Rico. MRS 12 is managed by the PR DNR for recreational purposes.

Table 6

EHE Module: Population Density Data Element Table

DIRECTIONS: Below are three classifications of population density and their descriptions. Determine the population density per square mile in the vicinity of the MRS and circle the score that corresponds with the associated population density.

Note: If an MRS is located in more than one county, use the largest population density value among the counties. If the MRS is within or borders a city or town, use the population density for the city or town, rather than that of the county.

Classification	Description	Score
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	***1***
POPULATION DENSITY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***1***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Density*** classification in the space provided.

Section 2.2.7 of the 2007 SI notes that the population density of the municipality of Culebra is 71.8 persons per mile, as obtained from Census 2000.

Table 7

EHE Module: Population Near Hazard Data Element Table

DIRECTIONS: Below are six classifications describing the number of inhabited structures near the MRS. The number of inhabited buildings relates to the population near the hazard. Determine the number of inhabited structures within two miles of the MRS boundary and circle the score that corresponds with the associated population near the known or suspected hazard.

Note: The term *inhabited structures* is defined in Appendix C of the Primer.

Classification	Description	Score
26 or more inhabited structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	***5***
16 to 25 inhabited structures	• There are 16 to 25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15 inhabited structures	• There are 11 to 15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10 inhabited structures	• There are 6 to 10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5 inhabited structures	• There are 1 to 5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0 inhabited structures	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
POPULATION NEAR HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Near Hazard*** classification in the space provided.

MRS 12 is located within a two-mile radius surrounding the Municipality of Culebra which has just fewer than 2,000 residents and many visitors throughout the year. (2007 SI Section 2.2.7 and Table 2.2).

Table 8

EHE Module: Types of Activities/Structures Data Element Table

DIRECTIONS: Below are five classifications of activities and/or inhabited structures near the hazard and their descriptions. Review the types of activities that occur and/or structures that are present within two miles of the MRS and circle the score(s) that correspond with **all** the activities/structure classifications at the MRS.

Note: The term *inhabited structure* is defined in Appendix C of the Primer.

Classification	Description	Score
Residential, educational, commercial, or subsistence	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	***5***
Parks and recreational areas	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with parks, nature preserves, or other recreational uses.	***4***
Agricultural, forestry	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with industrial activities or warehousing.	***2***
No known or recurring activities	• There are no known or recurring activities occurring up to two miles from the MRS's boundary or within the MRS's boundary.	1
TYPES OF ACTIVITIES/STRUCTURES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Types of Activities/Structures*** classifications in the space provided.

MRS 12 is located on the island of Culebra. The island has schools, residential areas, a clinic, an airport, restaurants, hotels, shops, and a few industrial companies. Beaches within a two mile radius are managed by the USFWS or PR DNR for wildlife conservation and recreational use. (2007 SI Report Sections 2.2.7 and 2.2.8)

Table 9

EHE Module: Ecological and/or Cultural Resources Data Element Table

DIRECTIONS: Below are four classifications of ecological and/or cultural resources and their descriptions. Review the types of resources present and circle the score that corresponds with the ecological and/or cultural resource classifications at the MRS.

Note: The terms *ecological resources* and *cultural resources* are defined in Appendix C of the Primer.

Classification	Description	Score
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	***3***
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0
ECOLOGICAL AND/OR CULTURAL RESOURCES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***3***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ecological and/or Cultural Resources*** classification in the space provided.

MRS 12 is included within the Luis Pena Water Refuge managed by the PR DNR and is used for recreational purposes; No cultural resources are documented on the site per the 2007 SI (Section 2.2.6) and the 2006 SSWP.

Table 10
Determining the EHE Module Rating

DIRECTIONS:

1. From Tables 1–9, record the data element scores in the **Score** boxes to the right.
2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.
3. Add the three **Value** boxes and record this number in the **EHE Module Total** box below.
4. Circle the appropriate range for the **EHE Module Total** below.
5. Circle the **EHE Module Rating** that corresponds to the range selected and record this value in the **EHE Module Rating** box found at the bottom of the table.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

	Source	Score	Value
Explosive Hazard Factor Data Elements			
Munitions Type	Table 1	30	40
Source of Hazard	Table 2	10	
Accessibility Factor Data Elements			
Location of Munitions	Table 3	20	35
Ease of Access	Table 4	10	
Status of Property	Table 5	5	
Receptor Factor Data Elements			
Population Density	Table 6	1	14
Population Near Hazard	Table 7	5	
Types of Activities/ Structures	Table 8	5	
Ecological and /or Cultural Resources	Table 9	3	
EHE MODULE TOTAL			89

EHE Module Total	EHE Module Rating
92 to 100	A
82 to 91	***B***
71 to 81	C
60 to 70	D
48 to 59	E
38 to 47	F
less than 38	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected Explosive Hazard
EHE MODULE RATING	***B***

Table 11

CHE Module: CWM Configuration Data Element Table

DIRECTIONS: Below are seven classifications of CWM configuration and their descriptions. Circle the score(s) that correspond to **all** CWM configurations known or suspected to be present at the MRS.

Note: The terms *CWM/UXO, CWM/DMM, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
CWM, explosive configuration either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is: • Explosively configured CWM that are UXO (i.e., CWM/UXO). • Explosively configured CWM that are DMM (i.e., CWM/DMM) that have been damaged.	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged, or nonexplosively configured CWM/DMM, or CWM not configured as a munition, that are commingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are undamaged DMM	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is: • Nonexplosively configured CWM/DMM. • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• Only CAIS, other than CAIS K941 and K942, are known or suspected of being present at the MRS.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	***0***
CWM CONFIGURATION	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).	***0***

DIRECTIONS: Document any MRS-specific data used in selecting the ***CWM Configuration*** classifications in the space provided.

There is no historical or anecdotal evidence that CWM were ever used on this MRS. (Sections 2.5 and 4.2 of the 2007 SI Report). Tables 12-19 have been omitted.

Table 20
Determining the CHE Module Rating

DIRECTIONS:

1. From Tables 11–19, record the data element scores in the **Score** boxes to the right.
2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.
3. Add the three **Value** boxes and record this number in the **CHE Module Total** box below.
4. Circle the appropriate range for the **CHE Module Total** below.
5. Circle the **CHE Module Rating** that corresponds to the range selected and record this value in the **CHE Module Rating** box found at the bottom of the table.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

	Source	Score	Value
CWM Hazard Factor Data Elements			
CWM Configuration	Table 11	0	0
Sources of CWM	Table 12	0	
Accessibility Factor Data Elements			
Location of CWM	Table 13	0	0
Ease of Access	Table 14	0	
Status of Property	Table 15	0	
Receptor Factor Data Elements			
Population Density	Table 16	0	0
Population Near Hazard	Table 17	0	
Types of Activities/ Structures	Table 18	0	
Ecological and /or Cultural Resources	Table 19	0	
CHE MODULE TOTAL			0

CHE Module Total	CHE Module Rating
92 to 100	A
82 to 91	B
71 to 81	C
60 to 70	D
48 to 59	E
38 to 47	F
less than 38	**G**
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected CWM Hazard
CHE MODULE RATING	***No Known or Suspected CWM Hazard***

Table 21

HHE Module: Groundwater Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's groundwater and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the groundwater, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$
100 > CHF > 2	M (Medium)	
2 > CHF	L (Low)	

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the groundwater is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in groundwater has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the groundwater to a potential point of exposure (possibly due to geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater receptors at the MRS.

Classification	Description	Value
Identified	There is a threatened water supply well downgradient of the source and the groundwater is a current source of drinking water or source of water for other beneficial uses such as irrigation/agriculture (equivalent to Class I or IIA aquifer).	H
Potential	There is no threatened water supply well downgradient of the source and the groundwater is currently or potentially usable for drinking water, irrigation, or agriculture (equivalent to Class I, IIA, or IIB aquifer).	M
Limited	There is no potentially threatened water supply well downgradient of the source and the groundwater is not considered a potential source of drinking water and is of limited beneficial use (equivalent to Class IIIA or IIIB aquifer, or where perched aquifer exists only).	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Groundwater MC Hazard	✓

Groundwater is not present (2007 SI Section 5.12.4

Table 22

HHE Module: Surface Water – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for human endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF Scale	CHF Value	Sum The Ratios
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$
100 > CHF > 2	M (Medium)	
2 > CHF	L (Low)	

CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record the CHF Value from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L

MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L

RECEPTOR FACTOR	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	

No Known or Suspected Surface Water (Human Endpoint) MC Hazard	✓

As the MRS is connected to the Atlantic Ocean, any MC would be diluted. (2007 SI Report Section 5.12.5)

Table 23

HHE Module: Sediment – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the site's sediment and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for human endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios

CHF Scale	CHF Value	Sum The Ratios
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$
100 > CHF > 2	M (Medium)	
2 > CHF	L (Low)	

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Sediment (Human Endpoint) MC Hazard ✓

It is unlikely that elevated concentrations of MC would present in sediment in the ocean. (2007 SI report Section 5.12.5) I

Table 24

HHE Module: Surface Water – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF Scale	CHF Value	Sum the Ratios	
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L

MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L

RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Surface Water (Ecological Endpoint) MC Hazard	✓

As the MRS is connected to the Atlantic Ocean, any MC would be diluted. (2007 SI Report Section 5.12.5)

Table 25

HHE Module: Sediment – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's sediment and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios

CHF Scale	CHF Value	Sum the Ratios	
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Sediment (Ecological Endpoint) MC Hazard	✓

It is unlikely that elevated concentrations of MC would present in sediment in the ocean. (2007 SI report Section 5.12.5) I

Table 26

HHE Module: Surface Soil Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface soil and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the surface soil, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratio
CHF Scale	**CHF Value**	**Sum the Ratios**	
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).		

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface soil migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface soil is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface soil has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface soil to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface soil receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface soil to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface soil to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface soil to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Sediment (Ecological Endpoint) MC Hazard ✓

The MRS is underwater, soils are not anticipated to be contaminated with MC (2007 SI report Section 5.12.5)

Table 27

HHE Module: Supplemental Contaminant Hazard Factor Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: **Only use this table if there are more than five contaminants present at the MRS.** This is a supplemental table designed to hold information about contaminants that do not fit in the previous tables. Indicate the **media** in which these contaminants are present. **Then** record all **contaminants**, their **maximum concentrations** and their **comparison values** (from Appendix B) in the table below. Calculate and record the **ratio** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** for each medium on the appropriate media-specific tables.

Note: Remember not to add ratios from different media.

Media	Contaminant	Maximum Concentration	Comparison Value	Ratio

Table 28

Determining the HHE Module Rating

DIRECTIONS:

1. Record the letter values (H, M, L) for the **Contaminant Hazard, Migration Pathway, and Receptor Factors** for the media (from Tables 21–26) in the corresponding boxes below.
2. Record the media's three-letter combinations in the **Three-Letter Combination** boxes below (three-letter combinations are arranged from Hs to Ms to Ls).

Using the reference provided below, determine each media's rating (A–G) and record the letter in the corresponding Media Rating box below.

Media (Source)	Contaminant Hazard Factor Value	Migratory Pathway Factor Value	Receptor Factor Value		Three-Letter Combination (Hs-Ms-Ls)		Media Rating (A-G)
Groundwater (Table 21)							
Surface Water/Human Endpoint (Table 22)	-	-	-		-		-
Sediment/Human Endpoint (Table 23)	-	-	-		-		-
Surface Water/Ecological Endpoint (Table 24)	-	-	-		-		-
Sediment/Ecological Endpoint (Table 25)	-	-	-		-		-
Surface Soil (Table 26)							

DIRECTIONS (cont.):

3. Select the single highest Media Rating (A is highest; G is lowest) and enter the letter in the **HHE Module Rating** box below.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more media, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

HHE MODULE RATING	

HHE Ratings (for reference only)

Combination	Rating
HHH	A
HHM	B
HHL	C
HMM	C
HML	D
MMM	D
HLL	E
MML	E
MLL	F
LLL	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected MC Hazard

MRS 12 is an underwater MRS that is hydrologically connected to the Atlantic Ocean. The ocean would dilute MC; therefore, a no known or suspected MC Hazard.

Table 29
MRS Priority

DIRECTIONS: In the chart below, circle the letter **rating** for each module recorded in Table 10 (EHE), Table 20 (CHE), and Table 28 (HHE). Circle the corresponding numerical **priority** for each module. If information to determine the module rating is not available, choose the appropriate alternative module rating. The MRS priority is the single highest priority; record this number in the **MRS or Alternative Priority** box at the bottom of the table.

Note: An MRS assigned Priority 1 has the highest relative priority; an MRS assigned Priority 8 has the lowest relative priority. Only an MRS with CWM known or suspected to be present can be assigned Priority 1; an MRS that has CWM known or suspected to be present cannot be assigned Priority 8.

EHE Rating	Priority	CHE Rating	Priority	HHE Rating	Priority
		A	1		
A	2	B	2	A	2
B	**3**	C	3	B	3
C	4	D	4	C	4
D	5	E	5	D	5
E	6	F	6	E	6
F	7	G	7	F	7
G	8			G	8
Evaluation Pending		Evaluation Pending		Evaluation Pending	
No Longer Required		No Longer Required		No Longer Required	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		**No Known or Suspected MC Hazard**	
MRS or ALTERNATIVE PRIORITY				***3***	

MRSPP Evaluation

MRS 13

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Table A
MRS Background Information

DIRECTIONS: Record the background information below for the MRS to be evaluated. Much of this information is available from DoD databases, such as RMIS. If the MRS is located on a FUDS property, the suitable FUDS property information should be substituted. In the MRS summary, briefly describe the UXO, DMM, or MC that are known or suspected to be present, the exposure setting (the MRS's physical environment), any other incidental non-munitions related contaminants found at the MRS (e.g., benzene, trichloroethylene), and any potentially exposed human and ecological receptors. Include a map of the MRS, if one is available.

Munitions Response Site Name: MRS 13 – Cayo Luis Pena Impact Area

Component: US Marines

Installation/Property Name: Culebra Island

Location (City, County, State):Culebra, Puerto Rico

Site Name (RMIS ID)/Project Name (Project No.): MRS 13 Cayo Luis Pena Impact Area (I02PR006813)

Date Information Entered/Updated: January 2007/April 2007

Point of Contact (Name/Phone): Mr. Charles D. Fales, Florida FUDS Manager / (904) 232-1017

Project Phase (check only one):

❑ PA	✓SI	❑ RI	❑ FS	❑ RD
❑ RA-C	❑ RIP	❑ RA-O	❑ RC	❑ LTM

Media Evaluated (check all that apply):

❑Groundwater	❑Sediment (human receptor)
✓ Surface soil	❑ Surface Water (ecological receptor)
❑Sediment (ecological receptor)	❑ Surface Water (human receptor)

MRS Summary:

MRS Description: Describe the munitions-related activities that occurred at the installation, the dates of operation, and the UXO, DMM (by type of munition, if known) or munitions constituents (by type, if known) known or suspected to be present):

Culebra Island and the surrounding cays and cayos was used for aerial bombing, maneuvers, artillery firing, and amphibious training by the US Navy and Marines between 1902 and 1975. Many different training operations were conducted at this site and complete records are not available to designate specific ranges or range complexes. As such, the Island of Culebra and surrounding cays and cayos were divided into 14 munitions response sites (MRS) based on the islands geography and historic military use. MRS 13 is approximately 864 acres which is comprised of 342 acres of land and the rest encompasses the surrounding waters, located approximately ¼ mile along the western coast of Culebra. Cayo Luis Pena was used as a firing target during Marine exercises conducted between 1924 and 1941.

Description of Pathways for Human and Ecological Receptors:

Soils on the MRS were sampled as this is considered the most likely location for MC. Access to the site is unrestricted.

Description of Receptors (Human and Ecological):
The island is managed by the USFWS as part of the Culebra National Wildlife Refuge. Recreational users frequent the area.

Table 1

EHE Module: Munitions Type Data Element Table

DIRECTIONS: Below are 11 classifications of munitions and their descriptions. Circle the score(s) that correspond with **all** munitions types known or suspected to be present at the MRS.

Note: The terms *practice munitions, small arms, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Sensitive	All UXO that are considered likely to function upon any interaction with exposed persons [e.g., submunitions, 40mm high-explosive (HE) grenades, white phosphorus (WP) munitions, high-explosive antitank (HEAT) munitions, and practice munitions with sensitive fuzes, but excluding all other practice munitions]. All hand grenades containing energetic filler. Bulk primary explosives, or mixtures of these with environmental media, such that the mixture poses an explosive hazard.	***30***
High explosive (used or damaged)	All UXO containing a high-explosive filler (e.g., RDX, Composition B), that are not considered "sensitive." All DMM containing a high-explosive filler that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	***25***
Pyrotechnic (used or damaged)	All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades). All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	20
High explosive (unused)	All DMM containing a high explosive filler that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	15
Propellant	All UXO containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor). All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are: ▪ Damaged by burning or detonation ▪ Deteriorated to the point of instability.	15
Bulk secondary high explosives, pyrotechnics, or propellant	All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor), that are deteriorated. Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture poses an explosive hazard.	10
Pyrotechnic (not used or damaged)	All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	10
Practice	All UXO that are practice munitions that are not associated with a sensitive fuze. All DMM that are practice munitions that are not associated with a sensitive fuze and that have not: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	5
Riot control	All UXO or DMM containing a riot control agent filler (e.g., tear gas).	3
Small arms	All used munitions or DMM that are categorized as small arms ammunition [Physical evidence or historical evidence that no other types of munitions (e.g., grenades, subcaliber training rockets, demolition charges) were used or are present on the MRS is required for selection of this category.].	***2***
Evidence of no munitions	Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0
MUNITIONS TYPE	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).	***30***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Munitions Type*** classifications in the space provided.

75mm projectiles 155mm, 37mm, 8-inch and 6-inch rounds may have been fired at the Cay (Section 2.4.1.12 and Appendix J of the 2007 SI Report). The 2005 INPR briefly cites that one historical document that indicates that napalm was dropped on the area; however, no further documentation regarding this incident could be found. The munitions are rated as sensitive as the 75mm projectiles could potentially contain white phosphorus fillers.

Table 2

EHE Module: Source of Hazard Data Element Table

DIRECTIONS: Below are 11 classifications describing sources of explosive hazards. Circle the score(s) that correspond with **all** sources of explosive hazards known or suspected to be present at the MRS.

Note: The terms *former range, practice munitions, small arms, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	***10***
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former military range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, where the firing point is delineated as an MRS separate from the rest of a former military range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a military range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms ammunition was used [There must be evidence that no other types of munitions (e.g., grenades) were used or are present to place an MRS into this category.].	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0
SOURCE OF HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).	***10***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Source of Hazard*** classifications in the space provided.

Section 2.4.1.12 of the 2007 SI Report

Table 3

EHE Module: Location of Munitions Data Element Table

DIRECTIONS: Below are eight classifications of munitions locations and their descriptions. Circle the score(s) that correspond with **all** locations where munitions are located or suspected of being found at the MRS.

Note: The terms *surface, subsurface, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Confirmed surface	• Physical evidence indicates that there are UXO or DMM on the surface of the MRS • Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS, and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	• Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed. • Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	• There is physical evidence (e.g., munitions debris, such fragments, penetrators, projectiles, shell casings, links, fins), other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	***10***
Suspected (historical evidence)	• There is historical evidence indicating that UXO or DMM may be present at the MRS.	5
Subsurface, physical constraint	• There is physical or historical evidence indicating that UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	• The presence of small arms ammunition is confirmed or suspected, regardless of other factors such as geological stability [There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to place an MRS into this category.].	1
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0
LOCATION OF MUNITIONS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 25).	***10***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Location of Munitions*** classifications in the space provided.

Table 4.2 of the 2007 SI Report states that MD was found on the site.

Table 4

EHE Module: Ease of Access Data Element Table

DIRECTIONS: Below are four classifications of barrier types that can surround an MRS and their descriptions. The barrier type is directly related to the ease of public access to any explosive materiel. Circle the score that corresponds with the ease of access to the MRS.

Note: The term *barrier* is defined in Appendix C of the Primer.

Classification	Description	Score
No barrier	• There is no barrier preventing access to any part of the MRS (i.e., all parts of the MRS are accessible).	***10***
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS, but not the entire MRS.	8
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
EASE OF ACCESS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).	***10***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ease of Access*** classification in the space provided.

Although the vegetation is restrictive, there are no fences or physical barriers on site (2007 SI Report Paragraph 5.13.3.1,

Table 5

EHE Module: Status of Property Data Element Table

DIRECTIONS: Below are three classifications of the status of a property within the Department of Defense (DoD) and their descriptions. Circle the score that corresponds with the status of property at the MRS.

Classification	Description	Score
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by DoD. Examples are privately owned land or water bodies; land or water bodies owned or controlled by state, tribal, or local governments; and land or water bodies managed by other federal agencies.	***5***
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD, and DoD plans to transfer that land or water body to the control of another entity (e.g., a state, tribal, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD. With respect to property that is leased or otherwise possessed, DoD must control access to the MRS 24 hours per day, every day of the calendar year.	0
STATUS OF PROPERTY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Status of Property*** classification in the space provided.

Section 2.3 of the 2007 SI notes that all of the land acquired by the military on Culebra and the surrounding cays and cayos was excessed to the Department of the Interior or transferred to the government of Puerto Rico. The lands are currently managed by USFWS as the Culebra National Wildlife Refuge.

Table 6

EHE Module: Population Density Data Element Table

DIRECTIONS: Below are three classifications of population density and their descriptions. Determine the population density per square mile in the vicinity of the MRS and circle the score that corresponds with the associated population density.

Note: If an MRS is located in more than one county, use the largest population density value among the counties. If the MRS is within or borders a city or town, use the population density for the city or town, rather than that of the county.

Classification	Description	Score
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	***1***
POPULATION DENSITY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***1***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Density*** classification in the space provided.

Section 2.2.7 of the 2007 SI notes that the population density of the municipality of Culebra is 71.8 persons per mile, as obtained from Census 2000.

Table 7

EHE Module: Population Near Hazard Data Element Table

DIRECTIONS: Below are six classifications describing the number of inhabited structures near the MRS. The number of inhabited buildings relates to the population near the hazard. Determine the number of inhabited structures within two miles of the MRS boundary and circle the score that corresponds with the associated population near the known or suspected hazard.

Note: The term *inhabited structures* is defined in Appendix C of the Primer.

Classification	Description	Score
26 or more inhabited structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	***5***
16 to 25 inhabited structures	• There are 16 to 25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15 inhabited structures	• There are 11 to 15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10 inhabited structures	• There are 6 to 10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5 inhabited structures	• There are 1 to 5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0 inhabited structures	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
POPULATION NEAR HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Near Hazard*** classification in the space provided.

MRS 13 is located within a two-mile radius surrounding the Municipality of Culebra which has just under 2,000 residents and many visitors throughout the year. (2007 SI Section 2.2.7 and Table 2.2).

Table 8

EHE Module: Types of Activities/Structures Data Element Table

DIRECTIONS: Below are five classifications of activities and/or inhabited structures near the hazard and their descriptions. Review the types of activities that occur and/or structures that are present within two miles of the MRS and circle the score(s) that correspond with **all** the activities/structure classifications at the MRS.

Note: The term *inhabited structure* is defined in Appendix C of the Primer.

Classification	Description	Score
Residential, educational, commercial, or subsistence	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	***5***
Parks and recreational areas	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with parks, nature preserves, or other recreational uses.	***4***
Agricultural, forestry	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with industrial activities or warehousing.	***2***
No known or recurring activities	• There are no known or recurring activities occurring up to two miles from the MRS's boundary or within the MRS's boundary.	1
TYPES OF ACTIVITIES/STRUCTURES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Types of Activities/Structures*** classifications in the space provided.

MRS 13 is located on the island of Culebra. The island has schools, residential areas, a clinic, an airport, restaurants, hotels, shops, and a few industrial companies. Beaches within a two mile radius are managed by the USFWS or PR DNR for wildlife conservation and recreational use. (2007 SI Report Sections 2.2.7 and 2.2.8)

Table 9

EHE Module: Ecological and/or Cultural Resources Data Element Table

DIRECTIONS: Below are four classifications of ecological and/or cultural resources and their descriptions. Review the types of resources present and circle the score that corresponds with the ecological and/or cultural resource classifications at the MRS.

Note: The terms *ecological resources* and *cultural resources* are defined in Appendix C of the Primer.

Classification	Description	Score
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	• There are ecological resources present on the MRS.	***3***
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0
ECOLOGICAL AND/OR CULTURAL RESOURCES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***3***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ecological and/or Cultural Resources*** classification in the space provided.

The MRS is located within a USFWS refuge that is utilized by various species of birds. No cultural resources are reported on the site (2007 SI (Section 2.2.6) and the 2007 SSWP.)

Table 10
Determining the EHE Module Rating

DIRECTIONS:

1. From Tables 1–9, record the data element scores in the **Score** boxes to the right.
2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.
3. Add the three **Value** boxes and record this number in the **EHE Module Total** box below.
4. Circle the appropriate range for the **EHE Module Total** below.
5. Circle the **EHE Module Rating** that corresponds to the range selected and record this value in the **EHE Module Rating** box found at the bottom of the table.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

	Source	Score	Value
Explosive Hazard Factor Data Elements			
Munitions Type	Table 1	30	40
Source of Hazard	Table 2	10	
Accessibility Factor Data Elements			
Location of Munitions	Table 3	10	25
Ease of Access	Table 4	10	
Status of Property	Table 5	5	
Receptor Factor Data Elements			
Population Density	Table 6	1	14
Population Near Hazard	Table 7	5	
Types of Activities/ Structures	Table 8	5	
Ecological and /or Cultural Resources	Table 9	3	
EHE MODULE TOTAL			79

EHE Module Total	EHE Module Rating
92 to 100	A
82 to 91	B
71 to 81	**C**
60 to 70	D
48 to 59	E
38 to 47	F
less than 38	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected Explosive Hazard
EHE MODULE RATING	***C***

Table 11

CHE Module: CWM Configuration Data Element Table

DIRECTIONS: Below are seven classifications of CWM configuration and their descriptions. Circle the score(s) that correspond to **all** CWM configurations known or suspected to be present at the MRS.

Note: The terms *CWM/UXO, CWM/DMM, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
CWM, explosive configuration either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is: • Explosively configured CWM that are UXO (i.e., CWM/UXO). • Explosively configured CWM that are DMM (i.e., CWM/DMM) that have been damaged.	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged, or nonexplosively configured CWM/DMM, or CWM not configured as a munition, that are commingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are undamaged DMM	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is: • Nonexplosively configured CWM/DMM. • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• Only CAIS, other than CAIS K941 and K942, are known or suspected of being present at the MRS.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	***0***
CWM CONFIGURATION	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).	***0***

DIRECTIONS: Document any MRS-specific data used in selecting the ***CWM Configuration*** classifications in the space provided.

There is no historical or anecdotal evidence that CWM were ever used on this MRS. (Sections 2.5 and 4.2 of the 2007 SI Report). Tables 12-19 have been omitted.

Table 20
Determining the CHE Module Rating

DIRECTIONS:

1. From Tables 11–19, record the data element scores in the **Score** boxes to the right.
2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.
3. Add the three **Value** boxes and record this number in the **CHE Module Total** box below.
4. Circle the appropriate range for the **CHE Module Total** below.
5. Circle the **CHE Module Rating** that corresponds to the range selected and record this value in the **CHE Module Rating** box found at the bottom of the table.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

	Source	Score	Value
CWM Hazard Factor Data Elements			
CWM Configuration	Table 11	0	0
Sources of CWM	Table 12	0	
Accessibility Factor Data Elements			
Location of CWM	Table 13	0	0
Ease of Access	Table 14	0	
Status of Property	Table 15	0	
Receptor Factor Data Elements			
Population Density	Table 16	0	0
Population Near Hazard	Table 17	0	
Types of Activities/ Structures	Table 18	0	
Ecological and /or Cultural Resources	Table 19	0	
CHE MODULE TOTAL			0

CHE Module Total	CHE Module Rating
92 to 100	A
82 to 91	B
71 to 81	C
60 to 70	D
48 to 59	E
38 to 47	F
less than 38	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected CWM Hazard
CHE MODULE RATING	***No Known or Suspected CWM Hazard***

Table 21

HHE Module: Groundwater Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's groundwater and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the groundwater, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$
100 > CHF > 2	M (Medium)	
2 > CHF	L (Low)	

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the groundwater is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in groundwater has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the groundwater to a potential point of exposure (possibly due to geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater receptors at the MRS.

Classification	Description	Value
Identified	There is a threatened water supply well downgradient of the source and the groundwater is a current source of drinking water or source of water for other beneficial uses such as irrigation/agriculture (equivalent to Class I or IIA aquifer).	H
Potential	There is no threatened water supply well downgradient of the source and the groundwater is currently or potentially usable for drinking water, irrigation, or agriculture (equivalent to Class I, IIA, or IIB aquifer).	M
Limited	There is no potentially threatened water supply well downgradient of the source and the groundwater is not considered a potential source of drinking water and is of limited beneficial use (equivalent to Class IIIA or IIIB aquifer, or where perched aquifer exists only).	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Groundwater MC Hazard

Per TPP concurrence, no groundwater samples were collected as part of the SI.

Table 22

HHE Module: Surface Water – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for human endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF Scale	CHF Value	Sum The Ratios
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$
100 > CHF > 2	M (Medium)	
2 > CHF	L (Low)	

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Surface Water (Human Endpoint) MC Hazard

Per TPP concurrence, no surface water samples were collected as part of the SI

Table 23

HHE Module: Sediment – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the site's sediment and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for human endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
CHF Scale	**CHF Value**	**Sum The Ratios**	
CHF > 100	**H (High)**		
100 > CHF > 2	**M (Medium)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant}}$	
2 > CHF	**L (Low)**		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right maximum value = H).		

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***H***

No Known or Suspected Sediment (Human Endpoint) MC Hazard

Per TPP concurrence no sediment samples were collected as part of the SI.

Table 24

HHE Module: Surface Water – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF Scale	CHF Value	Sum the Ratios
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$
100 > CHF > 2	M (Medium)	
2 > CHF	L (Low)	

CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L
RECEPTOR FACTOR	DIRECTIONS: Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Surface Water (Ecological Endpoint) MC Hazard

Per TPP concurrence, no surface water samples were collected as part of the SI

Table 25

HHE Module: Sediment – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's sediment and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
CHF Scale	**CHF Value**	**Sum the Ratios**	
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).		

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Sediment (Ecological Endpoint) MC Hazard

Per TPP concurrence, no sediment samples were collected as part of the SI.

Table 26

HHE Module: Surface Soil Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface soil and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the surface soil, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratio
Aluminum	49000	77000	0.64
Strontium	58	46000	0.0012
CHF Scale	**CHF Value**	**Sum the Ratios**	**0.64**
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	***L***

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface soil migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface soil is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface soil has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface soil to a potential point of exposure (possibly due to presence of geological structures or physical controls).	*L*
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***L***

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface soil receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface soil to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface soil to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface soil to which contamination has moved or can move.	*L*
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***L***

No Known or Suspected Sediment (Ecological Endpoint) MC Hazard

Ambient soil samples collected are used to for metals comparison per TPP concurrence. Contaminants that are attributable to DoD activities (per Table 4.1 2007 SI Report), with comparison values developed, that exceed the metals comparison values contribute to the score. MPF and RF are rated low given the lack of contamination measured in the soil.

Table 27

HHE Module: Supplemental Contaminant Hazard Factor Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: **Only use this table if there are more than five contaminants present at the MRS.** This is a supplemental table designed to hold information about contaminants that do not fit in the previous tables. Indicate the **media** in which these contaminants are present. Then record all **contaminants**, their **maximum concentrations** and their **comparison values** (from Appendix B) in the table below. Calculate and record the **ratio** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** for each medium on the appropriate media-specific tables.

Note: Remember not to add ratios from different media.

Media	Contaminant	Maximum Concentration	Comparison Value	Ratio
Soil	Strontium	58	46000	0.001

Table 28

Determining the HHE Module Rating

DIRECTIONS:

1. Record the letter values (H, M, L) for the **Contaminant Hazard, Migration Pathway, and Receptor Factors** for the media (from Tables 21–26) in the corresponding boxes below.
2. Record the media's three-letter combinations in the **Three-Letter Combination** boxes below (three-letter combinations are arranged from Hs to Ms to Ls).
3. Using the reference provided below, determine each media's rating (A–G) and record the letter in the corresponding Media Rating box below.

Media (Source)	Contaminant Hazard Factor Value	Migratory Pathway Factor Value	Receptor Factor Value	Three-Letter Combination (Hs-Ms-Ls)	Media Rating (A-G)
Groundwater (Table 21)					
Surface Water/Human Endpoint (Table 22)	-	-	-	-	-
Sediment/Human Endpoint (Table 23)	-	-	-	-	-
Surface Water/Ecological Endpoint (Table 24)	-	-	-	-	-
Sediment/Ecological Endpoint (Table 25)	-	-	-	-	-
Surface Soil (Table 26)	L	L	L	LLL	G

DIRECTIONS (cont.):

4. Select the single highest Media Rating (A is highest; G is lowest) and enter the letter in the **HHE Module Rating** box below.

Note:

An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more media, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

HHE MODULE RATING	*G*

HHE Ratings (for reference only)

Combination	Rating
HHH	A
HHM	B
HHL	C
HMM	C
HML	D
MMM	D
HLL	E
MML	E
MLL	F
LLL	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected MC Hazard

Table 29
MRS Priority

DIRECTIONS: In the chart below, circle the letter **rating** for each module recorded in Table 10 (EHE), Table 20 (CHE), and Table 28 (HHE). Circle the corresponding numerical **priority** for each module. If information to determine the module rating is not available, choose the appropriate alternative module rating. The MRS priority is the single highest priority; record this number in the **MRS or Alternative Priority** box at the bottom of the table.

Note: An MRS assigned Priority 1 has the highest relative priority; an MRS assigned Priority 8 has the lowest relative priority. Only an MRS with CWM known or suspected to be present can be assigned Priority 1; an MRS that has CWM known or suspected to be present cannot be assigned Priority 8.

EHE Rating	Priority	CHE Rating	Priority	HHE Rating	Priority
		A	1		
A	2	B	2	A	2
B	3	C	3	B	3
C	***4***	D	4	C	4
D	5	E	5	D	5
E	6	F	6	E	6
F	7	G	7	F	7
G	8			***G***	***8***
Evaluation Pending		Evaluation Pending		Evaluation Pending	
No Longer Required		No Longer Required		No Longer Required	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		No Known or Suspected MC Hazard	
MRS or ALTERNATIVE PRIORITY				***4***	

MRSPP Evaluation

MRS 14

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Table A

MRS Background Information

DIRECTIONS: Record the background information below for the MRS to be evaluated. Much of this information is available from DoD databases, such as RMIS. If the MRS is located on a FUDS property, the suitable FUDS property information should be substituted. In the MRS summary, briefly describe the UXO, DMM, or MC that are known or suspected to be present, the exposure setting (the MRS's physical environment), any other incidental non-munitions related contaminants found at the MRS (e.g., benzene, trichloroethylene), and any potentially exposed human and ecological receptors. Include a map of the MRS, if one is available.

Munitions Response Site Name: MRS 14 – Airport and Camp Area

Component: US Marines and US Navy

Installation/Property Name: Culebra Island

Location (City, County, State):Culebra, Puerto Rico Airport and Camp Area (I02PR0068143)

Date Information Entered/Updated: January 2007 / April 2007

Point of Contact (Name/Phone): Mr. Charles D. Fales, Florida FUDS Manager / (904) 232-1017

Project Phase (check only one):

❑ PA	✓SI	❑ RI	❑ FS	❑ RD
❑ RA-C	❑ RIP	❑ RA-O	❑ RC	❑ LTM

Media Evaluated (check all that apply):

❑Groundwater	❑Sediment (human receptor)
✓ Surface soil	❑ Surface Water (ecological receptor)
❑Sediment (ecological receptor)	❑ Surface Water (human receptor)

MRS Summary:

MRS Description: Describe the munitions-related activities that occurred at the installation, the dates of operation, and the UXO, DMM (by type of munition, if known) or munitions constituents (by type, if known) known or suspected to be present):

Culebra Island and the surrounding cays and cayos was used for aerial bombing, maneuvers, artillery firing, and amphibious training by the US Navy and Marines between 1902 and 1975. Many different training operations were conducted at this site and complete records are not available to designate specific ranges or range complexes. As such, the Island of Culebra and surrounding cays and cayos were divided into 14 munitions response sites (MRS) based on the islands geography and historic military use. MRS 14 consists of approximately 416 acres of land at the north end of Great Harbor. This area includes the airport and the Former Camp Idelfonso. The Navy and Marine Corps air field and most of their encampments were located in this area. Small arms ranges were also associated with this site.

Description of Pathways for Human and Ecological Receptors:

Soils on the MRS were sampled as this is considered the most likely location for MC. Access to the site is unrestricted.

Description of Receptors (Human and Ecological):
The area is frequented by recreational users, workers and residents. The shoreline is managed by the USFWs and is used by various bird species.

Table 1

EHE Module: Munitions Type Data Element Table

DIRECTIONS: Below are 11 classifications of munitions and their descriptions. Circle the score(s) that correspond with **all** munitions types known or suspected to be present at the MRS.

Note: The terms *practice munitions, small arms, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Sensitive	All UXO that are considered likely to function upon any interaction with exposed persons [e.g., submunitions, 40mm high-explosive (HE) grenades, white phosphorus (WP) munitions, high-explosive antitank (HEAT) munitions, and practice munitions with sensitive fuzes, but excluding all other practice munitions]. All hand grenades containing energetic filler. Bulk primary explosives, or mixtures of these with environmental media, such that the mixture poses an explosive hazard.	30
High explosive (used or damaged)	All UXO containing a high-explosive filler (e.g., RDX, Composition B), that are not considered "sensitive." All DMM containing a high-explosive filler that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	25
Pyrotechnic (used or damaged)	All UXO containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades). All DMM containing pyrotechnic fillers other than white phosphorous (e.g., flares, signals, simulators, smoke grenades) that have: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	20
High explosive (unused)	All DMM containing a high explosive filler that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	15
Propellant	All UXO containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor). All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are: ▪ Damaged by burning or detonation ▪ Deteriorated to the point of instability.	15
Bulk secondary high explosives, pyrotechnics, or propellant	All DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor), that are deteriorated. Bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture poses an explosive hazard.	10
Pyrotechnic (not used or damaged)	All DMM containing a pyrotechnic fillers (i.e., red phosphorous), other than white phosphorous filler, that: ▪ Have not been damaged by burning or detonation ▪ Are not deteriorated to the point of instability.	10
Practice	All UXO that are practice munitions that are not associated with a sensitive fuze. All DMM that are practice munitions that are not associated with a sensitive fuze and that have not: ▪ Been damaged by burning or detonation ▪ Deteriorated to the point of instability.	5
Riot control	All UXO or DMM containing a riot control agent filler (e.g., tear gas).	3
Small arms	All used munitions or DMM that are categorized as small arms ammunition [Physical evidence or historical evidence that no other types of munitions (e.g., grenades, subcaliber training rockets, demolition charges) were used or are present on the MRS is required for selection of this category.].	***2***
Evidence of no munitions	Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0
MUNITIONS TYPE	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).	***2***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Munitions Type*** classifications in the space provided.

Historical records indicate a small arms range may have been located on this site. (Section 4.14 and Appendix J of the 2007 SI Report).

Table 2

EHE Module: Source of Hazard Data Element Table

DIRECTIONS: Below are 11 classifications describing sources of explosive hazards. Circle the score(s) that correspond with **all** sources of explosive hazards known or suspected to be present at the MRS.

Note: The terms *former range, practice munitions, small arms, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Former range	• The MRS is a former military range where munitions (including practice munitions with sensitive fuzes) have been used. Such areas include: impact or target areas, associated buffer and safety zones, firing points, and live-fire maneuver areas.	10
Former munitions treatment (i.e., OB/OD) unit	• The MRS is a location where UXO or DMM (e.g., munitions, bulk explosives, bulk pyrotechnic, or bulk propellants) were burned or detonated for the purpose of treatment prior to disposal.	8
Former practice munitions range	• The MRS is a former military range on which only practice munitions without sensitive fuzes were used.	6
Former maneuver area	• The MRS is a former maneuver area where no munitions other than flares, simulators, smokes, and blanks were used. There must be evidence that no other munitions were used at the location to place an MRS into this category.	5
Former burial pit or other disposal area	• The MRS is a location where DMM were buried or disposed of (e.g., disposed of into a water body) without prior thermal treatment.	5
Former industrial operating facilities	• The MRS is a location that is a former munitions maintenance, manufacturing, or demilitarization facility.	4
Former firing points	• The MRS is a firing point, where the firing point is delineated as an MRS separate from the rest of a former military range.	4
Former missile or air defense artillery emplacements	• The MRS is a former missile defense or air defense artillery (ADA) emplacement not associated with a military range.	2
Former storage or transfer points	• The MRS is a location where munitions were stored or handled for transfer between different modes of transportation (e.g., rail to truck, truck to weapon system).	2
Former small arms range	• The MRS is a former military range where only small arms ammunition was used [There must be evidence that no other types of munitions (e.g., grenades) were used or are present to place an MRS into this category.].	***1***
Evidence of no munitions	• Following investigation of the MRS, there is physical evidence that no UXO or DMM are present, or there is historical evidence indicating that no UXO or DMM are present.	0
SOURCE OF HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).	***1***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Source of Hazard*** classifications in the space provided.

Historical records indicate a small arms range may have been located on this site. (Section 4.14 and Appendix J of the 2007 SI Report).

Table 3

EHE Module: Location of Munitions Data Element Table

DIRECTIONS: Below are eight classifications of munitions locations and their descriptions. Circle the score(s) that correspond with **all** locations where munitions are located or suspected of being found at the MRS.

Note: The terms *surface, subsurface, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Confirmed surface	◆ Physical evidence indicates that there are UXO or DMM on the surface of the MRS ◆ Historical evidence (e.g., a confirmed incident report or accident report) indicates there are UXO or DMM on the surface of the MRS.	25
Confirmed subsurface, active	◆ Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS, and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM. ◆ Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost, heat heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose UXO or DMM.	20
Confirmed subsurface, stable	◆ Physical evidence indicates the presence of UXO or DMM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed. ◆ Historical evidence indicates that UXO or DMM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause UXO or DMM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause UXO or DMM to be exposed.	15
Suspected (physical evidence)	◆ There is physical evidence (e.g., munitions debris, such fragments, penetrators, projectiles, shell casings, links, fins), other than the documented presence of UXO or DMM, indicating that UXO or DMM may be present at the MRS.	10
Suspected (historical evidence)	◆ There is historical evidence indicating that UXO or DMM may be present at the MRS.	5
Subsurface, physical constraint	◆ There is physical or historical evidence indicating that UXO or DMM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the UXO or DMM.	2
Small arms (regardless of location)	◆ The presence of small arms ammunition is confirmed or suspected, regardless of other factors such as geological stability [There must be evidence that no other types of munitions (e.g., grenades) were used or are present at the MRS to place an MRS into this category.].	***1***
Evidence of no munitions	◆ Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present.	0
LOCATION OF MUNITIONS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 25).	***1***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Location of Munitions*** classifications in the space provided.

Historical records indicate a small arms range may have been located on this site. (Section 4.14 and Appendix J of the 2007 SI Report).

Table 4

EHE Module: Ease of Access Data Element Table

DIRECTIONS: Below are four classifications of barrier types that can surround an MRS and their descriptions. The barrier type is directly related to the ease of public access to any explosive materiel. Circle the score that corresponds with the ease of access to the MRS.

Note: The term *barrier* is defined in Appendix C of the Primer.

Classification	Description	Score
No barrier	• There is no barrier preventing access to any part of the MRS (i.e., all parts of the MRS are accessible).	***10***
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS, but not the entire MRS.	8
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
EASE OF ACCESS	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 10).	***10***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ease of Access*** classification in the space provided.

This MRS is in a developed area that includes an airport with both commercial and private use, There are no fences or physical barriers to this site. (2007 SI Report Paragraph 5.14.3.1).

Table 5

EHE Module: Status of Property Data Element Table

DIRECTIONS: Below are three classifications of the status of a property within the Department of Defense (DoD) and their descriptions. Circle the score that corresponds with the status of property at the MRS.

Classification	Description	Score
Non-DoD control	• The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by DoD. Examples are privately owned land or water bodies; land or water bodies owned or controlled by state, tribal, or local governments; and land or water bodies managed by other federal agencies.	***5***
Scheduled for transfer from DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD, and DoD plans to transfer that land or water body to the control of another entity (e.g., a state, tribal, or local government; a private party; another federal agency) within 3 years from the date the rule is applied.	3
DoD control	• The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD. With respect to property that is leased or otherwise possessed, DoD must control access to the MRS 24 hours per day, every day of the calendar year.	0
STATUS OF PROPERTY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Status of Property*** classification in the space provided.

Section 2.3 of the 2007 SI notes that all of the land acquired by the military on Culebra and the surrounding cays and cayos was excessed to the Department of the Interior or transferred to the government of Puerto Rico. The waterline is managed by the PR DNR and USFWS while the rest of the MRS is privately owned or utilized by the Puerto Rico DNR.

Table 6

EHE Module: Population Density Data Element Table

DIRECTIONS: Below are three classifications of population density and their descriptions. Determine the population density per square mile in the vicinity of the MRS and circle the score that corresponds with the associated population density.

Note: If an MRS is located in more than one county, use the largest population density value among the counties. If the MRS is within or borders a city or town, use the population density for the city or town, rather than that of the county.

Classification	Description	Score
> 500 persons per square mile	• There are more than 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	5
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the county in which the MRS is located, based on U.S. Census Bureau data.	***1***
POPULATION DENSITY	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***1***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Density*** classification in the space provided.

Section 2.2.7 of the 2007 SI notes that the population density of the municipality of Culebra is 71.8 persons per mile, as obtained from Census 2000.

Table 7

EHE Module: Population Near Hazard Data Element Table

DIRECTIONS: Below are six classifications describing the number of inhabited structures near the MRS. The number of inhabited buildings relates to the population near the hazard. Determine the number of inhabited structures within two miles of the MRS boundary and circle the score that corresponds with the associated population near the known or suspected hazard.

Note: The term *inhabited structures* is defined in Appendix C of the Primer.

Classification	Description	Score
26 or more inhabited structures	• There are 26 or more inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	***5***
16 to 25 inhabited structures	• There are 16 to 25 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	4
11 to 15 inhabited structures	• There are 11 to 15 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	3
6 to 10 inhabited structures	• There are 6 to 10 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	2
1 to 5 inhabited structures	• There are 1 to 5 inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	1
0 inhabited structures	• There are no inhabited structures located up to 2 miles from the boundary of the MRS, within the boundary of the MRS, or both.	0
POPULATION NEAR HAZARD	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Population Near Hazard*** classification in the space provided.

MRS 14 is located within a two-mile radius surrounding the Municipality of Culebra which has just under 2,000 residents and many visitors throughout the year. (2007 SI Section 2.2.7 and Table 2.2).

Table 8

EHE Module: Types of Activities/Structures Data Element Table

DIRECTIONS: Below are five classifications of activities and/or inhabited structures near the hazard and their descriptions. Review the types of activities that occur and/or structures that are present within two miles of the MRS and circle the score(s) that correspond with **all** the activities/structure classifications at the MRS.

Note: The term *inhabited structure* is defined in Appendix C of the Primer.

Classification	Description	Score
Residential, educational, commercial, or subsistence	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with any of the following purposes: residential, educational, child care, critical assets (e.g., hospitals, fire and rescue, police stations, dams), hotels, commercial, shopping centers, playgrounds, community gathering areas, religious sites, or sites used for subsistence hunting, fishing, and gathering.	***5***
Parks and recreational areas	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with parks, nature preserves, or other recreational uses.	***4***
Agricultural, forestry	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with agriculture or forestry.	3
Industrial or warehousing	• Activities are conducted, or inhabited structures are located up to two miles from the MRS's boundary or within the MRS's boundary, that are associated with industrial activities or warehousing.	***2***
No known or recurring activities	• There are no known or recurring activities occurring up to two miles from the MRS's boundary or within the MRS's boundary.	1
TYPES OF ACTIVITIES/STRUCTURES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Types of Activities/Structures*** classifications in the space provided.

MRS 13 is located on the island of Culebra. The island has schools, residential areas, a clinic, an airport, restaurants, hotels, shops, and a few industrial companies. Beaches within a two mile radius are managed by the USFWS or PR DNR for wildlife conservation and recreational use. (2007 SI Report Sections 2.2.7 and 2.2.8)

Table 9

EHE Module: Ecological and/or Cultural Resources Data Element Table

DIRECTIONS: Below are four classifications of ecological and/or cultural resources and their descriptions. Review the types of resources present and circle the score that corresponds with the ecological and/or cultural resource classifications at the MRS.

Note: The terms *ecological resources* and *cultural resources* are defined in Appendix C of the Primer.

Classification	Description	Score
Ecological and cultural resources present	• There are both ecological and cultural resources present on the MRS.	***5***
Ecological resources present	• There are ecological resources present on the MRS.	3
Cultural resources present	• There are cultural resources present on the MRS.	3
No ecological or cultural resources present	• There are no ecological resources or cultural resources present on the MRS.	0
ECOLOGICAL AND/OR CULTURAL RESOURCES	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 5).	***5***

DIRECTIONS: Document any MRS-specific data used in selecting the ***Ecological and/or Cultural Resources*** classification in the space provided.

The MRS is located within a USFWS refuge that is utilized by various species of birds. Page 5-1 of the SSWP (2006) notes that archeological remnants were discovered in the Lower Camp in 1992. No other cultural resources are reported on the site (2007 SI Section 2.2.6).

Table 10
Determining the EHE Module Rating

DIRECTIONS:

1. From Tables 1–9, record the data element scores in the **Score** boxes to the right.
2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.
3. Add the three **Value** boxes and record this number in the **EHE Module Total** box below.
4. Circle the appropriate range for the **EHE Module Total** below.
5. Circle the **EHE Module Rating** that corresponds to the range selected and record this value in the **EHE Module Rating** box found at the bottom of the table.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

	Source	Score	Value
Explosive Hazard Factor Data Elements			
Munitions Type	Table 1	2	3
Source of Hazard	Table 2	1	
Accessibility Factor Data Elements			
Location of Munitions	Table 3	1	16
Ease of Access	Table 4	10	
Status of Property	Table 5	5	
Receptor Factor Data Elements			
Population Density	Table 6	1	16
Population Near Hazard	Table 7	5	
Types of Activities/ Structures	Table 8	5	
Ecological and /or Cultural Resources	Table 9	5	
EHE MODULE TOTAL			35

EHE Module Total	EHE Module Rating
92 to 100	A
82 to 91	B
71 to 81	C
60 to 70	D
48 to 59	E
38 to 47	F
less than 38	**G**
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected Explosive Hazard
EHE MODULE RATING	***G***

Table 11

CHE Module: CWM Configuration Data Element Table

DIRECTIONS: Below are seven classifications of CWM configuration and their descriptions. Circle the score(s) that correspond to **all** CWM configurations known or suspected to be present at the MRS.

Note: The terms *CWM/UXO, CWM/DMM, physical evidence,* and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
CWM, explosive configuration either UXO or damaged DMM	The CWM known or suspected of being present at the MRS is: • Explosively configured CWM that are UXO (i.e., CWM/UXO). • Explosively configured CWM that are DMM (i.e., CWM/DMM) that have been damaged.	30
CWM mixed with UXO	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged, or nonexplosively configured CWM/DMM, or CWM not configured as a munition, that are commingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are undamaged DMM	• The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS is: • Nonexplosively configured CWM/DMM. • Bulk CWM/DMM (e.g., ton container).	15
CAIS K941 and CAIS K942	• The CWM/DMM known or suspected of being present at the MRS is CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	• Only CAIS, other than CAIS K941 and K942, are known or suspected of being present at the MRS.	10
Evidence of no CWM	• Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	***0***
CWM CONFIGURATION	**DIRECTIONS:** Record **the single highest score** from above in the box to the right (maximum score = 30).	***0***

DIRECTIONS: Document any MRS-specific data used in selecting the ***CWM Configuration*** classifications in the space provided.

There is no historical or anecdotal evidence that CWM were ever used on this MRS. (Sections 2.5 and 4.2 of the 2007 SI Report). Tables 12-19 have been omitted.

Table 20
Determining the CHE Module Rating

DIRECTIONS:

1. From Tables 11–19, record the data element scores in the **Score** boxes to the right.
2. Add the **Score** boxes for each of the three factors and record this number in the **Value** boxes to the right.
3. Add the three **Value** boxes and record this number in the **CHE Module Total** box below.
4. Circle the appropriate range for the **CHE Module Total** below.
5. Circle the **CHE Module Rating** that corresponds to the range selected and record this value in the **CHE Module Rating** box found at the bottom of the table.

Note:
An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

	Source	Score	Value
CWM Hazard Factor Data Elements			
CWM Configuration	Table 11	0	0
Sources of CWM	Table 12	0	
Accessibility Factor Data Elements			
Location of CWM	Table 13	0	0
Ease of Access	Table 14	0	
Status of Property	Table 15	0	
Receptor Factor Data Elements			
Population Density	Table 16	0	0
Population Near Hazard	Table 17	0	
Types of Activities/ Structures	Table 18	0	
Ecological and /or Cultural Resources	Table 19	0	
CHE MODULE TOTAL			0

CHE Module Total	CHE Module Rating
92 to 100	A
82 to 91	B
71 to 81	C
60 to 70	D
48 to 59	E
38 to 47	F
less than 38	**G**
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected CWM Hazard
CHE MODULE RATING	***No Known or Suspected CWM Hazard***

Table 21

HHE Module: Groundwater Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's groundwater and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the groundwater, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$
100 > CHF > 2	M (Medium)	
2 > CHF	L (Low)	

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the groundwater is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in groundwater has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the groundwater to a potential point of exposure (possibly due to geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the groundwater receptors at the MRS.

Classification	Description	Value
Identified	There is a threatened water supply well downgradient of the source and the groundwater is a current source of drinking water or source of water for other beneficial uses such as irrigation/agriculture (equivalent to Class I or IIA aquifer).	H
Potential	There is no threatened water supply well downgradient of the source and the groundwater is currently or potentially usable for drinking water, irrigation, or agriculture (equivalent to Class I, IIA, or IIB aquifer).	M
Limited	There is no potentially threatened water supply well downgradient of the source and the groundwater is not considered a potential source of drinking water and is of limited beneficial use (equivalent to Class IIIA or IIIB aquifer, or where perched aquifer exists only).	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Groundwater MC Hazard

Per TPP concurrence, no groundwater samples were collected as part of the SI.

Table 22

HHE Module: Surface Water – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for human endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF Scale	CHF Value	Sum The Ratios	
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).		

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Surface Water (Human Endpoint) MC Hazard

Per TPP concurrence, no surface water samples were collected as part of the SI

Table 23

HHE Module: Sediment – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the site's sediment and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for human endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
CHF Scale	**CHF Value**	**Sum The Ratios**	
CHF > 100	H (High)	$CHF = \sum \frac{[\text{Maximum Concentration of Contaminant}]}{[\text{Comparison Value for Contaminant}]}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right maximum value = H).		

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	H

per MMRP Realignment Summary

No Known or Suspected Sediment (Human Endpoint) MC Hazard

Per TPP concurrence no sediment samples were collected as part of the SI.

7 May 2008 = NDAI

Table 24

HHE Module: Surface Water – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the surface water, select the box at the bottom of the table.

Note: Use dissolved, rather than total, metals analyses when both are available.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios

CHF Scale	CHF Value	Sum the Ratios	
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L

MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L

RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Surface Water (Ecological Endpoint) MC Hazard

Per TPP concurrence, no surface water samples were collected as part of the SI

Table 25

HHE Module: Sediment – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's sediment and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including *additional contaminants recorded on Table 27. Based on the* **CHF**, *use the* **CHF Scale** *to determine and* record the **CHF Value**. If there is no known or suspected MC hazard for ecological endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios

CHF Scale	CHF Value	Sum the Ratios
CHF > 100	H (High)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$
100 > CHF > 2	M (Medium)	
2 > CHF	L (Low)	

CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).	

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	

No Known or Suspected Sediment (Ecological Endpoint) MC Hazard

Per TPP concurrence, no sediment samples were collected as part of the SI.

Table 26

HHE Module: Surface Soil Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface soil and their **comparison values** (from Appendix B) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the **ratios** for each medium together, including additional contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the surface soil, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratio
Barium	600	5300	0.11
Copper	120	2800	0.042
Strontium	76	46000	0.0016
CHF Scale	**CHF Value**	**Sum the Ratios**	**0.15**
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CONTAMINANT HAZARD FACTOR	**DIRECTIONS:** Record **the CHF Value** from above in the box to the right (maximum value = H).		***L***

Migratory Pathway Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface soil migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface soil is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface soil has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface soil to a potential point of exposure (possibly due to presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***L***

Receptor Factor

DIRECTIONS: Circle the value that corresponds most closely to the surface soil receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface soil to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface soil to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface soil to which contamination has moved or can move.	L
RECEPTOR FACTOR	**DIRECTIONS:** Record **the single highest value** from above in the box to the right (maximum value = H).	***L***

No Known or Suspected Sediment (Ecological Endpoint) MC Hazard

Ambient soil samples collected are used to for metals comparison per TPP concurrence. Contaminants that are attributable to DoD activities (per Table 4.1 2007 SI Report), with comparison values developed, that exceed the metals comparison values contribute to the score. MPF and RF are rated low given the lack of contamination measured in the soil.

Table 27

HHE Module: Supplemental Contaminant Hazard Factor Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: **Only use this table if there are more than five contaminants present at the MRS.** This is a supplemental table designed to hold information about contaminants that do not fit in the previous tables. Indicate the **media** in which these contaminants are present. Then record all **contaminants**, their **maximum concentrations** and their **comparison values** (from Appendix B) in the table below. Calculate and record the **ratio** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** for each medium on the appropriate media-specific tables.

Note: Remember not to add ratios from different media.

Media	Contaminant	Maximum Concentration	Comparison Value	Ratio

Table 28

Determining the HHE Module Rating

DIRECTIONS:

1. Record the letter values (H, M, L) for the **Contaminant Hazard, Migration Pathway, and Receptor Factors** for the media (from Tables 21–26) in the corresponding boxes below.
2. Record the media's three-letter combinations in the **Three-Letter Combination** boxes below (three-letter combinations are arranged from Hs to Ms to Ls).
3. Using the reference provided below, determine each media's rating (A–G) and record the letter in the corresponding Media Rating box below.

Media (Source)	Contaminant Hazard Factor Value	Migratory Pathway Factor Value	Receptor Factor Value		Three-Letter Combination (Hs-Ms-Ls)		Media Rating (A-G)
Groundwater (Table 21)							
Surface Water/Human Endpoint (Table 22)	-	-	-		-		-
Sediment/Human Endpoint (Table 23)	-	-	-		-		-
Surface Water/Ecological Endpoint (Table 24)	-	-	-		-		-
Sediment/Ecological Endpoint (Table 25)	-	-	-		-		-
Surface Soil (Table 26)	L	L	L		LLL		G

DIRECTIONS (cont.):

4. Select the single highest Media Rating (A is highest; G is lowest) and enter the letter in the **HHE Module Rating** box below.

Note:

An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more media, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

HHE MODULE RATING	G

HHE Ratings (for reference only)

Combination	Rating
HHH	A
HHM	B
HHL	C
HMM	C
HML	D
MMM	D
HLL	E
MML	E
MLL	F
LLL	G
Alternative Module Ratings	Evaluation Pending
	No Longer Required
	No Known or Suspected MC Hazard

Table 29
MRS Priority

DIRECTIONS: In the chart below, circle the letter **rating** for each module recorded in Table 10 (EHE), Table 20 (CHE), and Table 28 (HHE). Circle the corresponding numerical **priority** for each module. If information to determine the module rating is not available, choose the appropriate alternative module rating. The MRS priority is the single highest priority; record this number in the **MRS or Alternative Priority** box at the bottom of the table.

Note: An MRS assigned Priority 1 has the highest relative priority; an MRS assigned Priority 8 has the lowest relative priority. Only an MRS with CWM known or suspected to be present can be assigned Priority 1; an MRS that has CWM known or suspected to be present cannot be assigned Priority 8.

EHE Rating	Priority	CHE Rating	Priority	HHE Rating	Priority
		A	1		
A	2	B	2	A	2
B	3	C	3	B	3
C	4	D	4	C	4
D	5	E	5	D	5
E	6	F	6	E	6
F	7	G	7	F	7
G	***8***			***G***	***8***
Evaluation Pending		Evaluation Pending		Evaluation Pending	
No Longer Required		No Longer Required		No Longer Required	
No Known or Suspected Explosive Hazard		**No Known or Suspected CWM Hazard**		No Known or Suspected MC Hazard	
MRS or ALTERNATIVE PRIORITY				***8***	

APPENDIX L
REFERENCE COPIES

Electronic copy included on enclosed CD