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MRS/Area of Potential Interest (AoPI)	Approximate Acres	Suspect Past DoD Activities based on the ASR, ASR Supplement, and GIS-based Historical Photographic Analysis	Potential MEC/MD	Previous Investigation / Clearance Actions	Adjusted RI acreage	Post-DoD / Current Land Use and Potential Receptors	RI Field Sampling * *Transect spacing is based on VSP, using 1.5x HFD from the HE item (90% confidence for that item or larger)
MRS 1 GAS CHAMBERS	23.8	Training using CS smoke pots/grenades. Assume disposal of canisters in pits or tossed away from the gas chamber (gas chamber #1) in the same general area. Training trenches may also be associated with gas chambers. **NOTE:** Three other gas chambers are identified in historical photographic analysis. Gas chamber # 2 and gas chamber #3 are in the vicinity of the 10th and 3rd holes of the golf course, respectively, adjacent to AoPI 3 (previously referred to as OOU3). Gas chamber # 4 is due east of AoPI 11C (previously referred to as OOU 11C) near the ball fields.	CS smoke pots/grenades. No documented finds since site closure.	General location of gas chamber #3 has been geophysically mapped while investigating OOU3. Anomalies will be intrusively investigated in January 2011.	23.8	Private/commercial. Receptors: residents, landowners, employees. Site is publicly accessible other than the commercial property, which has restricted access.	Upon review of the historical photographic analysis, gas chamber #1 is located south of the southern boundary of MRS1. As such, the field investigation will be focused south of the delineated MRS1. Field investigation will be expanded to include general vicinity of gas chambers #2 and 3 as part of the AoPI 3 investigation, and gas chamber #4 as part of the AoPI 11C investigation. Within the PWS-defined MRS boundary, perform a surface reconnaissance along transects spaced 112 ft apart based on grenades to identify areas of potential munitions contamination. Develop anomaly density maps and document MD, CD and MEC. To the south of the PWS-defined boundary, perform a surface reconnaissance along transects spaced 50 ft apart, to determine anomaly density. Use EM61 in 50'x50' grids to locate disposal pits and/or consolidated disposal area. Within grids, intrusively investigate all MEC-like anomalies. If a large indistinguishable anomaly is present, i.e. a disposal pit, a test trench will be excavated to characterize the anomalous area. ***MC sampling*** – None. Per the ASR Supplement, it is unlikely that CS is present after 50 years. In addition, this is not a compound routinely analyzed by certified laboratories, and is currently not included in the ADR software database. There is no need to sample for metals – smoke canisters are not expected to be comprised of metals of concern for risk analysis.
MRS 2 GRENADE COURT	24.9	Live and practice grenade training.	Live and practice grenades. No documented finds since site closures.	None.	24.9	Private property. Receptors: landowners, residents. Area is publicly accessible.	Mag and dig 100% of anomalies using a MineLab detector along transects spaced at 112' based on a grenade. Develop anomaly density maps and document MD, CD and MEC. The MineLab was selected for use in MRS 2 and MRS 3 based on the magnetic rocks and responsive soils throughout the project site. Place grids (50'x50' equivalent) in areas of high, medium and low-density areas. Grid acreage will be at least 10% of the total transect acreage. DGM grids using EM61. Intrusively investigate MEC-like anomalies. ***MC sampling*** – One discrete soil sample (from 0 to 2" bgs) for explosives and select metals (Pb, Sb, Zn, Cu). If evidence of white phosphorus is discovered, discrete soil samples will be collected for chemical analysis.
MRS 3 OPERATIONAL RANGE COMPLEX	12,102.4 (not including Lake Johnson and Lake Craig)	Artillery training and combat range using live and practice munitions. Documented and undocumented firing points. 15 ranges, as documented in the Supplemental ASR.	60mm mortars, 81mm mortars, 1,000" AT, rifle grenades. Items found since site closure include: 37mm, 57mm, 60mm, 81mm, 105mm, 2.36" rockets, grenades, rifle	EE/CA (1996 and 1998). MEC surface removals at OOU1B, OOU2, and OOU7 in 1997. MEC removal at	12,102.4	State park, private property. Receptors: recreational users (hikers, bikers, camping, horseback riding), residents,	Due to the nature of the previous clearances, the minimal amount of acreage that was cleared, and the difficulty in accurately relocating the exact grids/acreage that was cleared more than 10 years ago, these areas will be included in the investigation, as described below. These data will allow the PDT to evaluate the effectiveness of the past removal actions, for consideration in the RI and FS documents. MRS 3 will be divided into sub-areas based on past land use. *Sub-area 1* is inclusive of the range complex most likely to have MK II grenades, 37mm, and 60mm mortars or larger munitions, based

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			grenades, 155mm with burster tube. Specifically: *1A* - 37mm and 57mm inert projectiles. *1B* – 60mm and 81mm mortar parts. *2* – 60mm and 81mm mortar parts, 4.2" mortar parts. *6A/6B* – M43 81mm mortars, M49 60mm mortar, M84 105mm HC smoke round. *7* – 60mm mortars, 81mm mortars, 2.36" rocket parts. *9F* – 37mm APT with tracer (expended), grenade ring. *10C* – MKII practice grenade scrap. *10D* – Grenade frag, part of a white phosphorus grenade. *11A* – Grenade top, 60mm mortar (expended). *12A* – Grenade spoon, M9 HEAT rifle grenades practice rifle grenades, 2.36" rocket motors, frag, and scrap, MKII hand grenades and scrap. *12B* – M9 rifle grenade.	OOU6A/6B in 2001. Less than 1% of the MRS has undergone MEC clearance, most of which was surface or shallow depth clearance as part of Time Critical Removal Actions.		landowners. Some timber harvesting on private property. Public access; some of the southern areas may be inaccessible due to limited road, dense vegetation.	on documented MEC finds. *Sub-area 2* represents all remaining portions where only sporadic and small quantities of munitions have been found. If MEC/MD is found up to the boundary of the MRS, including formerly identified OOUs, ZAPATA will coordinate with the Project Delivery Team to expand the investigation via instrument-assisted reconnaissance or mag and dig, to increase confidence that the boundary of MEC is defined. ***Sub-area 1*** - Mag and dig 100% anomalies using a MineLab detector at various transect spacings, those being 112 ft for MK II grenades, 242 ft for 37mm projectiles, and 416 ft for 60mm mortars. Develop anomaly density maps and document MD, CD and MEC. Conduct an instrument-assisted recon along transects in wetlands, documenting anomaly counts. There will be no intrusive investigation of anomalies in the wetlands. Place grids (50'x50' equivalent) in areas of high, medium and low density areas. Grid acreage will be at least 10% of the total transect acreage. DGM grids using EM61. Intrusively investigate MEC-like anomalies. ***Sub-area 2*** – Perform a surface reconnaissance along transects spaced 416 ft apart based on a 60mm mortar to identify areas of potential munitions contamination. Develop anomaly density maps and document MD, CD and MEC. ***MC sampling -*** Ten (10) discrete soil samples (from 0 to 2" bgs) for explosives and select metals (Pb, Sb, Zn, Cu) based on range fans/firing points, terrestrial targets, and findings from mag-and-dig.

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RANGE COMPLEX (LAKE CRAIG AND LAKE JOHNSON)	Total ~ 185.6 Lake Johnson footprint = 37.5 acres. ZAPATA contacted State Park personnel on 12/3/10 and SC DNR on 12/6/10 concerning lake water levels. Officials indicated that Lake Johnson has been drained but is currently being naturally filled and has approximately 7 acres of water. Lake Craig is 148.1 acres.	Situated within MRS 3.	60mm and 81mm mortars. No documented finds since site closure.	None	185.6	State park. Receptors: recreational users (boating, fishing). Site is publicly accessible.	Two investigation methodologies are proposed for MRS; mag-and-dig and surface reconnaissance, with variable transect spacings. Based on site restrictions, no data collection within the lakes is proposed. Mag-and-dig transects proposed for areas west of the lakes will be performed up to the water boundary, will turn and follow the shoreline until the point at which the transects turn and lead away from the lake. This will allow for data collection to occur along the lake shorelines. A similar method will be employed during surface reconnaissance east of the lakes. As with MRS 3, those data will be used to develop anomaly density maps and document MD, CD and MEC. ***MC sampling –*** No samples will be collected.
AREAS OF POTENTIAL INTEREST – GENERAL COMMENTS		Mixed use.					Field work in AoPI is contingent upon rights-of-entry. If MEC/MD is found up to the boundary of any AoPI, ZAPATA will coordinate with the Project Delivery Team to expand the investigation via instrument-assisted reconnaissance or mag and dig, to increase confidence that the boundary of MEC is defined.

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AREA OF POTENTIAL INTEREST 3	PWS AoPI = 11 acres. Previous defined OOU 3 (Wedgewood) = 46 acres.	Cantonment area.	Grenades. Items found since site closure include: grenades, 2.36" rocket fragmentation.	EE/CA (1996), multiple removal reports. Subsurface clearance to depth in approximately 40 acres in the Wedgewood development that encompasses the majority of AoPI 3. DGM and some clearance in golf course buffer. General location of gas chamber #3 has been geophysically mapped while investigating OOU3. Anomalies will be intrusively investigated in January 2011. Results of this clearance may alter the CSM.	Approx. 3 acres.	Residential and recreational (golf course). Receptors: Residents, golfers, and golf course maintenance personnel. Site is publicly accessible.	Areas that have undergone previous MEC removals will be excluded from the acres investigated under this RI based upon coordinates provided in removal documents. Extent of MEC has not been defined. MEC has been encountered beyond the currently delineated boundary of AoPI 3 as documented during the MEC removal at OOU3. Field investigation will occur beyond this boundary to the west, north and east to the road depicted in the historical photo analysis. While the 112 ft transect spacing is proposed for these extend areas of investigation, it is unclear what method of investigation is most appropriate; potential ideas include mag-and-dig, DGM with EM61 and/or the MetalMapper, or some combination of these. The method should be determined during the TPP process. ZAPATA believes that the location of gas chamber #2, as shown in the historical photographic analysis, has been investigated during previous MEC investigations/removals. In the event that this area was not characterized, the proposed line spacing is adequate to identify gas canisters. ***MC sampling*** - One discrete soil sample (from 0 to 2" bgs) for explosives and select metals (Pb, Sb, Zn, Cu).
AREA OF POTENTIAL INTEREST 5	5.5	North of the Range 7 firing point; southwest of grenade court.	Grenades. Items found since site closure include: rifle grenade.	EE/CA (1996)	5.5	Residential. Receptors: landowners, residents. Area is publicly accessible.	Mag and dig 100% transects using a MineLab detector at 173' line spacing, based on a rifle grenade. Develop anomaly density maps and document MD, CD and MEC. Place grids (50'x50' equivalent) in areas of high, medium and low-density areas. Grid acreage will be at least 10% of the total transect acreage. DGM grids using EM61. Intrusively investigate MEC-like anomalies. ***MC sampling*** - One discrete soil sample (from 0 to 2" bgs) for explosives and select metals (Pb, Sb, Zn, Cu).

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AREA OF POTENTIAL INTEREST 8	23.9	North of the Range 11 firing point.	Small arms ammunition. No documented finds since site closure.	EE/CA (1996)	23.9	State Park. Receptors: recreational users (hikers, bikers, camping, horseback riding). Site is publicly accessible.	Mag and dig 100% transects using a MineLab detector at 112' spacing. Develop anomaly density maps and document MD, CD and MEC. Place grids (50'x50' equivalent) in areas of high, medium and low-density areas. Grid acreage will be at least 10% of the total transect acreage. DGM grids using EM61. Intrusively investigate MEC-like anomalies. ***MC sampling*** - One discrete soil sample (from 0 to 2" bgs) for explosives and select metals (Pb, Sb, Zn, Cu).
AREA OF POTENTIAL INTEREST 9E	7.6	Northwest of the Range 7 firing point.	Small arms ammunition; which have also been found since site closure.	EE/CA (1998)	7.6	State Park. Receptors: recreational users (hikers, bikers, camping, horseback riding). Area is publicly accessible.	Mag and dig 100% transects using a MineLab detector at 112' spacing. Develop anomaly density maps and document MD, CD and MEC. Place grids (50'x50' equivalent) in areas of high, medium and low-density areas. Grid acreage will be at least 10% of the total transect acreage. DGM grids using EM61. Intrusively investigate MEC-like anomalies. ***MC sampling*** - One discrete soil sample (from 0 to 2" bgs) for explosives and select metals (Pb, Sb, Zn, Cu).
AREA OF POTENTIAL INTEREST 9G	6.6	North of the Range 3 firing point.	Small arms ammunition; which have also been found since site closure. Anecdotal evidence of grenades has been provided by the public.	EE/CA (1998)	6.6	Private property. Receptors: Residents. Area is publicly accessible.	Based on anecdotal information provided by the public and the Spartanburg County Sheriff's Office, it is recommended that AoPI 9G be expanded to the east, up to the MRS 3 boundary. Mag and dig 100% transects using a MineLab detector at 112' line spacing. Develop anomaly density maps and document MD, CD and MEC. Place grids (50'x50' equivalent) in areas of high, medium and low-density areas. Grid acreage will be at least 10% of the total transect acreage. DGM grids using EM61. Intrusively investigate MEC-like anomalies. ***MC sampling*** - One discrete soil sample (from 0 to 2" bgs) for explosives and select metals (Pb, Sb, Zn, Cu).
AREA OF POTENTIAL INTEREST 10A	171.5	North of AoPI 8 and Ranges 10 and 11 firing points.	Grenades and mortars. Items found since site closure include: rifle grenade parts, land mine parts , practice grenade, 2.36" rocket, small arms ammunition.	EE/CA (1998)	171.5	State Park Receptors: recreational users (hikers, bikers, camping, horseback riding). Area is publicly accessible.	Mag and dig 100% transects at 112' line spacing using a MineLab detector. Develop anomaly density maps and document MD, CD and MEC. Place grids (50'x50' equivalent) in areas of high, medium and low-density areas. Grid acreage will be at least 10% of the total transect acreage. DGM grids using EM61. Intrusively investigate MEC-like anomalies. ***MC sampling*** - One discrete soil sample (from 0 to 2" bgs) for explosives and select metals (Pb, Sb, Zn, Cu).

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AREA OF POTENTIAL INTEREST 10B	33.6	Southwest of Range 2 firing point.	Undetermined. Items found since site closure include: small arms ammunition, 60mm mortar.	EE/CA (1998)	33.6	State Park Receptors: recreational users (hikers, bikers, camping, horseback riding). Area is publicly accessible.	Mag and dig 100% transects at 416' line spacing using a Mine Lab detector. Develop anomaly density maps and document MD, CD and MEC. Place grids (50'x50' equivalent) in areas of high, medium and low-density areas. Grid acreage will be at least 10% of the total transect acreage. DGM grids using EM61. Intrusively investigate MEC-like anomalies. ***MC sampling*** - One discrete soil sample (from 0 to 2" bgs) for explosives and select metals (Pb, Sb, Zn, Cu).
ARE OF POTENTIAL INTEREST 11B	34.7	Northwest of Range 2 firing point.	Undetermined. Items found since site closure include: small arms ammunition, grenade part.	EE/CA (1998)	34.7	Private property. Receptors: residents. Area is publicly accessible.	Mag and dig 100% transects using a MineLab detector at 112' line spacing. Develop anomaly density maps and document MD, CD and MEC. Place grids (50'x50' equivalent) in areas of high, medium and low-density areas. Grid acreage will be at least 10% of the total transect acreage. DGM grids using EM61. Intrusively investigate MEC-like anomalies. ***MC sampling*** - One discrete soil sample (from 0 to 2" bgs) for explosives and select metals (Pb, Sb, Zn, Cu).

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AREA OF POTENTIAL INTEREST 11C	23.0	Undetermined.	Undetermined. Items found since site closure include: grenades grenade fuzes, anti-tank mines.	EE/CA (1998) Clearance to depth of 11 acres (2010).	12	Private property. Receptors: residents, landowners. Area is publicly accessible.	Areas that have undergone previous MEC removals will be excluded from the acres investigated under this RI. The PWS-defined boundary may be improperly located. Based on findings during ZAPATA's previous removal actions in OOU11C, the area of potential interest may lie to the east of both the PWS-defined boundary and the removal action boundary. However, the USAESCH has requested the PWS-defined boundary be included in future investigations along with those proposed activities to the east. Investigate additional acres to the east of the AoPI based on the 2010 removal action data and site knowledge. Additional acreage will include the approximate location of gas chamber #4, based on historical photographic analysis. Conduct mag and dig of 100% anomalies at 112' transect spacing using a MineLab detector. Develop anomaly density maps and document MD, CD and MEC. 100% digital geophysical mapping of ball fields east of AoPI 11C to illustrate extent of anomaly density. Based upon findings of mag and dig, and discussions w/PDT, MEC-like items may be intrusively investigated. Place grids (50'x50' equivalent) in areas of high, medium and low density mag and dig areas. ***MC sampling*** - One discrete soil sample (from 0 to 2" bgs) for explosives and select metals (Pb, Sb, Zn, Cu).
AREA OF POTENTIAL INTEREST 11D	15.1	Cantonment area.	Undetermined. Items found since site closure include: grenade, mortars (reported to sheriff).	EE/CA (1998)	15.1	Private property / recreational. Receptors: golfers and golf course maintenance personnel. Area is publicly accessible.	Location of AoPI in PWS appears to be offset, based on evaluation of the historic photo analysis. AoPI will be shifted due west. Mag and dig 100% transects using a MineLab at 112' line spacing in area identified in the historic photographic analysis. Develop anomaly density maps and document MD, CD and MEC. Place grids (50'x50' equivalent) in areas of high, medium and low-density areas. Grid acreage will be at least 10% of the total transect acreage. DGM grids using EM61. Intrusively investigate MEC-like anomalies. ***MC sampling*** - One discrete soil sample (from 0 to 2" bgs) for explosives and select metals (Pb, Sb, Zn, Cu).

NOTES: The proposed methodology assures that the following metrics will be met.

- Transect spacing and numbers of anomalies to be investigated results in 90% confidence that all MEC contaminated areas have been identified.
- Boundaries of MEC contaminated areas will be delineated to an accuracy of +/- half of the transect spacing for each MRS/AoPI.
- All land outside of the areas likely to contain MEC have less than or equal to .1 UXO/acre when public use is significant, .5 UXO/acre when public use is moderate, 1 UXO/acre when public use is low by using UXO density as recommended by UXO Estimator.
- Transect spacing and rationale for grid placement will result in 90% confidence that the nature of MEC and MEC debris for each homogenous MEC contaminated area has been achieved.
- Transect spacing, mag and dig along transects, development of anomaly density maps, and intrusive investigation in grids will provide comprehensive data to ensure FS cost estimates are within an accuracy of +50%/-30%.