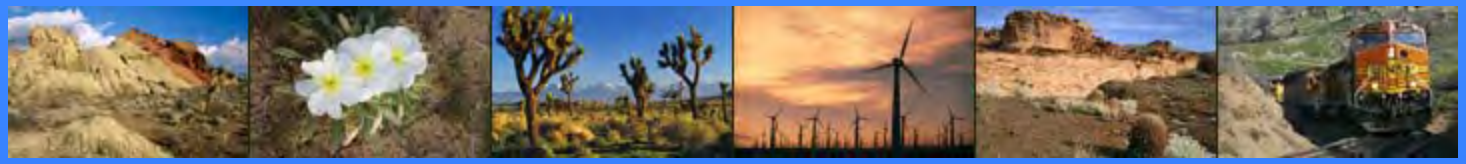
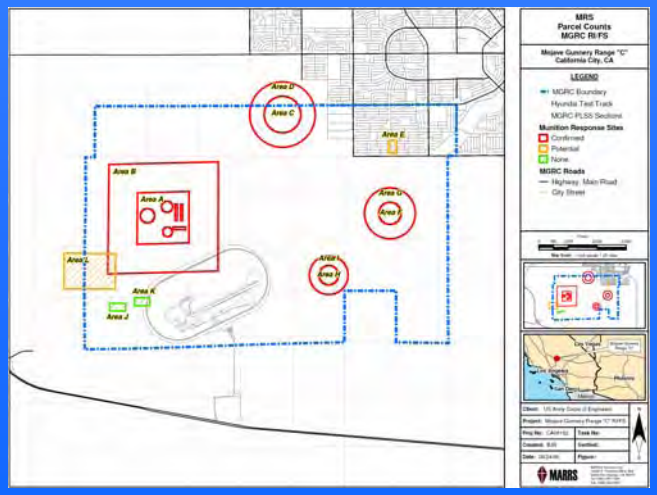
Former Mojave Gunnery Range "C"
DERP—FUDS No. J09CA728101
Remedial Investigation/Feasibility Study (RI/FS)



Technical Planning Process (TPP) Meeting 1
August 30, 2006



Tawny Tran

USACE Project Manager

(213) 452-3991

tawny.t.tran@usace.army.mil

Los Angeles District

Agenda

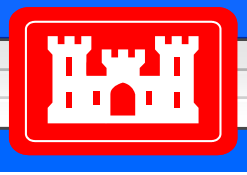
- Introduction of team and stakeholders
- FUDS Program and CERCLA Process
- TPP 4-step process
- Project RI/FS goals
- RI/FS process and elements
- Project history
- Site munitions
- Proposed RI strategy
- Probable remedies
- Schedule
- Questions

Acronyms

- ARAR – Applicable or Relevant and Appropriate Requirements
- ASR – Archive Search Reports
- FUDS – Formerly Used Defense Sites
- AP-T – Armor Piercing with Tracer
- CSM – Conceptual Site Model
- DD – Decision Document
- DGM – Digital Geophysical Mapping
- DoD – Department of Defense
- DQO – Data Quality Objective
- HE – High Explosives
- LTM – Long Term Monitoring
- MC – Munitions Constituent

Acronyms (Continued)

- MEC – Munitions and Explosives of Concern
- MM – Millimeter
- MRA – Munitions Response Area
- MRS – Munitions Response Site
- PA – Preliminary Assessment
- RA – Remedial Action
- RD – Remedial/Removal Design
- RI/FS – Remedial Investigation/Feasibility Study
- ROE – Right of Entry
- SI – Site Inspection
- TPP – Technical Project Planning
- UXO – Unexploded Ordnance



Mission: Serve the Public and meet Govt. customer needs

226,000 square miles

420 miles of shoreline

10% of the US population, growing

Regulatory/Construction/Flood Control

/Navigation/Recreation/Environmental

Los Angeles District

Formerly Used Defense Site (FUDS) Primer

Why	Congress 1986 '*correction, detection and disposal of unexploded ordnance which creates an imminent and substantial endangerment….'*
Where	*'the Secretary shall carry out all response actions under CERCLA at properties owned by, leased or otherwise possessed by the United States"* – USACE assigned
Who	USACE has almost 10,000 FUDS identified nationwide, over 1,300 in the Los Angeles District, funding limited
How	Military Munitions Response Program (MMRP) and Hazardous Toxic Radioactive Waste (HTRW) use the DoD investigation/cleanup methods based on Env. Protection Agency (EPA) CERCLA process

National Status of FUDS Properties and Projects

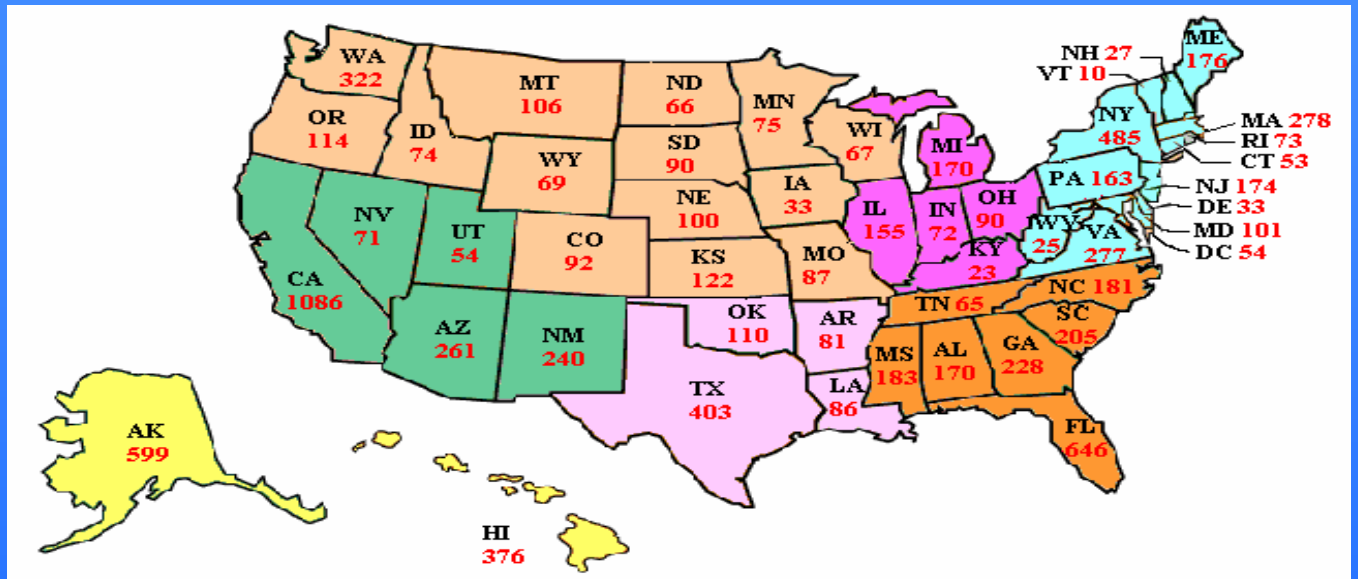
Metric	Oct 04	Sep 05
Total Properties in Inventory	9,730	9,847
Total Properties Eligible for FUDS Program	6,789	6,909
Properties Requiring Response Actions (30%)	2,948	2,965
Total Projects In Inventory	4,871	5,018
Cost to Complete	$18.1 Billion	$18.6 Billion

PROPERTY is the entire property formerly owned/used by DoD and is generally analogous to "site"

PROJECT is the individual area of potential hazard, differentiated by *type of hazard* (HTRW, OE, BD/DR) and is generally analogous to "operable unit"

FUDS Properties by State

data from 2000



Military Divisions

- Great Lakes and Ohio River
- North Atlantic
- Northwestern
- Pacific Ocean
- South Atlantic
- South Pacific
- Southwestern

Total Number of Properties: 9171

NOTE: Approximate numbers based on 11/07/00 database download. Subject to change.

Northern Mariana Islands (CN) **CN** 32
Palau (PT) **PT** 13
Puerto Rico (PR) **PR** 78
U.S. Virgin Islands (VI) **VI** 10
American Samoa (AS) **AS** 29
Guam (GM) **GM** 47

Los Angeles District

Los Angeles District by the Numbers

Formerly Used Defense Sites

Total Inventory 1,283, minus duplicates

Total Sites 1,043

By State:	AZ	262
	CA	763
	NV	18

Total Number of Projects

503 **(511 in FY05)**

MMRP by Risk Assessment Code (RAC):

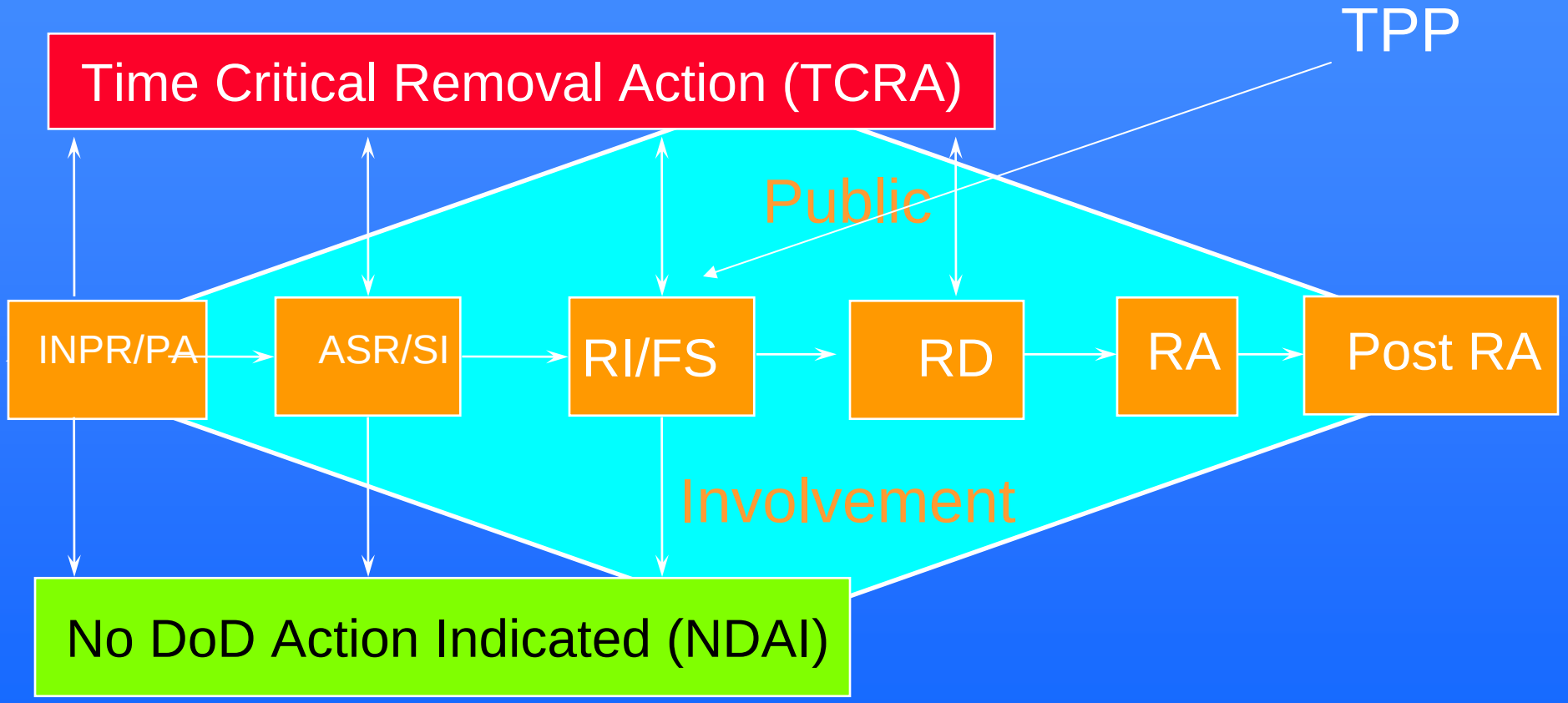
RAC 1: 18
RAC 2: 33
RAC 3: 54
RAC 4: 102
RAC 5: 150

Project Category	#	Los Angeles District Cost to Complete	% of Nation's CTC
Partially Responsible Party	24	------	------
Preliminary Assessment/INPR	NA	$1,300,000	0.04%
Building Demolition/Debris Removal	16	$2,400,000	0.07%
Containerized HTRW	84	$3,100,000	0.10%
Chemical Warfare Material	4	$91,500,000	2.81%
Hazardous Toxic Radioactive Waste	27	$105,800,000	3.35%
Military Munitions Response Program	**348**	**$3,052,500,000**	**27%**
TOTALS	**503**	**$3,256,600,000**	**18%**

Old Metric now using:
Munitions Response Site Prioritization Protocol w/
A – F ratings

Los Angeles District

CERCLA Project Process



Let's Start With The End In Mind
MGRC PP/DD/RD/RA

Proposed Plan

- Description of the Proposed Remedial Alternative intended for public review

Remedial Design

- Detailed designs, plans, specifications for remedial action, requires approved Explosive Safety Submittal

Decision Document

- 'Legal' description of the selected remedial alternative/goals/strategy
- Rationale for selection

Remedial Action

- Implementation phase for the selected remedial alternative

TPP Process

- **Purpose**
  - To achieve site closeout within project constraints
  - To involve stakeholders in project decision making
  - To systematically address complex issues
- **Structure**
  - **Four phase process**
- **Spirit**
  - **“Structured brainstorming”**

Four Phases

- **Phase 1 - Identify the project**

  (90% of TPP effort)

  Describe the situation

- **Phase 2 - Determine data needs**

  What *do* we know?

  What *don't* we know?

- **Phase 3 - Develop data collection options**
- **Phase 4 - Finalize data collection program**

  (Phases 3 & 4 mostly pre-defined for ordnance projects)

  How best to get the information we need?

Phase 1 - Identify Current Project

- Bring together decision makers and technical personnel to identify the current project, identify TPP Team goals and document short and long term objectives
- Prepare team information package, determine overall site approach, and identify project focus
- Begin the formal planning process
- Prepare Phase 1 Memorandum for Record (MFR) to document team's findings and decisions

Phase 2 – Determine Data Needs

- Review phase 1 MFR
- Evaluate existing data (completeness, usability)
- Obtain input from technical personnel, stakeholders, and regulators
- Define data needs
  - What type?
  - How much?
- Determine Data Collection Approaches

Phase 3 – Develop Data Collection Options

Focus is on design of sampling program

- **Developed and documented based on review of phases 1 and 2**

  - Decide which tools are appropriate
  - Communicate precisely how resulting data will be incorporated into the decision-making process
  - Determine how data will be handled, where stored and what format

Phase 4 – Finalize Data Collection Program

- **Finalize and document data collection options and decisions**
- **Prepare Data Quality Objective (DQO) statements**
  - **Clarify study objectives**
  - **Define the appropriate type of data**
  - **Specify tolerable levels of potential decision errors**

Provides assurance that decisions are well supported with the right data obtained in the correct manner

TPP Summary

- Iterative planning process that engages the USACE, stakeholders and regulators into the project decision-making process

- Dynamic process, not a rigid step by step process; some elements of each phase may be completed out of sequence depending on input to the process

TPP Team Roles/Responsibilities

- **Customer(s) –** All TPP Members and Landowners
- **Stakeholders -** Parties with direct interest (may be customers)
- **Regulators -** Federal and State agencies with jurisdiction
- **Project Manager -** team leader (USACE)
  - Primary decision maker
  - Sets constraints
  - Acquires and manages resources
  - Primary point of contact with customer
- **Technical Experts -** provide technical guidance

Team Goals

Understand the impact that the presence of MEC has at the site and to identify appropriate response actions to reduce and/or manage the risk of ordnance and explosives that allows for reasonable public use of the site

- **Goals are defined by:**
  - current and future land use
  - regulatory compliance
  - budget and schedule requirements and limitations

Team Information Package

- Team Members – List, contact info and roles
- TPP Team goals for the project
- USACE Project Team Schedule
- Existing site data (ASRs, photographs, maps)

Document Phase 1

- **Prepare TPP Phase 1 Memorandum for Record (MFR)**

  Stand alone summary document Includes:

  – Site background
  – Conceptual site model (CSM)
  – Project goal (closeout statement)
  – Project objectives
  – Constraints
  – Potential remedies
  – Additional data needs
  – Schedules and budgets

RI/FS Purpose

Formerly Used Defense Sites (FUDS) ER 200-3-1

- RI intended to "adequately characterize the site for purpose of developing and evaluating effective remedial alternatives"

- "RI provides information to assess the **risks** to human health, safety, and environment that will be identified during risk screening in the RI/FS"

RI/FS Process

- Review available documents and data
- Build CSM
- Collect sufficient data
- Develop RI Report with findings
- Develop and screen remedial action alternatives
- Detailed analysis of remedial action alternatives in accordance with RI data
- Develop FS Report

RI/FS Field Project Elements

- Technology evaluation (GPO) and field QC Program
- Surface visual survey
- Digital geophysical mapping
- Reacquisition and intrusive investigation
- Demil / Disposal
- Soil sampling
- Results presentation and recommendations

CSM – MEC Exposure Pathways

Is there MEC present?
Is there access?
What is human behavior/use of the site?
What are the environmental and physical conditions?
Is there a reasonable expectation of benefit to the stakeholders and taxpayers?

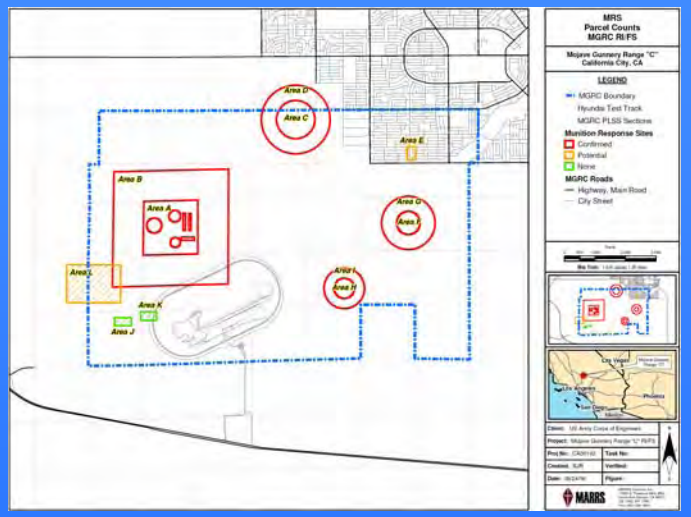
- UXO may exist on the surface - Recreational users may encounter surface UXO during hiking, camping and off-road activities

- Buried UXO may exist within the site's washes and become uncovered due to erosion - Recreational users may encounter the exposed UXO during hiking, camping and off-road activities

- Buried UXO may exist in proposed construction areas - construction crews may contact UXO during excavation and construction activities

Conceptual Site Model (CSM)

J09CA728101
Mojave Gunnery Range "C"
Multiple Targets



- Area = 21,756 acres
- Area Type = MEC
- Past DoD activities = Bombing, rocket and strafing practice
- MEC-related items found since closure = bombs, practice bombs, rockets, 20mm projectiles and practice landmines
- Post-DoD land use and current land use = private lands

MGRC History

Based on the ASR, Range “C” consisted of individual targets which were used for dive bombing, strafing and rocket training. Quantities of munitions used at the site could not be determined from available information.

Munitions Inventory

Extracted from MGRC ASR:

- Bomb, 3 to 4.5-lb Practice, Zinc Cast Iron, AN-MK5, MK23, with MK4 1-lb Signal
- Bomb, 20-lb Fragmentation, AN-MK41
- Bomb, 25-lb Practice, BDU-33/MK76, with MK4 1-lb Signal
- Bomb, 56-lb Practice, MK89, with MK4 1-lb Signal
- Bomb, 100-lb High Explosive, M30A1
- Bomb, 100-lb Practice, MK15 MOD3, with MK1 1-lb Spotting Charge
- Bomb, 100-lb Practice M38A2 Sand Filled with MK1 1-lb Spotting Charge
- Bomb, 250-lb High Explosive, M57A1
- Bomb, 500-lb High Explosive, AN-MK64A1
- Bomb, 500-lb Practice, MK5, MK15, MK21 without Spotting Charge
- Bomb, 1000-lb High Explosive, AN-MK65A1
- Bomb Unit, Practice, BLU061-A/B
- Bomb Unit, Practice, MK118 MOD0/MOD1
- Cartridges, 20-mm, TP
- Cartridges, 20-mm, HEI
- Landmine, Practice, VS-50
- Propelling Charge, M36A1
- Primer, M21A1
- Rocket, 2.75-Inch HE, FFAR
- Rocket, 2.25-Inch Practice, SCAR
- Rocket, 2.75-Inch Practice, FFAR
- Rocket, 5-Inch Practice, HVAR
- Small Arms Ammunition

UXO Safety Precautions

Recognize

Retreat

Report

- Do not touch
- Consider all suspect munitions parts dangerous
- Minimum amount of time near suspected items
- Never attempt to move or uncover
- Never use a cell phone or radio within 50 feet
- Never assume color code is accurate

Proposed RI Strategy

Combination of:

- Visual surveys
- Detector-aided surveys
- Wide area assessments
- Digital geophysical mapping

In accordance with:

- Terrain / geology
- Vegetation
- Natural / cultural concerns
- ROE
- Stakeholder concerns

MEC Investigation Strategy

MRA Investigation Mapping

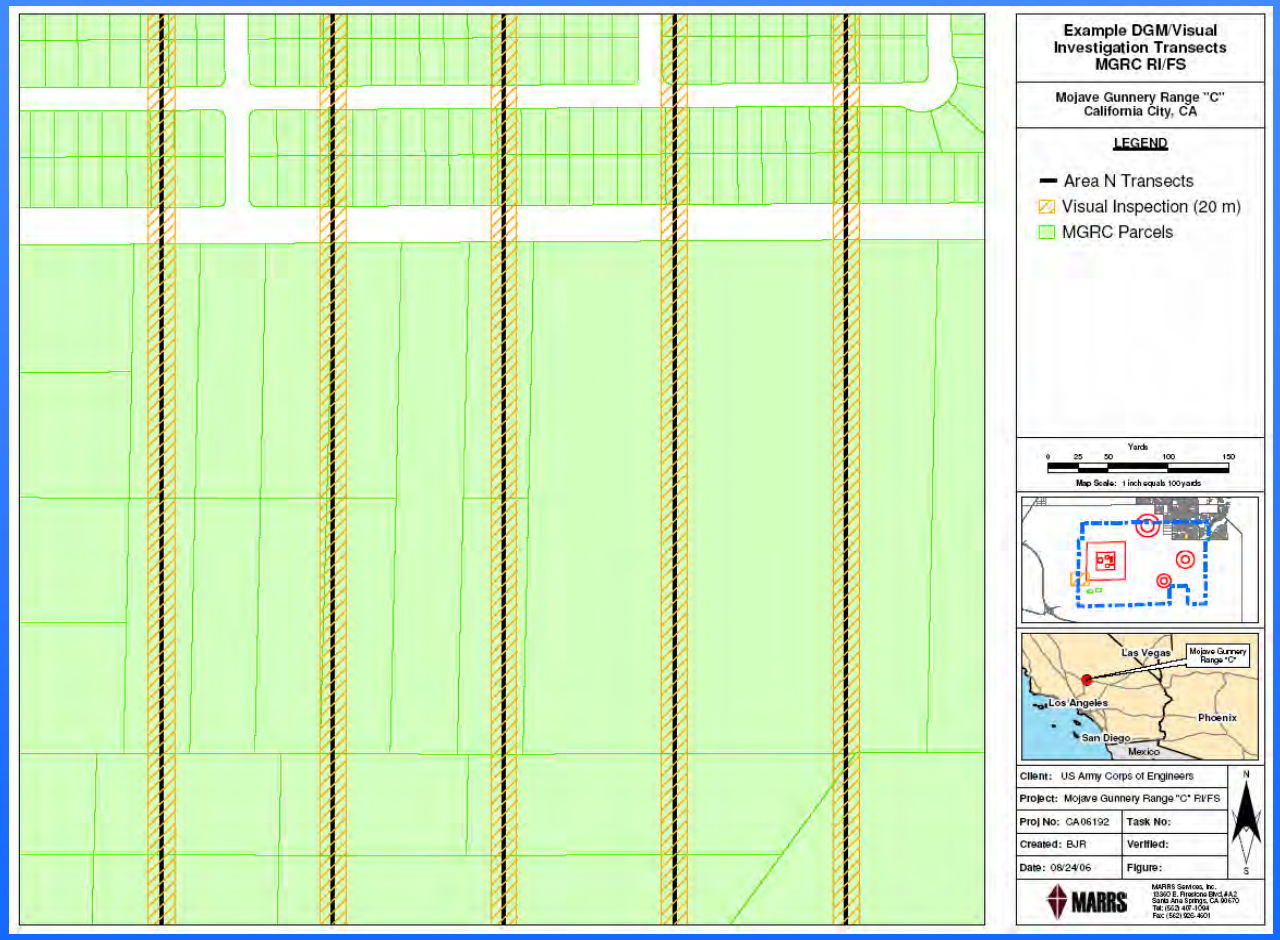
- MRA Geophysical Investigation coverage is determined by the total area of the site
- Survey coverage based on recommended minimum coverage as stated in EM 1110-01-4009
- Coverage requirements were selected from the most conservative models considering the total survey area and target dimensions

MRS Delineation Mapping

- MRS Geophysical Investigation area is determined by the observed distribution of munitions debris and/or the munitions with the greatest fragmentation distance (MGFD)

Engineering Manual EM 1110-01-4009 Guidelines			
Sector Size, Acres	Sector Size, Hectares	Required Minimum Area Investigated	Recommended Minimum Area Investigated
<50	<20.2	5.00%	7.50%
51 - 100	20.6 - 40.5	3.00%	4.50%
101 - 150	40.9 - 60.7	2.00%	3.00%
151 - 1000	61.1 - 404.7	1.00%	1.50%
>1000	>404.7	0.50%	0.75%

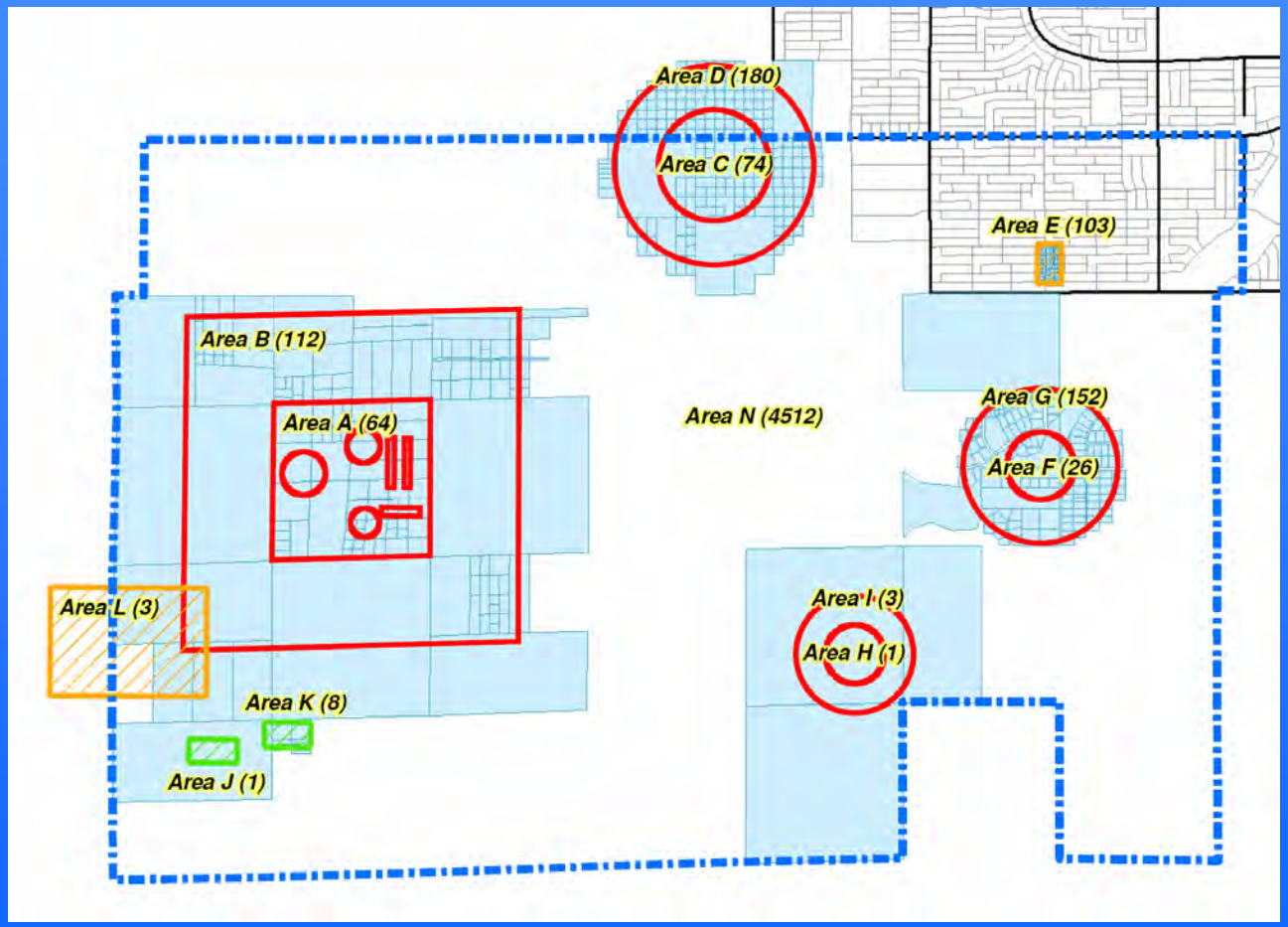
MEC Investigation Strategy



Constraints

- Terrain
- Vegetation
- Sensitive Species
- Trash
- Parcel Right-of-Entry
- Technology
- Budget

Parcel Count Map



MGRC Remedial Alternatives

The RI/FS will:

- Construct a Conceptual Site Model (CSM), and refine/validate throughout the investigation
- Compare the CSM against remedial objectives and select alternatives

Remedial Alternatives:

- Do Nothing Alternative
  - Current Situation
- Institutional Controls
  - Signs, Training, Education, Deed Notifications
- UXO Construction Support
- Surface Removal
- Subsurface Removal
- Any combination

RI/FS Schedule

- August 30, 2006 - TPP Meeting 1
- January 24, 2007 - TPP Meeting 2 and Public Meeting 1 - Present Draft Final PIP
- February 14, 2007 - TPP Meeting 3 and Public Meeting 2 -Present Draft Final RI/FS Workplan for Stakeholder/Public Review
- RI/FS Fieldwork - TBD
- TPP Meeting 4 – TBD
- Public Meeting 3 - TBD

Thanks For Your Participation

- Thank You For Your Input
- Next TPP - January 24, 2007
- Additional Information about MGRC is available at:

http://www.mgrc-mmrp.org/