



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION IX  
75 Hawthorne Street  
San Francisco, CA 94105

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DEF. TAFT

March 11, 2003

Captain C. Schanz  
CEC, U.S. Navy  
Commander  
Southwest Division  
Naval Facilities Engineering Command  
1220 Pacific Highway  
San Diego, CA 92132-5190

Dear Captain Schanze:

Subject: YEAR REVIEW REPORT, OU-2 AT MARINE CORP AIR STATION YUMA,  
ARIZONA

The United States Environmental Protection Agency (EPA) has reviewed the Five-Year Review Report dated December 12, 2002. Based upon this review, the EPA agrees with the overall conclusions, findings, and recommendations and concurs with the overall protectiveness determination. The document is well structured and concise. We would like to remind the Navy that current Five-Year Review document policy requires that all Operable Units (OU's) for the facility be included for review. It is our understanding that your staff has been advised of this policy and will include information for OU-1 and OU-2 in the next Five-Year Review.

We appreciate the opportunity to work with you on this project and look forward to continued success at the Marine Corp Air Station, Yuma. If you have questions regarding this letter please feel free to contact Martin Hausladen (415) 972-3007 of this office at any time.

Sincerely,

Deborah Jordan  
Chief, Federal Facility and Site Cleanup Branch  
Superfund Division

cc:

Ms Angela Lind

RPM

Southwest Division

1220 Pacific Highway

San Diego, CA92132-5190

Mr. Frank M. Smaila

Arizona Department of Environmental Quality

Federal Projects Unit, Superfund Programs Section,

Water Program Division

1110 West Washington Street

Phoenix, AZ 85007

Mr. Herbert Guillory

Environmental Director

Environmental Department

United States Marine Corps

Box 99100

Yuma, AZ 85369-9100



DEPARTMENT OF THE NAVY  
SOUTHWEST DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
1220 PACIFIC HIGHWAY  
SAN DIEGO, CA 92132-5190

5090  
Ser 5DEN.AL/2160  
December 11, 2002

Ms Deborah Jordan  
Director, Federal Facilities Cleanup Office  
Environmental Protection Agency Region IX  
75 Hawthorne Street  
San Francisco, CA 94105-3901

Dear Ms Jordan:

SUBJECT: FIVE-YEAR REVIEW REPORT FOR OU-2 AT MCAS YUMA, AZ

Enclosure (1) is the first Five-Year Review Report for Operable Unit 2 (OU-2) at the Marine Corps Air Station Yuma, Arizona. Institutional controls were selected to remedy contaminated soil at OU-2 CERCLA Areas of Concern (CAOCs) 1, 8A, and 10 in accordance with the Record of Decision (ROD) signed on December 2, 1997. The purposes of this review were to evaluate the performance of the selected remedies and to recommend actions for improvement, if these remedies had not performed as designed.

The institutional controls specified in the OU-2 ROD consist of restrictions on future land use, state registration of the sites, and review of all plans for proposed activities and provisions for site access by the MCAS Yuma Environmental Department. The results of the five-year review conclude that the remedies at OU-2 are and will continue to be protective of human health and the environment because potential exposure pathways are being effectively controlled by maintaining existing land use at CAOCs 1, 8A, and 10.

Although this Five-Year Review Report is final if you discover any substantive omissions in the report you may submit your comments to Ms. Angela Lind, Remedial Project Manager 5DEN.AL, Southwest Division Naval Facilities Engineering Command, 1220 Pacific Highway, San Diego, California 92132-5190. Ms Angela Lind can also be reached at (619) 532-4228.

Sincerely,

  
C. SCHANZE  
Captain, CEC, U.S. Navy  
Commander

Enclosure: 1. Five-Year Review Report for Operable Unit 2, Marine Corps Air Station Yuma, Arizona

Copy to:

Mr. Martin Hausladen, US EPA Region IX  
Mr. Frank Smaila, ADEQ, Phoenix, AZ  
Ms. Carol Lewis, Environmental Department, MCAS YUMA, AZ  
Mr. Mike Hurd, US EPA, Arlington, VA (CD only)

**Five-Year Review Report for  
Operable Unit 2  
Marine Corps Air Station  
Yuma, Arizona**

**December 2002**



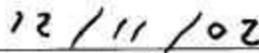
Prepared by:

Southwest Division  
Naval Facilities Engineering Command  
1220 Pacific Highway  
San Diego, California 92132-5190

Approved by:

Date:

  
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C. SCHANZE  
Captain, CEC, U.S. Navy  
Commander

## EXECUTIVE SUMMARY

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This report provides the results of the first Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) five-year review conducted for Operable Unit (OU)-2 at Marine Corps Air Station (MCAS) Yuma, Arizona. The review was conducted in accordance with the Navy/Marine Corps Policy for Conducting CERCLA Statutory Five-Year Reviews (November 2001) and the U.S. EPA Comprehensive Five-Year Review Guidance (OSWER No. 9355.7-03B-P, June 2001). The purposes of this review are to evaluate the performance of the remedy implemented in OU-2 CERCLA Areas of Concern (CAOCs) 1, 8A, and 10 and to recommend actions for improvement if the remedy has not performed as designed. The remedy as selected in the Record of Decision (ROD) consists of institutional controls in the form of restrictions on future land use, state registration of the sites, and review of all plans for proposed activities and provisions for site access by the MCAS Yuma Environmental Department. Because this remedy would not result in site conditions suitable for unlimited use and unrestricted exposure (i.e., residential land use) and because the ROD for OU-2 was signed after October 17, 1986, the effective date of the Superfund Amendments and Reauthorization Act (SARA), this statutory review is required by and conducted according to the applicable laws. The scheduled completion date for this review is 02 December 2002, as dictated by the date when the ROD for OU-2 was signed, i.e., 02 December 1997.

This five-year review comprises document and data review, site inspections, station personnel interviews, regulatory comments review, and report development. The results of the review indicate that the intent of the remedy for CAOCs 1, 8A, and 10, i.e., protection of human health by restricting land use, has been achieved with the signing of the OU-2 ROD in December 1997 and inclusion of the institutional controls for OU-2 in the 2001 MCAS Yuma Master Plan, the 2002 Final Land Use Control Implementation Plan (LUCIP), and the 2002 MCAS Yuma Station Order 5090. These institutional controls have been employed by the MCAS Yuma Environmental Department to limit the land use of CAOCs 1, 8A, and 10 and to review dig permit applications and new construction plans involving OU-2 sites and other base sites and range locations.

The method for formally implementing institutional controls at OU-2 has been evolving over the past five years in response to state requirements and federal limitations on implementing land-use controls (LUCs) on property within active military facilities. MCAS Yuma Station Order 5090, signed on 10 January 2002, formally directed tenants and contractors to incorporate the LUCs, as provided in the MCAS Yuma Master Plan and the Final LUCIP, into their existing land-use planning and management programs. The Final LUCIP provides revised LUCs for OU-2 and the steps to be taken in implementing them.

To fulfill the requirement of site registration with the state of Arizona as specified in the OU-2 ROD, the Navy has provided proposed “modified Declaration of Environmental Use Restrictions” (DEURs) for CAOCs 1, 8A, and 10 in the Final LUCIP. Although the proposed “modified DEUR” is not a “covenant running with the land”, the Navy believes that the recording of each “modified DEUR” satisfies the substantive intent of Arizona Revised Statute (A.R.S.) 49-152(E), given the Navy’s other responsibilities under CERCLA and federal property law. The Final LUCIP also stipulates that the Arizona Department of Environmental Quality (ADEQ) will be informed of any future plans to transfer the properties to non-federal ownership. Therefore, recordation of the “modified DEURs”, together with the LUC provisions in the MCAS Yuma Master Plan and the Final LUCIP, will restrict the use of CAOCs 1, 8A, and 10 and provide a proper notice to any future (non-federal) property owners of the contamination.

The following United States Environmental Protection Agency (U.S. EPA) Five-Year Review Summary Form provides additional information regarding the review assessment results and future effectiveness of the remedy as implemented.

## Five-Year Review Summary Form – Page 1

SITE IDENTIFICATION		
<b>Site name:</b> Marine Corps Air Station Yuma, Operable Unit 2 (CAOCs 1, 8A, and 10)		
<b>EPA ID:</b> AZ0971590062 (MCAS Yuma)		
<b>EPA Region:</b> 09	<b>State:</b> AZ	<b>City/County:</b> Yuma / 027 Yuma
SITE STATUS		
<b>NPL status:</b> <input checked="" type="checkbox"/> Final <input type="checkbox"/> Deleted <input type="checkbox"/> Other (specify)		
<b>Remediation status</b> (choose all that apply): <input type="checkbox"/> Under Construction <input type="checkbox"/> Operating <input checked="" type="checkbox"/> Complete		
<b>Multiple OUs?</b> <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<b>Construction completion date:</b> <u>12/02/97</u>	
<b>Has site been put into reuse?</b> <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
REVIEW STATUS		
<b>Lead agency:</b> <input type="checkbox"/> EPA <input type="checkbox"/> State <input type="checkbox"/> Tribe <input checked="" type="checkbox"/> Other Federal Agency		
<b>Author name:</b> Southwest Division Naval Facilities Engineering Command		
<b>Author title:</b>	<b>Author affiliation:</b>	
<b>Review period:</b> <u>12/02/1997</u> to <u>12/02/2002</u>		
<b>Date(s) of site inspection:</b> <u>03/20/2002</u> to <u>03/22/2002</u>		
<b>Type of review:</b> <input checked="" type="checkbox"/> Post-SARA <input type="checkbox"/> Pre-SARA <input type="checkbox"/> NPL-Removal only <input type="checkbox"/> Non-NPL Remedial Action Site <input type="checkbox"/> NPL State/Tribe-lead <input type="checkbox"/> Regional Discretion		
<b>Review number:</b> <input checked="" type="checkbox"/> 1 (first) <input type="checkbox"/> 2 (second) <input type="checkbox"/> 3 (third) <input type="checkbox"/> Other (specify)		
<b>Triggering action:</b> <input type="checkbox"/> Actual RA Onsite Construction at OU # _____ <input type="checkbox"/> Actual RA Start at OU# _____ <input type="checkbox"/> Construction Completion <input type="checkbox"/> Previous Five-Year Review Report <input checked="" type="checkbox"/> Other (specify): <u>Signing of Record of Decision</u>		
<b>Triggering action date:</b> <u>12/02/1997</u>		
<b>Due date (five years after triggering action date):</b> <u>12/02/2002</u>		

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**Five-Year Review Summary Form – Page 2**

**Issues:**

- 1) Although previous documentation referred to CAOC 8A as “a former landfill/surface disposal area”, further document review has revealed that this area, in part, is within the Ordnance Distribution Facility (ODF) and has been used for ordnance storage prior to and since the signing of the OU-2 ROD.

**Recommendations and Follow-up Actions:**

- 1) Any future documents will clearly specify the part of CAOC 8A within the ODF fence line, the land use, and the location of former disposal areas. MCAS Yuma Environmental Department will review site activities and assure land-use restrictions are maintained.

**Protectiveness Statement for OU-2:**

The remedy at OU-2 is currently and will continue to be protective of human health and the environment because exposure pathways that may result in unacceptable risks are being controlled as follows:

- 1) Institutional controls are in-place to restrict exposure to contaminants in soil at CAOCs 1, 8A, and 10 through MCAS Yuma Station Order 5090 (issued on January 10, 2002). This order formally directed tenants and contractors to incorporate the LUCs provided in the MCAS Yuma Master Plan and the Final LUCIP into their existing land-use planning and management programs.
- 2) The “modified DEURs” for CAOCs 1, 8A, and 10 have been proposed to satisfy the requirements specified in the OU-2 ROD for registration of the sites with the state of Arizona.
- 3) The MCAS Yuma Environmental Department will continue to review and coordinate all plans for future activities at CAOCs 1, 8A, and 10, in consultation with U.S. EPA and ADEQ as necessary, to ensure continued compatibility with the land-use restrictions specified in the OU-2 ROD.

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## ACRONYMS/ABBREVIATIONS

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ACM	asbestos-containing material
ADEQ	Arizona Department of Environmental Quality
AOC	area of concern
ARAR	applicable or relevant and appropriate requirement
Ariz. Admin. Code	<i>Arizona Administrative Code</i>
A.R.S.	<i>Arizona Revised Statutes</i>
art.	article
AS	air sparging
bgs	below ground surface
BNI	Bechtel National, Inc.
CALA	Combat Arms Loading Apron
CAOC	CERCLA Area of Concern
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
C.F.R.	<i>Code of Federal Regulations</i>
ch.	chapter
CHC	chlorinated hydrocarbon
COPC	chemical of potential concern
CTOL	Contract Task Order Leader
DCE	dichloroethene
DEUR	Declaration of Environmental Use Restrictions
DoD	Department of Defense
DON	Department of the Navy
ELCR	excess lifetime cancer risk
FFA	Federal Facilities Agreement
FFAAP	Federal Facilities Agreement Assessment Program
FMD	Facilities Maintenance Department
FS	feasibility study
GSA	United States General Services Administration
HBGL	health-based guidance level
HI	hazard index
IR	Installation Restoration (Program)
JEG	Jacobs Engineering Group Inc.

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LUC	land-use control
LUCIP	Land-Use Control Implementation Plan
MCAS	Marine Corps Air Station
MCL	maximum contaminant level
mg/kg	milligram per kilogram
MWSS	Marine Wing Support Squadron
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
ODF	Ordnance Distribution Facility
OSWER	Office of Solid Waste and Emergency Response
OU	operable unit
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PMO	Provost Marshal's Office
PRG	preliminary remediation goal
RAB	Restoration Advisory Board
RAO	remedial action objective
RBC	risk-based concentration
RCRA	Resource Conservation and Recovery Act
RI	remedial investigation
ROD	record of decision
RPM	Remedial Project Manager
§	section
S4	Former Logistics Department
SARA	Superfund Amendments and Reauthorization Act
SRL	soil remediation level
Supp.	Supplement
SVE	soil vapor extraction
SVOC	semivolatile organic compound
SWDIV	Southwest Division Naval Facilities Engineering Command
TBD	to be determined
TCE	trichloroethene
tit.	title
TRPH	total recoverable petroleum hydrocarbons
UA	Uribe & Associates
U.S.C.	<i>United States Code</i>

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Acronyms/Abbreviations

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U.S. EPA	United States Environmental Protection Agency
UST	underground storage tank
VEMUR	Voluntary Environmental Mitigation Use Restriction
VOC	volatile organic compound

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## Section 1

# INTRODUCTION

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This report provides the results of the first Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) five-year review conducted for Operable Unit (OU)-2 at Marine Corps Air Station (MCAS) Yuma, Arizona. The purposes of this review are to evaluate the performance of the remedy implemented in OU-2 CERCLA Areas of Concern (CAOCs) 1, 8A, and 10 and to recommend actions for improvement if the remedy has not performed as designed. The report identifies the methods used in the review, key issues regarding the implementation and performance of the remedy, and gives recommendations on how the issues can be addressed. The triggering mechanism for this five-year review for OU-2 was the signing of the Record of Decision (ROD) on 02 December 1997.

Consistent with Executive Order 12580, the Secretary of Defense is responsible for ensuring that five-year reviews are conducted at all qualifying Department of Defense (DoD) remediation sites. The United States Department of the Navy (DON) is authorized to conduct the five-year review for OU-2 pursuant to CERCLA Section 121 and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA Section 121 states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five-years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.

The United States Environmental Protection Agency (U.S. EPA) and the DON interpret this requirement further in the NCP, Title 40 *Code of Federal Regulations* (C.F.R.) Section (§) 300.430(f)(4)(ii) (implemented by 42 *United States Code* [U.S.C.] § 9621[c]), which states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

The five-year review for OU-2 was conducted March through November of 2002 in accordance with the following guidance documents:

- DON. Navy/Marine Corps Policy for Conducting CERCLA Statutory Five-Year Reviews, November 2001.
- U.S. EPA Comprehensive Five-Year Review Guidance (OSWER No. 9355.7-03B-P), June 2001. (This document includes the report template used for preparing this Five-Year Review Report.)

The five-year review of the remedial action taken for OU-2 is a statutory review because the remedy does not result in site conditions unsuitable for unlimited use and unrestricted exposure (i.e., residential land use) at CAOCs 1, 8A, and 10 and because the OU-2 ROD was signed after

17 October 1986, the effective date of the Superfund Amendments and Reauthorization Act (SARA).

Because this five-year review is the first one performed for OU-2 and for MCAS Yuma overall, this report also provides the following to aid future five-year reviews:

- Background information and the status of remedial actions for all MCAS Yuma OUs
- A central point of reference at MCAS Yuma for all sources of information used in the review.

## 1.1 OU-2 REVIEW APPROACH

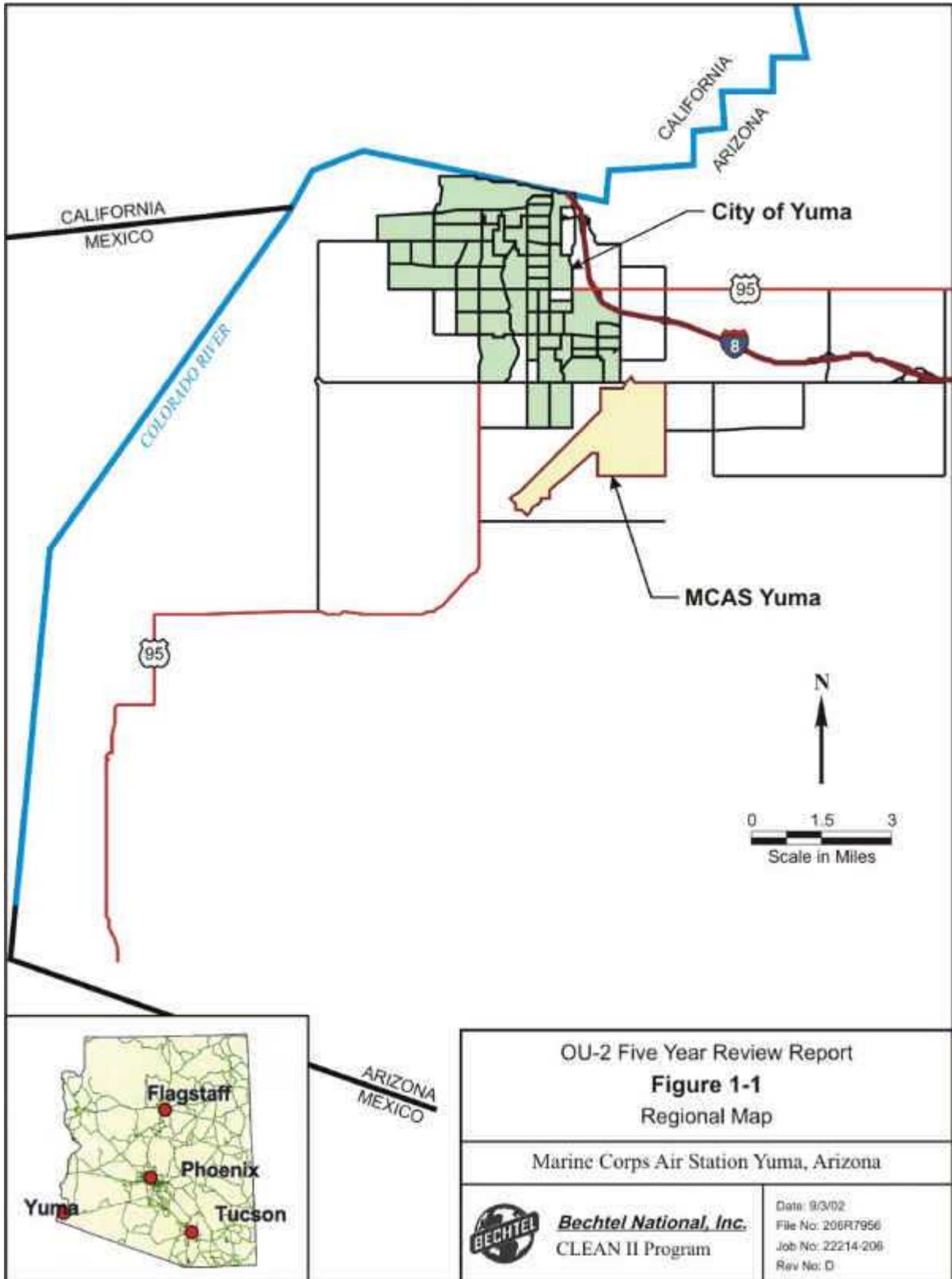
MCAS Yuma is located southeast of the city of Yuma, Arizona (Figure 1-1). Three OUs were established to address CAOCs at the station under the auspices of the Federal Facility Agreement (FFA) signed in January 1992. OU-1 includes areas of contaminated groundwater underlying the station and the associated soil at depths greater than 10 feet below ground surface (bgs), the common depth of building construction activities at MCAS Yuma. OU-2 consists of contaminated soils of the station from the ground surface to a depth of 10 feet bgs. OU-3 was established to include additional CAOCs that may be identified later on; however, no CERCLA sites have been identified since that time. Therefore, OU-3 has not been used at the station.

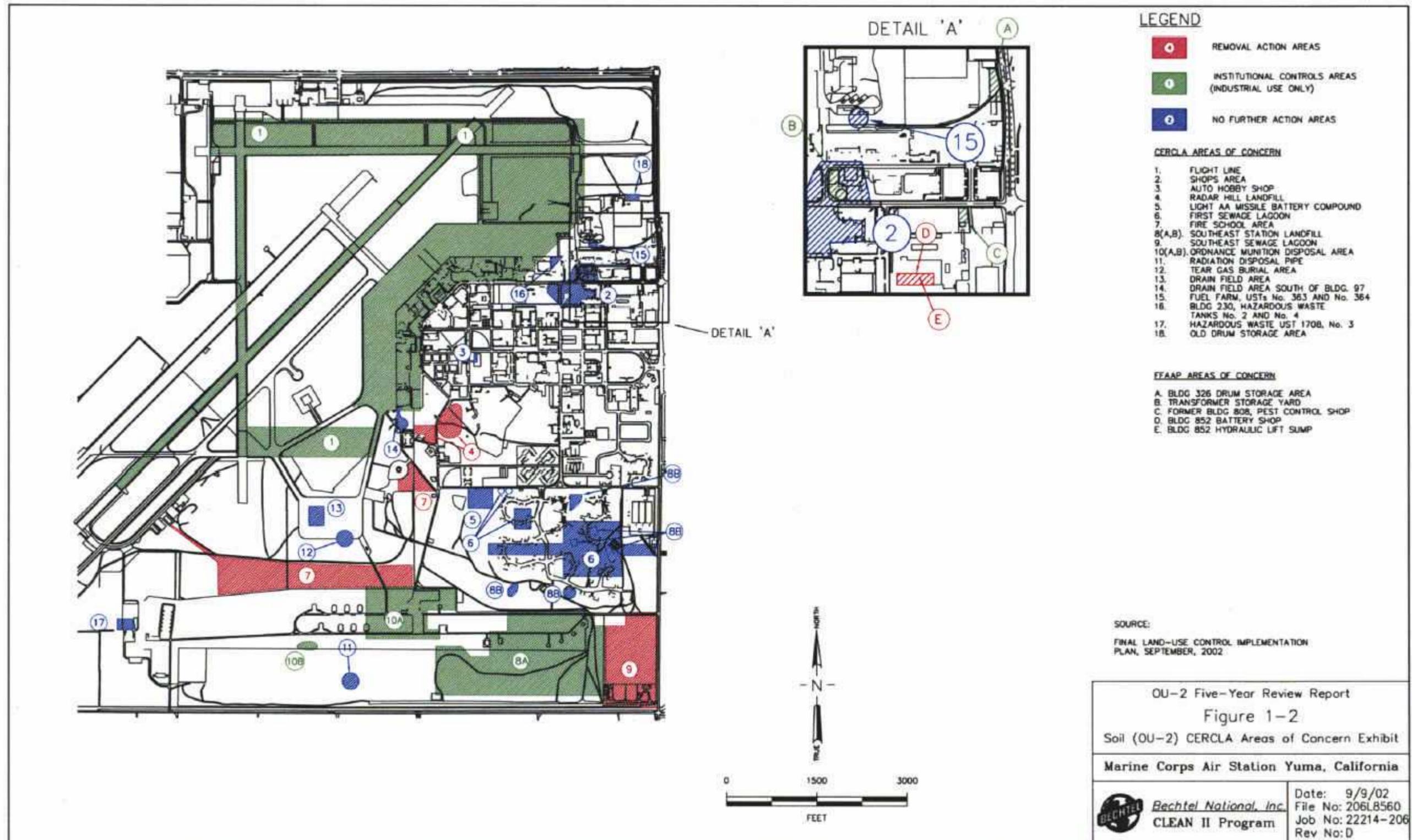
The remedial investigation (RI) for OU-2 assessed the impact on human health and the environment by hazardous substance releases to the soil (JEG 1996). A total of 18 CAOCs were investigated (Figure 1-2). Of these, 12 CAOCs were recommended for no further action because they did not pose a threat to human health or the environment. The remaining six CAOCs (1, 4, 7, 8A, 9, and 10) were recommended for remedial action to address a potential threat to human health from exposure to asbestos, metals, or organic compounds in the soil.

As referenced in the OU-2 ROD, a quantitative risk assessment conducted during the RI indicated that apart from the presence of asbestos-containing material (ACM), the risk from exposure to soil contaminants at CAOCs 4, 7, and 9 was acceptable for residential land use (i.e., unlimited use and unrestricted exposure) (UA 1997a). The remedy for CAOCs 4, 7, and 9 involved the removal of visible ACM and ACM-containing surface soil, verification inspections, and off-site disposal. The remediation of these three CAOCs was completed 07 June 1999 with the removal of remaining ACM at CAOC 9, the Horse Stable Area adjacent to CAOC 8A, and receipt of remedial activity inspection approval (GEOFON 1999).

The remedy selected for CAOCs 1, 8A, and 10 consists of institutional controls that protect the health of potential receptors by restricting future land use. Because this remedy leaves site conditions that do not allow for unlimited use and unrestricted exposure, a five-year review is required only for these CAOCs of OU-2.

Section 1 Introduction





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Although OU-1 underlies OU-2, the assessment of the remedial action taken for OU-1 CAOCs will not be addressed in this five-year review, but in a separate five-year review for the following reasons.

- The average depth to groundwater is 60 feet bgs and only CAOC 1 overlies an OU-1 groundwater area of concern (AOC).
- OU-1 groundwater AOCs are located downgradient (northwest) of CAOC 8A and CAOC 10.
- There is no direct use or contact with groundwater contaminants at MCAS Yuma at this time.
- None of the institutional controls established for OU-1 to protect human health set limitations on use of the overlying OU-2 soil environment.

## 1.2 OU-1 OVERVIEW AND CURRENT STATUS

The RI for OU-1 (JEG 1996) assessed the impact on human health and the environment by hazardous substance releases to groundwater and identified three fuel-related and four chlorinated hydrocarbon (CHC) plumes. The Navy, MCAS Yuma, U.S. EPA, and Arizona Department of Environmental Quality (ADEQ) agreed that the three fuel-related groundwater plumes would be handled under the state of Arizona Underground Storage Tank (UST) Program, and the four CHC groundwater plumes would be addressed under the Navy's Installation Restoration (IR) Program.

The chemicals of concern in the OU-1 CHC groundwater plumes consist predominantly of 1,1-dichloroethene (DCE), trichloroethene (TCE), and tetrachloroethene (PCE) at levels exceeding the federal or state of Arizona maximum contaminant levels (MCLs), the applicable water quality criteria for potential sources of drinking water. The following OU-1 groundwater plume areas are currently undergoing remediation:

- Area 1 Hot Spot (Source) Plume Area. This plume area is located at the aircraft flight apron in the vicinity of Building 230 and is being treated by air sparging (AS)/soil vapor extraction (SVE) to remove contaminants. Because this system has been determined to be effective, an optional groundwater treatment system as described in the ROD has not been implemented (Terra Vac 2001a, 2002a).
- Area 1 Leading Edge Plume Area (LEPA). This plume area is located at the Northwest Station boundary of MCAS Yuma, and is being treated by vertical recirculation to provide containment and treatment of relatively low concentrations of chemicals of concern (Terra Vac 2001b, 2002b). Area 2 DCE Plume, Area 3 Former TCE and DCE Plume, and Area 6 PCE Plume. Monitored natural attenuation and long-term monitoring of groundwater are being conducted to address very low levels of contaminants (SWDIV 2002).

Inspecting and maintaining the monitoring wells and remediation systems, implementing land-use controls (LUCs), and providing for long-term operation and maintenance to monitor the groundwater will ensure the integrity of the OU-1 remedies. LUCs will be implemented to prevent exposure to contaminants at the site through extraction of groundwater, ensure the integrity of the remediation systems, and maintain the integrity

of the monitoring wells. The Long-Term Groundwater Monitoring Plan for OU-1 (BNI 2002) and Final Land-Use Control Implementation Plan (LUCIP) (SWDIV 2002) have been developed and implemented for this purpose.

The AS/SVE system began operation in Area 1 on 16 November 1999. According to the long-term groundwater monitoring plan for OU-1 (BNI 2002) a baseline groundwater sampling event was conducted in February 2000, with subsequent groundwater monitoring conducted quarterly since then. For remedial actions at CERCLA sites that involve engineering controls to effect cleanup, such as described above for OU-1, the triggering mechanism for the five-year review is the date the remedial system construction began. On this basis, the five-year review for OU-1 will be due in 2004.

**Section 2**  
**SITE CHRONOLOGY**

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This section summarizes events in the development of the IR Program at MCAS Yuma with significance to the history of contaminant detection, characterization, and remediation at OU-2. Table 2-1 presents these events in chronological order.

**Table 2-1  
Chronology of Significant Events**

Event	Date
Initial Assessment Study was conducted to investigate past disposal practices at MCAS Yuma (Stearns et al. 1985).	1985
MCAS Yuma was placed on Superfund National Priorities List.	02/1990
Site inspection was completed at MCAS Yuma (MPI 1990).	06/1990
The Navy entered into a Federal Facilities Agreement with U.S. EPA and Arizona Department of Environmental Quality. OU-1 and OU-3 were established, along with a schedule and framework for implementing environmental investigations and appropriate cleanup activities (FFA 1991).	01/1992
RI for OU-2 was completed. Of 18 CAOCs identified, 12 were identified as requiring no further action (JEG 1996).	03/26/1996
A soil sampling program for PAHs was performed at CAOC 10 (UA 1996b) to better define the extent of the contaminants reported in surface soil during the RI.	06/1996
Feasibility Study for OU-2 (UA 1996a) was completed; CAOCs 1, 4, 7, 8A, 9, and 10 were recommended for remedial action.	12/20/1996
Supplemental soil sampling program for PAHs was completed at CAOC 10 (UA 1997b).	02/1997
Proposed Plan was issued for OU-2.	03/1997
Final ROD for OU-2 was signed and institutional controls were selected as the preferred remedy for CAOCs 1, 8A, and 10 (UA 1997a).	12/02/1997
Land survey conducted of CAOCs 1, 8A, and 10 for implementation of institutional controls was completed and revised.	07/23/1999
Final Remedial Action Report for OU-2 was issued with recommended addendum to the MCAS Yuma Base Master Plan containing institutional controls and VEMURs for CAOCs 1, 8A, and 10 (GEOFON 1999).	09/1999
Arizona Laws 2000, Chapter 225 amends <i>Arizona Revised Statutes</i> § 49-152 (Title 49, Chapter 1, Article 4) to eliminate VEMURs and replace them with DEURs as the appropriate document for recording a property's environmental land-use restrictions with the state of Arizona.	07/18/2000
MCAS Yuma Master Plan was revised to contain the land-use restrictions and state recording of environmental use restrictions required in institutional controls for OU-1 and OU-2 (KTUA 2001).	09/2001
Draft (Revision 1) LUCIP was issued as an addendum to the Master Plan to provide additional institutional controls and steps for implementation and monitoring for OUs 1 and 2, FFAAP Area of Concern A. Conditions for closure of Former USTs at the Former Exchange Gas Station were also provided in the document.	12/20/2001
MCAS Yuma Station Order 5090 implemented LUCs provided in the Draft LUCIP.	01/10/2002
Final LUCIP was issued, addressing all Navy and regulatory agency comments on the Draft (Revision 1) LUCIP.	09/2002

(table continues)

Section 2 Site Chronology

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**Table 2-1** (continued)

Acronyms/Abbreviations:

CAOC – Comprehensive Environmental Response, Compensation, and Liability Act area of concern  
DEUR – Declaration of Environmental Use Restrictions  
FFAAP – Federal Facilities Agreement Assessment Program  
LUC – land-use control  
LUCIP – Land-Use Control Implementation Plan  
MCAS – Marine Corps Air Station  
OU – operable unit  
PAH – polynuclear aromatic hydrocarbon  
RI – remedial investigation  
ROD – Record of Decision  
§ – section  
U.S. EPA – United States Environmental Protection Agency  
UST – underground storage tank  
VEMUR – Voluntary Environmental Mitigation Use Restriction

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## Section 3

# BACKGROUND

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This section describes the fundamental aspects of the station, providing a description of site characteristics. The purpose of this section is to identify the threat posed to the public and environment identified at the time of the OU-2 ROD (UA 1997a), so that the performance of the remedy can be easily compared with the site conditions the remedy was intended to address. Information provided by the OU-2 ROD regarding station history and site history has been updated in this section with information provided in the Remedial Action Report (GEOFON 1999) and Final LUCIP (SWDIV 2002).

### 3.1 STATION HISTORY

MCAS Yuma is a 4,791-acre area located in the city and county of Yuma, Arizona. MCAS Yuma is located at an average elevation of 180 feet above mean sea level, on the northern portion of Yuma Mesa and is approximately 60 to 70 feet above and 4 miles east of the Colorado River. MCAS Yuma started as a county airfield in 1928. It was then leased to the U.S. Army Air Corps for pilot training and bomber crew training from 1941 to 1946. In July 1951, the U.S. Air Force reactivated the station as a Weapons Proficiency Center for fighter-inceptor units. The station was declared a permanent Air Force installation in 1954. MCAS Yuma was established in 1959 to provide services and materials to support the operations of the Marine Aircraft Wing and its subordinate units. In January 1959, MCAS Yuma and associated range facilities were transferred to the U.S. Navy. MCAS Yuma currently operates the airport facility as a joint military/civilian airport with Yuma County Airport Authority.

During its 70 years of operation, MCAS Yuma has generated industrial wastes such as used oil, fuels, solvents, paint residues, battery acid, pesticides, herbicides, and polychlorinated biphenyls (PCBs). In the early years, some of these wastes were disposed in landfills, burn pits, and other areas located throughout MCAS Yuma. Construction and improvement activities also generated construction debris, which was disposed in undeveloped portions of MCAS Yuma.

The Initial Assessment Study (Stearns et al. 1985) conducted at MCAS Yuma in 1985 identified the past disposal practices at MCAS Yuma and indicated the presence of various contaminants in the soil and chlorinated solvents in underlying groundwater. MCAS Yuma was placed on the Superfund National Priorities List (NPL) list in February 1990. After the FFA established OU-1 and OU-2, further investigation of the OUs was conducted separately.

OU-2 initially consisted of surface disposal sites and disposal units within the upper 10 feet of soil underlying the station where disposal or releases of petroleum products, paints, solvents, metals, pesticides, and other process chemicals may have occurred. The RI conducted for OU-2 included all 18 CAOCs and included human-health and ecological risk assessments to assess the potential impacts of the hazardous substances reported on both potential human and environmental receptors. Figure 1-2 shows the locations of the OU-2 CAOCs within MCAS Yuma, general site characteristics (i.e., roads, fence lines, and buildings), and site status as agreed upon by the DON,

ADEQ, and U.S. EPA in consideration of the results of the RI and subsequent surface soil sampling at CAOC 10 (UA 1996b). The results of the ecological risk assessment conducted during the RI indicated that chemicals detected in the soil and surface water do not pose a significant risk to ecological receptors at MCAS Yuma. With the exception of migratory birds that have been observed in the air over MCAS Yuma, no state or federally listed threatened or endangered species are known to be present at MCAS Yuma. No critical habitats or habitats of endangered species are affected by chemicals of potential ecological concern at OU-2.

The feasibility study (FS) conducted for the remaining six CAOCs (UA 1996a) focused on remedial action for CAOCs 4, 7, and 9, where surface disposal of asbestos-bearing waste was confirmed, which would allow unrestricted use of the sites. Remediation to residential land use standards was completed in 1999 for OU-2 CAOCs 4, 7, and 9 (GEOFON 1999); therefore, these CAOCs and the 12 OU-2 CAOCs that achieved no-further-action status are not required to be included in further discussion of OU-2.

A discussion of background information for OU-2 CAOCs 1, 8A, and 10, including site physical characteristics, land and resources use, history of contamination, response actions, and the basis for taking remedial action, is provided in Sections 3.2 through 3.4. Current descriptions of the CAOCs are provided in Section 5.5, Site Inspection.

### **3.2 CAOC 1: FLIGHT LINE**

CAOC 1 consists of the pre-1960 flight line (tarmac, runways, aprons, and taxiways) and associated aircraft-maintenance hangar facilities. This site is located within the footprint of the existing flight line in the north-central portion of MCAS Yuma and occupies approximately 170 acres (Figure 1-2). In the 1940s, used oil was routinely drained from aircraft engines directly to the ground surface on which the aircraft were parked. In the 1950s, 1960s, and 1970s, waste oil was used for dust control around hangars, taxiways, and apron edges. The RI focused on the flight line areas where source areas of contamination were expected to be found, such as aircraft and vehicle wash racks, oil/water separators, fuel storage bladder locations, dry wells, miscellaneous stained soil areas, and maintenance and storage yards (JEG 1996).

#### *Basis for Taking Action*

The results of the RI did not reveal significant soil contamination in the areas of the specific units included in the investigation. Total recoverable petroleum hydrocarbons (TRPH) were found generally widespread and in localized occurrences around the flight line. Polynuclear aromatic hydrocarbons (PAHs) were also reported in localized occurrences. PCBs, formerly used as coolant for electric transformers, were reported at the northern edge of the flight line and existing wash rack. Solvents, containing volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs), pesticides, and metals, were reported in shallow soil samples throughout the flight line.

These chemicals, including metals that exceeded their respective background levels (i.e., arsenic, beryllium, and cadmium) were evaluated as chemicals of potential concern (COPCs) in the human-health risk assessment of the current (industrial) and potential

### Section 3 Background

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future (residential) land-use scenarios. The CAOC 1 risk assessment results for cancer (excess lifetime cancer risk [ELCR]) and noncancer risk (hazard index [HI]) are as follows:

- Residential exposure scenario
  - ELCR:  $2.19 \times 10^{-4}$
  - Risk driver(s): PAHs, 83 percent of the cancer risk
- Commercial/industrial exposure scenario
  - ELCR:  $6.48 \times 10^{-5}$  HI: 1.86
  - Risk driver(s): PAHs, 90 percent of the cancer risk

**Note:** A listing of the specific chemicals evaluated in the risk assessment for the OU-2 CAOCs, as provided in Table 2-1 of the ROD (UA 1997a), is provided in Appendix B1 of this report.

The HI exceeded the acceptable criterion of 1.0 (primarily attributed to metals); however, none of the individual target organs or organ systems HI values exceeded the criterion. The cancer risk for the residential scenario exceeded the generally acceptable range ( $10^{-6}$  to  $10^{-4}$ ), which precludes unrestricted or residential land use. The cancer risk for the commercial/industrial scenario is within the acceptable range; therefore, no restrictions would need to be placed on the site for this land use.

### 3.3 CAOC 8A: SOUTHEAST STATION LANDFILL

CAOC 8A is located in the southeastern portion of MCAS Yuma, between North Ordnance Road and the southern MCAS Yuma property line (Figure 1-2). CAOC 8A is the site of a former landfill and surface disposal areas. The site is vacant land, except for ordnance and munitions storage bunkers on the portion of the site within the Ordnance Distribution Facility (ODF). During the RI, this area was investigated as part of the greater CAOC 8. CAOC 8 was a 68-acre area used primarily for the disposal of municipal wastes generated at MCAS Yuma from 1953 to 1961 (UA 1997a). A portion of the area was also used for rubble disposal and as a borrow area. The wastes were burned prior to disposal in 10 to 20 disposal pits at CAOC 8A. The waste streams potentially associated with this disposal area include vehicle- and fuel-related wastes, used oils, solvents, paints, thinners, pesticides, and herbicides. The disposal pits were backfilled and no longer provide an opportunity for direct human exposure to contaminated soil. The CAOC 8A landfill is inactive, and no disposal or other use is authorized for the site. The portion of the site within the ODF is used for ordnance and munitions storage within storage bunkers.

#### *Basis for Taking Action*

The human-health risk assessment subdivided CAOC 8, based on current and anticipated future land use, into CAOC 8A and CAOC 8B, and evaluated each separately. CAOC 8B is the MCAS Yuma residential housing area located north of North Ordnance Road to

Loesch Street. The assessment estimated the human-health risks at CAOC 8B for both the commercial/industrial and residential scenarios to be within the acceptable range.

Drilling within the landfill at CAOC 8A was not performed during the RI because of potential drilling hazards and difficult drilling conditions caused by buried construction debris. The analytical results from the RI surface soil sampling and analysis program for CAOC 8 indicated the presence of TRPH, PAHs, PCBs, and metals in surface soil, generally at CAOC 8A. The maximum detected concentrations of four PAHs (benzo[a]anthracene, benzo[a]fluoranthene, benzo[a]pyrene, and benzo[k]fluoranthene) and one PCB (Aroclor 1254) were reported in soil collected from four disposal cells on the south side of CAOC 8A (GEOFON 1999). The RI risk assessment results for CAOC 8A are as follows:

- Residential exposure scenario
  - ELCR:  $9.94 \times 10^{-5}$  HI: 0.35
  - Risk driver(s): PAHs and PCBs; with 74 percent of the cancer risk attributed to Aroclor 1254, reported at three sample locations
  - Lead: detected at 659 milligrams per kilogram (mg/kg) in surface soil; this result exceeded the U.S. EPA Region 9 residential soil screening value of 400 mg/kg and caused lead to be identified as a potential residential health risk (UA 1997a)
- Commercial/industrial exposure scenario
  - ELCR:  $3.02 \times 10^{-5}$  HI: 0.41
  - Risk driver(s): PAHs and PCBs.

Because soil sample results were not available for the landfill contents, exposure to the landfill contents was not assessed for CAOC 8A. The cancer risk estimate for residential exposure at the site surface is at the high end of the generally acceptable range. Exposure to surface soil does not pose an unacceptable level of risk under an industrial land-use scenario. Based on both this information and that the risks associated with exposure to the landfill interior are not known, U.S. EPA, ADEQ, and the DON made a risk management decision to restrict the use of CAOC 8A to the current use (inactive landfill and industrial use of former surface disposal areas) and prohibit any land use that could potentially disturb the contents of the landfill (UA 1997a).

### 3.4 CAOC 10: ORDNANCE MUNITIONS DISPOSAL AREA

CAOC 10 is located within and south of the current ODF in the southeastern portion of MCAS Yuma (Figure 1-2). CAOC 10 was used during World War II as a shooting range for bomber gun crews. Since the early 1950s, ordnance materials have been stored in the magazines around the central portion of the Ordnance Loop (North and South Ordnance Roads). The area has also been used for surface tank and drum storage. Surface spills, including liquid residues from ordnance-mixing operations, have been reported within this area. CAOC 10 continued to be used for the storage and handling of ordnance as part of the station's ordnance distribution facility. Suspected waste associated with this area

### Section 3 Background

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includes used oils, ordnance, waste associated with nitroaromatics, fuel-related wastes, and metals.

#### *Basis for Taking Action*

The primary finding of the RI field sampling and analysis program was TRPH, PAHs in surface soil, and one lead result reported above the site background concentration. PAHs were detected in surface soil at four locations during the RI. The risk assessment results from CAOC 10 indicated both the commercial/industrial and residential exposure scenarios had potential cancer risk within the generally acceptable range; benzo(a)pyrene, a PAH, contributed 74 percent of the cancer risk for the residential exposure scenario.

The risk assessment results for CAOC 10 were later revised with results from additional soil sampling for PAHs conducted in August 1996 and February 1997. The August 1996 sample results showed one to two orders of magnitude higher total PAH concentrations, which led to supplemental soil sampling to fully define the extent of PAHs in the soil areas then designated as CAOCs 10A and 10B (UA 1997b). Initially, this second risk assessment used risk-based concentrations (RBCs) calculated during the RI with 1993 U.S. EPA-approved dermal exposure factors, instead of the promulgated 1996 dermal exposure factors. Recalculating the RBCs using the dermal exposure factors valid for 1996 resulted in RBCs for PAHs that were identical to the 1996 U.S. EPA preliminary remediation goals (PRGs). Using the recalculated RBC values to estimate human health risk for CAOC 10 yielded the following results:

- Residential exposure scenario
  - ELCR:  $2.9 \times 10^{-4}$
  - Risk driver(s): PAHs, greater than 74 percent of the cancer risk
- Commercial/industrial exposure scenario
  - ELCR:  $7.0 \times 10^{-5}$
  - Risk driver(s): PAHs.

The recalculated cancer risk for residential exposure exceeds the generally acceptable range, whereas the cancer risk for commercial/industrial exposure is in the middle of the range. For this reason, the risk for the site was considered potentially higher than acceptable for unrestricted or residential land use, but acceptable for industrial land use.

### **3.5 RESPONSE ACTIONS**

The FS and supplemental soil sampling program conducted for PAHs at CAOC 10 indicated that exposure to soil conditions at CAOCs 1, 8A, and 10 did not present an unacceptable risk to human health so long as controls were put in place to restrict current and future land-use to the industrial land-use scenario. Response actions for OU-2 CAOCs 1, 8A, and 10 since this finding have included the following:

- A Proposed Plan was issued to the public in March 1997, proposing institutional controls to restrict land use at the sites to current industrial uses.

- The OU-2 ROD outlined institutional controls that would be implemented as the preferred remedy for CAOCs 1, 8A, and 10 at MCAS Yuma by modification of the MCAS Yuma Master Plan. Access to CAOC 8A was summarily restricted by fencing.
- The institutional controls were immediately implemented in limiting access to CAOC 8A and incorporating the controls into the existing review process used by the MCAS Yuma Environmental Department for review of land-use proposals, dig permits, and construction plans for station property that may involve environmental sites.

## Section 4

# REMEDIAL ACTIONS

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This section discusses the results of events identified in the Section 2 chronology that define the remedy for OU-2, from the signing of the ROD to the present. The section discusses remedy selection, remedy implementation, and remedy performance, and identifies any changes to or problems with the components of the remedy.

### 4.1 REMEDY SELECTION

This section describes the purpose for remediation, the remedial alternatives developed and evaluated in the OU-2 FS (UA 1996a) against the nine CERCLA evaluation criteria for remedial alternatives, and the remedy selected in the ROD (UA 1997a).

#### 4.1.1 Remedial Action Objective

The remedial action objective (RAO) for OU-2 CAOCs 1, 8A, and 10 is to minimize the potential for unacceptable human-health risk that could result from a change in land use (UA 1996a). The RAO was determined as a final result of the human-health risk assessments conducted for each site in the RI and FS. The results indicated that potentially unacceptable cancer risk levels could result from residential land use and exposure to surface and shallow subsurface soil at the three sites. However, the cancer risk for the current and anticipated future land-use scenario, as areas of industrial land use, was estimated to be within the U.S. EPA acceptable range.

Arizona's Soil Remediation Standards are identified in the OU-2 ROD as relevant and appropriate chemical-specific requirements for the remediation of soil at CAOCs 1, 8A, and 10. These rules are relevant and appropriate, but not applicable because the remedial action is being conducted under federal law (e.g., CERCLA) and not under one of the state of Arizona regulatory programs. For more information, see the OU-2 ROD and the rules as summarized in *Arizona Revised Statutes* (Ariz. Rev. Stat.) Title (tit.) 49, §§ 151 and 152, and the Arizona Administrative Code (Ariz. Admin. Code) tit. 18, Chapter (ch.) 7, Article (art.) 2, Soil Remediation Standards (§§ R18-7-201 through R18-7-209). These rules allow for soil remediation to one of three standards as follows:

- Remediation to background levels;
- Remediation to health-based guidance levels (HBGLs) presented in Appendix A Soil Remediation Levels (SRLs) of Ariz. Admin. Code tit. 18, ch. 7, art. 2; or
- Remediation to levels derived from a site-specific risk assessment.

In addition, at sites where soil remediation does not meet residential standards or background levels, but rather industrial or site-specific standards, the rules previously required the submittal of a Voluntary Environmental Mitigation Use Restriction (VEMUR). However, in July of 2000, subsequent to the signing of the OU-2 ROD, Arizona's Soil Remediation Standards were amended. The amended rules eliminated the VEMUR and replaced it with a Declaration of Environmental Use Restriction (DEUR) as the appropriate document for recording a property's environmental land-use restrictions with the state of Arizona (See Arizona Laws 2000, Chapter 225 amending Ariz. Rev.

Stat. § 49-152 [Title 49, Chapter 1, Article 4]). Because soils at CAOCs 1, 8A, and 10 meet industrial, but not residential cleanup standards, and because these state rules were determined to be relevant and appropriate in the OU-2 ROD, the Navy has proposed “modified DEURs” for CAOCs 1, 8A, and 10 in the Final LUCIP to fulfill the substantive requirements of Ariz. Rev. Stat. § 49-152.

Copies of the proposed modified DEURs for CAOCs 1, 8A and 10 are provided in Appendix B3 to B5 of this report.

#### 4.1.2 Selected Remedy – Institutional Controls

Two remedial alternatives were developed and evaluated in the FS for OU-2 (UA 1996a) to address the RAO for CAOCs 1, 8A, and 10: no action and institutional controls. The no action alternative presented an acceptable risk to human health so long as the current land use remained an industrial one; however, without controls in place to prevent unrestricted use, future land use could lead to unacceptable levels of human-health risk. Taking public comment on the OU-2 Proposed Plan into consideration, the ROD proposed institutional controls as the preferred remedy for the three OU-2 CAOCs.

The selected remedy as defined in the ROD consisted of institutional controls restricting land use of CAOC 1 and CAOC 10 to industrial/commercial use and CAOC 8A to the current use. The institutional controls would be implemented through the MCAS Yuma Master Plan (former Base Master Plan), which will reference the OU-2 ROD. The institutional controls identified in the ROD are as follows:

- Restrict land use at CAOCs 1 and 10 to industrial/commercial use.
- Restrict land use at CAOC 8A to current use.
- Provide a legal description of site boundaries and a site map for each site.
- Execute and record a VEMUR with the state of Arizona for each site.

The VEMUR would contain language clarifying that it was executed and recorded by the federal government “for itself only, and not as a covenant running with the land”. In addition, it would clarify that:

- a. No interest in real property on behalf of the state of Arizona is created by the VEMUR or by any notice of cancellation of the VEMUR pursuant to Ariz. Rev. Stat. § 49-152, and
  - b. The signature of an authorized representative of the ADEQ on the document acknowledges that the remediation of the property was conducted in accordance with the provisions of Ariz. Rev. Stat. § 49-152.
- Any future activities planned for the area must be coordinated with and reviewed by the MCAS Yuma Environmental Department, including official consultation with the DON, in consultation with U.S. EPA and ADEQ as necessary.

A change in land use from industrial to residential use would require reevaluation of the remedy for CAOCs 1 and 10. For CAOC 8A, a change in land use that would involve

activities that may lead to disruption of the site surface and exposure of the landfill contents would require the reevaluation of the remedy for compatibility with the desired activity. The remedy could be changed pursuant to CERCLA Sections 120 and 121 and NCP Section 300.430(f)(4)(iii), and further investigation could be undertaken in order to determine if remediation is required and if the ROD must be amended.

If the Navy intended to excess the property to a nonfederal entity, it will notify the ADEQ and U.S. EPA in advance of the execution of any transfer. The Navy would again consult with the ADEQ and U.S. EPA in revisiting the existing land-use classification and restrictions for the CAOCs involved to determine if the foreseeable future land use would differ from the assumptions made at the time the original remediation action decision was made. A reevaluation of the institutional controls would be performed if necessary at that time.

## **4.2 REMEDY IMPLEMENTATION**

With the signing of the ROD for OU-2 on 02 December 1997, the land-use restrictions identified in the institutional controls for CAOCs 1, 8A, and 10 were considered implemented, and the remedial action for the sites completed (GEOFON 1999). However, the administrative controls to add the institutional controls to the MCAS Yuma Master Plan and to record the land-use restrictions for the CAOCs with the state of Arizona remained to be implemented.

The following sections discuss the steps taken post-ROD in implementation of institutional controls for CAOCs 1, 8A, and 10 at MCAS Yuma.

### **4.2.1 Remedial Action Report**

The Final Remedial Action Report for OU-2 (GEOFON 1999) issued September 1999, included an information summary and institutional controls for CAOCs 1, 8A, and 10 in a recommended addendum to the MCAS Yuma Base Master Plan. A VEMUR application package containing a summary of pertinent site conditions and legal description of the site boundaries was included as a part of the addendum. A land survey of CAOCs 1, 8A, and 10 was used to produce the legal descriptions and site maps (Don Peterson Engineers 1999).

### **4.2.2 MCAS Yuma Master Plan**

The MCAS Yuma Master Plan contains a detailed review of all physical conditions, resources, and tenant commands present at MCAS Yuma and the planned development of the station in the foreseeable future. The MCAS Yuma Master Plan was developed to support the MCAS Yuma mission and implement the station's strategic plan. In order to control the areas of potential risk from exposure to soil contamination at OU-2 CAOCs 1, 8A, and 10 and assure that future land-use would not result in unacceptable levels of risk to human health or the environment, the necessary restrictions were presented in a revision to the MCAS Yuma Master Plan. The MCAS Yuma Master Plan of 1998 was revised in September 2001 to contain the institutional controls for OU-1 and OU-2, as identified in the ROD and specified in the Master Plan addendum provided in the Final

Remedial Action Report for OU-2 (GEOFON 1999). Figures 5-17 and 5-19 of the revised MCAS Yuma Master Plan provide the locations of the OU-1 and OU-2 site areas for which institutional controls would apply and what the controls are. For OU-2 CAOCs 1, 8A, and 10, the requirement for recording modified VEMURs for each of the sites was included.

The MCAS Yuma Master Plan does not include a map of CAOC 8A showing the locations of the former disposal areas, as recommended in the ROD, or a map of the locations of PAHs in soil reported for CAOC 10. However, the site boundaries given for CAOCs 8A and 10 (as CAOCs 10A and 10B) in the Master Plan, for which the listed institutional controls apply, do incorporate corresponding areas of significance for both sites. Figure 4-1 shows the boundaries of the three CAOCs for which institutional controls are implemented as they appear in both the Master Plan and the Final LUCIP, which is discussed in detail in the following section.

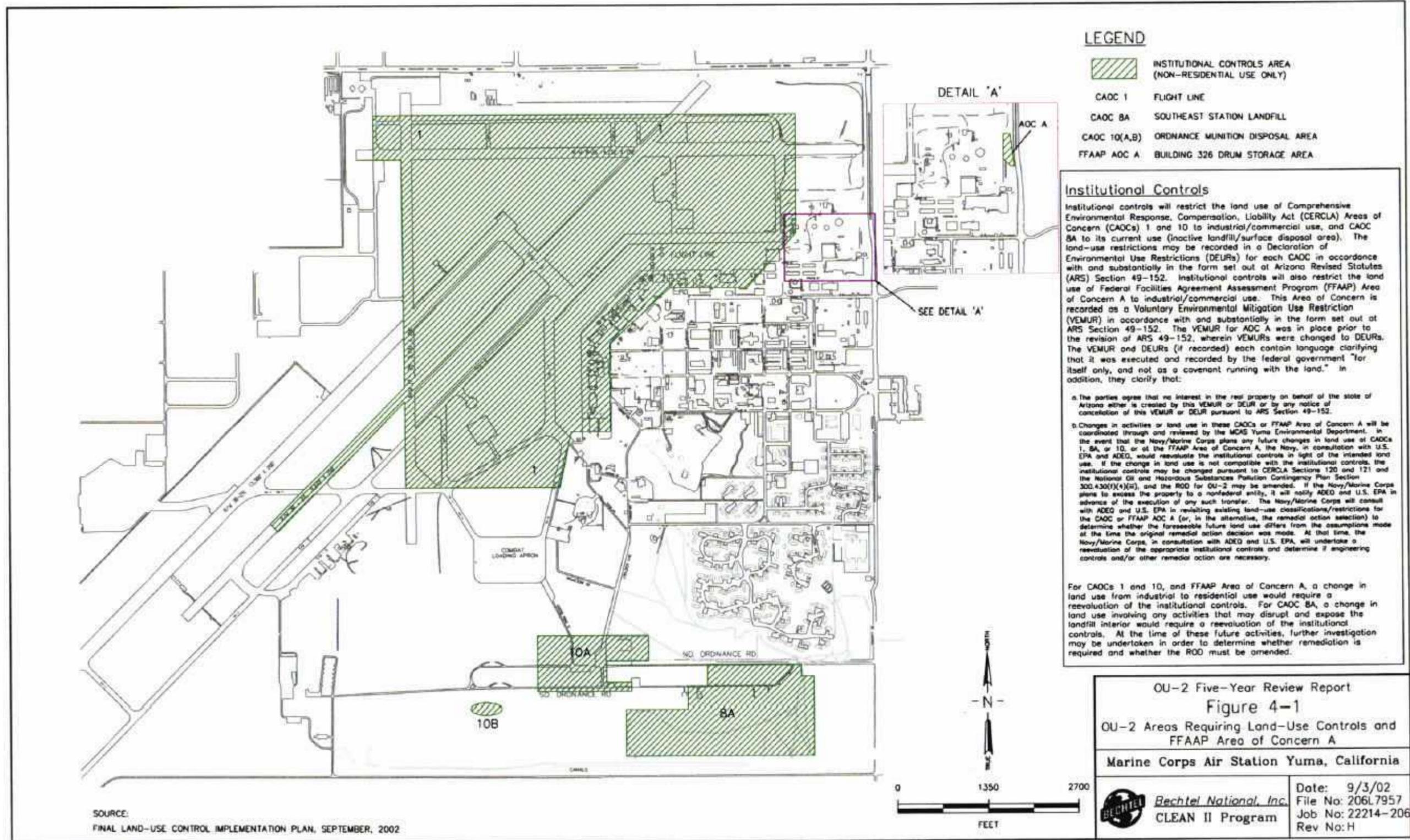
### **4.2.3 Land-Use Control Implementation Plan**

The Final LUCIP was issued in September 2002. The Final LUCIP addressed all DON, U.S. EPA, and ADEQ comments on the Draft (Revision 1) LUCIP that was issued on 20 December 2001.

MCAS Yuma Station Order 5090 was issued 10 January 2002 informing station tenants of the land-use restrictions for OU-1 and OU-2 and implementing the other LUCs provided in the Draft LUCIP (see Appendix B2). The Draft (Revision 1) LUCIP was originally issued as an addendum to the Master Plan to provide steps for implementation and monitoring of institutional controls at OU-1, OU-2, and Federal Facilities Agreement Assessment Program (FFAAP) AOC A. The document also contained complete VEMUR application packages for CAOCs 1, 8A, and 10. The Draft LUCIP noted that recordation of a VEMUR had been achieved previously for the MCAS Yuma FFAAP AOC A.

The institutional controls for OU-2 were subsequently updated in the Final LUCIP to provide “modified DEURs” for CAOCs 1, 8A, and 10 as follows (see Section 3 of the Final LUCIP):

Institutional controls will restrict the land use of CAOCs 1 and 10 to industrial/commercial use and CAOC 8A to its current use (inactive landfill/surface disposal area). Institutional controls for these CAOCs may be recorded in DEURs in accordance with and substantially in the form set out at ARS Section 49-152. Institutional controls will also restrict the land use of FFAAP AOC A to industrial/commercial use. Institutional controls for this AOC are recorded as a VEMUR in accordance with and substantially in the form set out at ARS Section 49-152. The VEMUR for AOC A was in place prior to the revision of ARS Section 49-152, wherein VEMURs were changed to DEURs. The VEMUR and DEURs (if recorded) each contain language clarifying that they were executed and recorded by





the federal government “for itself only, and not as a covenant running with the land.” In addition, they clarify the following:

- a. The parties agree that no interest in real property on behalf of the state of Arizona either is created by this VEMUR or DEUR or by any notice of cancellation of this VEMUR or DEUR pursuant to ARS Section 49-152.
- b. Changes in activities or land use in these CAOCs or FFAAP AOC A will be coordinated through and reviewed by the MCAS Yuma Environmental Department. In the event that the Navy/Marine Corps plans any future changes in land use at CAOCs 1, 8A, or 10 or at the FFAAP AOC A, the Navy, in consultation with U.S. EPA and ADEQ, would reevaluate the institutional controls in light of the intended land use. If the change in land use is not compatible with the institutional controls, the institutional controls may be changed pursuant to CERCLA Sections 120 and 121 and the National Oil and Hazardous Substances Pollution Contingency Plan Section 300.430(f)(4)(iii), and the ROD for OU-2 may be amended. If the Navy/Marine Corps plans to excess the property to a nonfederal entity, it will notify ADEQ and U.S. EPA in advance of the execution of any such transfer. The Navy/Marine Corps will consult with ADEQ and U.S. EPA in revisiting existing land-use classifications/restrictions for the CAOC or FFAAP AOC A (or, in the alternative, the remedial action selection) to determine whether the foreseeable future land use differs from the assumptions made at the time the original remedial action decision was made. At that time, the Navy/Marine Corps, in consultation with ADEQ and U.S. EPA, will undertake a reevaluation of the appropriate institutional controls and determine if engineering controls and/or other remedial action are necessary.

For CAOCs 1 and 10 and FFAAP AOC A, a change in land use from industrial to residential use would require a reevaluation of the institutional controls. For CAOC 8A, a change in land use involving any activities that may disrupt and expose the landfill interior would require a reevaluation of the institutional controls. At the time of these future activities, further investigation may be undertaken in order to determine whether remediation is required and whether the ROD must be amended.

In the event OU-2 property is excessed, MCAS Yuma shall notify the transferee or lessee of the LUCs described in this section, and NAVFAC SW Division shall include the restrictions, as shown in Figure 2-2 of this Land-Use Control Implementation Plan, in the transfer or lease. Such notification will be provided at least 45 days in advance of the property transfer or lease conveyance. MCAS Yuma shall comply with Section 120(h)(3) of CERCLA in any such transfers (Appendix C). Transfer or lease of real property out of federal control will follow guidance included in the Department of Defense memorandum, Interim Policy on Land Use Controls Associated With Environmental Restoration Activities (DoD 2000, as amended) (Appendix D).

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## Section 5

# FIVE-YEAR REVIEW PROCESS

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This section provides a description of the activities performed during the five-year review process for MCAS Yuma OU-2 and a summary of the findings of each step in the process when appropriate.

### 5.1 ADMINISTRATIVE COMPONENTS OF THE FIVE-YEAR REVIEW PROCESS

A kickoff meeting for the OU-2 five-year review was held 20 March 2002 at the MCAS Yuma Environmental Department. The following people were in attendance at the meeting:

<u>Name</u>	<u>Title</u>	<u>Organization</u>
Dan Goodman	Remedial Project Manager (RPM)	Navy, SWDIV
Kathryn Umbarger	Contract Task Order Leader (CTOL)	BNI
Doug Peeler	Senior Geologist	BNI
Herbert "Gil" Guillory	Environmental Director	MCAS Yuma Environmental Department
Carol Lewis	IRP Manager	MCAS Yuma Environmental Department
Mary Stewart	former IRP Manager	MCAS Yuma Environmental Department
Joe Britain	Staff Engineer	MCAS Yuma Environmental Department
Christian Kost	Range Oversight Officer Compliance Division	MCAS Yuma Environmental Department

The review team was identified at that time as Doug Peeler as the primary investigator for the review and Carol Lewis as the station contact responsible for arranging access to Environmental Department documents and station resources and personnel. Oversight for the review was provided by Dan Goodman, Kathryn Umbarger, and Gil Guillory.

The following list of components was identified in advance and reviewed with attendees of the kickoff meeting:

- Document review
- Data review
- Site inspection
- Local interviews
- Five-year review report development and review.

These components were later more specifically defined to include U.S. EPA and ADEQ review comments on the Draft (Revision 1) LUCIP instead of interviews of personnel from these agencies by Navy SWDIV. The site inspections and most of the interviews were conducted within two days of the kickoff meeting. The five-year review itself was conducted from March to November 2002.

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## 5.2 COMMUNITY NOTIFICATION AND INVOLVEMENT

MCAS Yuma personnel and the greater Yuma, Arizona, community were informed of the start of the review in late May 2002 in a public notice printed on three separate dates in area newspapers:

*The Sun* (Yuma and regional paper) Saturday, 18 May 2002, and Saturday, 25 May 2002

*The Cactus Comet* (MCAS Yuma paper) Thursday, 23 May 2002

The notice stated the purpose of the five-year review at OU-2 under CERCLA, described the remedy for contaminated soil at CAOCs 1, 8A, and 10, and identified the types of COPCs present. The restriction of future land use of CAOCs 1 and 10 to industrial/commercial use and of CAOC 8A to current use as an inactive landfill facility was identified as necessary to prevent unacceptable human-health risk that could result if the sites were used for residential purposes. The notice stated that the institutional controls for OU-2 were implemented through the Base Master Plan issued September 2001.

A second public notice and a fact sheet are planned to notify the community of the findings upon completion of the Five-Year Review Report. In addition, the fact sheet will be sent to current Restoration Advisory Board (RAB) members, regulatory agency personnel, and those community representatives who indicated on interest in prior mailings concerning environmental restoration activities at MCAS Yuma. The Five-Year Review Report for OU-2 will be made available at the Yuma County Public Library, 350 South Third Avenue, Yuma, Arizona 85364-3897.

The local community was not involved directly in the five-year review for OU-2. The general public does not live adjacent or have access to these sites, and institutional controls are currently implemented only within the station to limit the land use by station tenants. During the earlier phases of site RI and remedy selection and evaluation, interested community representatives had the opportunity to meet with and become members of the RAB. This group was established to provide a forum for exchange of information and partnership among the community, Navy, U.S. EPA, and state of Arizona regulatory agencies by reviewing and commenting on technical documents relating to the ongoing environmental cleanup at MCAS Yuma. With remedial activities well under way at OU-1 and OU-2, public interest in this forum has declined.

## 5.3 DOCUMENT REVIEW

This five-year review for OU-2 consisted of a review of relevant documents issued prior to and since the signing of the ROD (UA 1997a) (see Appendix A). The documents reviewed also included unpublished remediation manager meeting minutes, aerial photographs, and proposed work permit forms and compliance documents for the existing facilities at CAOCs 1 and 10 maintained by the MCAS Yuma Environmental Department.

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The RAO for OU-2 CAOCs 1, 8A, and 10 was developed based on the results of the human-health risk assessment and consideration of potential applicable or relevant and appropriate requirements (ARARs) in the FS Report for OU-2 (UA 1996a). However, the RAO was not identified specifically by name in the document or in the ROD for OU-2 along with the final ARARs determination.

A review of the former VEMUR application packages in the Draft LUCIP (SWDIV 2002) and Remedial Action Report for OU-2 (GEOFON 1999), respectively determined that the area surveyed and submitted for CAOC 10 resembled the earlier FFA boundaries for the site. The area did not include all of CAOC 10A over which institutional controls apply as depicted in the MCAS Yuma Master Plan and the Final LUCIP figures and reflected in Figures 4-1 and 5-1 of this report. This was addressed in a resurveying of CAOCs 10A and 10B to delineate the areas for which institutional controls apply. The resurveyed map was provided in the new “modified DEUR” application for CAOC 10 included in the Final LUCIP.

The current land use of CAOC 8A is sometimes stated in the documents reviewed as a former landfill and surface disposal area. However, the figures in the MCAS Yuma Master Plan and the Final LUCIP, showing the areas requiring institutional controls, indicated that this area, in part, is within the ODF and has been used for ordnance storage prior to and since the signing of the OU-2 ROD.

### **5.4 DATA REVIEW**

The data review consisted solely of a review of the maximum soil concentrations for the COPCs evaluated in the human-health risk assessment for CAOCs 1, 8A, and 10, as listed in the OU-2 ROD Tables 2-2 through 2-5 and provided in Appendix B6 of this report. The information was used in a screening evaluation of potential change in human-health risk for the CAOCs that is discussed in detail in Section 6.2.1 of this report.

### **5.5 SITE INSPECTION**

Inspections at OU-2 CAOCs 1, 8A, and 10 were conducted from 20 March to 22 March 2002, by Doug Peeler, Carol Lewis, and the project Contract Task Order Leader (CTOL) (first site visit to CAOC 8A only). The purpose of the site inspections was to review and document current site conditions at the CAOCs and evaluate visual evidence regarding the protectiveness of the land-use restrictions. This effort included noting the points of access and access requirements for the CAOCs, the location of fencing and munitions storage areas at the ODF relative to the footprint of the CAOCs, and the condition of the landfill cover at CAOC 8A. A review of compliance documents concerning waste management and spill reports for the current flight line and the ODF was conducted as a part of the site inspection for CAOCs 1 and 10 through the files maintained at the MCAS Yuma Environmental Department. The results of this part of the inspection for the two CAOCs are discussed in the interview results (Appendix E4).

The U.S. EPA Comprehensive Five-Year Review Guidance (OSWER 9355.7-03B-P) provides a site inspection checklist as well as the report template used for the development of this report. The modified site inspection checklists filled out during the

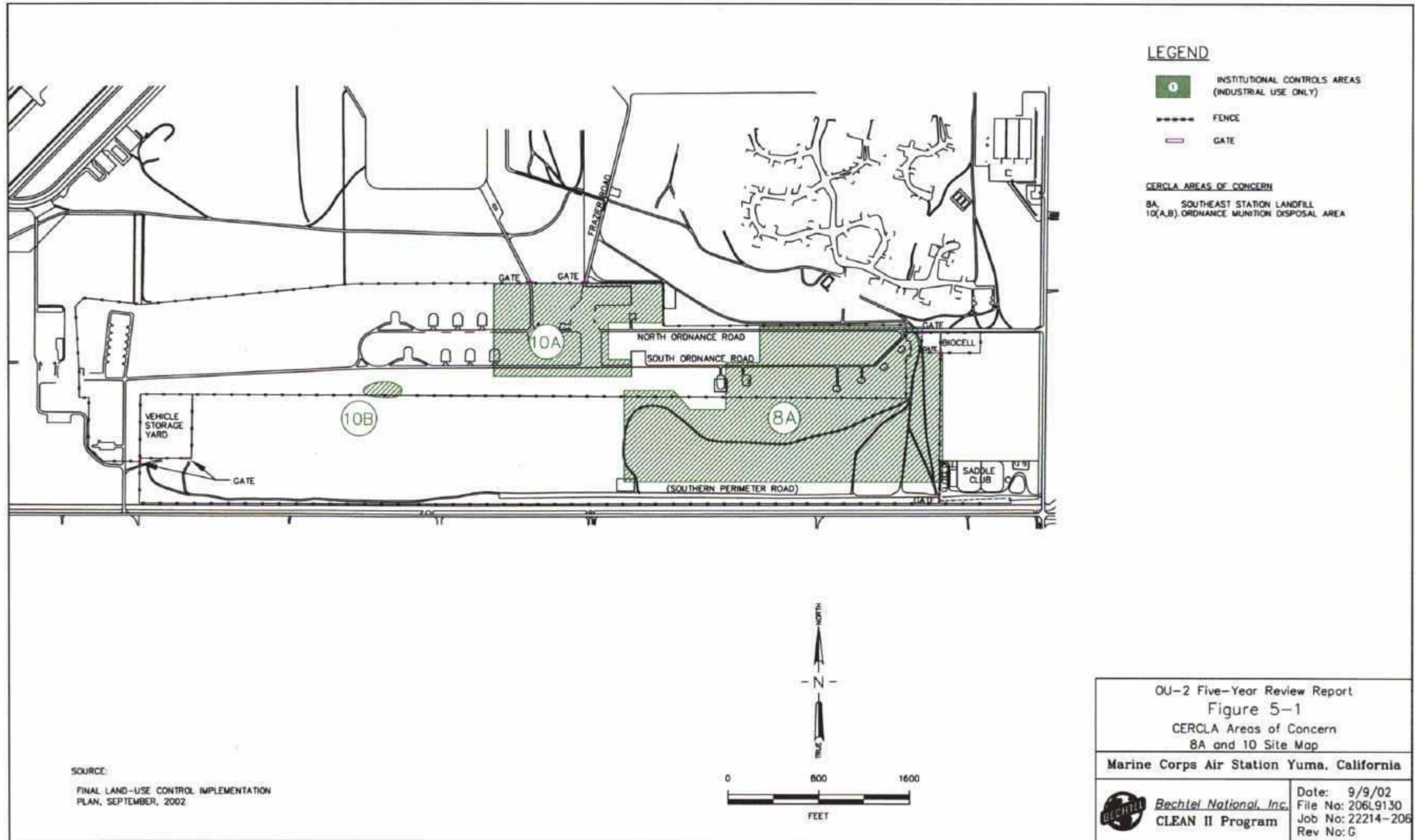
site inspection for each CAOC are provided to document site conditions in Appendices C1, C2, and C3. The corresponding detailed site maps provided in Figures 2-1, 2-7, and 2-9 of the OU-2 ROD are included with the checklists and annotated with the location and direction of photographs taken during the site inspection. The photographs selected to show the conditions noted during the site inspections are provided in Appendix D.

### **5.5.1 CAOC 1: Flight Line**

CAOC 1 is located within the secured existing flight line; access to this area is limited to personnel who have the appropriate identification and a flight line pass or a code key. The site inspection for CAOC 1 consisted of a driving tour of the eastern perimeter of the flight line, where aircraft parking areas, maintenance, and hangar areas are located, and visual observations across taxiways to the western boundary of the site. Photographs of CAOC 1 could not be taken at the time of the site inspection due to security requirements; however, a copy of the most recent aerial photograph was later provided by station personnel (Appendix D). No activity that would be considered inconsistent with industrial land use was noted at CAOC 1.

### **5.5.2 CAOC 8A: Southeast Station Landfill**

The site inspection for CAOC 8A was conducted on two separate occasions. As shown on Figure 5-1, CAOC 8A is located within a larger fenced area bounded by the ODF (north), the Broken Gate Saddle Club and former CAOC 9 (east side), County Road 13 (13th Street) and land used for agricultural purposes outside of MCAS Yuma (south side), and the Range Management Area (west side). Access to the area is limited to locked gates at North Ordnance Road and the western perimeter fence line. Three other gates in the perimeter fencing are locked and lead to a vehicle storage lot, the Biocell Soil Treatment Area, and the Broken Gate Saddle Club. The square of land between the dirt road from the North Ordnance Road gate and the dirt road to the Biocell Soil Treatment Area gate is not within the footprint of CAOC 8A. However, a considerable portion of CAOC 8A is located within the fence line of the ODF, where the site area is actively used for ordnance storage in concrete bunkers. South from the North Ordnance Road gate, the road divides into dirt roads that cross CAOC 8A north to south and east to west and connect to an off-site perimeter road within the southern fence line (see photographs in Appendix D). No signs identifying the restrictions on land use for the CAOC 8A area were noted.





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The site is predominantly flat, consisting of windblown sand, desert grasses, and scrub, like most of the rest of the fenced area. Long depressions to approximately 8 feet deep are present north to south across the western end of CAOC 8A, corresponding to former landfill cells. Some solid waste consisting of construction debris and general station refuse is evident at the surface in these areas. Facilities and structures typical for a permitted landfill constructed or capped under Resource Conservation and Recovery Act (RCRA) requirements or equivalent state of Arizona requirements were not expected because the landfill was operated and deactivated. No such facilities or structures were found during the inspection. Fresh horse manure found on this southern perimeter road outside the gate to the Broken Hill Saddle Club, along with a combination lock on this gate, suggests the saddle club uses the road for recreation.

No evidence of recent activity (e.g., horseshoe tracks, tire marks), landfill cover disturbance, or exposure of the landfill contents was found at CAOC 8A. Some evidence of minor soil erosion and redeposition was noted along the embankment associated with the off-site perimeter road to the south.

### 5.5.3 CAOC 10: Ordnance Munitions Disposal Area

CAOC 10, consisting of subareas 10A and 10B, is located within the secured and existing ODF (CAOC 10A) and the fenced area adjacent to CAOC 8A (CAOC 10B). Access to this area is limited to personnel who have the appropriate identification and who sign in at the guarded gate of the facility at Frazier Road (Figure 5-1). The site inspection for CAOC 10 consisted of a driving tour within the ODF conducted by the ODF Manager (on North and South Ordnance Roads). A second gate, located on the fence line west of the Frazier Road gate, leads to the Combat Arms Loading Apron (CALA). The primary activities at CAOC 10 are weapons construction and transfer to the CALA (Appendix D). These activities are conducted in temporary storage buildings, and the munitions are stored in concrete bunkers. CAOC 10B is located south of the intersection of North and South Ordnance Roads, at the west end of the ODF, and is indistinguishable from the rest of the land surface in the area. Skeet fragments were noted on the ground surface of the ODF near CAOC 10B. No activities were observed at CAOCs 10A, 10B, or 8A that violated the institutional controls.

## 5.6 INTERVIEWS

MCAS Yuma personnel responsible for or familiar with current activities at OU-2 CAOCs 1, 8A, and 10, or activities that took place over the past five years, were interviewed between 20 and 22 March 2002 (Appendix E). Additional substantive information was provided during subsequent telephone interviews on 26 July 2002. An interview documentation form listing the name, title, and organization of the interviewee, along with the date and location where the interviews took place, is provided in Appendix E1; the interview records documenting the interviews are provided in Appendices E2 through E10.

Instead, regulatory agency review comments regarding LUCs for OU-1 and OU-2 based on reviews of the Draft and Final LUCIPs were taken into consideration.

None of the personnel interviewed knew of any significant changes to site conditions or activities conducted at the CAOCs over the last five years. A summary presentation of additional observations made during the review's initial kickoff meeting, site inspections, personnel interviews, and regulatory agency comments is given below.

#### Kickoff Meeting, 20 March 2002

Gil Guillory has been the director of the MCAS Yuma Environmental Department since October 2001. Mr. Guillory provided the following information during the meeting, which was recorded on the site inspection checklist according to the CAOC (see Appendices C1, C2, and C3).

- CAOC 8A is no longer used for running events held at MCAS Yuma.
- A request for closure of CAOC 8A by the Facilities Maintenance Department (FMD) that would have involved raking the east end of CAOC 8A to a depth of 48 inches was turned down by the Environmental Department in consultation with legal counsel (see Appendix C2, attached letter and memorandum). This activity had the potential to disturb the landfill contents at CAOC 8A as well as disturb the ground surface in the area formerly used for a skeet range, the Tower Trap Range, and the Moving Target Range. These ranges were operated on CAOCs 8A and 10 from 1940 to 1983 and have not yet been assessed and closed as former military ranges. Changes to surface conditions at these CAOCs could complicate the assessment of quantities of clay skeet fragments and lead shot present.
- No endangered or threatened species are known to use CAOCs 1, 8A, and 10.

#### Site Inspections, 20 to 22 March 2002

Carol Lewis has been the IR Program Manager at the MCAS Yuma Environmental Department since 05 November 2001. During the site inspections, Ms. Lewis indicated that there have not been any problems of which she is aware in maintaining the institutional controls for the three CAOCs (Appendices C1, C2, C3). She agreed with others that large construction projects for MCAS Yuma that might affect the CAOCs would be planned in advance and reflected in the MCAS Yuma Master Plan.

#### Larry Leake, 20 to 21 March 2002

Mr. Leake was the IR Program Manager at the MCAS Yuma Environmental Department from April 1995 to December 2002. His interview records are provided in Appendices E2 and E3.

- CAOC 8A was fenced off with barbed wire after the OU-2 ROD was signed (and institutional controls began to be implemented for the site).
- The site boundaries for CAOCs 8A and 10 currently do not match the legal descriptions in the VEMURs (currently, DEURs).

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- The ADEQ has authorized the removal of boulders from the surface at CAOC 8A and grading and capping that may be performed on the site as maintenance of the landfill cap. Mr. Leake provided a copy of the ADEQ letter sent 01 June 1999 to Mike Gonzalez (former RPM, SWDIV for MCAS Yuma) from Nancy Lou Minkler, Project Manager, Federal Projects Unit, Waste Programs Division, which is included as a part of Appendix E2.
- The Broken Gate Saddle Club has access to the fenced area that includes CAOC 8A through the south end gate, which is secured by a combination lock.
- The Provost Marshal's Office (PMO) and former Logistics Department (S4) had keys to the North Ordnance Road gate of the greater fenced area in which CAOC 8A is located. S4 used to have station military personnel and family runs there; PMO provides station security and stores vehicles in the adjacent lot at the west end of the greater fenced area. Only the Environmental Department has the key to the Biocell Soil Treatment Area gate from the greater fenced area.
- The institutional controls for a piece of station property are included in the remarks of any dig permit issued for it. Larger construction projects may not get the same dig permits, but the Environmental Department engineer reviews the construction contracts for environmental issues.
- Dig permits had been reviewed by the MCAS Yuma Environmental Department prior to his role there as IR Program Manager in 1995. The permit form consisted only of the two-sided Locate, Digging, and Outage Request form (referred to as "Page 1") at that time. The Environmental Department Sign-Off Sheet (referred to as "Page 2") started to be used within the Environmental Department in October 2001.

A review of Environmental Department files provided several examples of the Environmental Department Sign-Off Sheet, and 1994 and 1998 Locate, Digging, and Outage Request forms implemented by Station Orders 11300.7 and 11300.7, Change 3. Examples of these documents have been included as part of Appendix E2. It is evident from the filed documents that the Environmental Department has consistently been involved in reviewing and approving construction activities for several years. The earliest signed copy on file of the current Environmental Department Sign-Off Sheet was dated 29 October 2001 (Appendix C1). Prior Locate, Digging, and Outage Request forms that also required Environmental Department review and sign-off were on file dating back to 1993. Older copies of these documents and others generated or maintained through the Environmental Department are available through off-station storage at the Canon Air Defense Complex.

### Mariano Hawk, 21 March 2002

Mr. Hawk is the Logistics Business Manager for MCAS Yuma, but was the Officer-in-Charge at the former Weapons Assembly Area (currently referred to as the ODF) from 1996 to 1999. The record of the interview with Mr. Hawk is provided in Appendix E5.

- The vehicle storage lot north of the fenced area that includes CAOC 8A is used by the PMO. PMO accesses the fenced area through the west end gate from the Range Management Area and County Road 13.

- Mr. Hawk indicated he knew the location of the CAOC 8A landfill within the greater fenced area accessed from North Ordnance Road, but did not know that the area for which institutional controls apply extends into the east end of the ODF. Further, he verified that the weapons storage bunkers on South Ordnance Road at this end of the ODF had been in active use prior to the signing of the ROD.
- With regard to the CAOC 1 Flight Line, no changes to the area have occurred since the construction of Building 220, and it would be fair to say that all changes to land use would have been reflected in the prior (1988) Base Master Plan.

Fred Daniel, 22 March 2002

MCAS Yuma Environmental Department files regarding spill/release reporting were reviewed as a part of the site inspection of active facilities at CAOCs 1 and 10. Reports of releases in the past year were readily available, along with a logbook compilation of reported releases. Older reports of releases are stored at the Canon Air Defense Complex and were not sought as part of this review. No releases were reported for the ODF. Several spills were reported for the Flight Line, which have the potential to impact CAOC 1. An interview with Fred Daniel, Compliance Division Director at the MCAS Yuma Environmental Department, was sought to discuss what the general experience was for releases in the course of operations at the Flight Line; the interview record is provided in Appendix E4.

- The general nature of releases at the Flight Line are: (1) unreportable to small quantities of hydraulic fluid, Stoddard solvent, other solvents, lube oils, and broken mercury vapor lamps; (2) fuels for jets and helicopters, to a few hundred gallons, due to regular operations or maintenance; and (3) larger quantities of fuel, as a result of aircraft malfunction on the ground or crashes.
- Under current procedures, releases are handled immediately by methods determined according to spill size. Each unit at the Flight Line has a spill contingency plan specific for it, maintains spill control equipment for use on-site, and has a designated hazardous waste officer.
- The Compliance Division conducts regular inspections and receives and logs release reports and waste generation and disposal forms.

Based on the information provided in this interview, the releases noted in the logbook and files for the current flight line did not constitute a change from conditions common to it and thereby do not present a change to the conditions of CAOC 1.

Stephen Spencer, 21 March 2002

Stephen Spencer, Manager of the ODF, was interviewed during the site inspection for CAOCs 8A and 10, which are in part located within the facility. Mr. Spencer has been in his current position for only a few months. The record of the interview with Mr. Spencer is provided in Appendix E6.

## Section 5 Five-Year Review Process

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- Ordnance is currently stored in concrete bunkers within the footprint of CAOC 8A, but future plans call for abandonment of those storage bunkers and some within the footprint of CAOC 10.
- No releases of potentially hazardous substances have occurred while he has been in charge. In a later telephone call, Mr. Spencer confirmed that release reports were not kept on file at the ODF, but he believed they were on file at the Environmental Department.

### Joe Britain, 22 March 2002

Joe Britain is an engineer at the MCAS Yuma Environmental Department. Mr. Britain was interviewed to get information on the steps that new construction applications go through at the Environmental Department in which land-use restrictions for the property would be identified. The record of the interview with Mr. Britain is provided in Appendix E7 of this report.

- All new construction projects undergo a multilayered environmental review process.
- During the planning phase, the proposed project must get a categorical exclusion from further documentation requirements under the National Environmental Policy Act based on the type of work to be performed.
- During the 15 percent design review, the site may be identified as a CERCLA site with specific limitations, including institutional controls on land use, which would require further coordination of the project's progress with the Environmental Department.
- During construction, federal regulations that apply to the site are referenced in the environmental controls portion of the construction specifications.

Examples of the documentation for each of these phases of the review process were provided by Mr. Britain and are included as attachments to the interview record (Appendix E7).

### Craig Bowman, 21 March 2002

Craig Bowman is a utilities technician at the MCAS Yuma FMD. The record of the interview with Mr. Bowman is provided in the Site Inspection Checklist for CAOC 8A (Appendix C2).

- A dig permit is issued by the Resident Officer in Charge of Construction.
- Dig permit application forms are currently handed to contractors in the preconstruction meeting. The future plan is to issue the Environmental Sign-Off Sheet (Page 2 of the form) with the bid requests for contracted work, and retain the sheets for the permit application packages. A new station order will be written to implement this.

### ADEQ Comments on the Draft (Revision 1) LUCIP, 13 May 2002

The Final LUCIP (SWDIV 2002) addressed the ADEQ comments on the Draft (Revision 1) LUCIP (SWDIV 2001) as proposed in the Responses to Comments issued

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by the ADEQ on 13 May 2002. The latter document is provided in Appendix E8 along with: (1) the SWDIV transmittal letter from the RPM and (2) the United States General Services Administration (GSA) policy regarding the establishing of restrictive covenants on real property by landholding agencies. The following is a summary of ADEQ comments concerning the implementation of institutional controls for OU-2.

- Area 8A: Measures must be taken to prevent human contact with the surface and shallow soils that are known to contain PCBs in excess of Arizona HBGLs. The former landfill and surface disposal area, which may still be used for surface disposal of construction debris, should be restricted to entry by only those personnel conducting authorized surface disposal activities. Entry should be restricted by fencing the entire site, including locked gates across South Ordinance Road. Areas where surface disposal has become impracticable should be capped (unless materials disposed at the surface are determined to provide an adequate barrier, preventing any human exposure to the contaminated soil). Future use of the area for jogging or other recreational activities should be strictly prohibited.
- The VEMUR and DEUR each contain language clarifying that they are executed and recorded by the federal government “for itself only and not as a covenant running with the land.” The statement that the “covenant does not run with the land” is contrary to the requirements of Ariz. Rev. Stat. § 49-152(e) which describes an owner’s DEUR as “a covenant that runs with and burdens the property” and “inures to the benefit of the department and the state”. A DEUR must be filed as a “covenant running with the land” in compliance with Arizona “state and rule.” While the state of Arizona has no “interest” in “Federal Property”, it is important to ensure that the LUCs “run with the land” in case of future transfer of such property to different entities (e.g., private, municipal, or other nonfederal public).
- One of the institutional controls for OU-2 ends with this statement: “At that time, the Navy/Marine Corps, in consultation with ADEQ and U.S. EPA, will undertake a reevaluation of the appropriate institutional controls.” This statement should acknowledge that engineering controls and/or other remedial actions may also be appropriate if “changes in activities or land use” occur in these CAOCs or FFAAP AOC A.

The SWDIV transmittal states that the Navy is not authorized to provide a DEUR that would be “a covenant that runs with and burdens the property”, for property on an active military facility that has not been identified for transfer to nonfederal ownership because of the GSA policy. (A copy of the referenced GSA memorandum is included in Appendix E8.) The other comments were responded to as necessary by revision of the referenced text of the Draft LUCIP, including revision of the institutional control for OU-2 identified in the third comment.

Larry Leake, 26 July 2002

The following information summarizes a telephone interview of Mr. Leake regarding the basis for the site boundaries of CAOC 10 recorded in Appendix E9.

## Section 5 Five-Year Review Process

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- He did not think the site boundaries determined for institutional controls were based on the location of the skeet range but on the distribution of reported PAH concentrations in the soil.
- The mobile target practice range was formerly located between North and South Ordnance Roads on the west half of the ODF. He confirmed that a skeet range and tower trap range were once located on CAOC 8A. In the past, he noted skeet fragments on the ground surface from CAOC 8A landfill west to CAOC 11.

During the site inspections conducted for the five-year review, skeet fragments were noted on the surface of CAOC 10A but not at CAOC 8A.

Two figures from a United States Army Corps of Engineers report based on aerial photographs from 1942 and 1958 were later found that indicated the locations of the former skeet range and tower trap range on the west and east ends of the CAOC 8A landfill, respectively.

### Gil Guillory, 26 July 2002

The following information summarizes a telephone interview of Mr. Guillory regarding changes at CAOC 8A and the basis for the site boundaries of CAOC 10 recorded in Appendix E10.

- On 08 July 2002, the Broken Gate Saddle Club was informed by memorandum that a red Environmental Department lock had replaced the combination lock of the gate to the fenced area that included CAOC 8A and that no further access to the fenced area was permitted.
- A sign has been placed on the North Ordnance Road gate to the fenced area in which CAOC 8A is located stating that all personnel intending to access the area must coordinate the access and activity within the fenced area with the MCAS Yuma Environmental Department.
- Mr. Guillory clarified that four storage bunkers at the east end of the ODF, within the footprint of CAOC 8A, may be demolished, and the foundations excavated and removed as part of the planned CALA Phase 2/3 construction in a few years. Further, he stated that a tactical parking apron for Marine Wing Support Squadron (MWSS)-371 would be constructed in the ODF between the areas designated for institutional controls for CAOCs 8A and 10 (subarea 10A specifically). Notification of the ADEQ, providing the work plans, and a discussion of how the construction would impact the implementation of institutional controls for the sites would precede the construction work.

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## Section 6

# TECHNICAL ASSESSMENT

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The technical assessment for OU-2 presented in this section describes how each of the three key assessment questions was answered for CAOCs 1, 8A, and 10 and provides reference to information that formed the basis for each answer. The discussion presented here is a framework for the protectiveness determination that explains the conclusions of the review, based on the information presented in the previous section.

### 6.1 QUESTION A

**Is the remedy functioning as intended by the decision documents? Yes.**

A review of documents, results of site inspections, and interviews of station personnel knowledgeable about the CAOCs indicate that the remedy is functioning to protect human health by maintaining existing land use. The required institutional controls were implemented by DON and the Marine Corps with the signing of the OU-2 ROD in December 1997 and the formal inclusion of the LUCs for OU-2 in the 2001 MCAS Yuma Master Plan, the 2002 Final LUCIP, and the 2002 MCAS Yuma Station Order 5090.

Since the signing of the OU-2 ROD, the MCAS Yuma Environmental Department has controlled access to CAOC 8A and provided reviews of dig permit and other construction permit applications in the OU-2 areas. According to interviews and observations made during site inspections, the fenced area that includes CAOC 8A is accessed by the PMO, FMD, and MCAS Yuma Environmental Department using dirt roads across and outside the perimeter of the site. The activities currently conducted in or in adjacent lots accessed through the fenced area include vehicle storage and site surface maintenance. These activities do not appear to involve off-road areas within CAOC 8A, and a sign is located at the primary entrance on North Ordnance Road to inform those accessing the area that coordination with the Environmental Department is required prior to proposed future activities. Prior access to off-site areas within the fenced area for recreational purposes by the Broken Gate Saddle Club has been addressed and is not an issue for this report.

The MCAS Yuma Master Plan was updated in September 2001 with the institutional controls for CAOCs 1, 8A, and 10 as intended in the OU-2 ROD. The Final LUCIP, issued in September 2002, was subsequently developed to provide the details for implementing LUCs for OU-2 and included a description of the institutional controls and access and notification provisions. The LUCs were also formally implemented for MCAS Yuma by Station Order 5090, which directed tenants and contractors to incorporate the LUCs into existing land-use planning and management systems. The MCAS Yuma Station Order 5090 was signed in January 2002 (see Appendix B2).

In addition, to fulfill the requirement of site registration with the state of Arizona as specified in the OU-2 ROD, the Navy has proposed “modified DEURs” for CAOCs 1, 8A, and 10 in the Final LUCIP. It should also be noted that the “modified DEUR” for CAOC 10 provided in the Final LUCIP contains a revised legal description and site map which depict the site areas for which institutional controls apply (i.e., CAOC 10A and

10B). The revised legal description and site map of CAOC 10 were prepared based upon a site resurvey conducted on 20 August 2002. As such, the protectiveness of the remedy can be ensured in the future.

The Final LUCIP also provides for ADEQ access to the sites, prior notification, and reevaluation of the remedy in the event a change to the land use is proposed. The Final LUCIP states that the ADEQ will be notified in advance if the property associated with these CAOCs is identified as excess by MCAS Yuma and proposed for transfer out of federal ownership. At that time, a DEUR citing environmental use restrictions for each property that would “run with the land” as a part of the property deed will be recorded with the state of Arizona.

## 6.2 QUESTION B

**Are the exposure assumptions, toxicity data, cleanup levels, and RAO used at the time of remedy selection still valid? Yes.**

The following subsections discuss the information evaluated in answering this question on the basis of human-health and ecological risk assessment, federal and state regulations evaluated as potential ARARs for the remedial action, and achievement of the RAO.

### 6.2.1 Human-Health and Ecological Risk Assessments

Toxicity factors for chemicals of concern, contaminant characteristics, and standardized risk assessment methodologies used in prior risk assessments for the CAOCs were not individually evaluated for changes over the last five years for the following reasons.

- No new human-health or ecological routes of exposure or receptors have been identified. No changes in previously identified receptors or exposure routes have occurred that could affect the protectiveness of the remedy.
- No new ecological risks or receptors or impacts due to natural disasters have been identified for OU-2 CAOCs or MCAS Yuma in general.
- CAOCs 1, 8A, and 10 were not recommended for remediation based on potential risk to ecological receptors; no threatened or endangered species have been identified for these CAOCs.
- Regulatory agency comments on the Draft LUCIP did not indicate that changes with regard to the evaluation of human-health risk had been identified or needed to be addressed at this time.
- The Final LUCIP provides an institutional control program that requires that ADEQ and U.S. EPA be informed in advance of any proposed changes in land use for the sites and that the effectiveness of the existing institutional controls and the remedy as a whole be reevaluated at that time.
- No indicators of change in land use at CAOCs 1, 8A, and 10 have been identified as a result of interviews, site visits, or document reviews.

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**Section 6 Technical Assessment**

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A preliminary screening of potential human-health risk for exposure to soil at the CAOCs was conducted in order to determine the need for a more extensive evaluation. The rationale and results for this assessment are given in the following discussion.

The human-health risk assessment performed during the RI for soils at CAOCs 1, 8A, and 10 used Arizona HBGLs and U.S. EPA exposure factors to estimate the risk from the surface and shallow subsurface soils. RBCs had been developed to estimate the potential carcinogenic risk using the U.S. EPA exposure factors in 1993. U.S. EPA's dermal exposure factors have since been revised. The HBGLs were derived using the assumption that incidental ingestion of soil contaminants is the only significant exposure pathway at the site. Therefore, the site-specific RBC values are more conservative than the HBGL values. The HBGL values derived by ADEQ for a nonresidential scenario are analogous to values for the anticipated future use industrial/commercial scenario used in the RI to develop the RBC values. If the RBCs were calculated with the 1996 U.S. EPA-approved factors (current at the time the ROD was signed), the RBCs for PAHs (the primary risk drivers in the risk assessment) would be identical to U.S. EPA PRGs. The HBGLs for soil were replaced by promulgated SRLs on 04 December 1997 according to Ariz. Admin. Code tit. 18, ch. 7, Supplement (Supp.) 01-4. The SRLs are predetermined remediation standards for cleanup to residential land-use standards.

Based on this information, the preliminary screening of potential human health risk for the sites consisted of a comparison of the 1996 and 2002 U.S. EPA PRGs for soil in an industrial exposure scenario for all COPCs reported for the three sites. The PRGs are calculated for an excess lifetime cancer risk not exceeding  $10^{-6}$  (the low end of the generally acceptable range for industrial scenario exposure) or a toxic effects HI not exceeding 1.0). A decrease in the PRG of greater than one order of magnitude was determined to be a deciding factor as to whether or not the decrease could indicate that a similar order of magnitude increase in the cancer risk from exposure to the soil could occur. The 2002 PRGs were also compared to the maximum soil concentrations reported for the CAOCs as summarized in the OU-2 ROD (Appendix B6 Tables 2-2 through 2-5). The results of the comparisons are as follows:

- **Metals:** Soil PRGs for cadmium, hexavalent chromium, and lead decreased in the last five years, but not by one order of magnitude. None of the maximum soil concentrations for these COPCs reported from CAOCs 1, 8A, or 10 exceeded the 2002 industrial soil PRG values; only lead at CAOC 8A was within one order of magnitude below the 2002 PRG.
- **Pesticides and PCBs:** Soil PRGs for these organic compounds have only increased in the last five years. This indicates that the potential risk from exposure to the soil concentrations reported for these compounds would likely be estimated at a lower level than in 1996.
- **SVOCs (including PAHs) and Total Petroleum Hydrocarbons:** Naphthalene, a PAH, was the only compound for which the PRGs went up in the last five years; its PRGs rose by less than one order of magnitude. None of the maximum soil concentrations for these COPCs reported from CAOCs 1, 8A, or 10 exceeded the 2002 industrial soil PRG values.

In summary, the preliminary risk screening did not identify conditions suggesting that a more detailed evaluation of potential changes in factors and methods typically used in human-health risk assessment is warranted at this time.

### **6.2.2 Applicable or Relevant and Appropriate Requirements**

No new ARARs have been identified for the OU-2 CAOCs based on review of the federal and state regulations initially evaluated for OU-2 in the FS (UA 1996a) and ROD (UA 1997a). In addition, no new ARARs for institutional controls were identified based on a review of other regulations, requirements, and guidance currently considered by DON during the five-year review process.

However, in July of 2000, subsequent to the signing of the OU-2 ROD, Arizona's Soil Remediation Standards (Ariz. Rev. Stat. §§ 49-151 and 49-152) were amended. These rules were determined to be relevant and appropriate in the OU-2 ROD as chemical-specific requirements for OU-2 remedial actions for soil. The amended rules eliminated the VEMUR and replaced it with a DEUR as the appropriate document for recording a property's environmental land-use restrictions with the state of Arizona (See Arizona Laws 2000, Chapter 225 amending Ariz. Rev. Stat. § 49-152 [Title 49, Chapter 1, Article 4]). This change in requirements has been addressed through the preparation of "modified DEURs" for CAOCs 1, 8A, and 10. These "modified DEURs" were included in the Final LUCIP to replace the VEMUR applications in the Draft (Revision 1) LUCIP previously submitted to the ADEQ for these sites.

In addition, ADEQ's comments on the Draft (Revision 1) LUCIP indicated that no additional regulations would need to be considered, apart from meeting the requirements of Ariz. Rev. Stat. §§ 49-151 and 49-152 for recording for each site environmental use restrictions in DEURs that would "run with the land." The Navy believes that the proposed "modified DEURs" for CAOCs 1, 8A, and 10 in the Final LUCIP satisfy the requirements in the OU-2 ROD for the execution and recordation of LUCs with the state of Arizona and meet the substantive intent of A.R.S 49-152(E). The language in the "modified DEURs" was developed to reflect the fact that they were not "a covenant running with the land" and that "no interest in real property" was being created (see Section 4.1.2 for more information). These "modified DEURs" are needed to provide for registration of the LUCs with the state of Arizona without compromising the Navy's other responsibilities under CERCLA and federal property law

### **6.2.3 Achievement of the RAO**

The RAO to restrict land use and thereby protect potential receptors from health risks that could arise from a change in land use remains valid for the site conditions as identified in this document. The RAO was achieved through the signing of the OU-2 ROD as the MCAS Yuma Environmental Department subsequently began to include institutional controls in review of plans for site development, permits, and station activities. The implementation of the remedy also included the formal inclusion of the institutional controls for OU-2 in the 2001 MCAS Yuma Master Plan, the 2002 Final LUCIP, and the 2002 MCAS Yuma Station Order 5090. In addition, to fulfill the requirement of site

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**Section 6 Technical Assessment**

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registration with the state of Arizona, as specified in the OU-2 ROD, the Navy has proposed “modified DEURs” for CAOCs 1, 8A, and 10 in the Final LUCIP.

### **6.3 QUESTION C**

**Has any other information come to light that could call into question the protectiveness of the remedy? No.**

No additional information has been found that suggests that the institutional controls for OU-2 CAOCs 1, 8A, and 10 as currently defined in the Final LUCIP (SWDIV 2002) may not be protective as the selected remedy, so long as activities performed in the site areas remain the same.

The prior history of CAOCs 8A and 10 as locations of a former skeet range, the Tower Trap Range, and Moving Target Range was known during the RI. Contaminants in surface soil the CAOCs were evaluated through soil sample analysis and risk assessment, and the results have been reported in the RI and FS Reports and OU-2 ROD. The range assessments for closure of these portions of the CAOCs are not expected to provide additional data that would provide cause for a reevaluation of the protectiveness of the remedy selected for these two OU-2 CAOCs. However, activities proposed for these CAOCs will have to be evaluated by the MCAS Yuma Environmental Department and may be postponed until assessment for the former military ranges can be completed and final closure is achieved.

Ordnance and munitions storage in bunkers within the footprint of CAOC 8A are consistent with the institutional controls provided activities that may disturb the ground surface and the landfill contents are not conducted in that part of the facility. Ordnance storage in the east end of the ODF is expected to be transferred to the west end of the ODF in the next few years as a part of CALA relocation. However, additional details on the proposed MWSS-371 Tactical Parking Apron and CALA Phase 2/3 construction indicate the efforts may include demolition and removal of ordnance storage bunkers and their foundations in the eastern half of the ODF, within the footprint of CAOC 8A. This activity and others related to construction in the area will have to be evaluated against the institutional controls in order to determine whether it will compromise the protectiveness of the remedy for CAOC 8A, and if so, for how long. Prior to this activity, the proposed work must be coordinated with the MCAS Yuma Environmental Department and evaluated in consultation with the ADEQ and U.S. EPA, as required in other controls in the ROD and Final LUCIP. The former landfill cells did not extend to this portion of CAOC 8A. Under these circumstances, it is anticipated that the proposed demolition will be considered consistent with the institutional controls for that part of the site, and demolition work specifications will be developed and implemented to ensure protection of human health during the demolition period. It is also anticipated that, once the demolition effort is completed, future land use for the site will remain industrial and be in compliance with the institutional controls for the site.

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**Section 7**  
**ISSUES, RECOMMENDATIONS, AND FOLLOW-UP ACTIONS**

This section discusses issues, recommendations, and follow-up actions in tabular form.

**7.1 ISSUES**

Table 7-1 identifies the site operations, conditions, or activities that may currently prevent the remedy from being protective, or may prevent it from being protective in the future.

**Table 7-1**  
**Issues**

<b>Issues</b>	<b>Affects Current Protectiveness (Yes/No)</b>	<b>Affects Future Protectiveness (Yes/No)</b>
1) Although previous documentation referred to CAOC 8A as “a former landfill/surface disposal area”, further document review has revealed that this area, in part, is within the ODF and has been used for ordnance storage prior to and since the signing of the OU-2 ROD.	No	No

Acronyms/Abbreviations:

- CAOC – Comprehensive Environmental Response, Compensation, and Liability Act area of concern
- CERCLA – Comprehensive Environmental Response, Compensation and Liability Act
- DEUR – Declaration of Environmental Use Restrictions
- GSA – General Services Administration
- LUCIP – Land-Use Control Implementation Plan
- MCAS – Marine Corps Air Station
- ODF – Ordnance Distribution Facility
- OU – operable unit
- ROD – Record of Decision

## 7.2 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Table 7-2 summarizes the recommendations made to address the issues identified for OU-2 CAOCs 1, 8A, and 10 in Table 7-1.

**Table 7-2  
Recommendations and Follow-up Actions**

Issue No.	Recommendations and Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness (Yes/No)	
					Current	Future
1	Any future documents will clearly specify the part of CAOC 8A within the ODF fence line, the land use, and the location of the former disposal areas. MCAS Yuma Environmental Department will review site activities and assure land-use restrictions are maintained.	SWDIV	DON	Review signing date	No	No

**Acronyms/Abbreviations:**

ADEQ – Arizona Department of Environmental Quality  
CAOC – Comprehensive Environmental Response, Compensation, and Liability Act area of concern  
DEUR – Declaration of Environmental Use Restrictions  
DON – Department of the Navy  
LUCIP – Land-Use Control Implementation Plan  
MCAS – Marine Corps Air Station  
ODF – Ordnance Distribution Facility  
SWDIV – Southwest Division Naval Facilities Engineering Command

## Section 8

# PROTECTIVENESS STATEMENT

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The remedy at OU-2 is currently and will continue to be protective of human health and the environment because exposure pathways that may result in unacceptable risks are being controlled as follows:

- 1) Institutional controls are in place to restrict exposure to contaminants in soil at CAOCs 1, 8A, and 10 through MCAS Yuma Station Order 5090 (issued on January 10, 2002). This order formally directed tenants and contractors to incorporate the LUCs provided in the MCAS Yuma Master Plan and the Final LUCIP into their existing land-use planning and management programs.
- 2) The “modified DEURs” for CAOCs 1, 8A, and 10 satisfy the requirements specified in the OU-2 ROD for registration of the sites with the state of Arizona.
- 3) The MCAS Yuma Environmental Department will continue to review and coordinate all plans for future activities at CAOCs 1, 8A, and 10, in consultation with U.S. EPA and ADEQ as necessary, to ensure continued compatibility with the land-use restrictions specified in the OU-2 ROD.

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**Section 9**  
**NEXT REVIEW**

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The next five-year review for MCAS Yuma OU-2 will be due five years from the date on which this document is signed. Consecutive five-year reviews will be required for OU-2 as long as site soil conditions remain that do not allow for unlimited use and unrestricted exposure.

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## Section 10

# REFERENCES

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- Kawasaki, Theilacker, Ueno and Associates. 2001. MCAS Yuma Masterplan, Marine Corps Air Station Yuma, Arizona. September.
- KTUA. *See* Kawasaki, Theilacker, Ueno and Associates.
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- . 2002. Final Land-Use Control Implementation Plan, Marine Corps Air Station Yuma, Arizona, Operable Unit-1 (Areas 1, 2, 3, and 6), Operable Unit-2 (Areas 1, 8A, and 10), FFAAP Area of Concern A, and Conditional Closure of Former Underground Storage Tanks at the Former Exchange Gas Station. 23 September.
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- . 2001b. Monthly Progress Memorandum – December 2001, Vertical Circulation Treatment System, Area 1 Leading Edge Plume Area (LEPA), MCAS Yuma, Arizona. 11 January.
  - . 2002a. Monthly Progress Memorandum – March 2002, Air Sparge/Soil Vapor Extraction System, Area 1 Hot Spot, MCAS Yuma, Arizona. 15 April.
  - . 2002b. Monthly Progress Memorandum – March 2002, Vertical Circulation Treatment System, Area 1 Leading Edge Plume Area (LEPA), MCAS Yuma, Arizona. 15 April.
- UA. *See* Uribe & Associates.
- United States Department of Defense. 2000. Interim Policy on Land Use Controls Associated With Environmental Restoration Activities. Memorandum (as amended). 31 August.
- Uribe & Associates. 1996a. Feasibility Study for Operable Unit 2 at Marine Corps Air Station, Yuma, Arizona. December.
- . 1996b. Report of Soil Sampling Program for Polycyclic Aromatic Hydrocarbons at CAOC 10, Operable Unit 2, Marine Corps Air Station Yuma, Arizona. August.
  - . 1997a. Final Record of Decision for Operable Unit 2, Marine Corps Air Station, Yuma, Arizona. August (signed 12 December 1997).
  - . 1997b. Report of Supplemental Soil Sampling Program for Polycyclic Aromatic Hydrocarbons at CAOC 10, Operable Unit 2, Marine Corps Air Station Yuma, Arizona. February.
- U.S. EPA. *See* United States Environmental Protection Agency.

## **APPENDIX A**

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### **DOCUMENTS REVIEWED**

## Appendix A

# DOCUMENTS REVIEWED

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- Bechtel National, Inc. 2001a. MCAS Yuma Operable Unit-1 Long-Term Monitoring Plan for Groundwater. May.
- . 2001b. Contact Report: Meeting with Mike Cornell and Dan Goodman (SWDIV); Noori Alavi (IT Group) and Bechtel National, Inc. (BNI). March 21.
- Federal Facilities Agreement. 1991. FFA Under CERCLA Section 120. Signed by U.S. EPA, Region 9; State of Arizona; and the United States Department of the Navy. August.
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- . 2002b. Monthly Progress Memorandum – March 2002, Air Sparge/Soil Vapor Extraction System, Area 1 Hot Spot, MCAS Yuma, Arizona. 15 April.
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- . 1996b. Feasibility Study for Operable Unit 2 at Marine Corps Air Station, Yuma, Arizona. December.

- . 1997a. Report of Supplemental Soil Sampling Program for Polycyclic Aromatic Hydrocarbons at CAOC 10, Operable Unit 2, Marine Corps Air Station Yuma, Arizona. February.
- . 1997b. Final Record of Decision for Operable Unit 2, Marine Corps Air Station, Yuma, Arizona. August (signed 12 December 1997).

## **APPENDIX B**

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### **DOCUMENTATION REGARDING REMEDY PERFORMANCE**

## **APPENDIX B1**

### **CHEMICALS OF POTENTIAL CONCERN FOR OU-2**

Table 2-1: Chemicals of Potential Concern (COPC) for OU2

<p><b><u>Petroleum Products</u></b>                      TPH-Diesel                      TPH-Gasoline</p>	<p><b><u>Semivolatile Organics</u></b>                      (Cont'd.)                      Benzo(b)fluoranthene                      Benzo(k)fluoranthene                      Benzo(a)pyrene                      Indeno(1,2,3-cd)pyrene                      Dibenz(a,h)anthracene                      Benzo(g,h,i)perylene                      2-Nitroaniline                      Hydroquinone                      Xylyl bromide**                      Ethyl iodoacetate**                      Chloroacetophenone**                      Bromobenzyl cyanide**</p>	<p><b><u>Herbicides</u></b>                      2,4-D                      Dalapon                      2,4-DB                      Dicamba                      Dichlorprop                      Dinoseb                      MCPA                      MCPP                      2,4,5-T                      2,4,5-TP</p>
<p><b><u>Volatile Organics</u></b>                      Benzene                      Toluene                      Ethyl benzene                      Xylene (Total)                      2-Butanone                      4-Methyl-2-pentanone                      Carbon tetrachloride                      Methylene chloride                      Trichloroethene (TCE)                      1,1,2,2-Tetrachloroethane                      1,1,1-Trichloroethane                      Tetrachloroethene (PCE)                      Chlorotrifluoromethane**                      1,1,2-Trichloro-1,2,2-trifluoroethane                      Methyl tert-butyl ether</p>	<p><b><u>Pesticides and PCBs</u></b>                      alpha-Chlordane                      gamma-Chlordane                      Aroclor-1016                      Aroclor-1221                      Aroclor-1232                      Aroclor-1242                      Aroclor-1248                      Aroclor-1254                      Aroclor-1260</p>	<p><b><u>Miscellaneous Organics</u></b>                      Ethylene glycol                      Lead (Organic)</p>
<p><b><u>Semivolatile Organics</u></b>                      Naphthalene                      2-Methylnaphthalene                      Acenaphthene                      Acenaphthylene                      Fluorene                      Phenanthrene                      Anthracene                      Fluoranthene                      Pyrene                      Benzo(a)anthracene                      Chrysene</p>	<p><b><u>Organophosphorus</u></b>  <b><u>Pesticides</u></b>                      Chlorpyrifos                      Diazinon                      Dichlorvos                      Dimethoate                      Malathion</p>	<p><b><u>Inorganics</u></b>                      Aluminum                      Arsenic                      Barium                      Cadmium                      Chromium (total)                      Chromium (hexavalent)                      Lead                      Radium+                      Silver                      Vanadium                      Zinc                      Cyanide                      Asbestos</p>

\*\* These analytes were only sought as tentatively identified compounds.  
 + Radium was included only in the on-site analytical program for CAOC 11.

## **APPENDIX B2**

**MCAS YUMA STATION ORDER 5090**



UNITED STATES MARINE CORPS  
 MARINE CORPS AIR STATION  
 BOX 99100  
 YUMA, ARIZONA 85389-9100

*[Redacted]*, Gil  
 C. H. C., 821  
 Fred

StaO 5090  
 ENVO  
 10 JAN 2002

RECEIVED

2002 JAN 16 P 7: 28'

ENVIRONMENTAL  
 YUM/

STATION ORDER 5090

From: Commanding Officer, Marine Corps Air Station Yuma, AZ  
 To: Distribution List

Subj: LAND USE CONTROLS

Ref: (a) MCO P5090.2A  
 (b) Land Use Control Implementation Plan

Encl: (1) Operable Unit-1 LUC Map  
 (2) Operable Unit-2 LUC Map  
 (3) Tenant List

1. Situation. The Navy and Marine Corps conduct several environmental cleanups on MCAS Yuma. To protect these cleanups and those who may come in contact with these cleanups, implementing land use controls, (LUCs), is sometimes necessary. LUCs include any type of physical, legal, or administrative mechanism restricting the use of, or limiting access to, environmental cleanup areas.

2. Mission. To implement land use controls necessary to protect human health and the environment as per the references.

3. Execution

a. Commander's Intent and Concept of Operations

(1) Commander's Intent

- (a) Prevent unauthorized groundwater use.
- (b) Prevent unauthorized land use.
- (c) Protect environmental cleanup areas.
- (d) Protect environmental cleanup facilities and equipment.

(2) Concept of Operations

(a) MCAS Yuma shall incorporate, as applicable, all cleanup area LUCs into its existing land-use planning and management systems. The system includes the site approval process for reviewing and approving all new construction and land-use changes.

(b) All groundwater use from the designated contaminated groundwater plume is prohibited.

(c) Before the end of each calendar year, each of the tenants listed in Enclosure (3) will give the MCAS Yuma Environmental Department a written description of their compliance with the groundwater use prohibition described above.

(d) MCAS Yuma and the tenants listed in Enclosure (3) will not damage or interfere with groundwater monitoring wells, remedial treatment systems, and/or sampling. Reasonable access to monitoring wells, remedial treatment systems, and sampling efforts will be permitted only for authorized MCAS Yuma personnel and contractors for sampling, operating, inspecting and maintaining monitoring wells and remediation systems. Reasonable access includes the use and/or transportation of equipment, including trucks, small loaders, and drill rigs.

(e) The tenants listed in Enclosure (3) will, within 5 working days of discovery, give the MCAS Yuma Environmental Department a written notice of failures to comply with the LUCs described in the preceding paragraphs.

b. Subordinate Element Missions

(1) MCAS Yuma Environmental Director is responsible for the implementation of this Order.

(2) MCAS Yuma Environmental Department is the point-of-contact for LUC matters to include compliance with this Order.

(3) MCAS Yuma tenants, the tenants in Enclosure (3), and future contractors conducting business, will comply with cleanup area LUCs.

c. Coordinating Instructions

(1) MCAS Yuma and the tenants in Enclosure (3) are responsible for compliance with this Order. (Note: This Order does not establish LUCs.)

(2) Enclosures (1) and (2) depict MCAS Yuma cleanup areas, and MCAS Yuma's Land Use Control Implementation Plan (LUCIP). Reference (b) identifies and describes cleanup area LUCs.

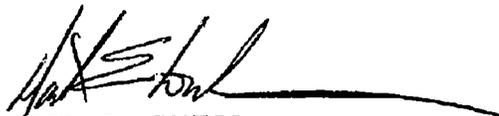
4. Administration and Logistics. This order is new and should be reviewed in its entirety.

5. Command and Signal

a. Signal. This Order is effective the date signed

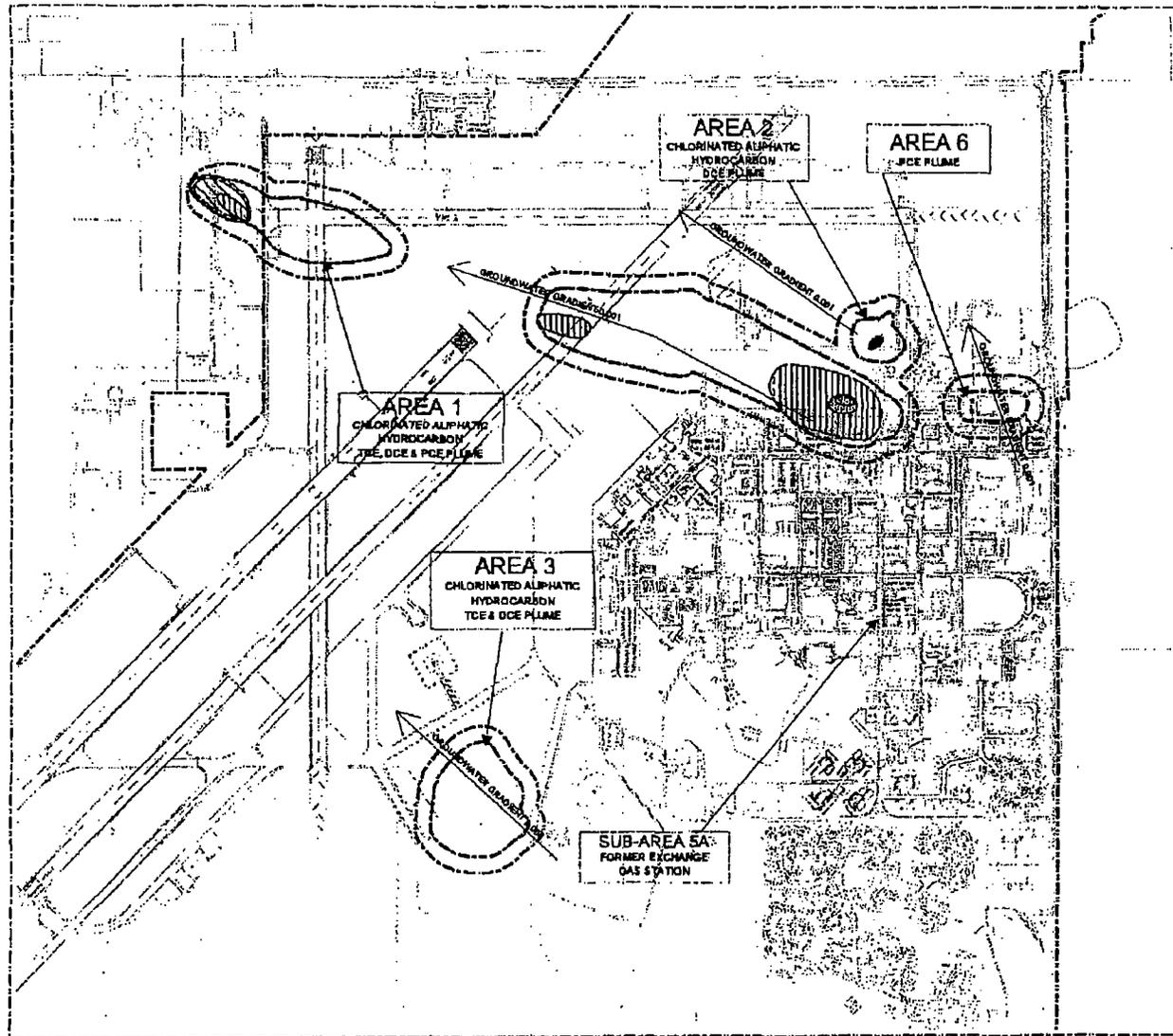
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10 JAN 2002

b. Command. This order is applicable to MCAS Yuma and the tenants listed in Enclosure (3).



MARK E. CONDRA

DISTRIBUTION: A



**MCAS YUMA MASTER PLAN**

**MCAS Yuma Groundwater (DU1) Areas of Concern**

- MCAS Yuma Boundary
- Estimated extent of TCE and DCE in groundwater (shallow aquifer - screen 50-80 feet BGS) Greater than 5ug/L (October through December 2000) Contour intervals prepared for TCE only (Area 1 plume).
- Estimated extent of TCE and DCE in groundwater (Deep aquifer - screen 100-110 and 130-140 ft BGS) Greater than 5ug/L (October through December 2000). Contour intervals prepared for TCE only (Area 1 plume).
- Approximate area cleaned by VCT pilot test during July 1998 through January 2000
- Approximate boundary of groundwater area impacted by chlorinated hydrocarbons. Designated by Jacobs (1995) and DIRM (1998). Dashed where uncertain.
- Outer limit of area requiring land-use controls. 150 foot wide buffer zone to prevent potential future ground-water withdrawal from drawing in contaminated groundwater.
- Estimated extent of 1,1-DCE greater than 7ug/L in groundwater (December 2000) (Area 2 plume).

**Institutional Controls**

Land Use Controls (LUCs) will be implemented throughout the duration of the remedial actions to restrict the use of contaminated groundwater. LUCs are not required for soil excavations for utility trenches or building construction.

MCAS Yuma tenants and assigned organizations will comply with all of the LUCs in force at MCAS Yuma.

MCAS Yuma tenants and assigned organizations will not use contaminated groundwater underlying the designated plume areas for any purpose including, but not limited to, drinking water, irrigation, its control, dust control or any other activity.

No later than 31 December of each year, MCAS Yuma tenants and assigned organizations will provide a written report to the MCAS Yuma Environmental Department describing compliance with prohibition of the use of groundwater underlying designated plume areas.

MCAS Yuma tenants and assigned organizations will not damage or interfere in any way with groundwater monitoring wells, remedial treatment systems, and sampling efforts. Flag all monitoring wells and locate all underground pipes and electrical lines within 100 feet of the proposed project area and take precautions to ensure that wells and underground systems are not damaged or destroyed.

Access to monitoring wells, remedial treatment systems, and sampling efforts will be permitted MCAS Yuma Environmental Department personnel and their contractors, as well as regulatory personnel, to conduct sampling and maintenance.

Within five working days of discovery, MCAS Yuma tenants and assigned organizations will provide the MCAS Yuma Environmental Department with written notice of failure to comply with the LUCs.

Well and remedial system abandonment will require the approval of the MCAS Yuma Environmental Department, the Environmental Protection Agency, and the Arizona Department of Environmental Quality.

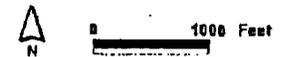
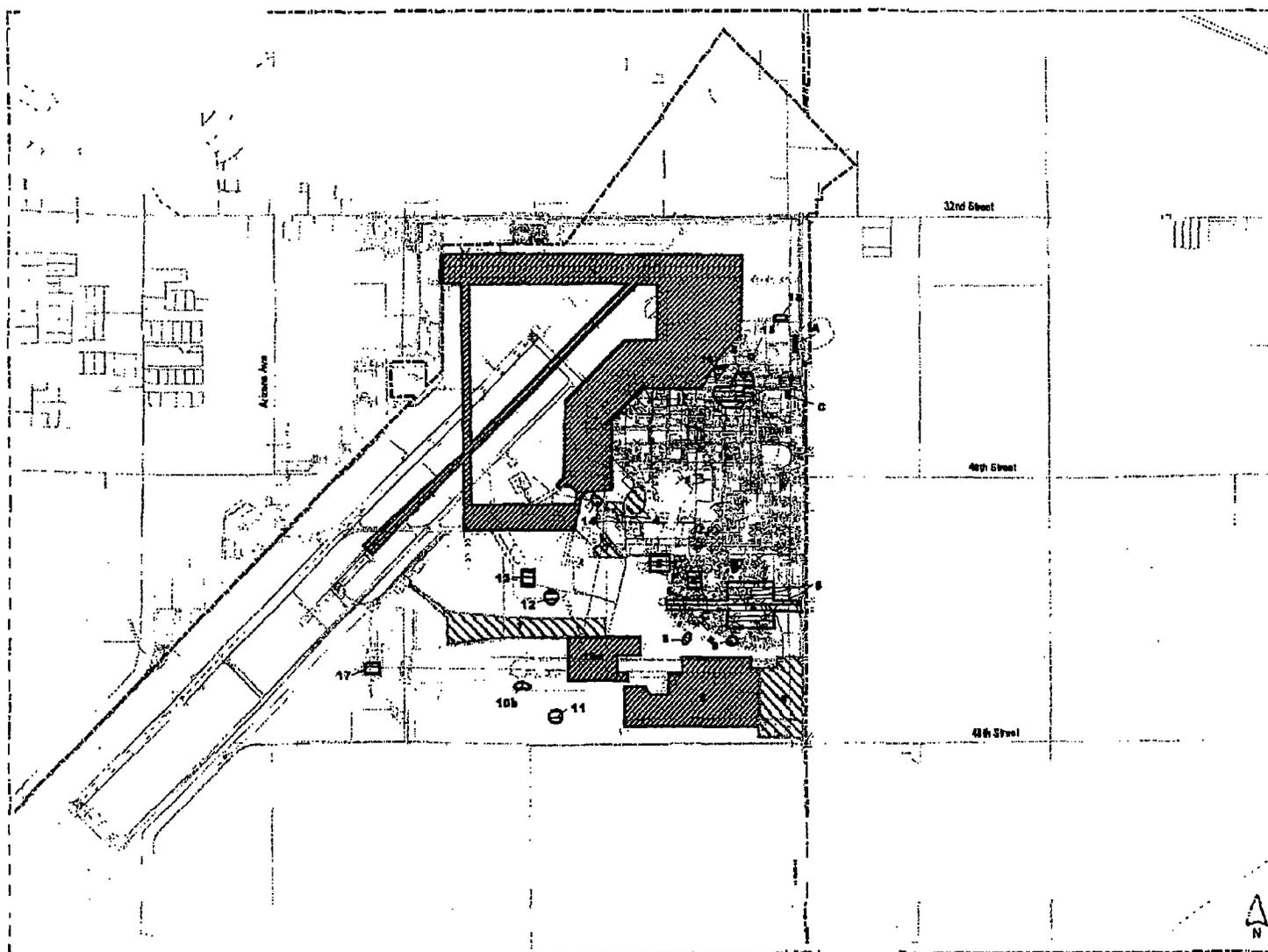


Figure 5-17

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Man Made Conditions - MCAS Yuma



**MCAS YUMA MASTER PLAN**

**MCAS Yuma  
 Soil (OU2) Contamination  
 Areas of Concern Exhibit**

MCAS Yuma Boundary

- Soil Contamination Areas
- Institutional Control Areas (Industrial Use Only)
  - No Further Action Areas
  - Removal Action Areas

**CERCLA Areas of Concern**

1. Flight Line
2. Shops Area
3. Auto Hobby Shop
4. Radar HW Landfill
5. Light AA Missile Battery Compound
6. First Sewage Lagoon
7. Fire School Area
8. Southeast Station Landfill
9. Southeast Sewage Lagoon
10. Ordnance Munition Disposal Area
11. Radionuclide Disposal Pipe
12. Tear Gas Burial Area
13. Drain Field Area
14. Drain Field Area South of Bldg. 97
15. Fuel Farm USTs No. 363 and No. 364
16. Bldg 230, Hazardous Waste Tanks No. 2 and No. 4
17. Hazardous Waste UST 1708, No. 3
18. O/M Drum Storage Area

**FFAAP Areas of Concern**

- A. Bldg 326 Drum Storage Area
- B. Transformer Storage Yard
- C. Former Bldg 808, Pest Control Shop
- D. Bldg 852 Battery Shop
- E. Bldg 852 Hydraulic Lift Sump

2000 Feet

Figure 5-18

TENANT COMMANDS

H&HS  
MAWTS-1  
MAG-13  
MALS-13  
VMA-211  
VMA-214  
VMA-311  
VMA-513  
MWSS-371  
MACS-1  
VMFT-401  
CSSD-16

OTHER

MCCS (Marine Corps Community Services)  
FMD (Facilities Management Department)  
ROICC (Resident Officer in Charge of Construction)  
BMC (Branch Medical/Dental Clinic)  
YCAA (Yuma county Airport Authority)

CURRENT CONTRACTORS

RAYTHEON AEROSPACE  
TERRA VAC  
SIKORSKY SUPPORT SYSTEMS INC  
BOEING  
MAYTAG SERVICE  
MAYBERRY  
SUBURBAN SANITATION

## **APPENDIX B3**

**DEUR FOR CAOC 1**

**DECLARATION OF ENVIRONMENTAL USE RESTRICTION  
FOR REAL PROPERTIES REMEDIATING CONTAMINATED SOIL TO  
NONRESIDENTIAL USES WITHOUT THE USE OF EITHER AN INSTITUTIONAL  
CONTROL OR ENGINEERING CONTROL  
UNDER A.R.S. § 49-152**

When recorded, return to:

Naval Facilities Engineering Command  
Southwest Division Real Estate Department Contracting Officer  
1220 Pacific Highway, San Diego, CA 92132

DECLARATION OF ENVIRONMENTAL USE RESTRICTION

This Declaration of Environmental Use Restriction ("Declaration") is executed and Recorded by Karen P. Ringel, Naval Facilities Real Estate Department Contracting Officer.

**RECITALS**

- A. Environmental contaminants are present on real property located at SW Corner of the intersection of Avenue 3E & 32<sup>nd</sup> St. M.C.A.S. Yuma, AZ, Exhibit 2
- B. Owner holds legal and equitable title to the Property. Owner's deed setting forth the legal description of the property is attached and marked "Exhibit 1." The location of the Property is shown by the Map attached and marked "Exhibit 2." The Property's tax Parcel Number is 104-03-07, 104-03-08, 105-01-1A & 105-45-22A.
- C. In order to comply with A.R.S. § 49-152 (A), Owner has elected to remediate (All) / a portion (**circle one**) of the property to nonresidential uses.
- D. Owner intends this Declaration to satisfy the requirements of A.R.S. § 49-152 (B).
- E. Owner shall promptly record this Declaration in the office of the County Recorder of each county where the Property is located.

**DECLARATION**

Owner covenants and agrees as follows:

1. Recitals. The Recitals and Exhibits are a material part of this Declaration.
2. Warranty of Title. Owner is the only owner of and holds equitable and legal title To the Property. Owner has authority to execute and record this Declaration.
3. Legal Description. The legal description of the area of the Property that Owner Shall restrict to nonresidential use is: ***As shown on Exhibit 1***

A map depicting the location of the area of the Property restricted to nonresidential use is Attached and marked "Exhibit 2."

4. Completion of Remediation. Remediation of the following environmental Contaminants on the area of the Property subject to this Declaration was complete on 12-02-1997:

The results of the investigation did not reveal significant soil contamination in the areas of the specific units included in the RI.

Chemical evaluated in the human health risk assessment included polyaromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), pesticides, and metal arsenic, beryllium, and cadmium, which exceeded their respective local background values.

For a commercial/industrial exposure scenario, the estimated excess cancer risk for CAOC 1 is  $6.48 \times 10^{-5}$ . The Hazard Index (HI) value (a measure of potential noncancer effects) for the commercial/industrial exposure scenario is 1.86, which is primarily attributed to metals, exceeds the acceptable criterion of 1.0. However, none of the target organs/organ systems HI values exceed the acceptable criterion of 1.0. The human health risk assessment showed that the soils within the upper 10 feet at CAOC 1 do not pose an unacceptable (acceptable range of excess cancer risk is  $10^{-6}$  to  $10^{-4}$ ) risk to human health under the commercial/industrial use scenario, which coincides with the current use of CAOC. For a residential exposure scenario, the calculated excess lifetime risk is  $2.19 \times 10^{-4}$ . The excess lifetime cancer risk at CAOC 1 is greater than the acceptable range for an unrestricted residential use scenario.

The date when such remediation was completed was 12-2-1997.

More detailed information on the remediation is maintained and available at the Arizona Department of Environmental Quality (Department) located at 3033 North Central Avenue, Phoenix, Arizona 85012.

5. Covenant Running With the Land. The State of Arizona and the Owner agree that no interest in real property on behalf of the State of Arizona shall be created by this agreement or by any cancellation of this agreement pursuant to §49-152, Arizona Revised Statutes. The signature of an authorized representative of the Arizona Department of Environmental Quality (ADEQ) which appears herein, acknowledges that the remediation of the property was conducted in accordance with the provisions of §49-152, A.R.S.

The undersigned voluntarily agrees, for itself only and not as a covenant running with the land, to limit and restrict the use of the remediated portion of the property to nonresidential uses, as defined in § 49-151, subsection A, A.R.S.

6. Copies to Local Jurisdictions. The Department shall provide a copy of this Declaration to each local jurisdiction having zoning and development plan approval for the Property.

7. Release of this Declaration. Within sixty (60) days of Owner's Written request that this Declaration be released, the Department shall determine whether release of this Declaration is appropriate according to the requirements established in A.R.S. § 49-152 ©. If the Department determines that the release of this Declaration is appropriate according to the requirement determines in A.R.S. § 49-152 ©, the Department shall record in the office of the county record of each county where the Property is located a notice releasing this Declaration.

\_\_\_\_\_  
Owner (state full name),

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(current address of Owner)

This Declaration of Environmental Use Restriction was subscribed and sworn

To before me this \_\_\_\_\_ day of \_\_\_\_\_, 2002 by:

\_\_\_\_\_  
(state full name and legal status of Owner).

\_\_\_\_\_  
Notary Public

My commission expires:

\_\_\_\_\_

This Declaration of Environmental Use Restriction is approved this \_\_\_\_\_ day of \_\_\_\_\_, 2002 by the Arizona Department of Environmental Quality.

ARIZONA DEPARTMENT OF  
ENVIRONMENTAL QUALITY,  
An agency of the State of Arizona,

By \_\_\_\_\_  
(signature of ADEQ's authorized agent)

Name \_\_\_\_\_  
(print name of the authorized agent)

Its \_\_\_\_\_  
(state person's official title)

This Declaration of Environmental Use Restriction was subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 2002 by:

\_\_\_\_\_  
(state full name and title of ADEQ's agent).

\_\_\_\_\_  
Notary Public

My commission expires: \_\_\_\_\_

EXHIBIT 1

VEMUR LEGAL DESCRIPTION  
OF  
HAZARDOUS SPILL AREA 1  
FOR  
MARINE CORPS AIR STATION, YUMA, AZ.

A portion of Sections 10, 11, 14 and 15 (Sec's. 10,11,14,15) of Township Nine South (T9S), Range 23 West (R23W) of the Gila and Salt River Base and Meridian (G&SRB&M), Yuma County, Arizona and more particularly described as follows:

Commencing at the Southeast corner of said Sec. 14; thence S89°47'17"W along the south line of the Southeast Quarter (SE¼) of said Sec. 14 and an extension thereof a distance of 6,476.86 feet; thence N45°37'28"W a distance of 4,322.11 feet to the TRUE POINT OF BEGINNING; thence continuing N45°37'28"W a distance of 150.10 feet; thence N44°33'17"E a distance of 3,806.53 feet; thence N00°30'42"W a distance of 3,390.22 feet; thence S89°32'08"W a distance of 274.39 feet; thence N00°15'18"W a distance of 600.00 feet; thence N89°32'28"E a distance of 5,987.08 feet; thence S00°42'26"E a distance of 900.75 feet; thence S89°28'15"W a distance of 62.54 feet; thence S01°14'45"E a distance of 800.00 feet; thence S53°17'18"W a distance of 1,547.57 feet; thence S80°55'30"W a distance of 763.96 feet; thence S38°37'13"W a distance of 1,109.30 feet; thence S00°38'33"E a distance of 266.13 feet; thence S03°24'17"W a distance of 943.43 feet; thence S89°57'09"W a distance of 452.87 feet; thence S13°35'25"W a distance of 743.36 feet; thence S89°43'28"W a distance of 2,268.40 feet; thence N00°20'05"W a distance of 1,306.22 feet; thence S44°33'45"W a distance of 3,655.29 feet to the TRUE POINT OF BEGINNING The area described above contains 540.91 acres more or less.

July 8, 1999  
Revised July 23, 1999  
Revised November 10, 2009

Prepared by:  
Don Esterson Engineers, Inc.  
1636-A E. 20<sup>th</sup> Street  
Yuma, AZ 85365

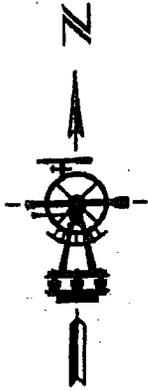
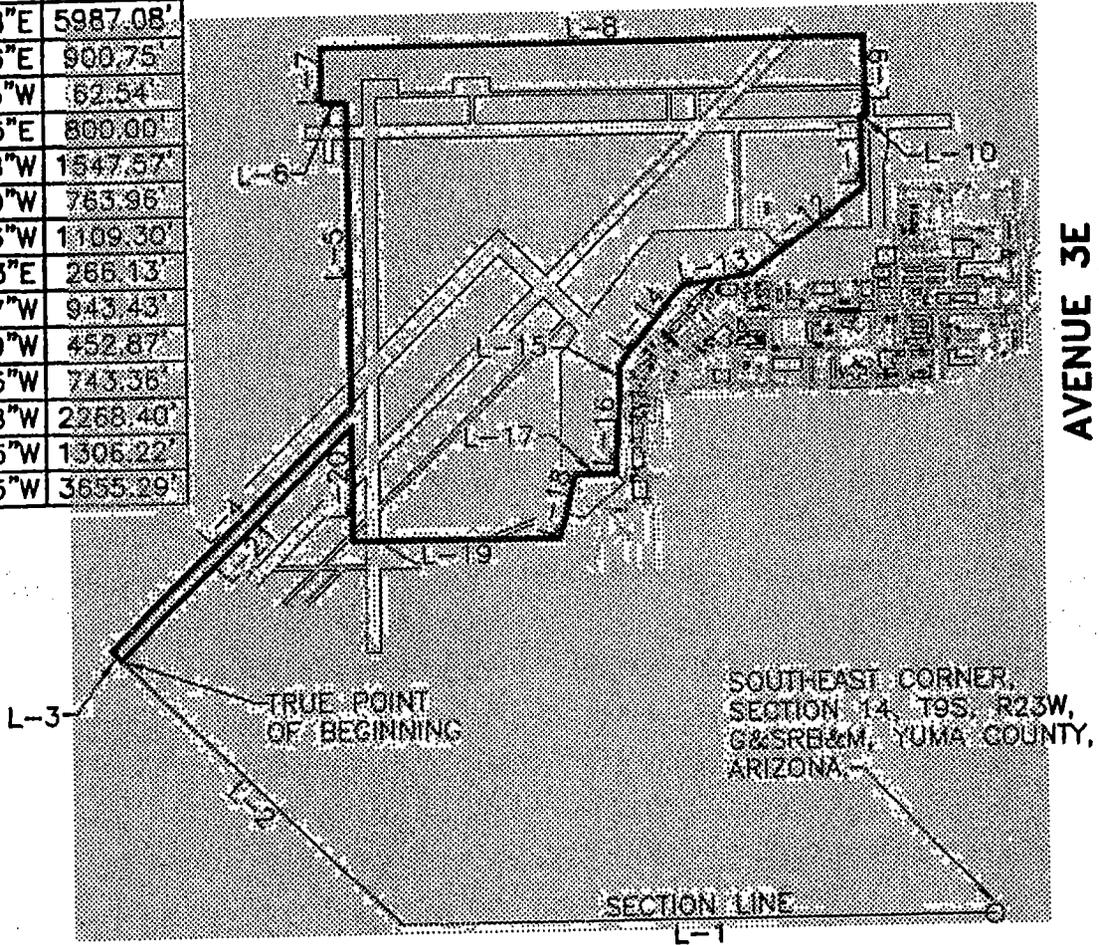


# EXHIBIT 2

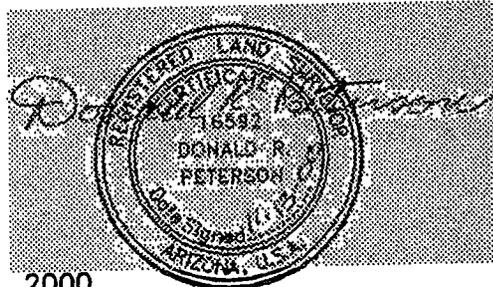
LINE DATA		
L-NO.	BEARING	DISTANCE
L-1	S89°47'17"W	6476.86'
L-2	N45°37'28"W	4322.11'
L-3	N45°37'28"W	150.10'
L-4	N44°33'17"E	3806.53'
L-5	N00°30'42"W	3390.22'
L-6	S89°32'08"W	274.39'
L-7	N00°15'18"W	600.00'
L-8	N89°32'28"E	5987.08'
L-9	S00°42'26"E	900.75'
L-10	S89°28'15"W	62.54'
L-11	S01°14'45"E	800.00'
L-12	S53°17'18"W	1547.57'
L-13	S80°55'30"W	763.96'
L-14	S38°37'13"W	1109.30'
L-15	S00°38'33"E	266.13'
L-16	S03°24'17"W	943.43'
L-17	S89°57'09"W	452.87'
L-18	S13°35'25"W	743.36'
L-19	S89°43'28"W	2268.40'
L-20	N00°20'05"W	1306.22'
L-21	S44°33'45"W	3655.29'

32nd STREET

AVENUE 3E



SCALE: 1"=2000'



REVISED NOV., 2000

## HAZARDOUS SPILL AREA 1

MCAS, YUMA, ARIZONA



don peterson engineers, inc.

1638A E. 20th Street Yuma, Arizona 85365 (520) 783-7885

## **APPENDIX B4**

**DEUR FOR CAOC 8A**

**DECLARATION OF ENVIRONMENTAL USE RESTRICTION  
FOR REAL PROPERTIES REMEDATING CONTAMINATED SOIL TO  
NONRESIDENTIAL USES WITHOUT THE USE OF EITHER AN INSTITUTIONAL  
CONTROL OR ENGINEERING CONTROL  
UNDER A.R.S. § 49-152**

When recorded, return to:  
Naval Facilities Engineering Command  
Southwest Division Real Estate Department Contracting Officer  
1220 Pacific Highway, San Diego, CA 92132

DECLARATION OF ENVIRONMENTAL USE RESTRICTION

This Declaration of Environmental Use Restriction ("Declaration") is executed and Recorded by Karen P. Ringel, Naval Facilities Real Estate Department Contracting Officer.

**RECITALS**

A. Environmental contaminants are present on real property located at NW Corner of the intersection of Avenue 3E & 48<sup>th</sup> St. (Co. 13<sup>th</sup> St.) M.C.A.S. Yuma, AZ, Exhibit 2

B. Owner holds legal and equitable title to the Property. Owner's deed setting forth The legal description of the property is attached and marked "Exhibit 1." The location of the Property is shown by the Map attached and marked "Exhibit 2." The Property's tax Parcel Number is 104-01-01.

C. In order to comply with A.R.S. § 49-152 (A), Owner has elected to remediate **[All]** / a portion (**circle one**) of the property to nonresidential uses.

D. Owner intends this Declaration to satisfy the requirements of A.R.S. § 49-152 (B).

E. Owner shall promptly record this Declaration in the office of the county Recorder of each county where the Property is located.

**DECLARATION**

Owner covenants and agrees as follows:

1. Recitals. The Recitals and Exhibits are a material part of this Declaration.
2. Warranty of Title. Owner is the only owner of and holds equitable and legal title To the Property. Owner has authority to execute and record this Declaration.
3. Legal Description. The legal description of the area of the Property that Owner Shall restrict to nonresidential use is: ***As shown on Exhibit 1***

A map depicting the location of the area of the Property restricted to nonresidential use is Attached and marked "Exhibit 2."

4. Completion of Remediation. Remediation of the following environmental Contaminants on the area of the Property subject to this Declaration was complete on 12-02-1997:

The primary findings of the field surface sampling and analysis program were the detection of residual total recoverable petroleum hydrocarbons (TRPH), PAHs, PCBs, and metal in surface soil. These contaminants were generally found in CAOC 8A.

For the human health risk assessment, CAOC 8 was subdivided into two sub-units. The portion of CAOC 8 south of North Ordinance Road was designated CAOC 8A, Landfill/Surface Disposal Area. The portion of CAOC 8 North Ordinance Road and within the MCAS Yuma housing area was designated CAOC 8B, Residential Housing Area. Health risks in CAOC 8B were considered to be acceptable.

For the CAOC 8A Landfill/Surface Disposal Area, health hazards were evaluated using residential, current land use, and future capped condition exposure scenarios. The results of the residential exposure scenario indicates that the calculated excess cancer risk is  $9.94 \times 10^{-5}$ , which is at the upper end of the acceptable range of risk ( $10^{-6}$  to  $10^{-4}$ ), as defined by the EPA. The HI value for residential exposure at CAOC 8A is 0.35. For a commercial/industrial exposure scenario, the excess cancer risk is  $3.02 \times 10^{-5}$  and the HI value is 0.41.

More detailed information on the remediation is maintained and available at the Arizona Department of Environmental Quality (Department) located at 3033 North Central Avenue, Phoenix, Arizona 85012.

The date when such remediation was completed was: 12-02-1997.

5. Covenant Running With the Land. The State of Arizona and the Owner agree that no interest in real property on behalf of the State of Arizona shall be created by this agreement or by any cancellation of this agreement pursuant to §49-152, Arizona Revised Statutes. The signature of an authorized representative of the Arizona Department of Environmental Quality (ADEQ) which appears herein, acknowledges that the remediation of the property was conducted in accordance with the provisions of §49-152, A.R.S.

The undersigned voluntarily agrees, for itself only and not as a covenant running with the land, to limit and restrict the use of the remediated portion of the property to nonresidential uses, as defined in § 49-151, subsection A, A.R.S.

6. Copies to Local Jurisdictions. The Department shall provide a copy of this Declaration to each local jurisdiction having zoning and development plan approval for the Property.

7. Release of this Declaration. Within sixty (60) days of Owner's Written request that this Declaration be released, the Department shall determine whether Release of this Declaration is appropriate according to the requirements established in A.R.S. § 49-152 ©. If the Department determines that the release of this Declaration is appropriate according to the requirement determines in A.R.S. § 49-152 ©, the Department shall record in the office of the county record of each county where the Property is located a notice releasing this Declaration.

\_\_\_\_\_  
Owner (state full name),

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(current address of Owner)

This Declaration of Environmental Use Restriction was subscribed and sworn

To before me this \_\_\_\_\_ day of \_\_\_\_\_, 2002 by:

\_\_\_\_\_  
(state full name and legal status of Owner).

\_\_\_\_\_  
Notary Public

My commission expires:

\_\_\_\_\_

This Declaration of Environmental Use Restriction is approved this \_\_\_\_\_ day of \_\_\_\_\_, 2002 by the Arizona Department of Environmental Quality.

ARIZONA DEPARTMENT OF  
ENVIRONMENTAL QUALITY,  
An agency of the State of Arizona,

By \_\_\_\_\_

(signature of ADEQ's authorized agent)

Name \_\_\_\_\_

(print name of the authorized agent)

Its \_\_\_\_\_

(state person's official title)

This Declaration of Environmental Use Restriction was subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 2002 by:

\_\_\_\_\_  
(state full name and title of ADEQ's agent).

\_\_\_\_\_  
Notary Public

My commission expires:

\_\_\_\_\_

EXHIBIT 1  
VEMUR LEGAL DESCRIPTION  
OF  
HAZARDOUS SPILL AREA 8  
FOR  
MARINE CORPS AIR STATION, YUMA, AZ.

A portion of Section 14 (Sec. 14) of Township Nine South (T9S), Range 23 West (R23W) of the Gila and Salt River Base and Meridian (G&SRB&M), Yuma County, Arizona and more particularly described as follows:

Commencing at the Southeast corner of said Sec. 14; thence S89°47'17"W along the south line of said Sec. 14 a distance of 929.33 feet; thence N00°29'29"E a distance of 97.51 feet to the TRUE POINT OF BEGINNING; thence S89°49'39"W a distance of 2782.33 feet; thence N00°09'44"W a distance of 960.60 feet; thence S87°37'45"E a distance of 293.08 feet; thence N00°09'44"W a distance of 283.79 feet; thence N89°55'04"E a distance of 450.18 feet; thence N00°09'44"W a distance of 314.42 feet; thence N89°52'59"E a distance of 1924.45 feet; thence S00°29'29"W a distance of 356.49 feet; thence N89°37'42"E a distance of 132.51 feet; thence S00°29'29"W a distance of 1187.29 feet to the TRUE POINT OF BEGINNING The area described above contains 90.65 acres more or less.

July 8, 1999

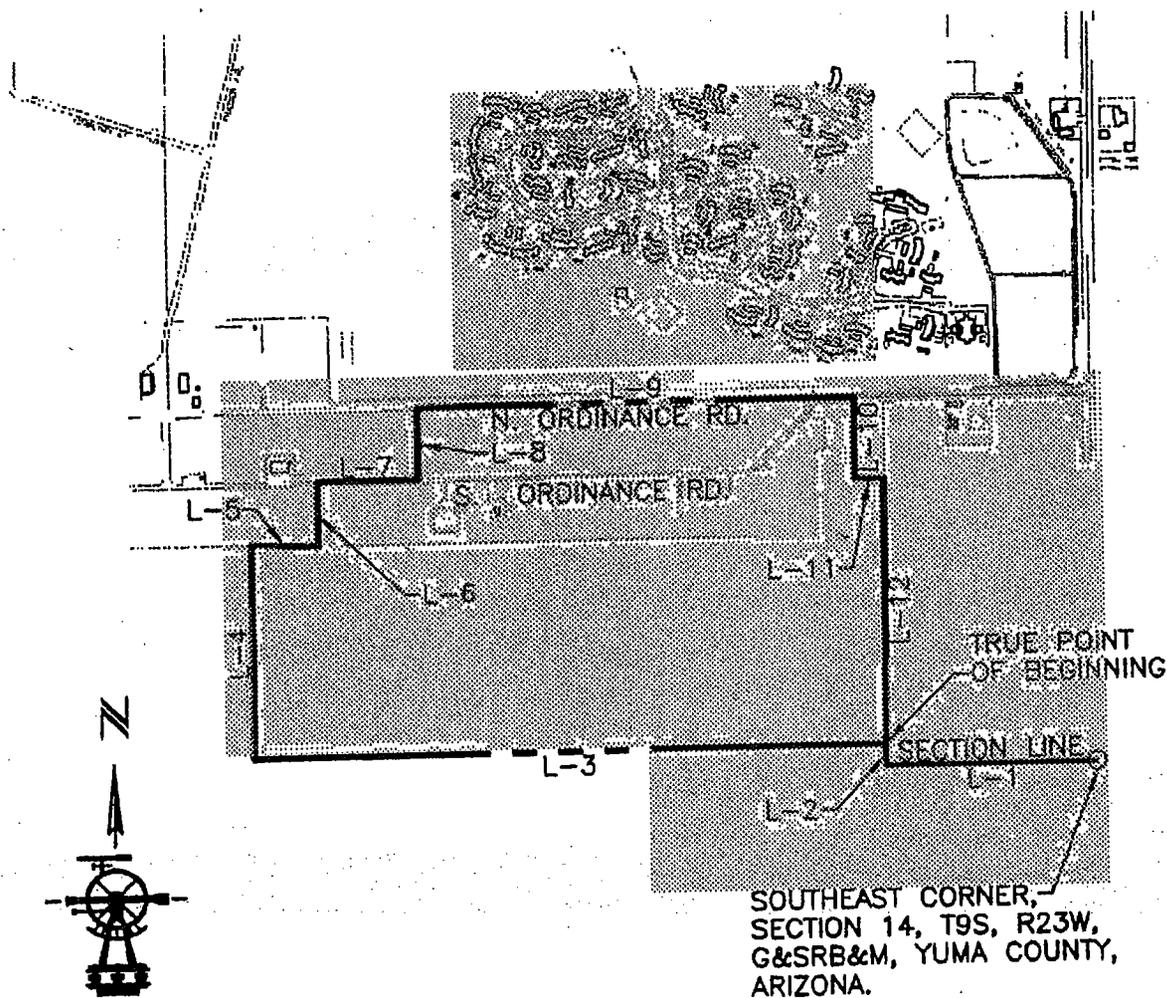
Revised July 23, 1999

Revised November 10, 2000

Prepared by:  
Don Peterson Engineers, Inc.  
1636 A. E. 20<sup>th</sup> Street  
Yuma, AZ. 85365



# EXHIBIT 2



SCALE: 1" = 800'

LINE DATA		
L-NO.	BEARING	DISTANCE
L-1	S89°47'17"W	929.33'
L-2	N00°29'29"E	97.51'
L-3	S89°49'39"W	2782.33'
L-4	N00°09'44"W	960.60'
L-5	S87°37'45"E	293.08'
L-6	N00°09'44"W	283.79'
L-7	N89°55'04"E	450.18'
L-8	N00°09'44"W	314.42'
L-9	N89°52'59"E	1924.45'
L-10	S00°29'29"W	356.49'
L-11	N89°37'42"E	132.51'
L-12	S00°29'29"W	1187.29'



REVISED NOV., 2000

## HAZARDOUS SPILL AREA 8

MCAS, YUMA, ARIZONA



don peterson engineers, inc

1636A E. 20th Street Yuma, Arizona 85365 (520) 783-7885

## **APPENDIX B5**

**DEUR FOR CAOC 10 (A/B)**

**DECLARATION OF ENVIRONMENTAL USE RESTRICTION  
FOR REAL PROPERTIES REMEDIATING CONTAMINATED SOIL TO  
NONRESIDENTIAL USES WITHOUT THE USE OF EITHER AN INSTITUTIONAL  
CONTROL OR ENGINEERING CONTROL  
UNDER A.R.S. § 49-152**

When recorded, return to:

Naval Facilities Engineering Command  
Southwest Division Real Estate Department Contracting Officer  
1220 Pacific Highway, San Diego, CA 92132

DECLARATION OF ENVIRONMENTAL USE RESTRICTION

This Declaration of Environmental Use Restriction ("Declaration") is executed and Recorded by Karen P. Ringel, Naval Facilities Engineering Real Estate Department Contracting Officer.

**RECITALS**

A. Environmental contaminants are present on real property located at NW Corner of the intersection of Avenue 3E & 48<sup>th</sup> St. (Co. 13<sup>th</sup> St.) M.C.A.S. Yuma, AZ Exhibit 2

B. Owner holds legal and equitable title to the Property. Owner's deed setting forth The legal description of the property is attached and marked "Exhibit 1." The location of the Property is shown by the Map attached and marked "Exhibit 2." The Property's tax Parcel Number is 104-01-01.

C. In order to comply with A.R.S. § 49-152 (A), Owner has elected to remediate **(A)** / a portion (**circle one**) of the property to nonresidential uses.

D. Owner intends this Declaration to satisfy the requirements of A.R.S. § 49-152 (B).

E. Owner shall promptly record this Declaration in the office of the county Recorder of each county where the Property is located.

**DECLARATION**

Owner covenants and agrees as follows:

1. Recitals. The Recitals and Exhibits are a material part of this Declaration.
2. Warranty of Title. Owner is the only owner of and holds equitable and legal title To the Property. Owner has authority to execute and record this Declaration.
3. Legal Description. The legal description of the area of the Property that Owner Shall restrict to nonresidential use is: **As shown on Exhibit 1**

A map depicting the location of the area of the Property restricted to nonresidential use is Attached and marked "Exhibit 2."

4. Completion of Remediation. Remediation of the following environmental Contaminants on the area of the Property subject to this Declaration was complete on 12-02-1997.

The primary finding of the field sampling and analysis program was the detection of TRPH and PAHS in surface soil and one anomalous lead concentration. PAHS were detected in surface soil at four locations during the RI.

The excess cancer risk calculated from the RI data used in the human health risk assessment is  $7.62 \times 10^{-5}$  for the residential exposure scenario. For the industrial scenario, the excess cancer risk is  $2.42 \times 10^{-5}$ .

The risk assessment based upon the data from a subsequent sampling program at CAOC 10 yielded higher calculated risks than the risk calculated for the RI. Based on the subsequent data, the industrial and residential excess lifetime cancer risk are  $4.5 \times 10^{-4}$  and  $1.4 \times 10^{-3}$ , respectively. However, using the same data and calculating the risks using the current EPA-approved exposure factors, which were promulgated subsequent to the risk assessments performed for the RI, the industrial and residential excess lifetime cancer risks are  $2.2 \times 10^{-4}$  and  $9.2 \times 10^{-4}$ , respectively (Uribe 1996b). Therefore, using the current EPA-approved exposure factors, the industrial exposure scenario results in an excess cancer risk that is at the high end of acceptable risks.

The date when such remediation was completed was: 12-02-1997.

More detailed information on the remediation is maintained and available at the Arizona Department of Environmental Quality (Department) located at 3033 North Central Avenue, Phoenix, Arizona 85012.

5. Covenant Running With the Land. The State of Arizona and the Owner agree that no interest in real property on behalf of the State of Arizona shall be created by this agreement or by any cancellation of this agreement pursuant to §49-152, Arizona Revised Statutes. The signature of an authorized representative of the Arizona Department of Environmental Quality (ADEQ), which appears herein, acknowledges that the remediation of the property was conducted in accordance with the provisions of §49-152, A.R.S.

The undersigned voluntarily agrees, for itself only and not as a covenant running with the land, to limit and restrict the use of the remediated portion of the property to nonresidential uses, as defined in § 49-151, subsection A, A.R.S.

6. Copies to Local Jurisdictions. The Department shall provide a copy of this Declaration to each local jurisdiction having zoning and development plan approval for the Property.

7. Release of this Declaration. Within sixty (60) days of Owner's Written request that this Declaration be released, the Department shall determine whether Release of this Declaration is appropriate according to the requirements established in A.R.S. § 49-152 ©. If the Department determines that the release of this Declaration is appropriate according to the requirement determines in A.R.S. § 49-152 ©, the Department shall record in the office of the county record of each county where the Property is located a notice releasing this Declaration.

---

Owner (state full name),

---

(Signature)

---

(current address of Owner)

This Declaration of Environmental Use Restriction was subscribed and sworn

To before me this \_\_\_\_\_ day of \_\_\_\_\_, 2002 by:

\_\_\_\_\_  
(state full name and legal status of Owner).

\_\_\_\_\_  
Notary Public

My commission expires:

\_\_\_\_\_

This Declaration of Environmental Use Restriction is approved this \_\_\_\_\_ day of \_\_\_\_\_, 2002 by the Arizona Department of Environmental Quality.

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY,  
An agency of the State of Arizona,

\_\_\_\_\_  
(signature of ADEQ's authorized agent)

Name \_\_\_\_\_  
(print name of the authorized agent)

Its \_\_\_\_\_  
(state person's official title)

This Declaration of Environmental Use Restriction was subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 2002 by:

\_\_\_\_\_  
(state full name and title of ADEQ's agent).

\_\_\_\_\_  
Notary Public

My commission expires:

\_\_\_\_\_

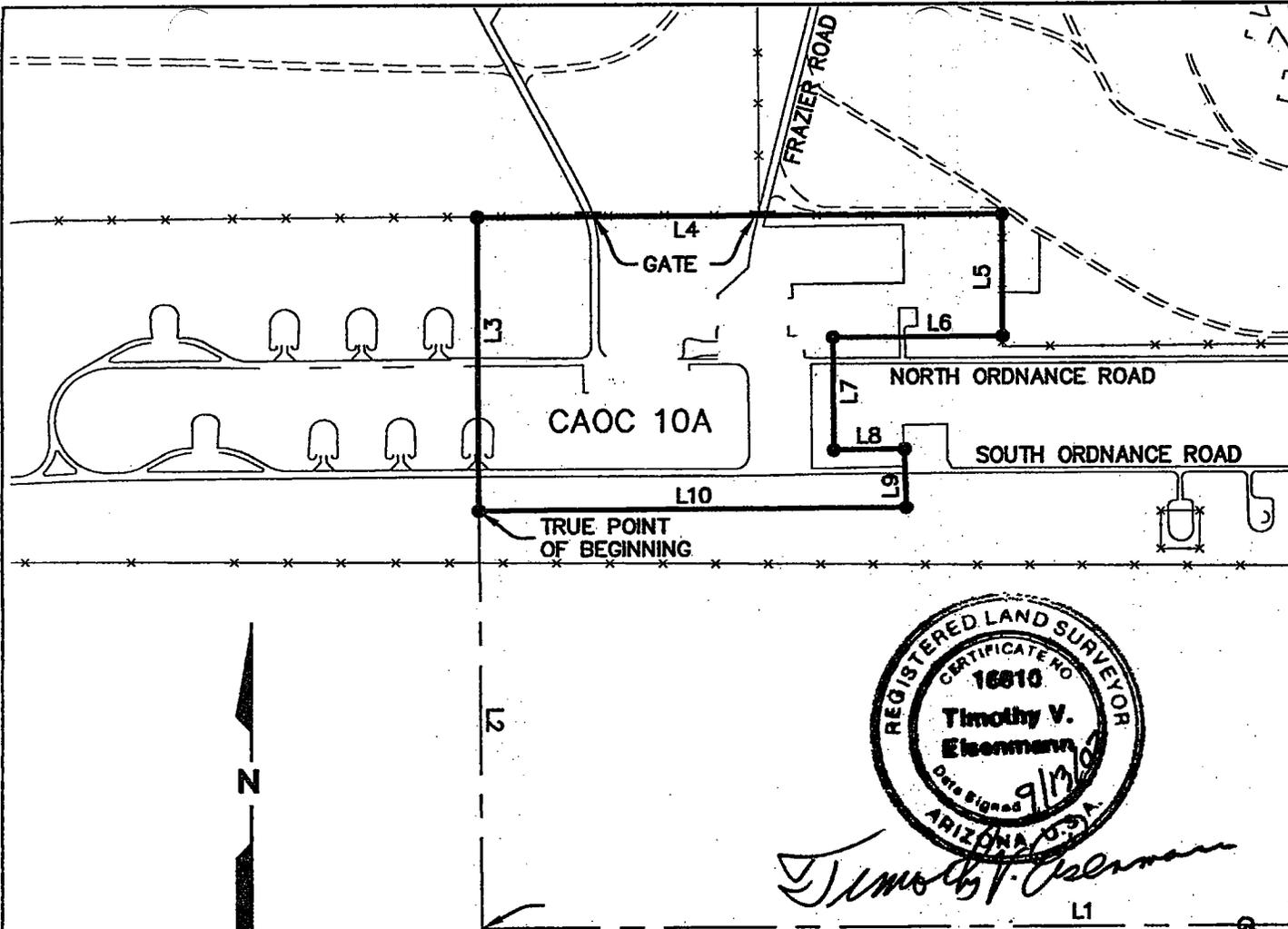
**EXHIBIT 1 A  
VEMUR LEGAL DESCRIPTION  
OF  
HAZARDOUS SPILL AREA 10A  
FOR  
MARINE CORPS AIR STATION, YUMA, AZ**

A portion of Section Fourteen (Sec. 14) of Township Nine South (T9S), Range 23 West (R23W) of the Gila and Salt River Base and Meridian (G&SRB&M), Yuma County, Arizona being more particularly described as follows:

Commencing at the Southeast corner of said Section 14;  
Thence S89°47'17"W along the South line of the Southeast Quarter (SE 1/4) of said Section 14 and an extension thereof a distance of 4842.46 feet;  
Thence N00°17'28"W a distance of 1208.85 feet to the TRUE POINT OF BEGINNING;  
Thence continuing N00°17'28"W a distance of 846.94 feet to a point 1 foot southerly of an existing east-west fence line;  
Thence N89°44'33"E along a line 1 foot southerly of said existing east-west fence line a distance of 1493.19 feet to a point 1 foot westerly of an existing north-south fence line;  
Thence S00°18'23"E along a line 1 foot westerly of said north-south fence line a distance of 351.04 feet;  
Thence S89°36'21"W a distance of 487.20 feet;  
Thence S00°23'58"E a distance of 323.22 feet;  
Thence N89°27'17"E a distance of 202.46 feet;  
Thence S01°27'38"E a distance of 168.76 feet;  
Thence S89°33'44" W a distance of 1212.60 feet to the TRUE POINT OF BEGINNING.

Said parcel contains 24.2520 acres more or less.





LINE DATA		
NUMBER	BEARING	DISTANCE
L1	S 89°47'17" W	4842.46'
L2	N 00°17'28" W	1208.85'
L3	N 00°17'28" W	846.94'
L4	N 89°44'33" E	1493.19'
L5	S 00°18'23" E	351.04'
L6	S 89°36'21" W	487.20'
L7	S 00°23'58" E	323.22'
L8	N 89°27'17" E	202.46'
L9	S 01°27'38" E	168.76'
L10	S 89°33'44" W	1212.60'



*Timothy V. Eisenmann*

POINT OF BEGINNING  
SE CORNER SECTION 14  
T. 9 S. R. 23 W.  
G. & S.R.B. & M.,  
YUMA COUNTY ARIZONA  
FOUND BRASS CAP IN  
HANDHOLE

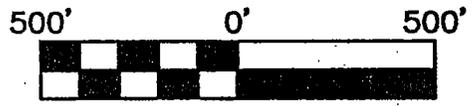
AVENUE 3E

SECTION LINE

S 89°47'17" W  
2667.50'

COUNTY 13TH STREET

¼ CORNER SECTION 14  
T. 9 S. R. 23 W.  
G. & S.R.B. & M.,  
YUMA COUNTY ARIZONA  
FOUND ¾" IRON PIPE  
BELOW ASPHALT PAVEMENT  
SURFACE



**LEGEND**

- FOUND SURVEY MONUMENT AS NOTED
- SET ½" REBAR WITH CAP "LS 16810"
- ==== EXISTING PAVED ROAD
- EXISTING DIRT ROAD
- \*-\*-\*-\* EXISTING FENCE

**EXHIBIT 1**

**MARINE CORPS AIR STATION  
YUMA, ARIZONA**

CAOC 10A SURVEY



**Nicklaus Engineering Inc.**  
1851 West 24th Street P.O. Box 6029  
YUMA, ARIZONA 85364 (928)344-8374  
Email: nel@nelaz.com

SCALE: AS SHOWN  
DATE: AUGUST, 2002  
DES. BY: T.V.E.  
DRAWN BY: G.B.  
SURVEYED BY: R.S.  
JOB. No.: 02-129  
FILE No.: IV-8-28

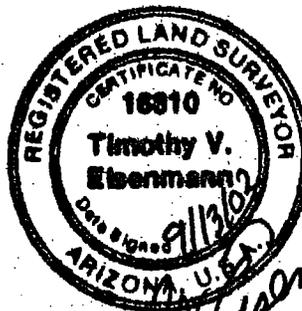
SHEET 1  
OF 1

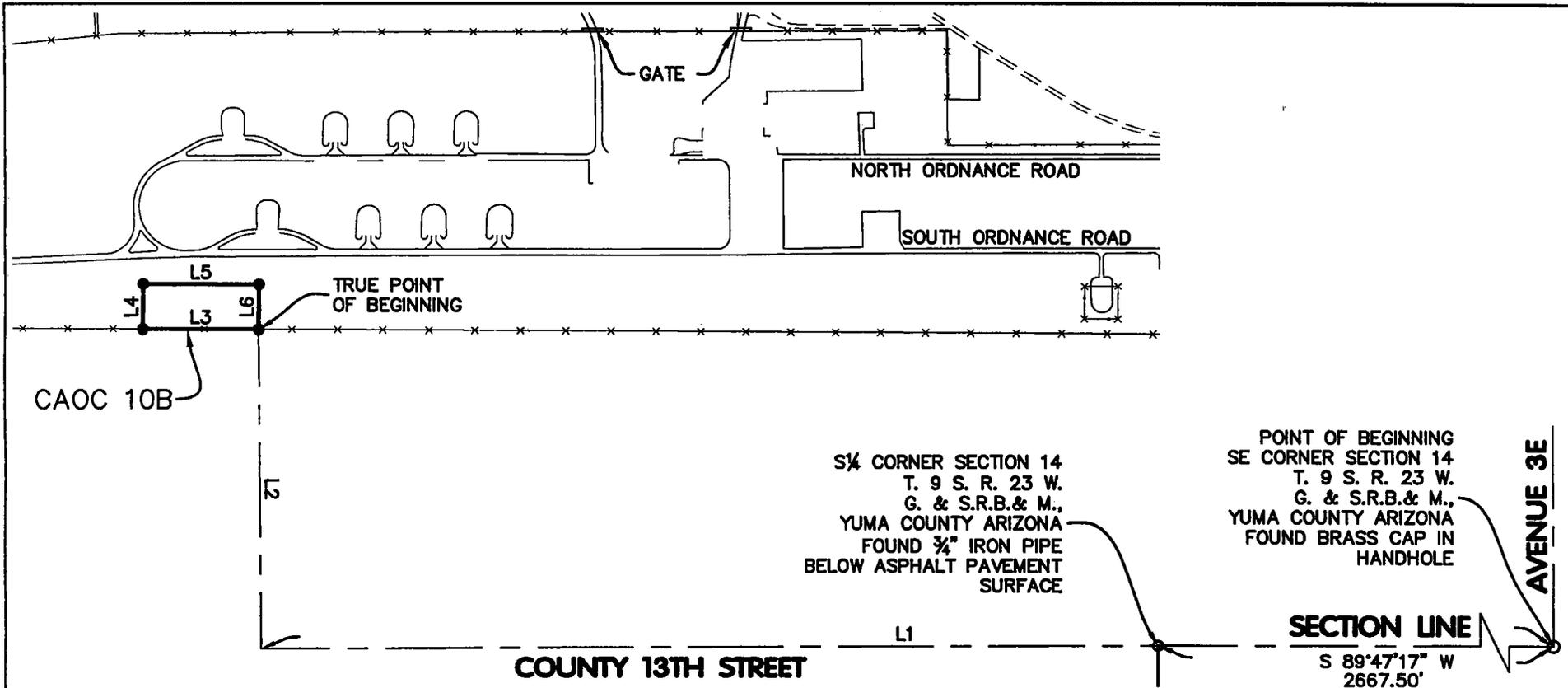
**EXHIBIT 2 A  
VEMUR LEGAL DESCRIPTION  
OF  
HAZARDOUS SPILL AREA 10B  
FOR  
MARINE CORPS AIR STATION, YUMA, AZ**

A portion of Section Fifteen (Sec. 15) of Township Nine South (T9S), Range 23 West (R23W) of the Gila and Salt River Base and Meridian (G&SRB&M), Yuma County, Arizona being more particularly described as follows:

Commencing at the Southeast corner of Section 14, T9S, R23W;  
Thence S89°47'17"W along the south line of the Southeast Quarter (SE 1/4) of said Section 14 and an extension thereof a distance of 5634.96 feet;  
Thence N00°17'28"W a distance of 1063.77 feet to a point 1 foot northerly of an existing east-west fence line, said point being the TRUE POINT OF BEGINNING;  
Thence N89°46'06"W along a line 1 foot northerly of said existing east-west fence line a distance of 380.09 feet;  
Thence N00°15'51"E a distance of 150.04 feet;  
Thence S89°45'20"E a distance of 379.97 feet;  
Thence S00°13'08"W a distance of 149.96 feet to the TRUE POINT OF BEGINNING.

Said parcel contains 1.3086 acres more or less.

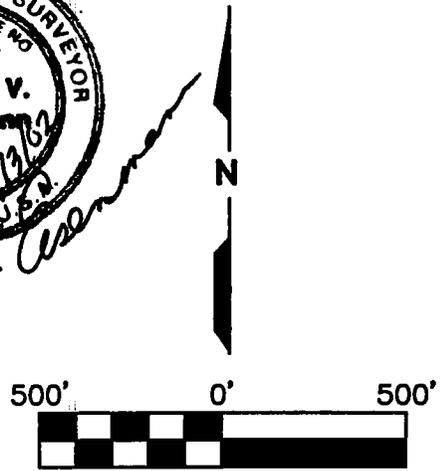




LINE DATA		
NUMBER	BEARING	DISTANCE
L1	S 89°47'17" W	5634.96'
L2	N 00°17'28" W	1063.77'
L3	N 89°46'06" W	380.09'
L4	N 00°15'51" E	150.04'
L5	S 89°45'20" E	379.97'
L6	S 00°13'08" W	149.96'

**LEGEND**

- FOUND SURVEY MONUMENT AS NOTED
- SET ½" REBAR WITH CAP "LS 16810"
- ===== EXISTING PAVED ROAD
- =====  
=====  
===== EXISTING DIRT ROAD
- ××××× EXISTING FENCE



**EXHIBIT 2**

<b>MARINE CORPS AIR STATION YUMA, ARIZONA</b>	
CAOC 10B SURVEY	SCALE: AS SHOWN
	DATE: AUGUST, 2002
	DES. BY: T.V.E.
	DRAWN BY: G.B.
	SURVEYED BY: R.S.
	JOB. No.: 02-129
	FILE No.: IV-B-29
 <b>Nicklaus Engineering Inc.</b> 1851 West 24th Street P.O. Box 6029 YUMA, ARIZONA 85364 (928)344-8374 Email: nel@nelaw.com	SHEET 1 OF 1

## **APPENDIX B6**

### **MAXIMUM CONCENTRATIONS OF OU-2 CHEMICALS OF POTENTIAL CONCERN**

**Table 2-2: Maximum Concentrations of Volatile Organic Compounds  
Detected by Off-Site Laboratory at 0 to 10 Feet, MCAS YUMA, Operable Unit 2  
Concentrations in milligrams per kilogram**

Analyte	Regulatory Based Criteria		Industrial Based Criteria		CAOC			
	Cancer	Noncancer	Cancer	Noncancer	1	2	3	4
1,1-Dichloroethene	--	2.22	--	14.5	*	*	*	*
2-Butanone	--	2,770	--	3,070	2.31	*	*	*
Carbon Disulfide	--	3.89	--	25.4	*	*		*
Chloromethane	3.17	--	5.82	--	0.11	*	*	*
Freon 113	--	1,130	--	1,130	*	*	*	*
Methylene Chloride	6.44	1,930	12	1,930	0.16	0.077	*	*
Tetrachloroethene	3.51	338	8.84	338	*	*	*	*
Toluene	--	484	--	48.4	*	*	*	*
Trichlorofluoromethane	--	142	--	933	*	*	0.3	*
Xylene	--	1,930	--	1,930	0.09	*	*	*

**Notes:**

- indicates that this constituent does not have cancer and/or noncancer toxicity.
- \* indicates that this constituent was not a constituent of potential concern (COPC) for this CAOC.

**Table 2-2: Maximum Concentrations of Volatile Organic Compounds  
Detected by Off-Site Laboratory at 0 to 10 Feet, MCAS YUMA, Operable Unit 2  
Concentrations in milligrams per kilogram**

Analyte	CAOC													
	5	6	7	8A	8B	9	10	12	13	14	15	16	17	18
1,1-Dichloroethene	*	*	*	*	*	0.075	*	*	*	*	*	*	*	*
2-Butanone	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Carbon Disulfide	*	*	0.089	*	*	*	*	*	*	*	*	*	*	*
Chloromethane	*	*	*	*	*	0.22	*	*	*	*	*	*	*	*
Freon 113	*	*	*	*	*	*	*	*	*	*	*	*	*	0.05
Methylene Chloride	*	0.092	0.23	*	*	*	*	*	6.44	*	*	*	*	0.106
Tetrachloroethene	*	0.11	*	*	*	*	*	*	*	*	*	*	*	*
Toluene	*	*	*	*	*	*	*	0.053	*	*	*	*	*	*
Trichlorofluoromethane	0.38	*	*	*	*	*	*	*	*	*	*	*	*	*
Xylene	*	*	*	*	*	*	*	*	*	*	*	*	*	*

**Table 2-3: Maximum Concentrations of Semi-Volatile Organic Compounds and Total Petroleum Hydrocarbons Detected by Off-Site Laboratory, Operable Unit 2, Concentrations in milligrams per kilogram**

Analyte	Residential Risk-Based Criteria		Industrial Risk-Based Criteria		CAOC	
	Cancer	Noncancer	Cancer	Noncancer	1	2
<b>Semi-volatile organic compounds</b>						
1,2,3,5-Tetrachlorobenzene	-	11.7	-	96.3	*	*
1-Methyl-2-Pyrrolidinone	NA	NA	NA	NA	0.16	*
2-Cyclohexen-1-OL	NA	NA	NA	NA	0.1	0.11
2-Cyclohexen-1-One	NA	NA	NA	NA	0.095	*
2-Methylnaphthalene	-	608	-	608	54	*
2-Pentene, 2-Methoxy	NA	NA	NA	NA	*	*
2-Pyrrolidinone, 1-Methyl	NA	NA	NA	NA	*	*
2,4-Dinitrotoluene	-	78	-	640	*	*
2-Pentanone, 4-Hydroxy-4-Methyl	NA	NA	NA	NA	9.8	*
4-Methylphenol	-	195	-	1,600	*	*
7H-Benz(DE)Anthracen-7-One	NA	NA	NA	NA	1.7	*
9,10-Anthracenedione	NA	NA	NA	NA	1.6	*
Acenaphthene	-	55.6	-	55.6	0.034	*
Acenaphthylene	NA	NA	NA	NA	0.045	*
Anthracene	-	1.76	-	1.76	0.26	*
Benzene, 1,4-Dimethoxy-2,3	NA	NA	NA	NA	*	*
Benzo(e) Pyrene	NA	NA	NA	NA	0.17	*
Benzo(a) Anthracene	0.391	-	1.23	-	3.6	0.12
Benzo(a) Pyrene	0.0391	-	0.123	-	4.5	0.065
Benzo(b) Fluoranthene	0.391	-	1.23	-	10	0.11
Benzo (g,h,i) Perylene	NA	NA	NA	NA	2	*
Benzo(k) Fluoranthene	3.91	-	12.3	-	4.2	0.096
Benzo(b) Naphtho(2,3-D)Furan	NA	NA	NA	NA	0.18	*
Bis(2-Ethylhexyl) Phthalate	20.4	780	64.1	6,400	2.7	1.4
Butyl Benzyl Phthalate	-	7,800	-	64,000	0.25	0.041
Carbazole	14.3	-	44.9	-	0.77	*
Chrysene	39.1	-	123	-	5.6	0.15
Cyclopenta(def) Phenanthrenon	NA	NA	NA	NA	0.62	*
Di-n-Octylphthalate	-	780	-	6,400	0.24	*
Di-n-Butylphthalate	-	3,900	-	32,000	1.78	1.61
Dibenzo(a,h) Anthracene	0.0391	-	0.123	-	0.97	*
Dibenzofuran	NA	NA	NA	NA	0.05	*
Diethyl Phthalate	-	31,200	-	100,000	*	*
Ethanol, 2-[2-[4-(1,1,3,3-T	NA	NA	NA	NA	*	*
Ethanone, 1-Oxiranyl	NA	NA	NA	NA	0.071	*
Ethylene Glycol	-	78,000	-	100,000	170	*
Fluoranthene	-	1,560	-	12,800	8.3	0.21
Fluorene	-	47.6	-	47.6	0.044	*
Hexanedioic Acid, Bis(2-Ethyl)	NA	NA	NA	NA	5.1	0.8
Indeno (1,2,3-cd) Pyrene	0.391	-	1.23	-	2.5	*
N-Nitrosodiphenylamine	58.2	-	183	-	*	*
Naphthalene	-	124	-	124	70	*
Nonylphenol	NA	NA	NA	NA	*	*
Pentachlorobenzene	-	31.2	-	256	*	*
Phenanthrene	-	42	-	42	2.3	0.074
Phenol	-	18,700	-	100,000	0.064	*
Phenol, 2,2' - Methylenebis (6	NA	NA	NA	NA	*	*
Pyrene	-	1,170	-	9,600	8	0.22
Trans-Chlordane	NA	NA	NA	NA	*	*
<b>Total Petroleum Hydrocarbons</b>						
Diesel	-	-	-	-	5,100	6,000
Gasoline	-	-	-	-	48	*
Total Petroleum Hydrocarbons	-	-	-	-	4,200	*

**Notes:**

- indicates that this constituent does not have cancer and/or noncancer toxicity.
- \* indicates that this constituent was not a constituent of potential concern (COPC).
- NA indicates no toxicity data available
- <sup>1</sup> Total Petroleum Hydrocarbons are not included in RBC calculations because constituents of greatest concern (BTEX and PAHs) are addressed individually.

Table 2-3: Maximum Concentrations of Semi-Volatile Organic Compounds and Total Petroleum Hydrocarbons Detected by Off-Site Laboratory, Operable Unit 2, Concentrations in milligrams per kilogram

Analyte	CAOC											
	3	4	5	6	7	8A	8B	9	10	12	13	14
<b>Semi-volatile organic compounds</b>												
1,2,3,5-Tetrachlorobenzene	*	*	*	*	0.43	*	*	*	*	*	*	*
1-Methyl-2-Pyrrolidinone	*	*	*	*	*	0.13	*	*	*	*	*	*
2-Cyclohexen-1-ol	*	*	*	*	*	*	*	0.1	*	*	*	*
2-Cyclohexen-1-One	*	*	*	*	*	*	*	*	*	*	*	*
2-Methylnaphthalene	*	*	*	*	0.033	*	*	*	*	*	*	*
2-Pentene, 2-Methoxy	*	*	0.37	*	*	*	*	*	*	*	*	*
2-Pyrrolidinone, 1-Methyl	*	*	0.15	*	*	*	*	*	*	*	*	*
2,4-Dinitrotoluene	*	0.037	*	*	*	*	*	*	*	*	*	*
2-Pentanone, 4-Hydroxy-4-Methyl	*	*	*	*	*	*	*	11	*	*	*	*
4-Methylphenol	*	*	*	*	0.17	*	*	*	*	*	*	*
7H-Benz(DE)Anthracen-7-One	*	*	*	*	*	*	*	*	*	*	*	*
9,10-Anthracenedione	*	*	*	*	*	*	*	*	0.166	*	*	*
Acenaphthene	*	*	*	*	*	*	*	*	*	*	*	*
Acenaphthylene	*	*	*	*	*	*	*	*	*	*	*	*
Anthracene	*	*	*	*	*	*	*	*	0.388	*	*	*
Benzene, 1,4-Dimethoxy-2,3	*	*	*	0.14	*	*	*	*	*	*	*	*
Benzo(e) Pyrene	*	*	*	*	*	*	*	*	*	*	*	0.13
Benzo(a) Anthracene	*	0.373	*	*	*	0.2	*	0.081	2.718	*	*	0.15
Benzo(a) Pyrene	*	0.255	*	*	0.12	0.24	*	0.075	2.197	*	0.0391	0.24
Benzo(b) Fluoranthene	*	0.902	*	*	*	0.42	*	0.11	3.482	*	*	*
Benzo (g,h,i) Perylene	*	0.038	*	*	0.17	0.035	*	0.04	0.322	*	*	*
Benzo(k) Fluoranthene	*	*	*	*	*	0.2	*	0.064	*	*	*	0.2
Benzo(b) Naphtho(2,3-D)Furan	*	*	*	*	*	*	*	*	*	*	*	*
Bis(2-Ethylhexyl) Phthalate	1.4	*	0.37	3.4	0.12	0.387	*	0.054	*	0.844	20.4	18
Butyl Benzyl Phthalate	0.095	*	0.21	*	0.043	*	*	*	*	0.614	*	0.86
Carbazole	*	*	*	*	*	*	*	*	0.19	*	*	*
Chrysene	0.059	0.363	*	0.055	*	0.27	*	0.11	2.873	*	*	0.27
Cyclopenta(def) Phenanthrenon	*	*	*	*	*	*	*	*	*	*	*	*
Di-n-Octylphthalate	0.391	*	3.516	*	0.035	4.038	1.738	*	3.359	2.426	*	*
Di-n-Butylphthalate	*	0.026	*	*	*	*	*	*	*	*	*	*
Dibenzo(a,h) Anthracene	*	*	*	*	*	*	*	*	*	*	*	*
Dibenzofuran	*	*	*	*	0.054	*	*	*	*	*	*	*
Diethyl Phthalate	*	*	*	*	*	*	*	*	*	*	*	11
Ethanol, 2-[2-(4-(1,1,3,3-T	*	*	*	*	*	*	*	*	*	*	*	*
Ethanone, 1-Oxiranyl	*	*	*	*	*	*	*	*	*	*	*	*
Ethylene Glycol	*	*	*	*	*	*	*	*	*	*	*	*
Fluoranthene	*	0.194	*	0.036	0.073	0.344	*	0.11	4.132	*	*	0.35
Fluorene	*	*	*	*	*	*	*	*	*	*	*	*
Hexanedioic Acid, Bis(2-Ethyl)	*	0.076	1.4	*	*	*	*	*	*	*	*	*
Indeno (1,2,3-cd) Pyrene	*	0.119	*	*	*	0.074	*	0.044	1.531	*	*	*
N-Nitrosodiphenylamine	*	0.049	*	*	0.065	0.049	*	*	*	*	*	*
Naphthalene	*	*	*	*	*	*	*	*	0.112	*	*	*
Nonylphenol	*	*	*	*	*	*	*	*	*	*	*	6.1
Pentachlorobenzene	*	*	*	*	0.45	*	*	*	*	*	*	*
Phenanthrene	*	0.042	*	*	0.057	0.14	*	0.05	1.746	*	*	0.095
Phenol	*	*	*	*	0.044	*	*	*	*	*	*	*
Phenol, 2,2' - Methylenebis (6	*	*	*	*	2.7	*	*	*	*	*	*	*
Pyrene	0.042	0.277	*	0.036	0.061	0.344	*	0.14	4.057	*	*	0.37
Trans-Chlordane	*	*	0.13	*	*	*	*	*	*	*	*	*
<b>Total Petroleum Hydrocarbons</b>												
Diesel	740	270	150	77	1,000	860	22	21	*	*	*	900
Gasoline	*	*	*	*	52	*	*	*	*	*	*	*
Total Petroleum Hydrocarbons	*	*	*	*	*	*	*	*	25	*	*	*

**Table 2-3: Maximum Concentrations of Semi-Volatile Organic Compounds and Total Petroleum Hydrocarbons Detected by Off-Site Laboratory, Operable Unit 2, Concentrations in milligrams per kilogram**

Analyte	CAOC			
	15	16	17	18
<b>Semi-volatile organic compounds:</b>				
1,2,3,5-Tetrachlorobenzene	*	*	*	*
1-Methyl-2-Pyrrolidinone	*	*	*	*
2-Cyclohexen-1-ol	*	*	*	*
2-Cyclohexen-1-One	*	*	*	*
2-Methylnaphthalene	*	*	*	*
2-Pentene, 2-Methoxy	*	*	*	*
2-Pyrrolidinone, 1-Methyl	*	*	*	*
2,4-Dinitrotoluene	*	*	*	*
2-Pentanone, 4-Hydroxy-4-Methyl	*	*	*	*
4-Methylphenol	*	*	*	*
7H-Benz(DE)Anthracen-7-One	*	*	*	*
9,10-Anthracenedione	*	*	*	*
Acenaphthene	*	*	*	*
Acenaphthylene	*	*	*	*
Anthracene	*	*	*	*
Benzene, 1,4-Dimethoxy-2,3	*	*	*	*
Benzo(e) Pyrene	*	*	*	*
Benzo(a) Anthracene	*	*	*	*
Benzo(a) Pyrene	*	*	*	*
Benzo(b) Fluoranthene	*	*	*	*
Benzo (g,h,i) Perylene	*	*	*	*
Benzo(k) Fluoranthene	*	*	*	*
Benzo(b) Naphtho(2,3-D)Furan	*	*	*	*
Bis(2-Ethylhexyl) Phthalate	*	0.055	*	*
Butyl Benzyl Phthalate	*	0.565	*	*
Carbazole	*	*	*	*
Chrysene	*	*	*	*
Cyclopenta(def) Phenanthrenon	*	*	*	*
Di-n-Octylphthalate	*	*	*	*
Di-n-Butylphthalate	*	1.052	*	2.45
Dibenzo(a,h) Anthracene	*	*	*	*
Dibenzofuran	*	*	*	*
Diethyl Phthalate	*	*	*	*
Ethanol, 2-[2-[4-(1,1,3,3-T	*	*	*	*
Ethanone, 1-Oxiranyl	*	*	*	*
Ethylene Glycol	*	*	*	*
Fluoranthene	*	*	*	0.056
Fluorene	*	*	*	*
Hexanedioic Acid, Bis(2-Ethyl)	*	*	*	*
Indeno (1,2,3-cd) Pyrene	*	*	*	*
N-Nitrosodiphenylamine	*	*	*	*
Naphthalene	*	*	*	*
Nonylphenol	*	*	*	*
Pentachlorobenzene	*	*	*	*
Phenanthrene	*	*	*	0.037
Phenol	*	*	*	*
Phenol, 2,2' - Methylenebis (6	*	*	*	*
Pyrene	*	*	*	0.047
Trans-Chlordane	*	*	*	*
<b>Total Petroleum Hydrocarbons</b>				
Diesel	*	*	29	*
Gasoline	*	*	*	*
Total Petroleum Hydrocarbons	*	*	*	*

**Table 2-4: Maximum Concentrations of Pesticides and PCBs  
Detected by Off-Site Laboratory at 0 to 10 Feet,  
MCAS YUMA, Operable Unit 2  
Concentrations in milligrams per kilogram**

Analyte	Residential Risk-Based Criteria		Industrial Use-Based Criteria		CAOC	
	Cancer	Noncancer	Cancer	Noncancer	1	2
4,4-DDD	0.935	--	2.63	--	0.021	0.0076
4,4-DDE	0.66	--	1.86	--	0.14	0.092
4,4-DDT	0.66	15.6	1.86	113	0.026	0.044
aldrin	0.0132	0.973	0.0371	6.76	0.000088	0.00071
aroclor 1242	0.0473	--	0.176	--	*	*
aroclor 1254	0.0473	--	0.176	--	0.02	*
aroclor 1260	0.0473	--	0.176	--	0.39	*
dieldrin	0.014	1.56	0.0395	11.3	0.014	0.00457
endosulfan I	--	1.56	--	11.3	*	*
endosulfan II	--	1.56	--	11.3	0.015	*
endosulfan sulfate	--	1.56	--	11.3	0.013	0.00287
endrin	--	9.37	--	67.6	0.0067	0.00414
endrin aldehyde	--	9.37	--	67.6	0.0097	0.00598
endrin ketone	--	9.37	--	67.6	0.018	0.0018
heptachlor	0.0499	15.6	0.14	113	*	*
heptachlor epoxide	0.0247	0.406	0.0694	2.93	0.0065	*
alpha-benzene hexachloride	0.0453	--	0.143	--	0.00027	*
alpha-chlordane	0.173	1.87	0.486	13.5	0.17	0.0067
beta-benzene hexachloride	0.158	--	0.499	--	*	*
delta-benzene hexachloride	0.158	--	0.499	--	0.0063	0.00122
gamma-chlordane	0.173	1.87	0.486	13.5	0.14	0.009
gamma-benzene hexachloride (lindane)	0.173	9.37	0.486	67.6	*	*
methoxychlor	--	156	--	1,130	0.063	0.00918
prometon	--	468	--	3,380	*	0.056

**Notes:**

- indicates that this constituent does not have cancer and/or noncancer toxicity.
- \* indicates that this constituent was not a constituent of potential concern (COPC) for this CAOC.



**Table 2-4: Maximum Concentrations of Pesticides and PCBs  
Detected by Off-Site Laboratory at 0 to 10 Feet,  
MCAS YUMA, Operable Unit 2  
Concentrations in milligrams per kilogram**

Analyte	CAOC					
	13	14	15	16	17	18
4,4-DDD	*	0.0012	*	*	*	*
4,4-DDE	0.0004	0.008	*	*	*	0.002
4,4-DDT	*	0.0047	*	*	*	0.00191
aldrin	*	*	*	*	*	*
aroclor 1242	*	*	*	*	*	*
aroclor 1254	*	*	*	*	*	*
aroclor 1260	*	*	*	*	*	*
dieldrin	*	0.0012	*	*	*	*
endosulfan I	*	*	*	*	*	*
endosulfan II	*	*	*	*	*	0.00061
endosulfan sulfate	*	0.00052	*	*	*	*
endrin	*	*	*	*	*	*
endrin aldehyde	*	*	*	*	*	*
endrin ketone	*	*	*	*	*	*
heptachlor	0.00108	*	*	*	*	*
heptachlor epoxide	*	0.0003	*	*	*	*
alpha-benzene hexachloride	*	0.00072	*	*	*	*
alpha-chlordane	*	0.0014	*	*	*	0.00206
beta-benzene hexachloride	0.00065	*	*	*	*	0.00056
delta-benzene hexachloride	*	0.0039	*	*	*	*
gamma-chlordane	*	0.0012	*	*	*	0.00144
gamma-benzene hexachloride (lindane)	*	*	*	*	*	*
methoxychlor	*	0.01	*	*	*	*
prometon	*	*	*	*	*	*

**Table 2-5: Maximum Values Detected by Off-Site Laboratory and  
Background Threshold Limit Values (TLV)  
for Metals Detected at 0 to 10 Feet  
Concentrations in milligrams per kilogram**

Analyte	Residential Risk-Based Criteria		Industrial Risk-Based Criteria		CAOCT	
	Cancer	Noncancer	Cancer	Noncancer	TLV	Maximum
Aluminum	--	71,100	--	100,000	20,800	26,200
Antimony	--	28.4	--	532	6.98	*
Arsenic	0.302	21.3	1.9	399	8.59	16
Barium	--	1,520	--	12,400	187	437
Beryllium	0.129	356	0.859	6,650	1.97	0.43
Cadmium	26.5	35.6	45.4	665	1.04	6.2
Chromium	--	71,100	--	100,000	49.2	32.2
Chromium VI	4.07	356	6.97	6,650	nd	*
Cobalt	--	4,540	--	29,600	12.2	16.6
Copper	--	2,630	--	49,200	15.4	47.1
Lead <sup>1</sup>	--	--	--	--	15.8	102
Manganese	--	136	--	1,180	319	727
Mercury	--	21	--	382	nd	1.3
Nickel	--	1,420	--	26,600	19.5	39.3
Selenium	--	356	--	6,650	2.26	0.59
Silver	--	356	--	6,650	1.15	42.1
Thallium	--	4.98	--	93.1	4.21	0.5
Vanadium	--	498	--	9,310	37.7	56.7
Zinc	--	21,300	--	100,000	37.9	101
Cyanide	--	1,420	--	26,600	nd	*

**Notes:**

- indicates that this constituent does not have cancer and/or noncancer toxicity.
- \* indicates that this constituent was not a constituent of potential concern (COPC) for this CAOCT.
- nd indicates that no data were obtained for TLV calculations.
- <sup>1</sup> EPA Region IX residential and industrial soil screening levels for lead are 400 mg/kg and 1,200 mg/kg, respectively. Concentrations below these values are not considered to have a negative health effect.

**Table 2-5: Maximum Values Detected by Off-Site Laboratory and  
Background Threshold Limit Values (TLV)  
for Metals Detected at 0 to 10 Feet  
Concentrations in milligrams per kilogram**

Analyte	CAOC2		CAOC3		CAOC4		CAOC5	
	TLV	Maximum	TLV	Maximum	TLV	Maximum	TLV	Maximum
Aluminum	12,000	5,450	9,980	5,160	18,600	12,800	26,400	6,120
Antimony	6.72	10.2	6	*	6	*	7.78	*
Arsenic	8.5	3.5	4.24	5.1	16.8	6.3	21.3	3
Barium	143	124	223	129	226	171	675	92
Beryllium	0.39	*	0.33	*	0.89	*	0.85	*
Cadmium	0.59	3.4	0.48	2.4	0.89	3	6.38	*
Chromium	38.2	24.6	45.4	21.4	61.2	24.4	30.0	17.2
Chromium VI	nd	*	nd	0.36	nd	*	nd	*
Cobalt	8.13	3.5	6.41	3.9	6.94	6.5	9.02	3.3
Copper	10.5	22.8	4.8	42.6	8.25	33.8	21.4	15.5
Lead <sup>1</sup>	9.6	232	7.91	103	11.5	88.5	19.8	43.5
Manganese	193	145	193	201	521	574	1,050	170
Mercury	nd	0.12	*	*	*	0.35	nd	*
Nickel	17.9	9.5	6.65	24.9	9.25	15.9	20.1	7.6
Selenium	3.07	*	2.27	0.65	5.94	0.69	4.87	0.61
Silver	1.2	*	1.15	*	1	4.4	1.34	*
Thallium	6.1	1.2	2.75	*	16.8	*	11.5	*
Vanadium	23.4	22.9	20.2	19.1	43.1	40.3	43.1	33.8
Zinc	23.3	135	14.3	112	35.4	220	49.2	79.2
Cyanide	nd	*	nd	*	nd	*	nd	*

**Table 2-5: Maximum Values Detected by Off-Site Laboratory and  
Background Threshold Limit Values (TLV)  
for Metals Detected at 0 to 10 Feet  
Concentrations in milligrams per kilogram**

Analyte	CAOC 6		CAOC 7		CAOC 8	3A Landfill	3B Housing
	TLV	Maximum	TLV	Maximum	TLV	Maximum	Maximum
Aluminum	20,500	4,690	31,400	18,300	7,770	11,700	5,900
Antimony	6.52	6.5	7.44	7.4	6	8.5	*
Arsenic	6.06	6.3	15.6	10.5	9.68	4.7	3.7
Barium	270	156	334	247	133	160	137
Beryllium	0.7	0.25	4.02	0.54	0.28	0.14	*
Cadmium	1.03	1	1.09	7.1	0.8	1.2	*
Chromium	30.1	12.1	38.8	56.3	10.6	15.7	12.5
Chromium VI	nd	*	nd	*	nd	0.22	*
Cobalt	11.2	3.4	19.7	14.2	6.12	6.5	3.2
Copper	22.5	112	24.8	84.6	21.7	582	50.8
Lead	14.3	25.2	21.6	195	8.79	659	22.2
Manganese	397	159	460	678	137	278	150
Mercury	nd	0.06	nd	0.06	nd	0.17	*
Nickel	15.4	9.7	27.4	33.1	6.7	14.9	8
Selenium	3.76	0.61	2.93	1.4	1.89	0.98	*
Silver	1.19	*	1.01	*	1.47	10.2	*
Thallium	3.54	*	3.9	*	6.76	0.5	*
Vanadium	27.5	21	61.6	107	22.6	28	22.1
Zinc	37.5	113	60.8	199	28.0	58.9	52.5
Cyanide	nd	0.31	nd	*	nd	*	*

**Table 2-5: Maximum Values Detected by Off-Site Laboratory and  
Background Threshold Limit Values (TLV)  
for Metals Detected at 0 to 10 Feet  
Concentrations in milligrams per kilogram**

Analyte	CAOC 9		CAOC 10		CAOC 12		CAOC 13	
	TLV	Maximum	TLV	Maximum	TLV	Maximum	TLV	Maximum
Aluminum	10,200	5,150	6,310	5,290	nd	*	239,000	*
Antimony	7.91	13.4	7.11	*	nd	*	56.5	*
Arsenic	9.06	5	8.99	3.9	nd	*	139	*
Barium	277	103	184	85.3	nd	*	259	*
Beryllium	0.46	0.08	0.28	0.67	nd	*	8.38	*
Cadmium	0.63	6.7	1.64	1.7	nd	*	4.39	*
Chromium	29.9	12.5	25.1	11.2	nd	*	56.9	*
Chromium VI	nd	1.2	nd	*	nd	*	nd	*
Cobalt	9.47	3.9	7.31	3.7	nd	*	48.9	*
Copper	8.37	36.7	5.83	5.5	nd	*	45.9	*
Lead <sup>1</sup>	9.88	19.5	6.79	31	nd	*	103	*
Manganese	183	136	157	176	nd	*	2,280	*
Mercury	*	0.12	nd	*	nd	*	nd	*
Nickel	1.88	6.3	9.83	6.8	nd	*	75	*
Selenium	nd	0.61	1.9	0.63	nd	*	48.8	*
Silver	1	3.2	1.14	0.78	nd	*	1	*
Thallium	4.65	1.3	7.88	*	nd	*	1	*
Vanadium	26.8	24.8	26.9	22.3	nd	*	126	*
Zinc	27.7	39.6	30.2	157	nd	*	228	*
Cyanide	nd	0.41	nd	*	nd	*	nd	*

**Table 2-5: Maximum Values Detected by Off-Site Laboratory and  
Background Threshold Limit Values (TLV)  
for Metals Detected at 0 to 10 Feet  
Concentrations in milligrams per kilogram**

Analyte	CAOC 14		CAOC 15		CAOC 16		CAOC 17	
	TLV	Maximum	TLV	Maximum	TLV	Maximum	TLV	Maximum
Aluminum	59,000	16,900	7,410	*	19,100	4,460	10,800	3,800
Antimony	6	*	6	*	8.26	*	8.36	*
Arsenic	13.1	9.7	7.53	*	10.6	4.2	11.9	4.3
Barium	408	245	148	*	135	170	120	105
Beryllium	2.68	0.86	0.26	*	0.55	*	0.38	*
Cadmium	1.97	3.8	0.72	*	1.72	*	0.68	*
Chromium	40.2	18.9	27.4	*	17.8	6.6	43.4	7
Chromium VI	nd	0.15	nd	*	nd	*	nd	*
Cobalt	44.0	12.5	5.81	*	12.1	2.5	11.7	3.3
Copper	45.1	28.5	4.14	*	13.9	90.4	8.55	26
Lead <sup>1</sup>	29.2	25.8	9.71	*	14.1	4.6	9	4.5
Manganese	511	718	166	*	245	138	286	130
Mercury	nd	0.06	nd	*	nd	*	nd	*
Nickel	46.5	29.2	7.24	*	16.0	5.3	18.7	7.2
Selenium	13.1	0.82	6.04	*	3.43	*	3.34	*
Silver	1	*	1	*	1.18	*	1	*
Thallium	3.66	*	6.95	*	7.98	*	7.35	*
Vanadium	79.6	34	20.3	*	30.7	21.9	41.6	20.2
Zinc	78.2	54.8	17.6	*	40.1	148	29.5	57.6
Cyanide	nd	*	nd	*	nd	*	nd	*

**Table 2-5: Maximum Values Detected by Off-Site Laboratory and  
Background Threshold Limit Values (TLV)  
for Metals Detected at 0 to 10 Feet  
Concentrations in milligrams per kilogram**

Analyte	CAOCL8	
	TLV	Maximum
Aluminum	10,900	6,240
Antimony	8.27	*
Arsenic	11.1	3.1
Barium	127	126
Beryllium	0.42	*
Cadmium	0.73	*
Chromium	19.3	13
Chromium VI	nd	*
Cobalt	9.89	*
Copper	10.1	10.4
Lead <sup>1</sup>	9.06	13.5
Manganese	205	148
Mercury	nd	*
Nickel	11.7	6.7
Selenium	3.07	*
Silver	1.48	*
Thallium	7.16	*
Vanadium	35.6	28.8
Zinc	39.9	31.2
Cyanide	nd	*

## **APPENDIX B7**

### **ARARs FOR REMEDIAL ACTION FOR MCAS YUMA**

**Table 2-12: ARARs for Remedial Action for MCAS Yuma**

Medium/Location	Requirements	Prerequisite	Citation	ARAR Determination	Comments
<b>CHEMICAL-SPECIFIC:</b>					
<b>Arizona Revised Statutes (ARS), Title 49, The Environment, as implemented in Arizona Administrative Code (A.A.C.) Title 18, Chapter 7, Article 2, Interim Soil Remediation Standards</b>					
Contaminated soil	Sites that are legally required to conduct soil remediation.	Soils contaminated with constituents identified in Appendix A to the regulation.	ARS 49-151 and 152. R18-7-201 through R18-7-209	Relevant and Appropriate at CAOC 1, 8A, and 10	Requires that soils be remediated to either: 1) background levels; 2) Health Based Guidance Levels; or 3) remediation levels derived from a site-specific risk assessment.
<b>U.S. EPA Guidance on Remedial Actions for Superfund Sites with PCB Contamination USEPA/540/G-90/007</b>					
Soils with PCB Contamination	Approach for evaluating and remediating sites with PCB contamination.	Soils contaminated with PCBs.	USEPA/540/G-90/007	Potential TBC for PCBs at CAOC 8A	Describes recommended approach for evaluating and remediating sites with PCB contamination. Since compliance with ARS 49-151 and 152 is sufficient to protect human health and the environment, this guidance is not considered TBC.
<b>LOCATION-SPECIFIC:</b>					
<b>National Historic Preservation Act, 16 USC Section 470-470w-6 [36 CFR Part 800] and the Archeological Resource Protection Act, 16 USC Section 450n [36 CFR Part 299]</b>					
Within area where action may cause irreparable harm, loss or distraction of significant artifacts	Action to recover and preserve artifacts.	Alteration of terrain that threatens significant scientific, prehistoric, historic, or archaeological data.	36 CFR Part 65	Not an ARAR	Scientific, prehistoric, historic, or archaeological artifacts may be present at MCAS Yuma. However, response actions for ACM at MCAS Yuma do not require alteration of terrain or excavation of native soil.
<b>Endangered Species Act, 16 USC 1531 <i>et seq.</i>, and Fish and Wildlife Coordination Act, 16 USC 661 <i>et seq.</i></b>					
Critical habitat upon which endangered species or threatened species depend	Action to conserve endangered species including consultation with the Department of Interior.	Determination of effect upon endangered or threatened species its habitat.	50 CFR Part 200, 50 CFR Part 402 and 33 CFR Parts 320 - 330	Not an ARAR	Federal threatened and endangered species have been recorded as being potentially present on MCAS Yuma. Sites with ACM are located on populated and highly trafficked area and do not support wildlife. Response actions at MCAS Yuma is not anticipated to affect habitat.

**Table 2-12: ARARs for Remedial Action for MCAS Yuma**

Medium/Location	Requirements	Prerequisite	Citation	ARAR Determination	Comments
<b>LOCATION SPECIFIC - Continued</b>					
<b>Migratory Bird Treaty Act of 1972, 16 USC 703</b>					
Migratory bird area	Protects almost all species of native birds in the U.S. from unregulated "take," which can include poisoning at hazardous waste sites.	Presence of migratory birds.	16 USC 703	Not an ARAR	Migratory birds have been observed on and in the immediate vicinity of MCAS Yuma. Sites with ACM are located on populated and highly trafficked area and do not support wildlife.
<b>Arizona Revised Statutes, Title 41 - State Government, Chapter 4.1 - History, Archaeology, and State Emblems, Article 4 - Archaeological Discoveries</b>					
Within state-owned or controlled land containing archaeological features at historic sites	Prohibits excavation in or upon, defacing, or altering archaeological or historical site or objects; and require notification upon discovery of any such site or object.	Existence of archaeological, paleontological, or historic site or object at least 50 years old..	ARS 41-844A	Not an ARAR	Archaeological or historical site may be present at MCAS Yuma. Sites with ACM are not located on archaeological or historical sites or objects. Response actions for MCAS Yuma do not anticipate excavation of native soil.
<b>ACTION SPECIFIC</b>					
<b>Clean Air Act National Emission Standards for Hazardous Air Pollutants (NESHAP) USC 7401 to 7671(q)</b>					
Waste, Soil, and Debris	Management of ACM and notification requirements	Demolition, renovation, or removal of ACM	40 CFR Subpart M; Section 61.145, 61.150, and 61.154	Relevant and Appropriate	NESHAP apply to demolition or renovation of facilities with ACM. Remediation of ACM at MCAS Yuma is neither a renovation nor demolition operation. However, procedures for asbestos emission control (Section 61.145(c)); procedures for ACM waste handling, transportation, and disposal (61.150); and compliance of disposal facilities accepting ACM waste with Section 61.154 is considered relevant and appropriate.

**Table 2-12: ARARs for Remedial Action for MCAS Yuma**

Medium/Location	Requirements	Prerequisite	Citation	ARAR Determination	Comments
<b>To Be Considered (TBC):</b>					
<b>Chief of Naval Operations Instruction (OPNAVINST), 5100.23D, Chapter 17</b>					
Waste, Soil, and Debris	Exposure to asbestos fibers	Use, removal, and disposal of ACM	5100.23C, Chapter 17	Potential TBC for ACM at CAOC 4, 7, and 9	The Navy manual provides guidance for controlling or eliminating the exposure of Navy personnel to asbestos during the use, removal, and disposal of ACM. Since these provisions apply primarily to building structures and facilities, it is not considered to be relevant and appropriate. In addition, since compliance with NESHAP and federal OSHA is sufficient to protect human health and the environment, this manual is not considered TBC.
<b>U.S. EPA Guidance on Remedial Actions for Superfund Sites with PCB Contamination USEPA/540/G-90/007</b>					
Soils with PCB Contamination	Approach for evaluating and remediating sites with PCB contamination.	Soils contaminated with PCBs.	USEPA/540/G-90/007	Potential TBC for PCBs at CAOC 8A	Describes recommended approach for evaluating and remediating sites with PCB contamination. Since compliance with ARS 49-151 and 152 is sufficient to protect human health and the environment, this guidance is not considered TBC.

## **APPENDIX C**

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### **SITE INSPECTION CHECKLISTS AND ASSOCIATED DOCUMENTATION**

## **APPENDIX C1**

### **FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST FOR CAOC 1**



3. ROICC Office contact MCAS YUMA, Base Services Department  
MARIANO HAWK LOGISTICS BUS. MANAGER 3/21/02  
Name Title Date

Interviewed  at site  at office  by phone Phone no. 928-269-2717

Adjacent activities; local facility contacts; suggestions;  Report attached

Officer in Charge, managed Weapons Area DLP  
\* Current role, familiar with flight line development as well.  
\* Little change to flight line.  
\* All changes of significance would be reflected in Master Plan.

VERIFIED

MCAS YUMA ENVIR. DEPT., COMPLIANCE DIV. (DIRECTOR)  
4. Local regulatory authorities and response agencies (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply. DLP

Agency MCAS YUMA ENVIR. DEPT., COMPLIANCE DIV.  
Contact FRED DANIEL DIRECTOR 3/22/02 928-269-  
Name Title Date Phone no.

Problems; regulation or policy changes; suggestions;  Report attached  
\* FLIGHT LINE, RESIDENT UNIT OPERATIONS discussed  
(release reports logged have many for CAOC1)

Agency MCAS YUMA FACILITY SUPPORT SERVICES  
Contact LARRY LEAKE DIRECTOR 3/20/02 928-269-2161  
Name Title Date Phone no.

Problems; regulation or policy changes; suggestions;  Report attached  
IRP Manager - April 15, 1995 to Dec 30, 2000

Agency \_\_\_\_\_  
Contact \_\_\_\_\_  
Name Title Date Phone no.

Problems; regulation or policy changes; suggestions;  Report attached

Agency \_\_\_\_\_  
Contact \_\_\_\_\_  
Name Title Date Phone no.

Problems; interim observations/changes to regulations or policy; suggestions;  Report attached

5. Other interviews (optional)  Report attached.

Agency ADEQ, FEDERAL PROJECTS UNIT, SUPERFUND SECTION, WASTE PROGRAM DIV.  
 Contact FRANK SAMIHA PROJECT MANAGER 3/7/02 \_\_\_\_\_  
 Name Title Date Phone no.

Problems; regulation or policy changes; suggestions;  Report attached  
Agency comments on Draft (Rev. 1) Land Use Control Imple-  
mentation Plan (for OU1, OU2, etc.). Bearing on state regis-  
tration of all CAOCs of OU2 via DEUR.

Agency \_\_\_\_\_  
 Contact \_\_\_\_\_  
 Name Title Date Phone no.

Problems; regulation or policy changes; suggestions;  Report attached

Agency \_\_\_\_\_  
 Contact \_\_\_\_\_  
 Name Title Date Phone no.

Problems; regulation or policy changes; suggestions; remarks:  Report attached

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. Existing Facility Documents (CAOC 1 and 10 only)  N/A
- |   |  |                                     |                              |
|---|--|-------------------------------------|------------------------------|
| <input checked="" type="checkbox"/> incident reports    | <input checked="" type="checkbox"/> Readily available at <sup>ENVIR.</sup> DEPT. | <input type="checkbox"/> Up to date | <input type="checkbox"/> N/A |
| <input checked="" type="checkbox"/> waste mgmt. records | <input checked="" type="checkbox"/> Readily available at <sup>ENVIR.</sup> DEPT. | <input type="checkbox"/> Up to date | <input type="checkbox"/> N/A |
| <input type="checkbox"/> service agreements             | <input type="checkbox"/> Readily available                                       | <input type="checkbox"/> Up to date | <input type="checkbox"/> N/A |

Contact FRED DANIEL COMPLIANCE DIV. 3/22/02 \_\_\_\_\_  
 Name Title DIRECTOR Date Phone no.

Problems; regulation or policy changes; remarks:  Report attached  
A review of release reports for site for several releases  
were logged for the past year or so. Talked to Fred to  
identify what was standard experience at CAOC 1. The previous  
records already in storage at Cannon Air Defense Complex.

2. MCAS Yuma Environmental Department/MILCON Records (see above)



Violations have been reported  Yes  No  N/A  
 Other problems or suggestions:  Report attached

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2. Adequacy  ICs are adequate  ICs are inadequate  N/A  
 Remarks \_\_\_\_\_

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**D. General**

1. Vandalism/trespassing  Location shown on site map  No vandalism evident  
 Remarks \_\_\_\_\_

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2. Land use changes on site  N/A  
 Remarks NONE

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3. Land use changes off site  N/A  
 Remarks NONE IDENTIFIED OR REQUESTED FOR INSPECTION

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**VI. GENERAL SITE CONDITIONS (Applicable to all CAOCs)**

**A. Roads**  Applicable  N/A

1. Roads damaged  Location shown on site map  Roads adequate  N/A  
 Remarks of those viewed.

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**B. Other Site Conditions**

Remarks:  
Larry Leake - Radar Hill Bedrock extends in a ridge to south of Hangar #97 (last on flight line). Some gravel removed from foot print of BLDG. during construction.  
Asked M. Hawk to verify not much has changed on flight line in last 5 years. No change in land use, still in operation.

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**VII. LANDFILL COVERS (Applicable to conditions at CAOC 8A only)**

**A. Landfill Surface**

1. **Settlement (Low spots)**       Location shown on site map       Settlement not evident  
 Areal extent \_\_\_\_\_      Depth \_\_\_\_\_  
 Remarks \_\_\_\_\_

2. **Cracks**       Location shown on site map       Cracking not evident  
 Lengths \_\_\_\_\_      Widths \_\_\_\_\_      Depths \_\_\_\_\_  
 Remarks \_\_\_\_\_

3. **Erosion**       Location shown on site map       Erosion not evident  
 Areal extent \_\_\_\_\_      Depth \_\_\_\_\_  
 Remarks \_\_\_\_\_

4. **Holes**       Location shown on site map       Holes not evident  
 Areal extent NA      Depth \_\_\_\_\_  
 Remarks \_\_\_\_\_

5. **Vegetative Cover**       Grass       Cover properly established       No signs of stress  
 Trees/Shrubs (indicate size and locations on a diagram)  
 Remarks \_\_\_\_\_

6. **Alternative Cover (armored rock, concrete, etc.)**       N/A  
 Remarks \_\_\_\_\_

7. **Bulges**       Location shown on site map       Bulges not evident  
 Areal extent \_\_\_\_\_      Height \_\_\_\_\_  
 Remarks \_\_\_\_\_

8. **Wet Areas/Water Damage**       Wet areas/water damage not evident  
 Wet areas       Location shown on site map      Areal extent \_\_\_\_\_  
 Ponding       Location shown on site map      Areal extent \_\_\_\_\_  
 Seeps       Location shown on site map      Areal extent \_\_\_\_\_  
 Soft subgrade       Location shown on site map      Areal extent \_\_\_\_\_  
 Remarks \_\_\_\_\_

9. **Slope Instability**       Slides       Location shown on site map       No evidence of slope instability  
 Areal extent \_\_\_\_\_  
 Remarks \_\_\_\_\_

**B. Benches**       Applicable       N/A  
 (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)



XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

*ICs to maintain industrial use effective and functioning as designed (modified BMP) to protect human health.*

*Only open issue, not registered as an envir. ~~prop~~ use-restricted property with state through VEMUR does not have bearing on effectiveness at protecting human health.*

B. Adequacy of O&M (including pre-construction communications) *N/A*

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

C. Early Indicators of Potential Remedy Problems *N/A*

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

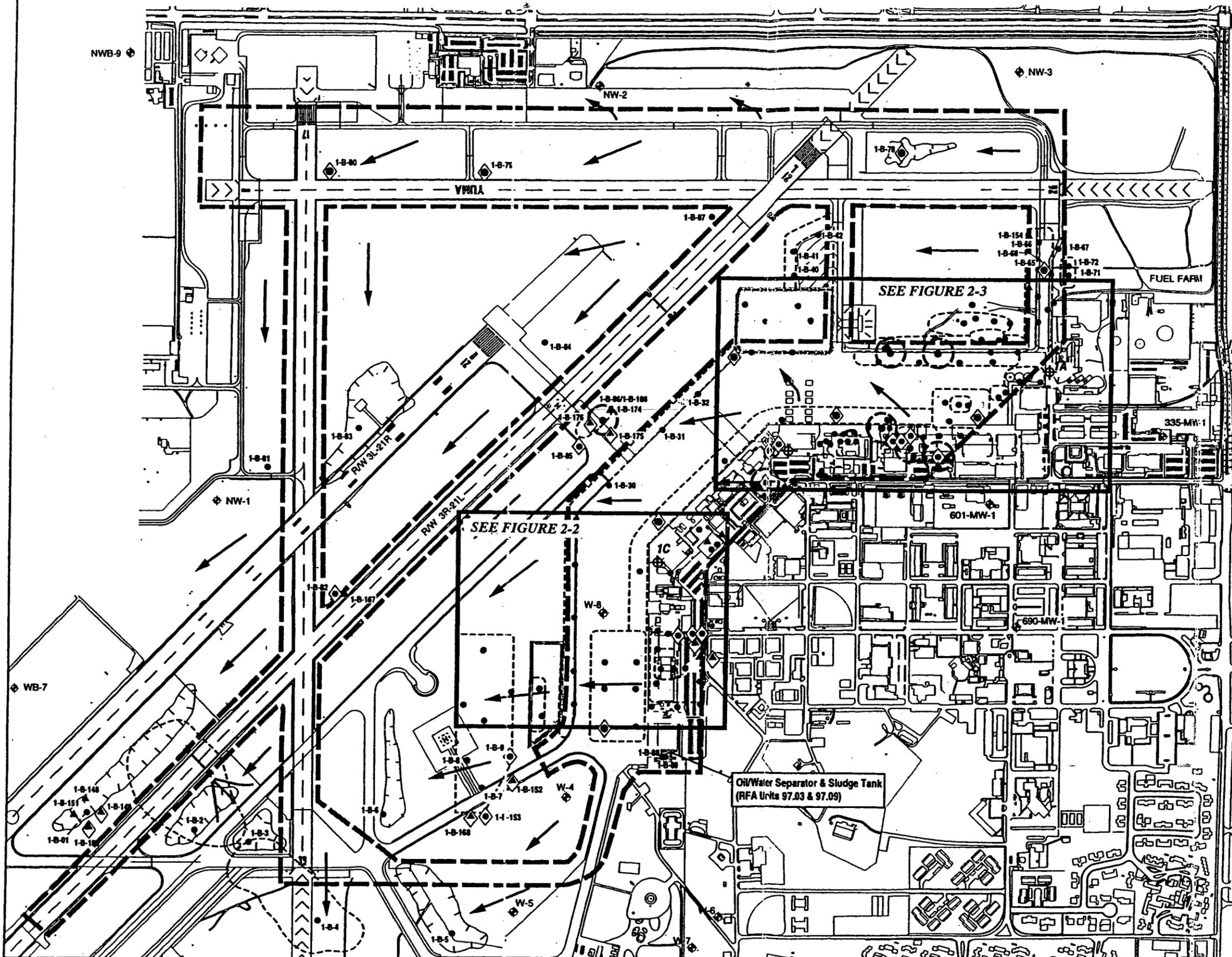
*None*

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

*To assure ICs maintained in the future, registration of the site promised in LUCIP, when transfer to ~~the~~ public ownership is sought.*

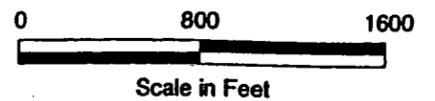
YUMA INTERNATIONAL AIRPORT



**LEGEND**

- Approximate FFA Boundary of CAOC 1
- Features Viewed in Aerial Photographs
- RCRA-type Facility Assessment (RFA) Unit Boundary
- Boring for Soil Screening Samples
- Boring for Soil Screening Samples (Step-out)
- Boring for Off-site Laboratory Analysis and Soil Screening Samples
- Existing Monitoring Well
- Existing Soil Boring Location
- Direction of Surface Drainage
- Topographic Depression
- Identified Hot Spot

*Note: No photographs permitted or collected during site walk.*



DEPARTMENT OF THE NAVY		NAVAL FACILITIES ENGINEERING COMMAND	
SAN DIEGO		CALIFORNIA	
NORTH ISLAND NAVAL AIR STATION		SAN DIEGO, CALIFORNIA	
<b>FIGURE 2-1:</b>			
<b>CAOC 1: FEATURE AND BORING LOCATION MAP</b>			
SIZE	CODE IDENT NO.	NAVFAC DRAWING NO.	
B			
SCALE	AS NOTED	SPEC.	SHEET OF

**APPENDIX C2**

**FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST FOR  
CAOC 8A**



**MCAS YUMA FACILITIES SUPPORT SERVICES**

**3. ROICC Office contact**

LARRY LEAKE DIRECTOR 3/20/02  
 Name Title Date

Interviewed  at site  at office  by phone Phone no. 928-269-2161

Adjacent activities; local facility contacts; suggestions;  Report attached

Site boundaries vs. VEMUR legal description.  
\* No problems maintaining institutional controls, site  
within a secured area. Other do have access,  
however no activities likely to disturb landfill  
contents.

**4. Local regulatory authorities and response agencies (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply. ADEQ = ARIZONA DEPT. OF ENVIRONMENTAL QUALITY.**

Agency ADEQ, FEDERAL PROJECTS UNIT, SUPERFUND PROGS. SEC., WASTE PROG.  
 Contact FRANK SMAILA PROJECT MANAGER 2/7/02 DIV.  
 Name Title Date Phone no.

Problems; regulation or policy changes; suggestions;  Report attached

Agency Comments on Draft (Rev. 1) Land Use Control  
Implementation Plan (for OU1 and OU2 etc). Bearing on CAOC8A  
and State registration of all 3 CAOCs of OU2 via DEUR.

Agency \_\_\_\_\_  
 Contact \_\_\_\_\_  
 Name Title Date Phone no.

Problems; regulation or policy changes; suggestions;  Report attached

Agency \_\_\_\_\_  
 Contact \_\_\_\_\_  
 Name Title Date Phone no.

Problems; regulation or policy changes; suggestions;  Report attached

Agency \_\_\_\_\_  
 Contact \_\_\_\_\_  
 Name Title Date Phone no.

Problems; interim observations/changes to regulations or policy; suggestions;  Report attached

5. Other interviews (optional)  Report attached.

MCAS YUMA 3:10pm  
 Agency ENVIRONMENTAL DEPT.  
 Contact JOE BRITAIN STAFF ENVIR. ENG. 3/22/02 928-269-5581  
 Name Title Date Phone no.

Problems; regulation or policy changes; suggestions;  Report attached  
 Details on construction plan review process at ENVIRONMENTAL DEPT.

MCAS YUMA ✓ provided base CADD file CD.  
 Agency BASE SERVICES DEPT.  
 Contact CRAIG BOWMAN UTILITIES TECH. 3/22/02 928-269-6368  
 Name Title Date Phone no.

Problems; regulation or policy changes; suggestions;  Report attached  
 \* Future plan to issue Environmental sign-off sheet of dig permit (i.e. Page 2) with bid requests for contracted work, and retain them for permit application package. New station orders for dig permits under supply these.  
 \* Permit appl. forms are handed contractors in pre-construction meeting  
 \* Dig permits are issued by the ROICC office.

Agency MCAS YUMA, LOGISTICS  
 Contact MARIANO HAWK LOGISTICS BUS. MNGR. 3/21/02 928-269-2717  
 Name Title Date Phone no.

Problems; regulation or policy changes; suggestions; remarks:  Report attached  
 Accesses to fenced yard that includes CAOC 8A.

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. Existing Facility Documents (CAOC 1 and 10 only)  N/A

- |  |  |                                     |                              |
|--|--|-------------------------------------|------------------------------|
| <input type="checkbox"/> incident reports    | <input type="checkbox"/> Readily available | <input type="checkbox"/> Up to date | <input type="checkbox"/> N/A |
| <input type="checkbox"/> waste mngt. records | <input type="checkbox"/> Readily available | <input type="checkbox"/> Up to date | <input type="checkbox"/> N/A |
| <input type="checkbox"/> service agreements  | <input type="checkbox"/> Readily available | <input type="checkbox"/> Up to date | <input type="checkbox"/> N/A |

Contact \_\_\_\_\_  
 Name Title Date Phone no.

Problems; regulation or policy changes; remarks:  Report attached

2. MCAS Yuma Environmental Department/MILCON Records



Violations have been reported  Yes  No  N/A  
 Other problems or suggestions:  Report attached  
*Maybe: not certain of instruction to Saddle Club members regarding use of access road off-site on south side. No evidence (manure) on other roads that may eventually cross site.*

2. Adequacy  ICs are adequate  ICs are inadequate  N/A  
 Remarks \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**D. General**

1. Vandalism/trespassing  Location shown on site map  No vandalism evident  
 Remarks \_\_\_\_\_  
 \_\_\_\_\_

2. Land use changes on site  N/A  
 Remarks *None visible; no apparent disturbance of flat or former disposal surfaces for sometime; no new debris.*

3. Land use changes off site  N/A  
 Remarks *None identified or requested for inspection.*

**VI. GENERAL SITE CONDITIONS (Applicable to all CAOCs)**

**A. Roads**  Applicable  N/A

1. Roads damaged  Location shown on site map  Roads adequate  N/A  
 Remarks *unpaved only, no evidence of recent use.*

**B. Other Site Conditions**

Remarks:  
*Square of land between North Ordnance Road access gate and gate to BIOCELL Area managed by ENVIRONMENTAL DEPT. is not a part of CAOC SA. Therefore no inquiry made about old tanker truck body stored (?) there.*  
*Gate to PMO yard (where cars parked long term) at north side fence east of west end of site is accessed by PMO through gate on west end fence line.*

**VII. LANDFILL COVERS (Applicable to conditions at CAOC 8A only)**

**A. Landfill Surface**

*Note: Landfill use predates RCRA. No formal cover used.*

1. **Settlement (Low spots)**       Location shown on site map       Settlement not evident  
 Areal extent \_\_\_\_\_      Depth \_\_\_\_\_  
 Remarks *Low spots correspond to some of large disposal cell areas. Nothing new or newly exposed.*

2. **Cracks**       Location shown on site map       Cracking not evident  
 Lengths \_\_\_\_\_      Widths \_\_\_\_\_      Depths \_\_\_\_\_  
 Remarks \_\_\_\_\_

3. **Erosion**       Location shown on site map       Erosion not evident  
 Areal extent \_\_\_\_\_      Depth \_\_\_\_\_  
 Remarks \_\_\_\_\_

4. **Holes**       Location shown on site map       Holes not evident  
 Areal extent \_\_\_\_\_      Depth \_\_\_\_\_  
 Remarks \_\_\_\_\_

5. **Vegetative Cover**   Grass       Cover properly established       No signs of stress  
 Trees/Shrubs (indicate size and locations on a diagram)  
 Remarks *Typical desert cover, chapparal.*

6. **Alternative Cover (armored rock, concrete, etc.)**       N/A  
 Remarks \_\_\_\_\_

7. **Bulges**       Location shown on site map       Bulges not evident  
 Areal extent \_\_\_\_\_      Height \_\_\_\_\_  
 Remarks \_\_\_\_\_

8. **Wet Areas/Water Damage**       Wet areas/water damage not evident  
 Wet areas       Location shown on site map      Areal extent \_\_\_\_\_  
 Ponding       Location shown on site map      Areal extent \_\_\_\_\_  
 Seeps       Location shown on site map      Areal extent \_\_\_\_\_  
 Soft subgrade       Location shown on site map      Areal extent \_\_\_\_\_  
 Remarks \_\_\_\_\_

9. **Slope Instability**       Slides       Location shown on site map       No evidence of slope instability  
 Areal extent \_\_\_\_\_  
 Remarks *No slope to site area generally, only around former cells.*

**B. Benches**       Applicable       N/A  
 (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)



XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.)

*Institutional controls to maintain current land use, whether as a former landfill or for ordnance storage at the Ordnance Distribution Facility, appear to be effective and functioning as designed (see Revised BMP) to protect human health.*  
*ISSUES: (1) May cease to be protective if notice of ICs not posted at the site boundaries identifying the area that should not be disturbed (by activities of any type).*  
*(2) CAOC 8A is not registered with the State as a property with*

B. Adequacy of O&M (including pre-construction communications)

*land-use restrictions for environmental reasons.*

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

*N/A*

C. Early Indicators of Potential Remedy Problems

*N/A*

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

*To assure ICs are maintained in the future:*  
*(1) Post use restrictions at boundaries of CAOC 8A.*  
*(2) Clarify registration of the site upon transfer to public ownership is provided for in the LUCIP and/or other means in place of State submittal of a VEMUR or DEUR.*

*Other: The results of the site inspection of the former street range area should be evaluated for impact on CAOC 8A status and remedy protectiveness.*

04-B-01  
(IN PLAYGROUND  
2208)

VICINITY  
MAP

0 2000  
Feet

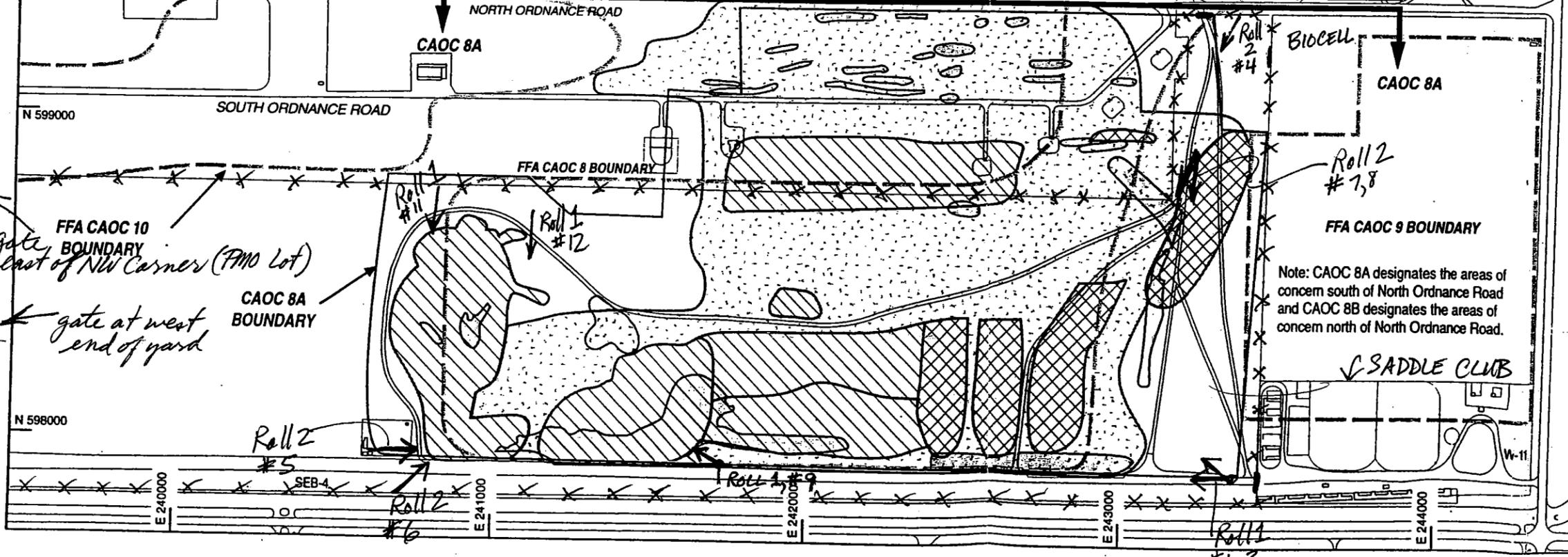
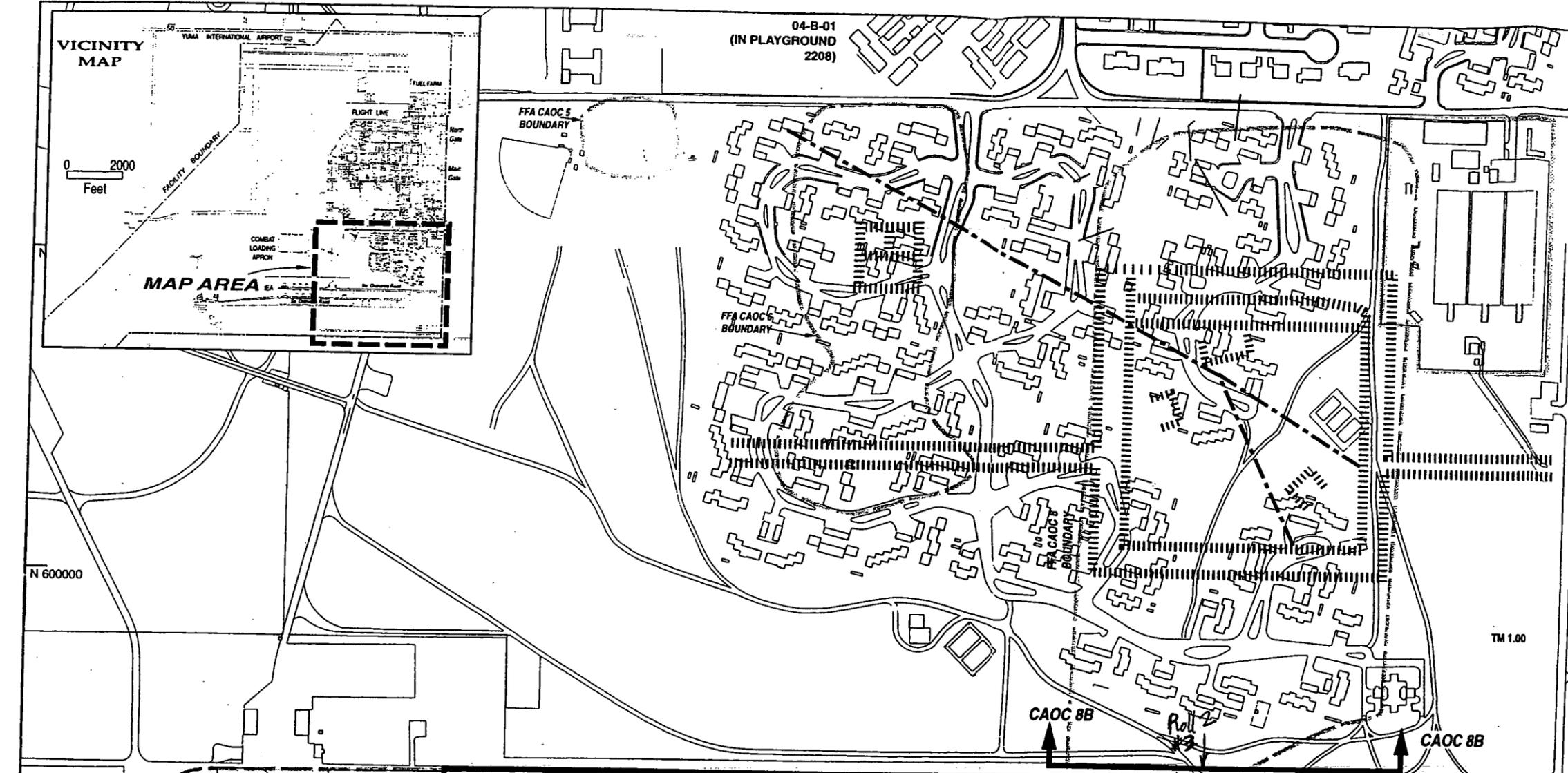
MAP AREA

**LEGEND**

- 8.6 Known or Suspected Waste Disposal Area (CAOC 8)
- Sewage Disposal Area (CAOC 6)
- FFA Boundary
- Former Berm
- Underground Pipeline
- Disposal Cells
- Disposal Cells with High Activity
- Disturbed and/or Surface Disposal Area Receiving Primary Construction Debris
- Geophysical Anomaly (EM, Mag, or GPR)

- FENCE LINE
- GATE IN FENCE LINE

Roll 2 | Photo taken and direction  
#3 ↓



Note: CAOC 8A designates the areas of concern south of North Ordnance Road and CAOC 8B designates the areas of concern north of North Ordnance Road.

0 400 800 1200  
Scale in Feet

Source: Jacobs Engineering Group, 1996

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND  
SAN DIEGO SOUTHWEST DIVISION CALIFORNIA  
NORTH ISLAND NAVAL AIR STATION SAN DIEGO, CALIFORNIA

**FIGURE 2-7:  
CAOC 8: FEATURE AND BORING LOCATION MAP**

SIZE <b>B</b>	CODE IDENT NO.	NAVFAC DRAWING NO.
SCALE AS NOTED	SPEC.	SHEET OF

15 AUG 2001

MEMORANDUM

From: Environmental Department

To: Facilities Management Department, Attn. Mr. Ron Kruse, Staff Civil Engineer

Subj: CLOSURE PLANS FOR CERCLA AREA OF CONCERN (CAOC) #8A

Encl: (1) E-Mail from Western Area Counsel Office (WACO) dtd 14 Aug 01

1. We are in receipt of your request for closure of the CAOC #8A. We have contacted the WACO for a legal opinion since the area did encroach a former skeet range. See the enclosed response from Major Jump (WACO).

2. After reviewing the plans for closure of the CAOC #8A, we have determined that CAOC #8A should not be disturbed until the site is characterized to determine if there is any danger to human health or the environment posed by a former skeet range. CAOC #8A contains an area that had been previously used as a skeet range from 1940 to 1983. During this period of time, the area immediately to the west of CAOC #8A was used as a tower trap range including a moving target range that operated in the area where the bunkers are currently located. These areas are covered with a large amount of clay target debris, as well as an unknown amount of lead shot, and are considered to be "closed ranges". As a result, a site assessment must be done. Furthermore, any grading, filling or construction would hinder the site assessment process.

3. There is also an environmental concern with the closure plan requirement to rake the east edge of CAOC #8A down to a depth of 48 inches. While surface removal of debris is considered to be normal maintenance of the site, this depth has the potential to disturb the interior of the landfill, which would be in violation of the Record of Decision (ROD) for Operable Unit (OU) 2.

4. If additional information is needed, please contact Ms. Marie Stewart, at 269-5637.

  
HERBERT "GIL" GUILLORY

Copy to:

Joint Law Center (LtCol Boughman)

ROICC (Jon Coger)

-----Original Message-----

**From:** Jump Maj Darren S  
**Sent:** Monday, August 13, 2001 4:24 PM  
**To:** Boughman LtCol Paul R  
**Cc:** Stewart Ms Marie; Gullory Mr Herbert  
**Subject:** CAOC-8A  
**Sensitivity:** Private

Sir:

## 1. Background

a. On 8 August 2001, I visited Yuma to meet with staff and discuss Yuma's proposal to fill and grade its CERCLA Area of Concern (CAOC), Number 8A (a former landfill area containing asbestos containing materials and other unknown waste). Following our meeting, Gill drove me to CAOC Number 8A. CAOC Number 8A is a highly disturbed area, intermittently littered with wood, metal, and other construction and demolition debris. Black clay target fragments also litter its surface (with an unknown quantity of lead shot). I'm told these fragments originate from a former recreational skeet range and "Tower Trap Range" operated over or around CAOC Number 8A from the 1940s to approximately 1983.

b. Another highly disturbed area lies to the west of CAOC Number 8A. Black clay target fragments and other debris intermittently litter the surface here as well. I'm told this area was a former Moving Base Range in the 1940's--an area where the Army Air Corps launched clay targets for proficiency with shotguns mounted on moving vehicles with turrets. Today, ammunition bunkers border CAOC Number 8A to the north. Beyond that, family housing lies to the north and northeast, and agricultural fields border to the south. To the casual observer (i.e., me), both CAOC Number 8A and the former Moving Base Range appear alike. The only appreciable difference between the two is a significant depression over CAOC Number 8A.

c. During our meeting, Gill revealed that Yuma may consider constructing a solar energy collection facility over one or both of these sites. To assist Yuma in deciding how to proceed with this proposed action, Gil requested an opinion on how to generally manage the unknown amount of clay target debris and lead shot on the surface and immediate subsurface of CAOC Number 8A and the former Moving Base Range. In doing so, I assume the unknown quantity of clay target debris and lead shot (and any resulting contamination to soil) was not considered in selecting the CERCLA remedy for CAOC 8A.

2. Opinion. Yuma should not now grade or fill CAOC Number 8A. All construction over CAOC Number 8A (to include the recreational skeet range and the "Tower Trap Range) and the site of the former Moving Base Range should be postponed until the unknown amount spent clay target debris, lead shot, and potentially-contaminated surface and subsurface range soils are

Enclosure ( / )

characterized to determine whether they "may present an imminent and substantial endangerment to health and the environment" and require a response. 42 U.S.C. sections 6972(a)(1)(B) and 6973(a). [I assume the former ranges are not subject to the state's RCRA corrective action authority because Yuma does not have a permitted RCRA hazardous waste treatment, storage, or disposal facility. 42 U.S.C. section 6924(v)].

### 3. Justification.

a. The EPA has consistently held that munitions fired on active military ranges are used for their intended purpose and not subject to regulation as RCRA waste management activity. Military Munitions Rule, 62 Fed. Reg. 6,622, 6,628 (February 12, 1997). Similarly, spent munitions remaining on active and inactive military ranges are not subject to RCRA solid waste/hazardous waste regulatory requirements. 62 Fed. Reg. 6,622, 6,630. Under the federal Military Munitions Rule that Arizona incorporates by reference, [65 Fed. Reg. 64369 (October 27, 2000)] an "active range" is a "military range that is currently in service and is being regularly used for range activities." 40 CFR section 266.201, Ariz. Admin. Code R-18-8-266.A. An "inactive range" is a "military range that is not currently being used, but that is still under military control and considered by the military to be a potential range area, and that has not been put to a new use that is incompatible with range activities." 40 CFR section 266.201, Ariz. Admin. Code R-18-8-266.A. A "military range" is generally an area set aside for training military personnel with military munitions and explosives. 40 CFR section 266.201, Ariz. Admin. Code R-18-8-266.A.

b. The former recreational skeet range is not a "military range" because it was not set aside to train military personnel in proficiency with military munitions and/or explosives. 40 CFR section 266.201, Ariz. Admin. Code R-18-8-266.A. Consequently, after a certain period after the range ceased operations, the unknown quantity of black clay target fragments, lead shot littering its surface and subsurface became subject to regulation as RCRA statutory solid waste. *Connecticut Coastal Fishermen's Association v. Remington Arms Co.*, 989 F.2d 1305, 1316 (2d Cir. 1993). Whether these "solid wastes" are now regulated as statutory hazardous waste requiring remediation depends upon whether they pose a "substantial present or potential hazard to human health or the environment." *Connecticut Coastal*, 989 F.2d 1305, 1316-17. 42 U.S.C. section 6903(5).

c. RCRA [and Arizona's implementation of RCRA's hazardous waste management program] does not define the term, "closed range." The term, however, was defined in withdrawn drafts of the DOD's "Range Rule." In these drafts, a "closed range" is a "military range that has been taken out of service as a range and that either has been put to new uses that are incompatible with range activities or is not considered by the military to be a potential range area...." (10/01/99 draft) The "Tower Trap Range," and the Moving Base Range were once active ranges. They could also have been inactive ranges for a period of time. Today, however, they should be considered "closed" ranges because Yuma does not consider them potential range areas. This intent is evidenced by the incompatible land use surrounding

them and Yuma not identifying them as "active" or "inactive" for potential small arms military training. Because these ranges should be considered "closed," they should also be assessed to determine what threat/hazard, if any, they pose to human health or the environment and whether follow-on notification, investigation, and response is required. See generally, MCO P5090.2A, para. 10201 ("If a potential disposal site exists, conduct a PA to determine whether a release has occurred"). To properly accomplish this, they should not be disturbed by grading, filling, or with new construction.

v/r

### Major Jump

Special Counsel, Environmental Law  
Western Area Counsel Office  
Box 555231  
Camp Pendleton, California 92055-5231  
Com: (760) 725-5191; DSN: 365-5191  
Fax: XXX-5132

ATTORNEY-CLIENT PRIVILEGED INFORMATION

E-mail: [jumpds@mail.cpp.usmc.mil](mailto:jumpds@mail.cpp.usmc.mil)

## **APPENDIX C3**

### **FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST FOR CAOC 10 (A/B)**

# Five-Year Review Site Inspection Checklist

I. SITE INFORMATION													
Site name: <u>MCAS YUMA, OUZ (CAOC 10)</u>	Date of inspection: <u>3/21/02</u>												
Location and Region: <u>YUMA Co., AZ</u>	EPA ID: (station) <u>AZ0971590062</u>												
Agency, office, or company leading the five-year review: <u>SWDIV, NAVFACENGCOM</u>	Weather/temperature: <u>Sunny, clear, warm.</u>												
Remedy Includes: (Check all that apply) <table style="width: 100%; border: none;"> <tr> <td><input type="checkbox"/> Landfill cover/containment</td> <td><input type="checkbox"/> Monitored natural attenuation</td> </tr> <tr> <td><input type="checkbox"/> Access controls</td> <td><input type="checkbox"/> Groundwater containment</td> </tr> <tr> <td><input checked="" type="checkbox"/> Institutional controls <i>only</i></td> <td><input type="checkbox"/> Vertical barrier walls</td> </tr> <tr> <td><input type="checkbox"/> Groundwater pump and treatment</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Surface water collection and treatment</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Other _____</td> <td></td> </tr> </table>		<input type="checkbox"/> Landfill cover/containment	<input type="checkbox"/> Monitored natural attenuation	<input type="checkbox"/> Access controls	<input type="checkbox"/> Groundwater containment	<input checked="" type="checkbox"/> Institutional controls <i>only</i>	<input type="checkbox"/> Vertical barrier walls	<input type="checkbox"/> Groundwater pump and treatment		<input type="checkbox"/> Surface water collection and treatment		<input type="checkbox"/> Other _____	
<input type="checkbox"/> Landfill cover/containment	<input type="checkbox"/> Monitored natural attenuation												
<input type="checkbox"/> Access controls	<input type="checkbox"/> Groundwater containment												
<input checked="" type="checkbox"/> Institutional controls <i>only</i>	<input type="checkbox"/> Vertical barrier walls												
<input type="checkbox"/> Groundwater pump and treatment													
<input type="checkbox"/> Surface water collection and treatment													
<input type="checkbox"/> Other _____													
Attachments: <input type="checkbox"/> Inspection team roster attached <input checked="" type="checkbox"/> Site map attached													
II. INTERVIEWS (Check all that apply)													
1. MCAS Yuma Environmental Department <span style="float: right;"><u>RICK OFF MEETING</u></span>													
<u>H. GIL GUILLORY</u> <u>DIRECTOR, MCAS YUMA ENVIR. DEPT.</u> <u>3/20/02</u> Name    Title    Date <u>0900</u>													
Interviewed <input type="checkbox"/> at site <input checked="" type="checkbox"/> at office <input type="checkbox"/> by phone    Phone no. <u>928-269-2282</u>													
Site status, adjacent activities, suggestions; <input type="checkbox"/> Report attached													
<u>* no changes to site in last five years.</u> <u>* no endangered or threatened species, 5 years ago or today.</u> <u>* mentioned and provided copy of Memorandum regarding closure plan request for CAOC 10. CAOC 10 has some part of former skeet range (operational 1940 to 1983), times trap range w/ moving target range where bunkers are today, where clay skeet debris and lead shot are present on site surface.</u>													
2. MCAS Yuma Environmental Department													
<u>CAROL LEWIS</u> <u>IRP MANAGER</u> <u>3/22/02</u> Name    Title    Date													
Interviewed <input type="checkbox"/> at site <input checked="" type="checkbox"/> at office <input type="checkbox"/> by phone    Phone no. <u>928-269-5637</u>													
Site status, adjacent activities, suggestions; <input type="checkbox"/> Report attached													
<u>* No issues she is aware of regarding problems maintaining institutional controls for the site.</u>													

see attached to CAOC 10 SA

3. ~~ROICC~~ Office contact MCAS YUMA, LOGISTICS  
MARIANO HAWK LOGISTICS BUS. MANAGER 3/21/02  
 Name Title Date  
 Interviewed  at site  at office  by phone Phone no. 928-269-2717  
 Adjacent activities; local facility contacts; suggestions;  Report attached  
Officer-in-Charge, Managed Weapons Assembly Area (within Ordnance Distribution Facility) 1996-1999.  
Previously managed by: JOE WOLFE 808-457-2996 (Hawaii)  
Area now managed by: Stephen Spencer.

4. MCAS YUMA, ORDNANCE DISTRIBUTION FACILITY, 1  
 Local regulatory authorities and response agencies (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.  
 Agency BASE SERVICES DEPT. ORDNANCE DISTRIBUTION  
 Contact STEPHEN SPENCER FACILITY MANAGER 3/21/02  
 Name Title Date Phone no.  
 Problems; regulation or policy changes; suggestions;  Report attached  
Been at this position only a couple months; no problems/issues thus far.

MCAS YUMA  
 Agency FACILITIES SUPPORT SERV. ~~DEPT.~~  
 Contact LARRY LEAKE DIRECTOR 3/20/02 928-269-2161  
 Name Title Date Phone no.  
 Problems; regulation or policy changes; suggestions;  Report attached  
Site boundaries vs. VEMUR Legal descriptions  
\* NO problems maintaining institutional controls, site within a very secure area.

Agency \_\_\_\_\_  
 Contact \_\_\_\_\_  
 Name Title Date Phone no.  
 Problems; regulation or policy changes; suggestions;  Report attached

Agency \_\_\_\_\_  
 Contact \_\_\_\_\_  
 Name Title Date Phone no.  
 Problems; interim observations/changes to regulations or policy; suggestions;  Report attached

5. Other interviews (optional)  Report attached.

Agency ADEQ, FEDERAL PROJECTS UNIT, SUPERFUND SECTION, WASTE PROGRAM  
 Contact FRANK SMILA PROJECT MANAGER 2/7/02 DIV.  
 Name Title Date Phone no.

Problems; regulation or policy changes; suggestions;  Report attached  
Agency comments on Draft (Rev. 1) Land Use Control Implementation Plan (for OU 1, OU 2, etc). Bearing on state registration of all 3 CAOCs of OU 2 via DEUR.

Agency \_\_\_\_\_  
 Contact \_\_\_\_\_  
 Name Title Date Phone no.

Problems; regulation or policy changes; suggestions;  Report attached

Agency \_\_\_\_\_  
 Contact \_\_\_\_\_  
 Name Title Date Phone no.

Problems; regulation or policy changes; suggestions; remarks:  Report attached

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. Existing Facility Documents (CAOC 1 and 10 only)  N/A
- |  |  |                                     |                              |
|--|--|-------------------------------------|------------------------------|
| <input checked="" type="checkbox"/> incident reports | <input checked="" type="checkbox"/> Readily available <sup>thru</sup> ENVIR. DEPT. | <input type="checkbox"/> Up to date | <input type="checkbox"/> N/A |
| <input type="checkbox"/> waste mgmt. records         | <input type="checkbox"/> Readily available   | <input type="checkbox"/> Up to date | <input type="checkbox"/> N/A |
| <input type="checkbox"/> service agreements          | <input type="checkbox"/> Readily available   | <input type="checkbox"/> Up to date | <input type="checkbox"/> N/A |

Contact CAROL LEWIS IRP MANAGER 3/22/02 928-269-5637  
 Name Title Date Phone no.

and also possibly FRED DANIELS, COMPLIANCE DIV. MNGR, ENVIR. DEPT. (928-269-  
 Problems; regulation or policy changes; remarks:  Report attached  
\* Our search of incidents or release report file and log book maintained at ENVIRONMENTAL DEPT. did not have any files or listings for the site. Records beyond approximately one year ago are filed at Cannon Air Defense Complex, and were not requested for review.

2. MCAS Yuma Environmental Department/MILCON Records (see above)



Violations have been reported  Yes  No  N/A  
 Other problems or suggestions:  Report attached

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2. Adequacy  ICs are adequate  ICs are inadequate  N/A  
 Remarks \_\_\_\_\_

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**D. General**

1. Vandalism/trespassing  Location shown on site map  No vandalism evident  
 Remarks \_\_\_\_\_

---

2. Land use changes on site  N/A  
 Remarks NONE

---

3. Land use changes off site  N/A  
 Remarks NONE IDENTIFIED OR REQUESTED FOR INSPECTION

---

**VI. GENERAL SITE CONDITIONS (Applicable to all CAOCs)**

**A. Roads**  Applicable  N/A

1. Roads damaged  Location shown on site map  Roads adequate  N/A  
 Remarks of those reviewed

---

**B. Other Site Conditions**

Remarks:  
 \* Viewed area south of Ordnance ~~the~~ Distribution Facility for evidence of CAOC 10b. Result: nothing noted, except sheet fragments present on facility and 10b site of perimeter fence.  
 \* Sheet fragments not noted on surface of facility mapped as CAOC 10 for institutional controls.  
 \* Area of Ordnance Distribution Facility west of CAOC 8A access at N. Ordnance Road is shown on CAOC 8A map with institutional controls (in Master Plan) as part of CAOC 8A. This area, up to mapped east boundary of CAOC 10, is obviously in use for Ordnance Storage, and apparently has been for some time.

**VII. LANDFILL COVERS (Applicable to conditions at CAOC 8A only)**

**A. Landfill Surface**

1. **Settlement (Low spots)**       Location shown on site map       Settlement not evident  
 Areal extent \_\_\_\_\_  
 Depth \_\_\_\_\_  
 Remarks \_\_\_\_\_

2. **Cracks**       Location shown on site map       Cracking not evident  
 Lengths \_\_\_\_\_ Widths \_\_\_\_\_ Depths \_\_\_\_\_  
 Remarks \_\_\_\_\_

3. **Erosion**       Location shown on site map       Erosion not evident  
 Areal extent \_\_\_\_\_  
 Depth \_\_\_\_\_  
 Remarks \_\_\_\_\_

4. **Holes**       Location shown on site map       Holes not evident  
 Areal extent  \_\_\_\_\_  
 Depth \_\_\_\_\_  
 Remarks \_\_\_\_\_

5. **Vegetative Cover**       Grass       Cover properly established       No signs of stress  
 Trees/Shrubs (indicate size and locations on a diagram)  
 Remarks \_\_\_\_\_

6. **Alternative Cover (armored rock, concrete, etc.)**       N/A  
 Remarks \_\_\_\_\_

7. **Bulges**       Location shown on site map       Bulges not evident  
 Areal extent \_\_\_\_\_  
 Height \_\_\_\_\_  
 Remarks \_\_\_\_\_

8. **Wet Areas/Water Damage**       Wet areas/water damage not evident  
 Wet areas       Location shown on site map      Areal extent \_\_\_\_\_  
 Ponding       Location shown on site map      Areal extent \_\_\_\_\_  
 Seeps       Location shown on site map      Areal extent \_\_\_\_\_  
 Soft subgrade       Location shown on site map      Areal extent \_\_\_\_\_  
 Remarks \_\_\_\_\_

9. **Slope Instability**       Slides       Location shown on site map       No evidence of slope instability  
 Areal extent \_\_\_\_\_  
 Remarks \_\_\_\_\_

**B. Benches**       Applicable       N/A  
 (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

<b>C. Letdown Channels</b>		<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)			
<b>D. Cover Penetrations</b>		<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	<b>Gas Vents</b>	<input type="checkbox"/> Active	<input type="checkbox"/> Passive
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled
	<input type="checkbox"/> Evidence of leakage at penetration	<input type="checkbox"/> Needs Maintenance	<input type="checkbox"/> Good condition
	Remarks _____		<input type="checkbox"/> N/A
2.	<b>Gas Monitoring Probes</b>	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Needs Maintenance	<input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> N/A
	Remarks _____		
3.	<b>Monitoring Wells (within surface area of landfill)</b>	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Needs Maintenance	<input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> N/A
	Remarks _____		
4.	<b>Leachate Extraction Wells</b>	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled
	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Needs Maintenance	<input type="checkbox"/> Good condition
	<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> N/A
	Remarks _____		
5.	<b>Settlement Monuments</b>	<input type="checkbox"/> Located	<input type="checkbox"/> Routinely surveyed
	Remarks _____		<input type="checkbox"/> N/A
<b>E. Gas Collection and Treatment</b>		<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A
<b>F. Cover Drainage Layer</b>		<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A
<b>G. Detention/Sedimentation Ponds</b>		<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A
<b>H. Retaining Walls</b>		<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A
<b>I. Perimeter Ditches/Off-Site Discharge (if applicable)</b>		<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A
<b>VIII. VERTICAL BARRIER WALLS</b>		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
<b>IX. GROUNDWATER/SURFACEWATER REMEDIES</b>		<input type="checkbox"/> Applicable	<input type="checkbox"/> N/A
<b>X. OTHER REMEDIES</b>		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A

**XI. OVERALL OBSERVATIONS**

**A. Implementation of the Remedy**

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

*ICs to maintain industrial use are effective and functioning as designed (Modified BMP) to protect human health.*

*Only open issue, not registered as an environmental use-restricted property with state through VEMUR or DEUR, does not have a bearing on effectiveness at protecting human health.*

**B. Adequacy of O&M (including pre-construction communications) *N/A***

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**C. Early Indicators of Potential Remedy Problems *N/A***

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

*None*

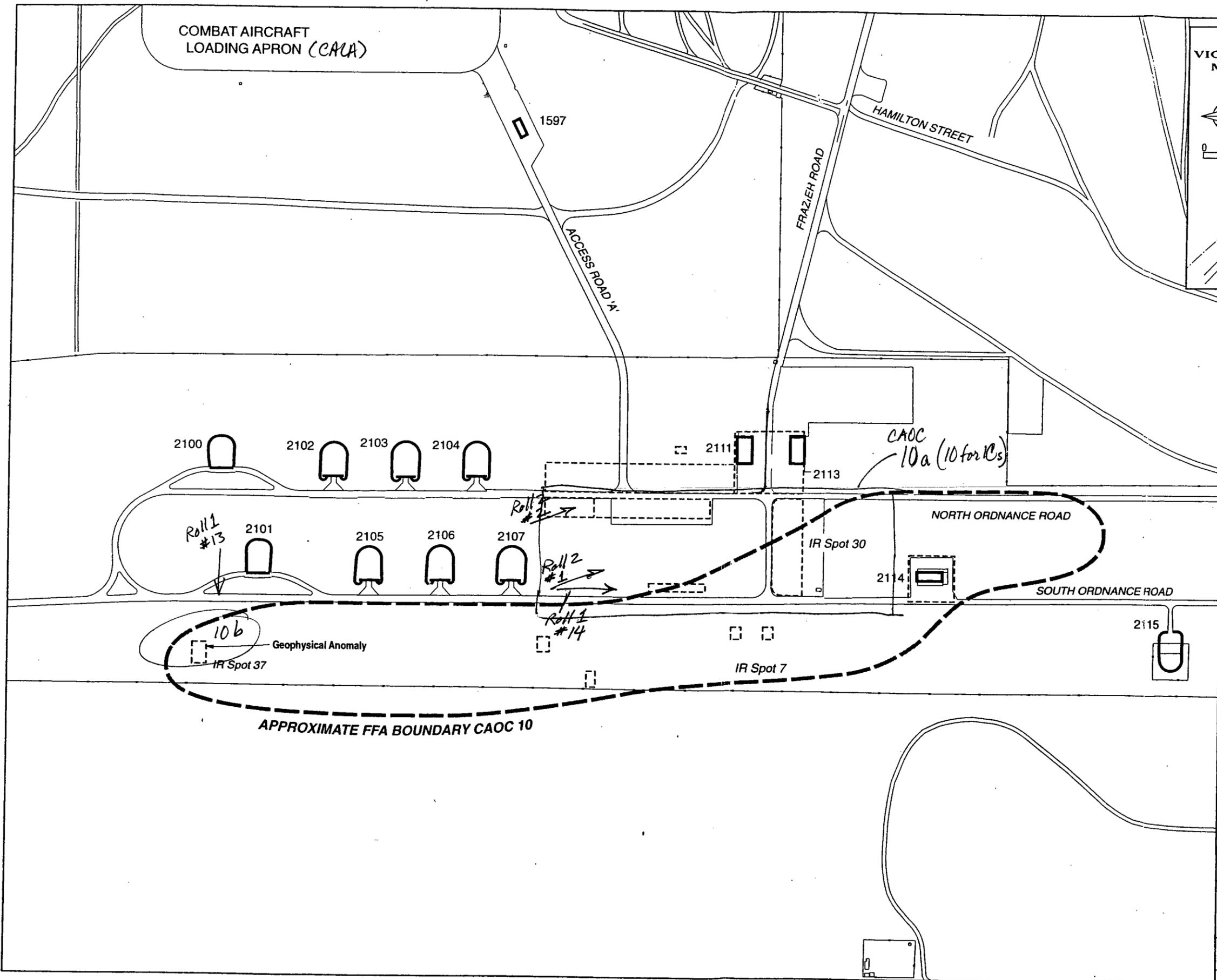
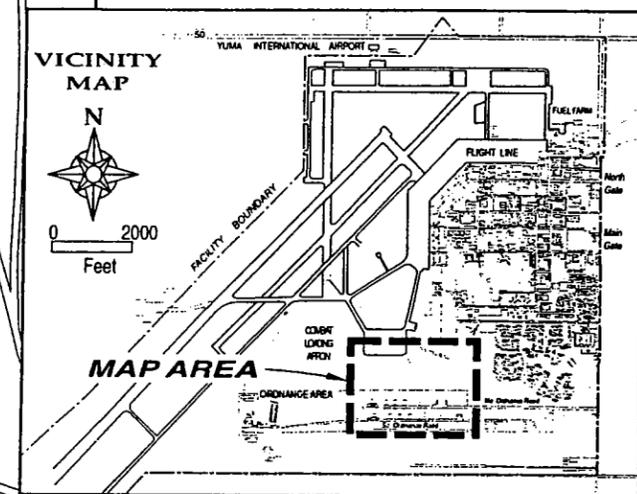
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**D. Opportunities for Optimization**

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

*To assure ICs maintained in the future, registration of the site promised in LUCIP, when transfer to public ownership is sought.*

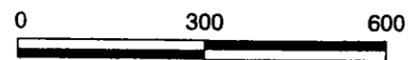
*OTHER: Site inspection to close former sheet range area should verify ~~area~~ that CAOC 10 is not a part of the former area - or - include CAOC 10 in the site inspection.*



**LEGEND**

- FFA Boundary
- Aerial Photo Features
- Existing Structures
- Fenceline

Roll 1 #13 ↓ Photo taken and direction



Approximate Scale in Feet  
Source: Jacobs Engineering Group, 1996

DEPARTMENT OF THE NAVY  
NAVAL FACILITIES ENGINEERING COMMAND  
SOUTHWEST DIVISION  
SAN DIEGO CALIFORNIA  
NORTH ISLAND NAVAL AIR STATION SAN DIEGO, CALIFORNIA

**FIGURE 2-9:  
CAOC 10: FEATURE MAP**

SIZE	CODE IDENT NO.	NAVFAC. DRAWING NO.
B		
SCALE	AS NOTED	SHEET OF

## **APPENDIX D**

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### **PHOTOGRAPHS DOCUMENTING SITE CONDITIONS**

## Site Inspection Photographs

### CAOC 8A



Date: 03/22/02

Photo: Roll II / No. 3

Looking south through the North Ordnance Road gate into the greater fenced area in which CAOC 8A is located. Beyond the gate, the fence line shown at right marks the boundary of the Ordnance Distribution Facility (ODF).



Date: 03/22/02

Photo: Roll II / No. 4

Looking southwest across CAOC 8A from a short distance inside the gate at North Ordnance Road. Note the site is relatively flat, with little vegetation. The area shown left of the dirt road at right and before the first intersecting road south (to Biocell) is not part of CAOC 8A.



Date: 03/21/02

Photo: Roll I / No.3

Looking northwest across CAOC8A from the southern perimeter road and Broken Gate Saddle Club. The storage bunkers (white) of the ODF are in the background.



Date: 03/21/02

Photo: Roll I / No. 9

Looking west across CAOC 8A, along the southern perimeter road. Note the hummocky ground surface and presence of stone and construction rubble present on this side of the site.



Date: 03/22/02

Photo: Roll II / No. 5

Looking back east along the southern boundary of CAOC 8A from the southwest corner of the site. Note evidence of water drainage to this area and the presence of old construction debris and refuse.



Date: 03/21/02

Photo: Roll I / No. 11

Looking south across the westernmost former disposal cell of CAOC 8A, from the northwest corner of the site. This is the deepest depression on the site, estimated at about 8 feet deep; and it extends to the southern perimeter road. Some large stones and wooden and metal construction debris are evident on the site surface.



Date: 03/21/02

Photo: Roll I / No. 12

Looking south across CAOC 8A toward the southern perimeter road. Some metal and concrete construction debris is evident on the site surface. Larger stone and construction debris mark the north side of the road.

## Site Inspection Photographs

### CAOC 10(A and B)



Date: 03/21/02

Photo: Roll II / No. 2

Looking northeast across CAOC 10A to the gates on the north fence of the Ordnance Distribution Facility (ODF) from a point near the west end of the site.



Date: 03/21/02

Photo: Roll II / No. 1

Looking northeast across the west end of CAOC 10A from a point south of the main gate of the ODF. The picture shows the temporary buildings used for weapons assembly and the organized staging of boxed parts for this purpose.



Date: 03/21/02

Photo: Roll I / No. 13

From the same vantage point as the previous photograph (II/1), looking east past the temporary buildings along North Ordnance Road. Points south of the road are not on CAOC 10A.



Date: 03/21/02

Photo: Roll I / No. 14

Looking southwest across CAOC 10B from a point off South Ordnance Road. Skeet fragments are present on the ground surface.

## **APPENDIX E**

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### **INTERVIEW REPORTS**

## **APPENDIX E1**

### **INTERVIEW DOCUMENTATION FORM**

## INTERVIEW DOCUMENTATION FORM

The following individuals were interviewed for this 5-year review or provided information in meetings, site visits, etc. See the attached contact records for a detailed summary of the interviews. The site inspection checklists provided in Appendix B contain additional information.

Name	Title	Organization (at MCAS Yuma)	Date	Appendix
Herbert "Gil" Guillory	Director	Environmental Department	03/20/02*	C1, C2, C3
Herbert "Gil" Guillory	Director	Environmental Department	07/26/02*	E10
Carol Lewis	IR Program Manager	Environmental Department	03/20-22/02*	C1, C2, C3
Larry Leake	Director, Facility Support Services Division	Facilities Maintenance Department	03/20/02	E2
Larry Leake	Director, Facility Support Services Division	Facilities Maintenance Department	03/21/02	E3
Larry Leake	Director, Facility Support Services Division	Facilities Maintenance Department	07/26/02	E9
Mariano Hawk	Logistics Business Manager	Base Services Department	03/21/02	E5
Stephen Spencer	Manager	Ordnance Distribution Facility	03/21/02	E6
Fred Daniel	Director, Compliance Division	Environmental Department	03/22/02	E4
Joe Britain	Staff Environmental Engineer	Environmental Department	03/22/02	E7
Craig Bowman	Utilities Technician	Facilities Maintenance Department	03/22/02*	C2

**Note:**

- \* see Site Inspection Checklists in the referenced appendix for the information collected from the individual on this date; a separate interview report was not made

**Acronyms/Abbreviations:**

- IR – Installation Restoration (Program)
- MCAS – Marine Corps Air Station

**APPENDIX E2**

**INTERVIEW RECORD FOR LARRY LEAKE (3/20/02)**

# INTERVIEW RECORD

Site Name: <i>MCAS YUMA, OUL2 (CAOCs 1, 8A, 10)</i>	EPA ID No.: <sup>(station)</sup> <i>AZ0971590062</i>	
Subject: <i>FIRST FIVE-YEAR REVIEW FOR OUL2</i>	Time: <i>2:45 to 4:00pm</i>	Date: <i>3/20/02</i>
Type: <input type="checkbox"/> Telephone <input checked="" type="checkbox"/> Visit <input type="checkbox"/> Other	<input type="checkbox"/> Incoming <input type="checkbox"/> Outgoing	
Location of Visit: <i>MCAS YUMA ENVIR. DEPT.</i>		

**Contact Made By:**

Name: <i>DOUG L. PEELER</i>	Title: <i>SENIOR GEOLOGIST</i>	Organization: <i>BNI</i>
-----------------------------	--------------------------------	--------------------------

**Individual Contacted:**

Name: <i>LARRY LEAKE</i>	Title: <i>DIRECTOR, FACILITY SUPPORT SERVICES DIV.</i>	Organization: <i>MCAS YUMA</i>
--------------------------	--	--------------------------------

Telephone No: <i>928-269-2161</i>	Street Address: <i>Box 99140, Bldg 888</i>
Fax No:	City, State, Zip: <i>MCAS YUMA, AZ 85369</i>
E-Mail Address: <i>LEAKE LM@YUMA.USMC.MIL</i>	

**Summary Of Conversation** *Reminder: He was IRP Manager April 15, 1995 to Dec. 30, 2000*

*DIG PERMITS - instituted prior to his involvement/signoff authority. But consisted of Page 1 only. Page 2 of the permit, Environmental Dept. signoff page, start use ~ October 2001, under Gil Guillory management.*

*Get: → Copies of forms*

*\* Had no problems implementing institutional controls for CAOCs 1, 8A, and 10.*

*PRVSI - (Prelim. Review Visual Site Inspection) Study of 535 sites outside of the IRP sites / CERCLA Areas of Concern (CAOC) of OUL2. Identified former skeet range history for part of CAOC 8A.*

*- Draft document only; approved by state and federal agencies.*

*CAOC 8A - CAOC 8A landfill - was a pre-RCRA abandonment case. No unofficial dumping. After ROD for OUL2, was barbed wire-fenced.*

*Legal descriptions - boundary of 8A and 10 don't match legal description; GEOFON did survey for VEMURs. Control (on survey) for CAOC 1 was better.*

*Aerial photo of CAOC 1 - talk to Ron Cruz (SP?), FAC. Management Dept., Engineering Section, Staff Civil Engineer*

*(continued on next page) (928) 269-3523.*

(Continued from Page 1 of 2)

## INTERVIEW RECORD

Site Name: <i>MCAS YUMA, OU2 (CAOCs 1, 8A, 10)</i>		EPA ID No.:	
Subject:		Time:	Date: <i>3/20/02</i>
Type: <input type="checkbox"/> Telephone <input checked="" type="checkbox"/> Visit <input type="checkbox"/> Other	Location of Visit: <i>MCAS YUMA ENVIR. DEPT.</i>		
<input type="checkbox"/> Incoming <input type="checkbox"/> Outgoing			
Contact Made By:			
Name: <i>DOUG L. PEELER</i>	Title:	Organization: <i>BNI</i>	
Individual Contacted:			
Name: <i>LARRY LEAKE</i>	Title: <i>DIRECTOR</i>	Organization: <i>FSSD, MCAS YUMA</i>	
Telephone No:	Street Address:		
Fax No:	City, State, Zip:		
E-Mail Address:			
Summary Of Conversation			
<p><i>Access to CAOC 8A - Broken Gate Saddle Club, through gate in common fence on CAOC 8A east side, south corner (CAOC 9) secured with combination lock. Fred Daniels, Compliance Director is a member.</i></p> <p><i>- Gate off North Ordnance Road.</i></p> <p><i>State authorized: ① removal of boulders at site for public works use, and ② grading/capping of site surface, as maintenance of the landfill. Will provide letter.</i></p> <p><i>✓ GOT: ADEQ letter of June 1, 1999 to Mike Gonzales, RPM SWDIV regarding this authorization, from Nancy Lou Minkler, Project Manager, Federal Projects Unit, Waste Programs Division. (See Attached)</i></p> <p><i>(This conversation was continued the next day. See separate record sheet.)</i></p>			



7 Oct 94

STATION ORDER 11300.7

From: Commanding Officer  
To: Distribution

Subj: DIGGING PERMITS, ROAD CLOSURES, AND UTILITY OUTAGE PROCEDURES

Encl: (1) FMD Form 1-94

1. Purpose. To establish procedures for requesting, reviewing, and approving utility outages, road closures, and digging permits aboard the Marine Corps Air Station, Yuma. This Order pertains to water, gas, air, electrical high voltage, pneumatic, air conditioning, heating services, sewage and communication. No digging, utility outage, or road closure will be put into effect without complying with this Station Order.

2. Definitions

a. Digging: Any breaking up, turning over or removal of earth, sand, asphalt or concrete with tools, equipment or by hand.

b. Road Closure: The blocking or preventing of traffic flow on any road aboard Marine Corps Air Station Yuma.

c. Outage: The interruption of water, gas, air, high voltage electrical, pneumatic, air conditioning, heating services, sewage and communications for any length of time.

3. Procedure. This procedure consists of five parts: request, review, tenant notification, approval, and responsibility. The procedure is initiated when the requestor submits enclosure (1) to the Facilities Management Department (FMD) Customer Service Desk.

a. Request. Any government representative may submit a request. All requests are submitted to Building 888, Customer Service Desk, on enclosure (1). A minimum of seven (7) days prior to the requested date(s) will be allowed for digging permits. Other permits require 15 calendar days prior to the desired date(s). FMD's Facilities Maintenance Division will take necessary action and return a signed copy to the requestor, maintaining a signed copy at the Customer Service Desk.

b. Review. Requests will be reviewed by the Facilities Maintenance Director or authorized representative. Facilities, roads, utilities, and tenants affected will be noted on enclosure (1) by the work center supervisor and returned to requestor.

c. Tenant Notification. It is the requestor's responsibility to notify all tenants affected by the request. Affected tenants will be listed on the returned request with the building number or area, point of contact responsible for the activities of the affected area, rank, date/time, and phone number. Requestors will then coordinate with tenants concerning date and time requirements.

d. Approval. The approving officials for all FMD Form 1-94's are the Facilities Maintenance Division Director or Facilities Management Officer. Their offices are in Building 888 and may be called at extension 2394. When conditions or situations warrant, approved outages or activities can be cancelled by the Facilities Management Officer or authorized representative at any time.

e. Responsibility. Only Facilities Maintenance Division personnel are authorized to secure primary power, main water supply, main gas supply, sewer lines, pneumatic supply lines, refrigeration units over 10 tons, or boilers. Anyone securing any utility is responsible for safety measures required by the respective regulatory codes.

  
A. M. TORRANCE  
By direction

DISTRIBUTION: B



UNITED STATES MARINE CORPS

MARINE CORPS AIR STATION

BOX 99100

YUMA, ARIZONA 85369-9100

StaO 11300.7 Ch 3

3JE

27 JAN 1998

STATION ORDER 11300.7 Ch 3

From: Commanding Officer  
To: Distribution List

Subj: DIGGING PERMITS, ROAD CLOSURES AND UTILITY OUTAGE PROCEDURES

Encl: (1) New page inserts to StaO 11300.7 of 7 Oct 94

1. Purpose. To transmit new page inserts to the basic order.
2. Action. Remove enclosure (1) and replace enclosure (1) with the corresponding enclosure contained in the enclosure.
3. Filing Instructions. File this Change transmittal immediately behind the signature page of the basic Order.

  
C. J. TURNER

DISTRIBUTION: B

REQUESTS REQUIRE 15 CALENDAR DAYS TO COMPLETE FROM DATE SUBMITTED

REQUESTOR SHALL COMPLETE ; (PLEASE PRINT OR WRITE LEGIBLY)

THE CONTRACTOR SHALL RETURN HIS/HER COMPLETED PORTION OF THIS FORM TO THE CUSTOMER SERVICE DESK, LOCATED IN BUILDING 888, PHONE (520) 341-2222 FOR FINAL APPROVAL AND INSTRUCTIONS PRIOR TO START OF WORK.

COMPANY: \_\_\_\_\_ DATE \_\_\_\_\_

P.O.C.: \_\_\_\_\_ PHONE \_\_\_\_\_

REQUESTOR'S SIGNATURE: \_\_\_\_\_ PHONE \_\_\_\_\_

ACTIONS REQUIRED; ROAD CLOSURE \_\_\_\_\_ UTILITIES OUTAGE REQUEST \_\_\_\_\_ DIGGING PERMIT \_\_\_\_\_  
 (CHECK APPLICABLE) UTILITY OPERATION \_\_\_\_\_ FMD INVOLVEMENT / ACTION \_\_\_\_\_ FMD INFO ONLY \_\_\_\_\_

IF DIGGING IS REQUIRED THE CONTRACTOR SHALL PRE-MARK AREAS IN WHITE PAINT FOR VERIFICATION IN THE FIELD BY VARIOUS OFFICES

DESCRIPTION OF WORK;

1. TYPES OF UTILITIES INVOLVED WATER \_\_\_\_\_ SEWER \_\_\_\_\_ GAS \_\_\_\_\_ ELECTRICAL \_\_\_\_\_ AIR \_\_\_\_\_ TELEPHONE \_\_\_\_\_

OTHER (EXPLAIN) \_\_\_\_\_

2. PURPOSE OF WORK \_\_\_\_\_

3. RECOMMENDED START TIME/DATE \_\_\_\_\_ COMPLETION TIME/DATE \_\_\_\_\_

4. LOCATIONS AND DRAWINGS ATTACHED \_\_\_\_\_ (YES) \_\_\_\_\_ (NO) BUILDING NO./LOCATIONS: \_\_\_\_\_

A GOVERNMENT CONTRACTING REP MUST OBTAIN APPROVAL AND PROPER SIGNATURES WITH THE FOLLOWING PRIOR TO START;

OFFICE	PHONE	SIGNATURE	DATE/TIME	SEE COMMENTS PAGE 2
1. ENVIRONMENTAL..... (BLDG 128)	2675	_____	_____	YES NO
2. TELEPHONE ..... (BLDG 1030)	3500	_____	_____	YES NO
3. PMO..... (BLDG 916)	2361	_____	_____	YES NO
4. FIRE DEPARTMENT..... (BLDG 149)	2285	_____	_____	YES NO
5. GROUND ELECTRONICS... (BLDG 500)	2675	_____	_____	YES NO
6. FMD BLUE STAKE..... (BLDG 888)	6368	_____	_____	YES NO
7. FMD TROUBLE DESK ..... (BLDG 888)	2222	_____	_____	YES NO

SPECIAL INSTRUCTIONS OR COMMENTS FROM THE GOVERNMENT; CONTRACTOR IS TO HAND DIG WITHIN FIVE (5) FEET OF ANY BUILDING OR STRUCTURE WHILE LOCATING UNDERGROUND UTILITIES. ALL MARKED UTILITIES SHALL HAVE A MINIMUM VARIANCE OF THREE (3) FEET EITHER SIDE OF MARKED LINES. HAND DIGGING FOR EXACT ELEVATIONS AND LOCATIONS IS REQUIRED. THE CONTRACTOR SHALL READ AND FOLLOW ALL COMMENTS OR INSTRUCTIONS LISTED ON PAGE TWO (2).

IF ANY UTILITY OR EQUIPMENT IS DAMAGED, IMMEDIATELY NOTIFY FMD CUSTOMER SERVICE DESK AT 341-2222 AND THE GOVERNMENT REPRESENTATIVE FOR INSPECTION !!!

(SEE OTHER SIDE)



**ENVIRONMENTAL DEPARTMENT  
LOCATE, DIGGING, AND OUTAGE REQUEST  
INFORMATION REQUIREMENTS**

The following information is needed to ensure that we properly evaluate the environmental impacts from your proposal to construct, excavate, and drill on Marine Corps Air Station, Yuma, Arizona:

	<u>YES</u>	<u>NO</u>
Drawing showing the general location of the project area:	/	/
Are all structures in the affected area identified:	/	/
Have you provided the Building Numbers or nearest Building:	/	/
Have you highlighted the proposed excavated area:	/	/
Have you indicated the depth, length, width of excavation:	/	/
Have you indicated the final grade elevation and impacts:	/	/
Have you provided a brief description of the proposal:	/	/

If the above information is not provided, we will not be able to evaluate your proposal.

SUBJECT: \_\_\_\_\_ DATE: \_\_\_\_\_

++++PLEASE RETURN THIS COMPLETED PACKAGE TO ENVIRONMENTAL DEPARTMENT++++

The following land use controls are in effect aboard MCAS Yuma:

- There will be no damage or interference to the groundwater monitoring wells, remedial treatment systems, and/or samplings. Reasonable access to monitoring wells, remediation treatment systems, and sampling efforts will be permitted for authorized MCAS Yuma personnel and contractors for sampling, operating, inspecting, and maintaining monitoring wells and remediation treatment systems. Reasonable access includes the use and/or transportation of equipment, including trucks, small loaders, and drill rigs.
- Flag all monitoring wells within the construction area, and locate all pipes and electrical lines in the construction area and take precautions to ensure that the wells and underground systems are not damaged or destroyed.
- All groundwater use from the designated contaminated groundwater plume is prohibited.
- Notify Environmental immediately upon discovery of a failure to comply with the above listed land use controls.

INITIAL/DATE

ENVIRONMENTAL ENGINEER (NEPA): \_\_\_\_\_ / \_\_\_\_\_  
 ASBESTOS/LEAD PROGRAM: \_\_\_\_\_ / \_\_\_\_\_  
 INSTALLATION RESTORATION PROGRAM: \_\_\_\_\_ / \_\_\_\_\_



*Larry Leake*

**RECEIVED**  
**ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY**

1999 JUN -4 P 2:31

Governor Jane Dee Hull

Jacqueline E. Schafer, Director

U  
PT

June 1, 1999  
FPU99.0298

4210.1.17

Mr. Mike Gonzales  
Project Manager, Southwest Division  
Naval Facilities Engineering Command  
1220 Pacific Highway  
San Diego, CA 92132-5190

**RE:: Area 8A, Marine Corps Air Station, Yuma, Request to Grade to Level**

Dear Mr. Gonzales :

The On-Site Installation Restoration Program (IRP) Project Manager for Yuma Marine Corps Air Station, Mr. Larry Leake, contacted the ADEQ Project Manager, Ms. Nancy Lou Minkler, requesting that ADEQ research the possibility of YMCAS grading to level the OU-2 Area 8A landfill.

Area 8A landfill received municipal waste generated at MCAS Yuma between 1953 and 1961. Before disposal most of the wastes were burned. During disposal, approximately 10 to 20 pits were used for the burial of wastes. A portion of the area was used for rubble disposal and as a borrow area for fill soil. Area 8A landfill was included in the OU-2 ROD. The chosen remedy was Institutional Controls, which will include a filing of a Voluntary Environmental Mitigation Use Restriction (VEMUR) and alteration of the Base Master Plan.

The ADEQ Project Manager contacted the Solid Waste Section for advise on the regulations. Mr. Dave Phillips of the Solid Waste Section, Program Development and Special Projects Unit was contacted. Mr. Phillips stated that pursuant to ARS 49 CFR 701.3(b)(1), that Area 8A landfill is considered a "closed solid waste facility" because it ceased receiving solid waste prior to July 1, 1983. § 49 CFR 701.29(k)(i-iii) states that a "closed" solid waste facility may excavate or remove solid waste for maintenance or repair provided the following conditions are met:

- (i) When the project is completed there will not be an increase in leachate that would result in a discharge.
- (ii) When the project is completed the concentration of methane gas will not exceed twenty-five percent of the lower explosive limit in on-site structures, or the concentration of

Mr. Michael Gonzales  
June 1, 1999  
Page 2 of 2

methane gas will not exceed the lower explosive limit at the property line.

- (iii) Protection has been provided to prevent remaining waste from causing any vector, odor, litter or other environmental nuisance.

On April 15, 1999, the ADEQ Project Manager performed a site visit of the Area 8A landfill and based on the visual site inspection (VSI), is confident that MCAS, Yuma will have no problem complying with § 49 CFR 701.29(k)(i-iii).

In summary, based on the Solid Waste Landfill regulations, the Marine Corps Air Station, Yuma, can grade to level the closed landfill Area 8A.

Sincerely,



Nancy Lou Minkler, Project Manager  
Federal Projects Unit, Waste Programs Division

NLM/mao

cc: Martin Hausladen, U.S. Environmental Protection Agency Region IX  
Larry Leake, IRP Program Manager  
Don Atkinson, Hydrologist, RIHU, Waste Programs Division, ADEQ  
Project and Reading File

**APPENDIX E3**

**INTERVIEW RECORD FOR LARRY LEAKE (3/21/02)**

# INTERVIEW RECORD

Site Name: <i>MCAS YUMA, OU 2 (CAOCs 1, 8A, 10)</i>	EPA ID No.: <i>(Station) AZ0971590062</i>
Subject: <i>CAOC 8A</i>	Time: <i>2:30 pm</i>   Date: <i>3/21/02</i>
Type: <input type="checkbox"/> Telephone <input checked="" type="checkbox"/> Visit <input type="checkbox"/> Other	<input type="checkbox"/> Incoming <input type="checkbox"/> Outgoing
Location of Visit: <i>L. LEAKE FSSD Office</i>	

### Contact Made By:

Name: <i>DOUG L. PEELER</i>	Title: <i>SENIOR GEOLOGIST</i>	Organization: <i>BNI</i>
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### Individual Contacted:

Name: <i>LARRY LEAKE</i>	Title: <i>DIRECTOR</i>	Organization: <i>FSSD, MCAS YUMA</i>
--------------------------	------------------------	--------------------------------------

Telephone No: <i>928-269-2161</i>	Street Address: <i>(see previous days)</i>
Fax No:	City, State, Zip: <i>(see previous days)</i>
E-Mail Address: <i>(see previous days/record)</i>	

### Summary Of Conversation

*Authorized access to CAOC 8A - PMO (Provost Marshall Office) and S4 (Station Logistic Dept.) had keys to North Ordnance Road gate. PMO provides station security and store vehicles in adjacent fenced area. S4 used to have base military personnel and family runs there.*

*- Only Environmental Dept. has key to biocell/treatment area (east gate accesses this).*

*April 8th - 12th: Larry scheduled out of office.*

*Institutional Controls: are reflected in "Remarks" on the dig permit forms.*

*Large construction projects - may not get dig permits, but Environmental Dept. engineer does review construction contracts for environmental issues.*

**APPENDIX E4**

**INTERVIEW RECORD FOR FRED DANIEL (3/22/02)**

# INTERVIEW RECORD

Site Name: <u>MCAS YUMA, OU 2</u>	EPA ID No.: <sup>(station)</sup> <u>AZ0971590062</u>
Subject: <u>CAQC 1 - FLIGHT LINE</u>	Time: <u>10 am</u> Date: <u>3/22/02</u>
Type: <input type="checkbox"/> Telephone <input checked="" type="checkbox"/> Visit <input type="checkbox"/> Other	<input type="checkbox"/> Incoming <input type="checkbox"/> Outgoing
Location of Visit: <u>MCAS YUMA, ENVIR. DEPT. Offices</u>	

**Contact Made By:**

Name: <u>DOUG L. PEELER</u>	Title: <u>SENIOR GEOLOGIST</u>	Organization: <u>BNI</u>
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**Individual Contacted:**

Name: <u>FRED DANIEL</u>	Title: <u>DIRECTOR, ENVIR. COMPLIANCE DIV. OF ENVIR. DEPT.</u>	Organization: <u>MCAS YUMA ENVIR DEPT.</u>
Telephone No:	Street Address: <u>BOX 99110, ENVIR. DEPT.</u>	
Fax No: <u>928-269-5216</u>	City, State, Zip: <u>MCAS YUMA, AZ 85369</u>	
E-Mail Address: <u>DANIELF@yuma.usmc.mil</u>		

**Summary Of Conversation**

General Nature of Releases - ① small to unreportable quantities (few to fraction of gallon) - hydraulic fluid, Stoddard solvent, other solvents, lube oils, broken mercury vapor lamps.

② Commonly - fuels for jets and helicopters, to a few 100 gallons. Due to aircraft malfunction or crashes - large quantities may be released. Due to regular operations and maintenance of aircraft - smaller quantities.

Cleanup - in all cases of release cleanup is handled immediately.  
- Method: ① Small quantities - site personnel cleanup with spill kits kept on site. Satellite storage unit has 85 gallon overpack drum for double of waste drum.  
② larger quantities - call in heavy (earth moving) equipment, and other services, and Environmental Compliance Division (his office).

\* Each Unit on Flight Line has a contingency plan specific for it and maintains spill control equipment for use on site. Hazardous waste officer designated for each also.  
\* Compliance Division conducts regular inspections of potential hazardous materials, and waste generators, and get release reports and waste disposal and generation forms.

→ ∴ Releases D. Peeler found registered in Compliance logbook do not constitute releases unusual for standard operations at the Flight line.

**APPENDIX E5**

**INTERVIEW RECORD FOR MARIANO HAWK (3/21/02)**

# INTERVIEW RECORD

Site Name: <u>MCAS YUMA, OU 2 (CAOCs 1, 8A, 10)</u>	EPA ID No.: <sup>(Station)</sup> <u>AZ0971590062</u>
Subject: <u>-CAOC 10, 8A, and 1</u>	Time: <u>9:10 am</u> Date: <u>3/21/02</u>
Type: <input type="checkbox"/> Telephone <input checked="" type="checkbox"/> Visit <input type="checkbox"/> Other	<input type="checkbox"/> Incoming <input type="checkbox"/> Outgoing
Location of Visit: <u>MCAS YUMA, LOGISTICS BUS. Manager Office</u>	

**Contact Made By:**

Name: <u>DOUG L. PEELER</u>	Title: <u>SENIOR GEOLOGIST</u>	Organization: <u>BNI</u>
-----------------------------	--------------------------------	--------------------------

**Individual Contacted:**

Name: <u>MARIANO HAWK</u>	Title: <u>LOGISTICS BUSINESS MANAGER</u>	Organization: <u>MCAS YUMA</u>
Telephone No: <u>928-269-2717</u>	Street Address: <u>BLDG. 324, BSD</u>	
Fax No:	City, State, Zip: <u>MCAS YUMA, AZ 85369</u>	
E-Mail Address:		

**Summary Of Conversation** *Reminders: Officer-in-Charge at Weapons Assembly Area (old name), from 1996 - 1999*

Site 10 is within fenced area of Ordnance Distribution Facility, as shown on better station map (D size). Fence complete at west end where shown broken-lined.

Access to PMO Storage lot - through western gate of fenced area that includes CAOC 8A area, ~~DP~~ through Range Management Area (cleared grove/ agricultural land) on west from County Road 13.

Flight Line (CAOC 1) - no changes in the last 5 years.  
 - Bldg. 220 is newest.  
 - fair to say all changes (to land use) would have been reflected in the 1988 BMP (Farm Base Master Plan).

\*Verified Larry Leake statement - CAOC 8A landfill is only a narrow strip east, and broad area south of CAOC 10-enclosing fence (Area of Ordnance Distribution Facility).  
 Weapons storage bunkers have been in active use on the road east of 10 since a point prior to 1997 (so, "no use other than as a former landfill" could not apply to this part of CAOC 8A as mapped for Institutional Controls in 2001 MCAS YUMA Master Plan.

**APPENDIX E6**

**INTERVIEW RECORD FOR STEPHEN SPENCER (3/21/02)**

# INTERVIEW RECORD

Site Name: <u>MCAS YUMA, OU 2 (CAOCs 1, 8A, 10)</u>	EPA ID No.: <sup>(Station)</sup> <u>AZ0971590062</u>
Subject: <u>CAOC 10 - ORDNANCE MUNITIONS DISPOSAL AREA</u>	Time: <u>10:09am</u> Date: <u>3/21/02</u>
Type: <input type="checkbox"/> Telephone <input checked="" type="checkbox"/> Visit <input type="checkbox"/> Other	<input type="checkbox"/> Incoming <input type="checkbox"/> Outgoing
Location of Visit: <u>at ORDNANCE DISTRIBUTION FACILITY</u>	

Contact Made By:

Name: <u>DOUG L. PEELER</u>	Title: <u>SENIOR GEOLOGIST</u>	Organization: <u>BNI</u>
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Individual Contacted:

Name: <u>STEPHEN SPENCER</u>	Title: <u>MANAGER, ORDNANCE DISTRIBUTION FACILITY</u>	Organization: <u>MCAS YUMA BASE SERV. DEPT.</u>
Telephone No:	Street Address:	
Fax No:	City, State, Zip: <u>MCAS YUMA, AZ 85369</u>	
E-Mail Address:		

Summary Of Conversation *Reminder: at post only couple months.*

\* *not much change in area as far as he knew but much proposed for future - weapons storage to move west, away from fence line (with CAOC 8A) and from area around CAOC 10 too.*

\* *Facility has 2 gates on North fence line:*

*(EAST) (1) Regular guard, everyday use; no ordnance through this; must sign-in to enter.*

*(WEST) (2) CALA gate - for Ordnance movement to/from flightline. Again, guarded when in use, which occurs only during training exercises or military action.*

\* *No problems maintaining the proper land use due to high security for the area.*

\* *No releases since he got the post. Doesn't maintain release reports/forms file there. See Environmental Dept.*

*3/22/02 → called back; got answer thru C. Lewis.*

**APPENDIX E7**

**INTERVIEW RECORD FOR JOE BRITAIN (3/22/02)**

## INTERVIEW RECORD

Site Name: <i>MCAS YUMA, OLC 2 (1, 8A, 10)</i>	EPA ID No.: <i>(station) AZ0971590062</i>
Subject: <i>CONSTRUCTION PLAN ENVIR. REVIEW PROCESS</i>	Time: <i>3:10 pm</i> Date: <i>3/22/02</i>
Type: <input type="checkbox"/> Telephone <input checked="" type="checkbox"/> Visit <input type="checkbox"/> Other	<input type="checkbox"/> Incoming <input type="checkbox"/> Outgoing
Location of Visit: <i>MCAS YUMA ENVIR. DEPT. OFFICE</i>	<i>N/A</i>

### Contact Made By:

Name: <i>DOUG L. PEELER</i>	Title: <i>SENIOR GEOLOGIST</i>	Organization: <i>BNI</i>
-----------------------------	--------------------------------	--------------------------

### Individual Contacted:

Name: <i>JOE BRITAIN</i>	Title: <i>STAFF ENVIR. ENGINEER</i>	Organization: <i>MCAS YUMA ENVIR. DEPT.</i>
Telephone No: <i>928-269-5581</i>	Street Address: <i>BOX 99110, ENVIR. DEPT.</i>	
Fax No: <i>928-269-5216</i>	City, State, Zip: <i>MCAS YUMA, AZ 85369</i>	
E-Mail Address: <i>BRITAINJ@yuma.usmc.mil</i>		

### Summary Of Conversation

*\* All construction projects undergo a multilayered environmental review process:*

- (1) During planning phase - must get a categorical exclusion from further documentation requirements under NEPA.*
- (2) During 15% design review - the site may be identified as a CERCLA site with specific limitations, including institutional controls on land use, requiring further coordination with the Environmental Dept.*
- (3) During construction, when federal regulations that apply to the site are referenced in the environmental controls portion of the construction specifications.*

*GET: ① Copies of review forms for 1997 to present, for record.*

*② Examples of documentation generated during the review process phases discussed above.*

*Regarding ②: see attachments.*



UNITED STATES MARINE CORPS  
MARINE CORPS AIR STATION  
BOX 99100  
YUMA, ARIZONA 85369-9100

(1) Flannery  
LIFE  
Britain

IN REPLY REFER TO:

**CATEGORICAL EXCLUSION**

**(CATEX #02-011)**

Subj: TACTICAL AVIATION FUELS-DISPENSING SYSTEM (TAFDS) IMPROVEMENTS

Ref: (a) MCO P5090.2a, Chapter 12

Encl: (1) Checklist for Identifying the Significance of an Action (32 CFR 775.6 (e))  
(2) Vicinity Map

1. As required by the reference, the proposed action has been evaluated in accordance with Title 32 Code of Federal Regulations, Part 775. The project has been found to meet all requirements for a categorical exclusion and is exempt from further documentation requirements under the National Environmental Policy Act (NEPA), as evidenced by enclosure (1). The applicable categorical exclusions are listed in paragraph 3, below. Project vicinity maps are included as enclosure (2).

2. Project Description: The Marine Corps Air Station (MCAS) Yuma, Arizona, proposes to perform construction, improvements, maintenance, and repairs on the existing TAFDS with installation of an additional bladder adjacent to the current site. This will involve ancillary demolition of that new bladder no later than 120 days after initial installation and site restoration to prior grade and soil conditions. Bladder installation will involve general construction that will include soils excavation and berm construction, sub-grade compaction, and placement of an impermeable liner (under bladder). Petroleum and related soils contamination abatement may be required for demolition or alterations portions for this project. Any such abatement work will be routed through MCAS Yuma Environmental Department for review, approval, and oversight. The TAFDS also has a distribution system that includes various pumps, piping, filters, manifolds, valves, controls, emergency (casualty control) power generators, with associated electro-mechanical components that involve ongoing maintenance and repair as detailed in the respective Military System Command Maintenance Program. TAFDS is considered a temporary operation to support a tactical military maneuver.

3. The following Categorical Exclusions would apply:

a. 32 CFR 775.6 (f)(6) - Routine repair and maintenance of existing facilities and equipment, to maintain existing operation and activities, including maintenance of improved and semi-improved grounds such as landscaping, lawn care, and minor erosion control measures.

b. 32 CFR 775.6 (f)(7) - Alteration of and additions to existing structures to conform or provide conforming use, specifically required by new or existing applicable legislation or regulations, e.g., hush house for aircraft engines and scrubbers for air emissions

c. 32 CFR 775.6 (f)(9) - New construction that is consistent with existing land use, and when completed, the use or operation of which complies with existing regulatory requirements and constraints; i.e., a building on a parking lot with associated discharges/runoffs within existing handling capacities, a bus stop along a roadway, and foundation pad for a portable building within a building complex.

d. 32 CFR 775.6 (f)(15) - Demolition, disposal or elimination of buildings or structures not on or eligible for listing on the National Register of Historic Places, and when per applicable regulations applying to removal of asbestos, polychlorinated biphenyls (PCB) and other hazardous materials.

Subj: TACTICAL AVIATION FUELS DISPENSING SYSTEM (TAFDS) IMPROVEMENTS

4. Recommendation: The proposed action will not have a significant effect on the human environment. Appropriate safety measures will be followed. An Environmental Assessment or Environmental Impact Statement may be required if recommendations are not adhered to.

APPROVED BY:



Chairman  
Environmental Impact Review Board

1/29/02  
Date

CHECKLIST FOR IDENTIFYING THE SIGNIFICANCE OF AN ACTION  
(32 CFR 775.6(e))

	<u>YES</u>	<u>NO</u>	<u>NOTES</u>
1. Will the action adversely affect public health or safety?	___	<u>X</u>	___
2. Is there potential to significantly effect any unique regional characteristics, such as:			
a. historic, cultural, or archaeological resources?	___	<u>X</u>	<u>(1)</u>
b. wetlands?	___	<u>X</u>	___
c. prime farmlands?	___	<u>X</u>	___
d. ecologically critical areas?	___	<u>X</u>	___
e. scientific resources?	___	<u>X</u>	___
f. air quality?	___	<u>X</u>	___
3. Will the action induce effects on the human environment that are highly uncertain, involve unique or unknown risks, or that are scientifically controversial?	___	<u>X</u>	___
4. Does the action involve a hazardous waste site?	___	<u>X</u>	___
5. Will the action:			
a. establish a precedent for future actions with significant effects?	___	<u>X</u>	___
b. represent a decision in principle for future actions with significant effects?	___	<u>X</u>	___
6. Is the action related to other actions with individually insignificant but cumulatively significant impacts?	___	<u>X</u>	___
7. Will the action adversely affect:			
a. public services?	___	<u>X</u>	___
b. land users?	___	<u>X</u>	___
c. highways or any road surface?	___	<u>X</u>	___
d. buildings or structures?	___	<u>X</u>	___
e. objects or locations listed/eligible for the National Register of Historic Places?	___	<u>X</u>	<u>(1)</u>
f. minorities or low income communities?	___	<u>X</u>	___
8. Does the action threaten to violate any federal, state, or local environmental protection laws or requirements?	___	<u>X</u>	<u>(2)</u>
9. Will endangered or threatened species (or their habitat) be adversely impacted by the action?	___	<u>X</u>	<u>(3)</u>

A "Yes" answer to any question indicates that the project, decision, or action requires an Environmental Assessment or an Environmental Impact Statement.

CHECKLIST FOR IDENTIFYING OTHER REQUIREMENTS

	<u>YES</u>	<u>NO</u>	<u>NOTES</u>
10. Does the proposed action require contacting other Departments or Agencies to monitor all plans, specifications and construction?	<u>X</u>	___	(3)
11. Does the proposed action meet all the prerequisites of a categorical exclusion, therefore eliminating further documentation requirements under NEPA?	<u>X</u>	___	(4)

**NOTES**

(1) None of the existing sites are recommended eligible for the National Register of Historic Places. No cultural resources, if present, could have continued existing on the surface with the activities that have previously occurred at the present site. If any archaeological artifact is discovered during the evolution of this project, the activity will stop until a qualified archaeologist makes a determination.

(2) All soil disturbed during the demolition and debris piles will be watered to alleviate excessive MCAS Yuma PM10 emissions. The bermed containment will be equal to or exceed 110% of maximum design bladder storage capacity for spill contingency and storm water runoff purposes.

(3) The proposed project area has been surveyed for plants, animals, cultural and other Environmental Issues. All wildlife will be avoided. If any bird nests are found, contact the Natural Resources Specialists (at ext. 3777 or Ron Pearce at ext. 3401) or bring the intact nest to Building 1758. If possible, all plants will be relocated. All recyclables will be brought to the Recycling Yard located at Building 490. As this project is on a Installation Restoration Program (IRP) Site, Applicable Institutional Controls will be followed relating to the Installation Restoration Program, mandating restricted use of groundwater in this area due to presence of potential hazardous constituents (as detailed in the Record of Decision dated 18AUG00). Related safety measures are found in the Army Corps of Engineer Safety Manual (EM-385-1-1). Contact the Environmental Department immediately if there are any spills or questions regarding any Environmental concerns.

(4) Categorical exclusions that apply are 32 CFR 775.6(f)(6), (7), (9), & (15).

**Britain Mr Joseph C**

(2) Design

JC  
Britain

**From:** Britain Mr Joseph C  
**Sent:** Thursday, March 14, 2002 12:01 PM  
**To:** Kruse Mr Ronald L  
**Cc:** Guillory Mr Herbert; Daniel Mr Frederick E  
**Subject:** 15% Design Review, Joint/Spall Repairs, Miscellaneous Aprons & Taxiways, YU104M/YU106M

Ref: (a) FMD (R. Kruse) Ltr. of 05MAR02 (Same Subject)

1. In response to Ref. (a), the subject environmental projects were reviewed for constructability, with regards to satisfying environmental design criteria at MCAS Yuma. The following comments are provided in response to the reference, as a limited engineering review at this 15% design level:

- a. The basis of design reports (BDR) contained no Environmental Section.
  - b. Projects should include safety specifications (01525) that detail worker protection, safety & health concerns for exposures to chemical products (sealants, paints, topcoats, etc.).
  - c. As identified in the locally generated NAVFAC Guide Specification 01575, the MCASY airfield is a CERCLA Area of concern. The remedial investigation phase of the Installation Restoration Program (IRP) has been completed and Records of Decision have been signed agreeing to that methods of clean up and controls that must be implemented to protect human health and the environment. Any excavation on or near Institutionally Controlled Areas must be coordinated with the Environmental Department [Attn: Ms. Carol Lewis], to ensure the compliance with the land use restrictions that have been implemented and prevent damage to continuing remedial activities. Caution should be used when excavating at or near CERCLA "area of concern" sites that have been deemed "no further action" as isolated pockets of contamination may still exist undetected.
  - d. Recommend use of the locally generated NFGS-01575, which has been tailored to account for MCAS Yuma requirements for Hazardous Waste, IRP, Air & Water programs, natural and cultural resource issues, NEPA, and all other related environmental media.
  - e. Ensure no project related topographic changes that allow off site storm water drainage from the respective project construction areas.
2. POC in the Environmental Dept. for engineering reviews is the undersigned at 520-341-5581, or at the above e-mail address. BT.

Respectfully,  
J. C. Britain, PE

(3) Construction  
Spec

EXCERPT

3/21/05  
Britain

YU0019M

## SECTION 01575

TEMPORARY ENVIRONMENTAL CONTROLS  
03/00

## PART 1 GENERAL

## 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

## CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1910.1200	Hazard Communication
40 CFR 241	Guidelines for Disposal of Solid Waste
40 CFR 243	Guidelines for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste
40 CFR 258	Subtitle D Landfill Requirements
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Generators of Hazardous Waste
40 CFR 263	Transporters of Hazardous Waste
40 CFR 264	Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 265	Interim Status Standard for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 266	Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities
40 CFR 268	Land Disposal Restrictions
40 CFR 279	Used Oil Regulations
40 CFR 300	National Oil and Hazardous Substances Pollution Contingency Plan
40 CFR 355	Emergency Planning and Notification
40 CFR 372-SUBPART D	EPA Toxic Chemical Release Reporting Regulations
49 CFR 173	Shipments and Packagings
49 CFR 178	Packagings

## 1.10 UNFORESEEN HAZARDOUS OR REGULATED MATERIAL

If material that is not indicated in the contract documents is encountered that may be dangerous to human health upon disturbance during construction operations, stop that portion of work and notify the Contracting Officer immediately. Intent is to identify materials such as PCB, lead paint, mercury, petroleum products, and friable and nonfriable asbestos. Within 14 calendar days the Government will determine if the material is hazardous. If the material is not hazardous or poses no danger, the Government will direct the Contractor to proceed without change. If the material is hazardous and handling of the material is necessary to accomplish the work, the Government will issue a modification pursuant to "FAR 52.243-4, Changes" and "FAR 52.236-2, Differing Site Conditions."

## 1.11 STATION EXCAVATED WASTE REQUIREMENTS

## 1.11.1 CERCLA Areas of Concern

MCAS Yuma is on the National Priorities List; therefore, we must be in compliance with all Federal, State and local regulations during construction on or near any CERCLA "area of concern." Proposed projects located adjacent to, or on a part of CERCLA "area of concern" should have all remedial activities completed prior to any construction.

## 1.11.2 Areas of Potential Contamination

Until the remedial investigation phase of the Installation Restoration Program is complete, CERCLA areas of potential contamination cannot be accurately defined. Any excavation on or near a CERCLA "area of concern" will require sampling, analysis, testing and classification of the excavated waste product prior to disposal. To expedite construction, a representative sample of the excavated soils and materials (including concrete) should be tested to ensure proper handling and disposal in accordance with the Resource Conservation and Recovery Act. The following is a list regarding the chemicals of potential concern for which testing should be conducted.

TPH (oils)	PAHs	
TPH (fuels)	Acenaphtene	
	Anthracene	
Polychlorinated biphenyls	Benzo (a) anthracene	
	Benzo (b) fluoranthene	
Aromatics	Benzo (k) fluoranthene	
Benzene	Benzo (a) pyrene	
Ethylbenzene	Chrysene	
Toluene	Dibenz(a,h) anthracene	
Xylenes (total)	Fluoranthene	
	Fluorene	
Keytones	Indeno (1,2,3-cd) pyrene)	
Methyl Isobutyl keytone	Napthalene	
Methyl ethyl keytone	Phenanthrene	
	Pyrene	
Chlorinated Aliphatics		
Carbon tetrachloride	Metals	
Methylene chloride	Lead (inorganic)	
Trichlorethene		

## PART 2 PRODUCTS

**APPENDIX E8**

**SUBMITTAL OF RESPONSE TO ADEQ COMMENTS ON  
DRAFT LUCIP**



DEPARTMENT OF THE NAVY  
SOUTHWEST DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
1220 PACIFIC HIGHWAY  
SAN DIEGO, CA 92132-5190

5090  
Ser 5DEN.DG/2053  
May 13, 2002

Mr. Frank Smaila, Project Manager  
Arizona Department of Environmental Quality  
WPD/SPS/FPU/Federal Projects Unit  
3033 N. Central Avenue, Cube #715  
Phoenix, AZ 85012

Dear Mr. Smaila:

Subject: SUBMITTAL OF RESPONSE TO ADEQ COMMENTS RE: DRAFT (REVISION 1)  
LAND-USE CONTROL IMPLEMENTATION PLAN (LUCIP), OPERABLE UNIT 1  
(AREAS 2, 3, 4 & 6); OPERABLE UNIT-2 (AREAS 1, 8A & 10); AREA OF  
CONCERN 1, AND CONDITIONAL CLOSURE OF FORMER UNDERGROUND  
STORAGE TANKS AT THE FORMER EXCHANGE GAS STATION, DATED  
DECEMBER 20, 2001; MARINE CORPS AIR STATION (MCAS) YUMA, ARIZONA

The Navy is forwarding two (2) copies of Responses to Arizona Department of Environmental Quality Comments to the Draft (Revision 1) Land-Use Control Implementation Plan (LUCIP) at the Marine Corps Air Station (MCAS) Yuma, Arizona, dated February 7, 2002, for your concurrence.

The subject document includes a General Services Administration (GSA) memorandum that sets out the federal policy against encumbering federal real property with restrictive covenants that run with the land while the land is under federal ownership. Although this prevents us from recording a restrictive covenant that runs with the land in question at this time, we believe that recording each Declaration of Environmental Use Restriction (DEUR) as we have proposed would satisfy the substantive intent of A.R.S. 49-152(E) given our other responsibilities under the federal Comprehensive Environmental Response Compensation and Liability Act (CERCLA).

Recordation of the DEUR as we have proposed it, together with modifications to the base's master plan, would restrict the base's use of the relevant land, and would give notice to subsequent transferees of contamination. In the future, upon transfer to any non-federal entity, authority would exist to place the restrictions in covenants that run with the land exactly as current Arizona law provides. In addition, section 120(h) of CERCLA would require the federal government to transfer the land with a covenant warranting (among other things) that remedial action necessary to protect human health and the environment has been taken. To the extent that the government's warranty depends on use restrictions, those restrictions must be deed restrictions that run with the land.

If the foregoing does not provide adequate assurances to the State that necessary future restrictions would run with the land in the event that the land is transferred outside federal control, we would be willing to incorporate further assurances into the LUCIP. We recognize the importance of the policy underlying A.R.S. 49-152, and we look forward to discussing this matter with you.

Please provide your response to this office at your earliest convenience; however, it would be appreciated if you could respond by May 29, 2002. If you have any additional questions, please do not hesitate to contact me at (619) 532-1163. Thank you for your attention to this matter.

Sincerely,  


DAN GOODMAN  
Remedial Project Manager  
By direction of the Commander

Enclosures: 1. Response to Agency Comments on Draft (Revision 1) Land-Use Control Implementation Plan, MCAS Yuma, Arizona  
2. GSA Policy Letter dated October 16 1998

Copy to:

Mr. Martin Hausladen, U.S. Environmental Protection Agency (w/enclosures)  
Mr. Herbert "Gil" Guillory, MCAS Yuma, Environmental Director (w/o enclosures)  
Ms. Carol Lewis, MCAS Yuma, IRP Manager (w/enclosures)  
Mr. B.K. Schafer, Office of the Assistant General Counsel (Installations and Environment),  
General Counsel of the Navy, Senior Counsel (w/o enclosures)  
Mr. Richard Butterworth, GSA

**RESPONSE TO COMMENTS**  
**DRAFT (REVISION 1) LAND-USE CONTROL IMPLEMENTATION PLAN, OPERABLE UNIT 1 (AREAS 1, 2, 3 & 6)**  
**OPERABLE UNIT 2 (AREAS 1, 8A AND 10), AREA OF CONCERN A, AND CONDITIONAL CLOSURE OF FORMER**  
**UNDERGROUND STORAGE TANKS AT THE FORMER EXCHANGE GAS STATION – DATED DECEMBER 20, 2001**  
**MARINE CORPS AIR STATION, YUMA, ARIZONA**

CTO-206

**Comments by:** Frank Smaila, Project Manager, Federal Projects Unit, Superfund Programs Section, Waste Program Division  
 Arizona Department of Environmental Quality  
 Dated 7 February 2002

**Responses by:** Kathryn Umbarger - Bechtel National, Inc.

General Comments	Comment	Response
1.	<p>The document repeatedly refers to active remedial actions and the components of remediation systems as engineering controls and land-use controls. "Engineering controls" generally refer to such items as fences, caps, slurry walls and sheet pilings. Groundwater monitoring wells may be a component of an engineering control or a remedial action. Pump and treat systems and air sparge/soil vapor extraction systems may be used for plume containment/control. However, the primary function of these systems at Marine Corps Air Station Yuma is aquifer restoration. Therefore, they should be referred to as remedial systems. [Note: A glossary of Department of the Navy (DON) terms should be included in documents submitted for regulatory review if DON elects to use unique terms and definitions.]</p>	<p>The LUCIP has been revised as follows to address the over-broad application of the term "engineering control" as follows:</p> <p>1) The first discussion of "engineering controls", on Pages 1-5 and 1-6, has been revised to clearly define the term in a manner consistent with ADEQ and U.S. EPA use, and DOD protocols for institutional controls as a potential CERCLA response action at open military installations.</p> <p>The U.S. EPA defines engineered controls as "a method of managing environmental and health risks by placing a barrier between the contamination and the rest of the site, thus limiting exposure pathways." The purpose given for engineering controls in this definition is consistent with the primary purpose for selecting institutional controls in the DOD protocol, i.e., to prevent unacceptable risk to human health and the environment while contamination remains at a site. The DOD protocol defines institutional controls as "non-engineering or administrative mechanisms, particularly legal measures, designed to limit activities or access at a particular site" (e.g. land-use restrictions and limited access provisions). Engineering controls are, therefore, alternatively defined in the LUCIP as follows:</p> <p><u>Page 1-5.</u> "Engineering controls are physical mechanisms or barriers designed to minimize risk to human health and the environment by limiting activities or access at a particular site."</p> <p>It is believed that this definition is also consistent with the typical use anticipated by the ADEQ from the information provided.</p>

**RESPONSE TO COMMENTS**  
**DRAFT (REVISION 1) LAND-USE CONTROL IMPLEMENTATION PLAN, OPERABLE UNIT 1 (AREAS 1, 2, 3 & 6)**  
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2) All references to active remediation system components that do not minimize potential risk to human health by limiting pathways for receptor exposure as "engineering controls" have been removed or replaced by an appropriate term. These changes effect the following pages:

Page iii and Page 6-2 -

The title of Table 6-1 has been revised to " Operable Unit 1 Remediation System Inspection Schedule".

Page 6-1 - The second sentence of the page has been revised as follows:

"Remediation system components and engineering controls that will be inspected and/or monitored at OU-1 include the following:"

Section 6.2 - The first sentence of the first paragraph has been revised as follows:

"The OU-1 remediation system and engineering controls will be inspected by NAVFAC SW Division during each groundwater sampling event or during routine maintenance and operation of remediation systems."

Section 6.2 - The first sentence of the last paragraph has also been revised as follows:

"The inspection schedule for the remediation system is presented in Table 6-1."

**RESPONSE TO COMMENTS**  
**DRAFT (REVISION 1) LAND-USE CONTROL IMPLEMENTATION PLAN, OPERABLE UNIT 1 (AREAS 1, 2, 3 & 6)**  
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2.	The document consistently describes the remedial technology in use at the Area 1 hot spot groundwater plume as soil vapor extraction. The Area 1 hot-spot is a groundwater remedy consisting of air sparging ( <i>in-situ</i> air stripping of groundwater) and soil vapor extraction to remove the volatile contaminants from the subsurface. Air sparging is a vital component of the remedial system operating at the Area 1 hot-spot, and should be presented as such in this document.	References to the groundwater remediation system that appear on the following pages have been revised as recommended to consistently mention both the air sparging and soil vapor extraction components of remedy:  Page 1-5, second bullet Page 3-1, fourth bullet Page 6-1, second bullet
<b>Specific Comments</b>		
1.	Page 2-1, <b>2.1 Operable Unit-1</b> – The screening criteria to be applied to groundwater monitoring data should also include the Arizona Aquifer Water Quality Standards (AWQS).	The Arizona AWQS for aquifers that are classified for drinking water protected use (Arizona Admin. Code [AAC] R18-11-405 and 406) would be appropriate for screening OU 1 groundwater quality. However, Arizona has designated all groundwater in the state as potential drinking water aquifers and therefore, state and federal drinking water standards, applicable to the monitoring of public water supply systems, are relevant and appropriate. The numerical AWQS given for the OU 1 COCs are <u>identical</u> to the Arizona Maximum Contaminant Levels (MCLs) (AAC R18-4-201) and federal MCLs and Maximum Contaminant Level Goals (MCLGs). Because the state standards for drinking water are not more stringent than the federal standards, the federal MCLs were identified as the chemical-specific regulations applicable to remediation of OU 1 groundwater during the ARARs evaluation.

**RESPONSE TO COMMENTS**

**DRAFT (REVISION 1) LAND-USE CONTROL IMPLEMENTATION PLAN, OPERABLE UNIT 1 (AREAS 1, 2, 3 & 6)  
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Dated 7 February 2002

**Responses by:** Kathryn Umbarger - Bechtel National, Inc.

2.	Page 2-2, <b>2.1 Operable Unit-1</b> – The Arizona Department of Water Resources (ADWR) numbers applied to wells are “registration” numbers, not “regulation” numbers.	The referenced text on Page 2-2 has been revised to present the referenced well numbers as “registration numbers”.
3.	Page 2-6, <b>2.2 Operable Unit-2</b> – Regarding Area 8A: measures must be taken to prevent human contact with the surface and shallow soils which are known to contain PCBs in excess of Arizona HBGLs. The former landfill and surface disposal area, which may still be used for surface disposal of construction debris, should be restricted to entry by only those personnel conducting authorized surface disposal activities. Entry should be restricted by fencing the entire site, including locked gates across South Ordnance Road. Areas where surface disposal has become impracticable should be capped (unless materials disposed of at the surface are determined to provide an adequate barrier, preventing any human exposure to the contaminated soil). Future use of the area for jogging or other recreational activities should be strictly prohibited.	<p>The human health risk assessment performed for CAOC 8A indicated that direct exposure to the site surface does not pose an unacceptable level of risk under an industrial land use scenario.</p> <p>CAOC 8A is currently an inactive landfill facility; no continued disposal at the site is authorized. The disposal pits used for municipal waste and rubble between 1953 and 1961 were backfilled and no longer provide an opportunity for direct human exposure to contaminated soil. The site is included in a larger fenced area and vehicular access through South Ordnance Road is limited to those authorized to open the locked gate.</p> <p>The decision to prohibit any further use of the site was made solely to prevent any disturbance of the landfill contents. No sample analysis results were available for the landfill contents and, therefore, it was not addressed in the risk assessment performed for the site.</p> <p>CAOC 8A is not designated as a recreational area for MCAS Yuma and site access for recreational purposes is not provided.</p> <p>The referenced text of Page 2-6 has been revised as appropriate with this information.</p>

**RESPONSE TO COMMENTS**

**DRAFT (REVISION 1) LAND-USE CONTROL IMPLEMENTATION PLAN, OPERABLE UNIT 1 (AREAS 1, 2, 3 & 6)  
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Arizona Department of Environmental Quality  
Dated 7 February 2002**

**Responses by: Kathryn Umbarger - Bechtel National, Inc.**

4. Page 3-1, **3.1 Operable Unit-1 Land-Use Controls** – Regarding the last bullet: provisions must be made for reasonable access by EPA and ADEQ for purposes of environmental sampling. Also it is stated that “alteration or destruction of monitoring wells or remedial treatment systems will require approval from the MCAS Yuma Environmental Department, U.S. EPA and ADEQ.” However, the last round of well abandonment was undertaken without ADEQ’s approval. Has the notification and approval process been modified? If not, changes must be made to allow ADEQ sufficient time to evaluate the value of each well to the groundwater monitoring system at MCAS Yuma.

a) This provision is common as an institutional control (IC) where ICs are proposed as a remedial action for Navy CLEAN Sites. The following IC from the MCAS Yuma Master Plan (dated September 2001) Figure 5-17, on page 5-59, specifically provides site access for regulatory agency personnel:

“Access to monitoring wells, remedial treatment systems and sampling efforts will be permitted MCAS Yuma Environmental Department personnel and their contractors, as well as regulatory personnel, to conduct sampling and maintenance.”

This IC has been used to revise the similar text on Page 3-1, Section 3.1, in the second sentence of the fifth bullet.

b) Monitoring well abandonment (by others) without ADEQ prior approval may have occurred before the provisions for the notification and approval process was in-place, and a part of the MCAS Yuma Master Plan (Figure 5-17) and LUCIP (Section 3.1) which state:

“Alteration or destruction of monitoring wells or remedial treatment systems will require approval from the MCAS Yuma Environmental Department, U.S. EPA, and ADEQ.”

Documentation of the most recent monitoring well abandonment efforts for OU-1 is being sought for review and verification of receipt of ADEQ approval in addition to ADWR abandonment authorization cards for each well. The standard procedure for well abandonment at Navy CLEAN sites includes getting prior concurrence from the appropriate state regulatory agency team member(s). The basis for a removal decision should meet statistical data evaluation requirements provided by the groundwater monitoring program workplan, prior to obtaining regulatory agency concurrence.

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5. Page 3-3, 3.2 Land-Use Controls for OU-2 and FFAAP AOC A – ‘The VEMUR and DEUR each contain language clarifying that they are executed and recorded by the federal government “for itself only and not as a covenant running with the land.”’

Your statement that the “covenant does not run with the land” is contrary to the requirements of A.R.S. § 49-152(e) which describes an owner’s declaration of environmental use restrictions (DEUR) as “a covenant that runs with and burdens the property” and “inures to the benefit of the department and the state”. The DEUR (form) contains language declaring/stating that it “constitutes a covenant that runs with and burdens the Property, binds Owner and his/her/its heirs, successors, tenants, and assigns, and inures to the benefit of the Department and the State of Arizona and is sufficient if it contains all of the information” found in A.R.S. § 49-152(E).

If Institutional Controls are used by the owner to satisfy the requirements of the DUER (sic), see A.R.S. § 49-152(F).

If Engineering Controls are used by the owner to satisfy the requirements of the DUER (sic), see A.R.S. § 49-152(G).

Pursuant to Federal Land Management Policy, the Navy cannot burden its land with restrictions that run with the land. (Please see attached General Services Administration memorandum, dated October 1998.) In the past, in the VEMUR context, the Navy and State agreed to the “for itself only ...” language. The recordation of the VEMUR with this language, taken together with restrictions recorded in the Base’s Master Plan, complied with the substantive intent of ARS 49-152(e). We believe that is still the case, although the statute was amended to its present form in 2000.

**RESPONSE TO COMMENTS**

**DRAFT (REVISION 1) LAND-USE CONTROL IMPLEMENTATION PLAN, OPERABLE UNIT 1 (AREAS 1, 2, 3 & 6)  
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**CTO-206**

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Arizona Department of Environmental Quality  
Dated 7 February 2002

**Responses by:** Kathryn Umbarger - Bechtel National, Inc.

A DEUR must be filed as a “covenant running with the land” in compliance with Arizona state and rule.

While the State of Arizona has no “interest” in “Federal Property”, it is important to ensure that the land-use controls “run with the land” in case of future transfer or such property to different entities, such as private, municipal, or other public.

ADEQ hopes that YMCAS can insert language that ensures compliance with provision A.R.S. § 49-152(E) without compromising Federal rights to own and manage land.

6. Page 3-3, 3.2 Land-Use Controls for OU-2 and FFAAP AOC A – Paragraph b ends with the statement “At that time, the Navy/Marine Corps, in consultation with ADEQ and U.S. EPA, will undertake a reevaluation of the appropriate institutional controls.” This statement should acknowledge that engineering controls and/or other remedial actions may also be appropriate if “changes in activities or land use” occurs in these CAOCs or FFAAP AOC A.

The referenced statement, in a form that provides for engineering controls and alternative remedial action, although not mentioned specifically, is given for CAOC 8A in the MCAS Yuma Master Plan. Revision of the LUCIP to provide the form of the statement requested would not be inconsistent with the IC protocols for open bases developed by the California Military Environmental Coordination Committee (CMECC), Site Cleanup Performance Action Team in 1998. This document states that sufficient time is to be provided the State for "an evaluation of the need for any additional remedial action resulting from the anticipated land use changes." More recent DOD guidance provided in *Guidance on Land Use Control Agreements with Environmental Regulatory Agencies* (dated March 2, 2001) does not present a level of discussion about institutional controls that amends or negates the guidance provided by the earlier document.

**RESPONSE TO COMMENTS**  
**DRAFT (REVISION 1) LAND-USE CONTROL IMPLEMENTATION PLAN, OPERABLE UNIT 1 (AREAS 1, 2, 3 & 6)**  
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**Responses by:** Kathryn Umbarger - Bechtel National, Inc.

7.	<p>Page 4-1, <b>Section 4 OU-1 Groundwater Discharge Standards</b> – This section should cite specific rules and statutes and give chemical specific standards (maximum contaminant levels) allowed in the treated groundwater being reinjected.</p>	<p>The first sentence of Section 4, page 4-1, has been deleted and replaced with the following text:</p> <p style="padding-left: 20px;">"Treated groundwater proposed for reinjection into a groundwater aquifer of the state will be subject to discharge requirements provided by the Narrative and Numerical AWQCs in AAC R18-11-405 and 406, respectively. Because the receiving aquifer is designated a potential source of drinking water by the State, reinjected water that may be delivered to users of drinking water systems will also have to meet the maximum permissible levels provided by the State MCLs (AAC R18-4-205 and -211). The numerical requirements for all constituents reported in the treated groundwater will have to be met, not just the COCs for which the groundwater was treated."</p> <p>The last sentence of paragraph 1, Section 4, page 4-1, has been revised as follows:</p> <p style="padding-left: 20px;">"Discharges to a publicly owned treatment works facility shall comply with that facility's site-specific discharge limits as required in the National Pollutant Discharge Elimination System permit."</p>
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Enclosure: Memorandum dated October 16, 1998, Re: Restrictive Covenants on Non-excess Property – General Services Administration Policy

To: SMTP1@SMTP1@MCB LEJEUNE["Alvarez, Armando @ SWDIV" <abalvarez@efvy.mil>]  
 SMTP1@SMTP1@MCB LEJEUNE["Armstrong, Erick @ San Diego" <CDR\_ERIC.d.navy.mil>]  
 SMTP1@SMTP1@MCB LEJEUNE["Baker, Janet @ SWEST Div" <jkbaker@efds.mil>]  
 SMTP1@SMTP1@MCB LEJEUNE["jag.af.mil"]  
 SMTP1@SMTP1@MCB LEJEUNE["mil"]  
 SMTP1@SMTP1@MCB LEJEUNE["1"]  
 SMTP1@SMTP1@MCB LEJEUNE["1"]  
 SMTP1@SMTP1@MCB LEJEUNE["Bowman, Mike" <Bowman.Mike@HQ.NAVY.MIL>]  
 SMTP1@SMTP1@MCB LEJEUNE["Bross, J@ PWCGL" <jbross@pwcgl.navfac.navy.mil>]  
 SMTP1@SMTP1@MCB LEJEUNE["Brown, Mary @ SPAWAR" <brownml@nosc.mil and others...]

OPTIONAL FORM 99 (7-90)

**FAX TRANSMITTAL** # of pages > 3

To	Kathryn	From	Darren
Depl/Agency	Bechtel	Phone #	760 725 5191
Fax #	619 697-8787	Fax #	5132

NSN 7540-01-317-7088 5099-101 GENERAL SERVICES ADMINISTRATION

Cc:  
 Bcc:  
 From: "Schafer, Bernard K" <Schafer.Bernard@HQ.NAVY.MIL>  
 Subject: HW100: GSA's Final Policy on Restrictive Covenants on Non-exces  
 Date: Monday, November 2, 1998 12:19:41 EST  
 Attach:  
 Certify: N  
 Priority: Normal  
 Defer until:  
 Expires:  
 Forwarded by: MAJ CRAIG D JENSEN@EACO1@MCB LEJEUNE

-----  
 Forwarded to: GS-12 JULIE A SHAMBAUGH@EMD@MCB LEJEUNE  
 cc: dj, sf  
 Forwarded date: Monday, November 2, 1998 17:19:14 EST  
 Comments by: MAJ CRAIG D JENSEN@EACO1@MCB LEJEUNE  
 Comments:

To All:  
 [REDACTED] a position memo.  
 [REDACTED]

v/r/s  
 Craig

----- [Original Message] -----

SUBJECT too long. Original SUBJECT is  
 HW100: GSA's Final Policy on Restrictive Covenants on Non-excess Property (10/16/98)

----- Original Message Follows -----  
 All --

In HW99, and previous emails, I mentioned that GSA was coming out with a policy clarifying their position on our ability to create deed restrictions on nontransferring property. The premise is that a number of State and U.S. EPA Regions have, at one time or another, demanded deed restrictions as an Institutional Control (IC) where our cleanup decision is to use ICs as the remedy. During such negotiations, we've made the simple, but true, observation that deed restrictions make no sense as an IC for an active installation since our land use decisions typically do not involve consulting the local grantor/grantee index. Well, in addition to logic, we have GSA's opinion below as an added basis for our not creating deed restrictions at nontransferring facilities -- in short, we don't have the authority to do so, only GSA does, and they are extremely reluctant to do so (for good reason).

bk

Oct 16 1998

MEMORANDUM FOR REGIONAL DIRECTORS - 1PR, 4PR, 7PR, 9PR

FROM: JOHN Q. MARTIN /S/ John Q. Martin  
DIRECTOR  
REDEPLOYMENT SERVICES DIVISION

SUBJECT: Restrictive Covenants on Non-excess Property

This memorandum clarifies the General Services Administration's (GSA) policy regarding restrictive covenants on real property by landholding agencies.

This issue has caused confusion and has created obstacles to the efficient and effective disposal of excess and surplus real property. Therefore it is essential that this issue be clarified and a consistent approach taken to these actions. This letter applies to GSA regional officials involved in the disposal of Federal real property and to all landholding executive agencies. This memorandum is effective immediately.

Recently, GSA has been approached by several military services requesting assistance with State environmental regulators. In the course of continuing military operations at specific installations, the Department of Defense (DOD) has been required to perform certain environmental remediation. These remediation actions require the final approval of the State regulators. In some states, the State regulators have demanded that DOD place use restrictions or other covenants on the property. These restrictions are intended to run with the land and restrict future owners of the property to specific uses. At this time, the installations in question are in continual use and are not being evaluated as potentially excess property.

At the same time, GSA is aware that other agencies have agreed to restrictive covenants on property in their inventory. These include historic preservation restrictions which have been agreed to by the landholding agency during negotiation of the National Environmental Policy Act (NEPA) or National Historic Preservation Act (NHPA) as these acts apply to the decision to excess the property.

GSA does not believe landholding agencies have the authority to place such restrictions on property in their inventory. GSA views such restrictive covenants as disposals of real property. Under the Federal Property and Administrative Services Act of 1949, as amended (Property Act) GSA was given the exclusive authority to manage the utilization and disposal of property

(40 U.S.C. ?? 471, et seq). The Property Act defines "property" to include "any interest in property" (40 U.S.C. ? 472(d)). GSA's regulations (41 C.F.R. ?101-47.103-12(a)) define "real property" to include "any interest in land." Therefore, unless the landholding agency has specific authority to dispose of such property rights, the landholding agency must request GSA to dispose of these real property rights or request a delegation of disposal authority from GSA.

Generally, covenants restricting the future use of property are evaluated during the disposal process carried out by GSA. Therefore, where property is expected to be reported excess, GSA will usually deny the request from the landholding agency and evaluate any necessary restrictions during the disposal process. If there are special circumstances that demand agreement on use restrictions prior to being evaluated in the disposal process, GSA will review the request on a case-by-case basis. GSA's evaluation will consider the impact any restrictions may have on the future disposition of the property, the ability to use the property for its highest and best use (as determined by GSA), the economic impact of the requested restrictions, the legal requirement to place such a restriction on the property, and/or the enforceability of the requested restriction.

GSA is particularly concerned about requests to restrict the future use of property when the landholding agency does not contemplate declaring the property excess in the near future. GSA is doubtful as to the necessity, desirability or legal enforceability of placing restrictions on property that will remain in the Government's inventory. Questions as to how such restrictions will be enforced, and by whom, while the property is still an active Government facility are raised by these requests. Further, it would be difficult, if not impossible, for GSA to accurately determine the impact such restrictions may have on the future disposal of the property when immediate disposal of the property is not being contemplated. Therefore, GSA will deny all requests for land use restrictions on fully utilized property unless the requesting landholding agency can demonstrate the unique and extreme circumstances which would overcome GSA's objections to the placing of such restrictions on the property.

Official File - PRD  
Readers - PR, PRD, PRP, PRA, Brooks, Chase, Flowers, Kelly, Mandell, Martin, Shoats, Butterworth LR

H:\RestCove.doc

PRD:JohnQ.Martin:10/16/1998:AW

Bernard K. Schafer  
Senior Counsel  
Office of the Assistant General Counsel  
(Installations & Environment)  
General Counsel of the Navy  
OFF: (703) 604-8224  
FAX: (703) 604-6990  
DSN: 664-6990

**APPENDIX E9**

**INTERVIEW RECORD FOR LARRY LEAKE (7/26/02)**

## INTERVIEW RECORD

Site Name: <i>MCAS YUMA, OUZ 2 (CAOCs 10 and 8A)</i>		EPA ID No.: <i>(station) AZ0971590062</i>	
Subject: <i>FIRST FIVE-YEAR REVIEW FOR OUZ 2</i>		Time: <i>10:30am</i>	Date: <i>7/26/02</i>
Type: <input checked="" type="checkbox"/> Telephone <input type="checkbox"/> Visit <input type="checkbox"/> Other		<input type="checkbox"/> Incoming <input checked="" type="checkbox"/> Outgoing	
Location of Visit: <i>BNI-PMO SAN DIEGO/MCAS YUMA</i>			
Contact Made By:			
Name: <i>DOUG L. PEELER</i>		Title: <i>SENIOR GEOLOGIST</i>	Organization: <i>BNI</i>
Individual Contacted:			
Name: <i>LARRY LEAKE</i>		Title: <i>DIRECTOR, FACILITY SUPPORT SERVICES DIV.</i>	Organization: <i>MCAS YUMA</i>
Telephone No: <i>928-269-2161</i>		Street Address: <i>Box 99140, Bldg 888</i>	
Fax No:		City, State, Zip: <i>MCAS YUMA, AZ 85369</i>	
E-Mail Address: <i>LEAKELM@YUMA.USMC.MIL</i>			
IRP MANAGER <i>5/15/95 to 12/30/00</i> Summary Of Conversation			
<p><i>I. CAOC 10 Site boundaries as shown in VEMURs/DEURs.</i></p> <ul style="list-style-type: none"> <li><i>- The original RI boundary was the "S" shaped one.</i></li> <li><i>DLP: (corresponds to FFA and VEMUR drawings of site)</i></li> <li><i>- does not think related to ranges (sketch as gunnery practice) on CAOC 10 and 8A</i></li> </ul>			
<p><i>II. More details on the ranges</i></p> <ul style="list-style-type: none"> <li><i>- one at CAOC 10, between North and South Ordnance Roads, for gunnery practice (guns mounted to vehicles which drove the loop and practiced shooting from the vehicle).</i></li> <li><i>- Tower trap range, and skeet range on <sup>CAOC</sup> 8A.</i></li> <li><i>- Larry walked the area west of the landfill, to CAOC 11 and found skeet debris along the entire length.</i></li> <li><i>- the skeet range at CAOC 8A was over landfill area.</i></li> </ul>			
<p><i>III West boundary of CAOC 10A as depicted in MASTER PLAN and LUCIP: "CAOC 10" in ROD.</i></p> <ul style="list-style-type: none"> <li><i>- doesn't know details of how this boundary was determined but believes it was based on results of additional PAH soil sampling after RI, and the supplemental sampling for same purpose. Therefore should be in PAH report as ROD.</i></li> </ul>			

**APPENDIX E10**

**INTERVIEW RECORD FOR HERBERT GULLORY (7/26/02)**

# INTERVIEW RECORD

Site Name: <i>MCAS YUMA, OU 2 (CAOCs 8A and 10)</i>	EPA ID No.: <i>(Station) AZ0971590062</i>
Subject: <i>FIRST FIVE-YEAR REVIEW FOR OU 2</i>	Time: <i>11:20am</i> Date: <i>7/26/02</i>
Type: <input checked="" type="checkbox"/> Telephone <input type="checkbox"/> Visit <input type="checkbox"/> Other	<input type="checkbox"/> Incoming <input checked="" type="checkbox"/> Outgoing
Location of Visit: <i>BNI-PMO SAN DIEGO / MCAS YUMA</i>	

Contact Made By:

Name: <i>DOUG L. PEELER</i>	Title: <i>SENIOR GEOLOGIST</i>	Organization: <i>BNI</i>
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Individual Contacted:

Name: <i>H. "GIL" GUILLORY</i>	Title: <i>DIRECTOR, MCAS YUMA ENVIRONMENTAL DEPT.</i>	Organization: <i>MCAS YUMA</i>
Telephone No: <i>928-269-2282</i>	Street Address: <i>Box 99110, Bldg 228</i>	
Fax No:	City, State, Zip: <i>MCAS YUMA, AZ</i>	
E-Mail Address:	<i>85369-9110</i>	

Summary Of Conversation

✓  
EMAIL  
Attached

**I. EMAIL** confirming access restriction changes at CAOC 8A vicinity.  
 - Gil had July 8 email to Saddle Club forwarded me:  
 (a) red environmental lock on Saddle Club gate to fenced yard in which CAOC 8A located.  
 (b) email provides reason for no further access by Saddle Club.  
 (c) Sign on order to post at North Ordinance Road directing those with keys to gate lock to coordinate access/land use with MCAS YUMA ENVIRONMENTAL DEPARTMENT.

**II. Details on Tactic Parking Apron and CALA construction in a few years:**  
 Gil says 4 storage bunkers (on east end of ODE) within the CAOC 8A delineated for institutional controls will need to be demolished and foundations excavated/removed during phase 2 and 3 CALA relocation.  
 Further, the Tactical Parking Apron is proposed to be constructed in area between CAOC 8A and CAOC 10A as shown in the master plan. (Although ~~area~~ the area does not have institutional controls for CAOC 10 or 8A associated with the majority of it; the DEBR Exhibit 2 for CAOC 10 shows this ~~area~~ as part of CAOC 10.)  
 - Gil stated the ADEQ will be notified in advance of

the construction, with submittal of work plans and maps, to reevaluate the application of the institutional controls and DEBR site boundaries for the construction/demolition in these areas.

## Peeler, Douglas

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**From:** Lewis Ms Carol J [LEWISCJ@yuma.usmc.mil]  
**Sent:** Friday, July 26, 2002 11:48 AM  
**To:** Peeler, Douglas  
**Subject:** FW: Land Use Restrictions (West of Saddle Club)

> -----Original Message-----

> From: Guillory Mr Herbert  
> Sent: Friday, July 26, 2002 11:14 AM  
> To: Lewis Ms Carol J  
> Subject: FW: Land Use Restrictions (West of Saddle Club)

> -----Original Message-----

> From: Guillory Mr Herbert  
> Sent: Monday, July 08, 2002 10:32 AM  
> To: Counts Maj Dwight N; Counts Maj Dwight N  
> Cc: Capps Maj John M; Doxtader Msgt Richard; Lewis Ms Carol J  
> Subject: Land Use Restrictions (West of Saddle Club)

> Major Counts:

> We are currently going through the 5-Year Review (which is a part of  
> the long-term remediation plan), which evaluated how we are managing the  
> area. As part of the long-term remediation plan for the landfill (west of  
> the Riding Stables).

> The Record of Decision (ROD) for the Comprehensive Environmental  
> Response, Compensation, and Liability Act (CERCLA) Areas of Concern 8  
> Southeast Station Landfill (west of the Riding Stables) established  
> Instructional Controls as the selected remedy of this area.

> According to CERCLA, a five-year review is required for remedial  
> actions that leave any hazardous substances, pollutants, or contaminants  
> at the site at levels greater than those allowed for unlimited land use  
> and unrestricted exposure (residential use), in order to assure protection  
> of human health and the environment. The purpose of the five-year review  
> for sites where remedial action has been completed is not to reconsider  
> decisions made during the selection of the remedy specified in the ROD,  
> but to evaluate the remedy's performance and recommend actions for  
> improvement if the remedy is not performing as designed.

> The rationale for selecting institutional controls as the preferred  
> alternative for potential health risks at the station landfill was based  
> on the United States Environmental Protection Agency (EPA) criteria that  
> the current use (inactive landfill/surface disposal area) would not be  
> disturbed and monitored by institutional controls and implemented by the  
> Base Master Plan. This remedy was selected after state regulatory agency  
> and public comments were evaluated because the contaminant concentrations  
> do not pose an unallowable risk to the health of base personnel working in  
> the vicinity.

> A change in land use involving activities that may disrupt and  
> expose the landfill interior would require re-evaluation of the  
> institutional controls. This can only be accomplished by the Department  
> of the Navy/Marine Corps in consultation with the EPA and Arizona  
> Department of Environmental Quality (ADEQ).

> In order to comply with the five-year review and the ROD.  
> Institutional Controls and restricted access must be maintained to the  
> area west of the west of the Riding Stables.

> We will be providing a request to the Provost Marshall Office to

> install a new locking device on the west gate of the Riding Stable. If  
> additional information is needed, please don't hesitate to contact me or  
> the Installation Restoration Program Manager Ms. Lewis at 269-637).

>  
> Respectively,

>  
> Herbert "Gil" Guillory  
> Environmental Director  
> DSN 269-2282  
> (928) 269-2282  
> guilloryh@yuma.usmc.mil  
>