



# **Explosives Safety Submission Time-Critical Removal Action Parcel XVI Paint Waste Area Munitions Response**

Former Mare Island Naval Shipyard,  
Vallejo, California

**September 2008**

*Prepared for*

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Appendix B	Correspondence Supporting Adequacy of Fragment Protection Shielding
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# **1. BACKGROUND**

## **1.1 RESPONSIBLE PROJECT MANAGER**

The Navy Remedial Project Manager for the project is:

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## **1.2 MRS IDENTIFIER AND DESCRIPTION**

The current name for the Munitions Response Site (MRS) is the Paint Waste Area (PWA) located on the former Mare Island Naval Shipyard (MINS) in Vallejo, California as shown on Figure 1-1. Although MINS is a closed naval installation with portions currently being transferred under Base Realignment and Closure (BRAC), the MRS site is still under Navy ownership. Approximately 3.5 acres will be affected by the removal action, with an estimated 25,000 cubic yards of soil requiring mechanical screening. The PWA site is presented in Figure 1-2.

## **1.3 REGIONAL MAP(S)**

See Figure 1-1.

## **1.4 SCOPE OF MUNITIONS RESPONSE**

Soil within the MRS contains chemical contaminants, which require removal and disposition under a Time-Critical Removal Action approved by regulatory agencies and partially completed in late 2007. During site preparation of the PWA for the removal action, routine radiation checks of the ground surface revealed elevated readings, which were determined to be associated with several low-level radiological luminescent deck markers. The entire upland area of the PWA was, therefore, scan surveyed by a qualified radiological technician using a calibrated 2-inch by 2-inch unshielded sodium iodide (NaI) scintillation detector (Ludlum Model 44-10) used in

conjunction with a scaler/ratemeter (Ludlum Model 2221). A total of 133 low-level radiological items, typical of radiological items found at MINS dredge outfall sites, were recovered from 6 to 18 inches below ground surface by an unexploded ordnance (UXO) Technician. Soil removal was halted later in December 2007 when a munitions and explosives of concern (MEC) item (1.1-inch MK1 anti-aircraft round), also typical of items found at MINS dredge outfall sites, was recovered near the surface. Locations of the recovered MEC and radiological items are shown as Figure 1-3.

This project involves the excavation and mechanical screening of soil from the PWA to remove MEC. Monitoring for radiological items will occur simultaneously with the soil excavation. The excavated soil will be transported to the adjacent Investigation Area (IA)-H1 (also under Navy ownership) where it will be mechanically screened to remove MEC and then placed in the landfill containment area for use as subgrade fill under the engineered cap. A post-excavation geophysical survey and radiological survey are also planned. The MRS is located within an area potentially containing endangered species habitat and future land use will remain as habitat (open space).

## **1.5 HISTORY OF MEC USE**

There was no documented history of MEC use at the MRS. Mare Island does have a history of MEC contamination at dredge outfall locations originating from the dredging of areas within Mare Island Strait where unauthorized dumping of World War II era anti-aircraft ammunition was apparently commonplace. The MEC item (1.1-inch projectile) and the 133 radiological items already recovered at the PWA, together with other inert metallic scrap, are all indicative of dredge outfall debris. Subsequent review of a 1939 Mare Island map identified a dredge ditch in the vicinity of the location where the MEC and radiological items were found. It is speculated that use of this dredge ditch may have resulted in material being deposited at the PWA location.

## **1.6 PREVIOUS STUDIES OF EXTENT OF MEC CONTAMINATION**

There have been no previous studies of the specific MRS area since there was no known history of MEC-related uses or contamination. MEC was encountered in December 2007 while preparing to remediate chemically-contaminated soil at the PWA.

## **1.7 REGULATORY STATUTE, PHASE, AND OVERSIGHT**

The remediation of the PWA site is being accomplished as a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Time-Critical Removal Action. The California Environmental Protection Agency Department of Toxic Substances Control is the lead regulatory agency for the removal action. There is no legally binding completion date, except that the excavated soil are scheduled to be placed under the IA-H1 Containment Area engineered cap, which is scheduled for completion in the Fall of 2008.

## **1.8 JUSTIFICATION FOR NDA/NFA DECISION**

N/A (time-critical removal action).

## **2. SAR**

### **2.1 NAVFAC FORM 11010/31, "REQUEST FOR PROJECT SITE APPROVAL"**

The NAVFAC 11010/31 site approval request package, attached as Appendix A, contains the transmittal and supporting figures. The following table summarizes the exclusion zones that will be implemented for specific MEC operations at the Paint Waste Area site:

## Summary of Exclusion Zones for Specific MEC Operations at the PWA Site

Operation	Sited As	Exposed Site	Basis <sup>1</sup>	ESQD (feet)
Manual Operations <sup>2</sup>	Unintentional Detonation	UXO Teams	K40 of the MGF	14 <sup>4</sup>
Manual Operations <sup>2</sup>	Unintentional Detonation	Public & Non-Essential Personnel	HFD of the MGF	104 <sup>4</sup>
Mechanized Operations <sup>3</sup>	Intentional Detonation	Essential Personnel	K24 of the MGF <sup>5</sup>	8 <sup>4</sup>
Mechanized Operations <sup>3</sup>	Intentional Detonation	Public & Non-Essential Personnel	MFD of the MGF	830 <sup>4</sup>
MEC Treatment (up to 25 pounds NEW)	Intentional Detonation	Public & All Personnel	MFD of the MGF	830 <sup>4,6</sup>
Magazine (up to 1,000 pounds NEW)	Aboveground Magazine	Non-essential personnel in structures	IBD	1,250
		Non-essential personnel in the open	PTR	750

Notes:

- 1 The MGF is the 1.1-inch MK1 projectile with a NEW of 0.037 pound.
- 2 Manual operations include detector-aided visual surface clearance and retrieving anomalies by hand digging.
- 3 Mechanized operations include the excavation of soil with an excavator/backhoe (without engineering controls), dumping excavated soil into off-road haul trucks (without engineering controls), spreading out wet soil and/or mixing in dry soil using a grader, dumping excavated soil into the grizzly, and screening soil. The excavation of soil using an excavator/backhoe and the dumping of excavated soil into off-road haul trucks may be considered as non-mechanized (manual) operations when the engineering controls described in Section 8.2 are implemented.
- 4 Values obtained as described in Section 3.
- 5 Requires shields or barricades designed to defeat hazardous fragments from the MGF. The K18 distance of 6 feet may be used if essential personnel are provided hearing protection providing  $\geq 9$  db attenuation.
- 6 This distance can be reduced if engineering controls listed in Department of Defense Explosives Safety Board Technical Paper-15 are employed.

ESQD explosives safety quantity-distance	MGF munition with the greatest
HFD hazard fragment distance	fragmentation distance
IBD inhabited building distance	NEW net explosive weight
MFD maximum fragment distance	UXO unexploded ordnance

## 2.2 ADDITIONAL INFORMATION

See Figures A-1, A-2, A-3, and A-4.

### 3. Types of MEC

#### 3.1 TYPES AND QUANTITIES OF MEC, INCLUDING MATERIAL POTENTIALLY PRESENTING AN EXPLOSIVE HAZARD

The only MEC item encountered at the MRS was a 1.1-inch MK1 projectile, along with several .50 caliber rounds. However, since the MRS contains outfall debris similar to that recovered at two nearby former dredge spoils ponds, the probability exists that other “typical” dredge outfall MEC items may also be present. Outfall MEC items have typically included 20-millimeter (mm) Oerlikon and 40-mm Bofors anti-aircraft ammunition. Much less common were several 3-inch/50 cal MK27 rounds recovered in similar outfall locations on Mare Island. Therefore the 1.1-inch MK1 (0.037 lbs net explosive weight [NEW]) is considered to be the site munition with the greatest fragmentation distance (MGFD), with the 40-mm MK2 (0.187 lbs NEW) and the 3-inch/50 cal MK27 (0.74 lbs NEW) designated as contingency MGFDs.

#### Munition with the Greatest Fragmentation Distance

Operation	MGFDs		EZs (feet)				
	Description	NEW (lbs)	Fragmentation Effects		Blast Overpressure Effects		
			HFD (feet)	MFD (feet)	K328	K40	K24
Soil Excavation	1.1-inch MK1	0.037 <sup>1</sup>	104 <sup>3</sup>	<u>830</u> <sup>3</sup>	110 <sup>4</sup>	14 <sup>4</sup>	8 <sup>4</sup>
	40-mm MK2	0.187 <sup>10</sup>	131 <sup>5</sup>	1,095 <sup>6</sup>	188 <sup>4</sup>	23 <sup>4</sup>	14 <sup>4</sup>
	3-inch/50 cal MK27	0.74 <sup>1</sup>	301 <sup>2</sup>	2,286 <sup>7</sup>	297 <sup>4</sup>	37 <sup>4</sup>	22 <sup>4</sup>
Excavated Soil Screening	1.1-inch MK1	0.037 <sup>1</sup>	104 <sup>3</sup>	<u>830</u> <sup>3</sup>	110 <sup>4</sup>	14 <sup>4</sup>	8 <sup>4</sup>
	40-mm MK2	0.187 <sup>10</sup>	131 <sup>5</sup>	1,095 <sup>6</sup>	188 <sup>4</sup>	23 <sup>4</sup>	14 <sup>4</sup>
	3-inch/50 cal MK27	0.74 <sup>1</sup>	301 <sup>2</sup>	2,286 <sup>7</sup>	297 <sup>4</sup>	37 <sup>4</sup>	22 <sup>4</sup>
MEC Treatment	1.1-inch MK1	0.037 <sup>1</sup>	104 <sup>3</sup>	830 <sup>3</sup>	<u>960</u> <sup>8</sup>	117 <sup>8</sup>	71 <sup>8</sup>
	40-mm MK2	0.187 <sup>10</sup>	131 <sup>5</sup>	722 <sup>9</sup>	960 <sup>8</sup>	117 <sup>8</sup>	71 <sup>8</sup>
	3-inch/50 cal MK27	0.74 <sup>1</sup>	301 <sup>2</sup>	2,286 <sup>7</sup>	960 <sup>8</sup>	117 <sup>h</sup>	71 <sup>8</sup>

## Munition with the Greatest Fragmentation Distance (Continued)

### Notes:

- 1 NEW of the item from OP 1664.
- 2 HFD is the greater distance calculated using Department of Defense Explosives Safety Board Technical Paper-16 (TP-16) equations 4-14 and 4-16.
- 3 MFD and hazardous fragmentation distance (HFD) is the greater distance calculated using the TP-16 Primary Fragment Range Generic Equations Calculator (Version 1.0 dated 3/5/08) for “robust” items.
- 4 Reflects detonation of a single MGF (without donor charge).
- 5 HFD from the item specific Fragmentation Data Review Form dated 12/31/07.
- 6 MFD from the item specific Fragmentation Data Review Form dated 12/31/07. May be reduced to 855 feet during soil excavation activities through use of the excavation shield described in Section 8.2.
- 7 MFD is the greater distance calculated from OP5 Tables 13-1 and 13-2 for “robust” items (note that if this contingency MGF is implemented, the MFD for MEC Treatment operations would be reduced by sand cover to bring within the established 1,250 ft range EZ after consultation with Naval Ordnance Safety and Security Activity to obtain item-specific TP-16 Buried Explosion Module data).
- 8 Reflects detonation of multiple items and associated donor charges within range limit (25 lbs NEW).
- 9 Reflects use of one foot of dry sand cover; from TP-16 Buried Explosion Module (1,095 feet without cover).
- 10 NEW from the item specific Fragmentation Data Review Form dated 12/31/07.

EZ	exclusion zone	MFD	maximum fragment distance
HFD	hazard fragment distance	MGF	munition with the greatest fragmentation distance
lbs	pounds	NEW	net explosive weight
MEC	munitions and explosives of concern		

### 3.1.1 Encountering MEC Other Than the Selected MGF

Should a MEC item having a greater fragmentation distance than the selected MGF (or the greatest of the contingency MGFDs) be encountered while executing the munitions response, the Navy project manager will take the following actions:

- Direct the UXO contractor or other munitions response personnel to immediately cease operations.
- Submit an amended ESS to Naval Ordnance Safety and Security Activity (NOSSA) N5.

### 3.1.2 Encountering MEC With Approved Contingency MGFDs

Should a MEC item having a greater fragmentation distance than the selected MGF (but less than or equal to one of the contingency MGFDs) be encountered by the UXO contractor or other munitions response personnel, the responsible project manager will take the following actions:

- Select from among the contingency MGFDs in the approved ESS a new MGF that has a fragmentation distance equal to or greater than the newly-encountered MEC item.

- Implement the increased protection required by the new MGF.
- Notify NOSSA N54 of the change in MGF.

If the project manager inserts the newly encountered MEC between MEC already identified as contingency MGFs, a corrected ESS may be submitted to NOSSA N54. NOSSA N54 shall then provide EZs specific to the new MGF following guidance found in Department of Defense Explosives Safety Board (DDESB) Technical Paper-16 (TP-16) "Methodologies for Calculating Primary Fragment Characteristics". The change in the MGF will be documented in the project After Action Report.

### **3.2 EXPLOSIVE SOIL AND CONTAMINATED BUILDINGS**

No explosive soil or contaminated buildings are located within the MRS.

## **4. PROJECT DATES**

### **4.1 PROJECT DATES**

The excavation and screening of excavated soil is expected to begin in September 2008 and be completed by November 2008. The treatment of recovered MEC is expected to be completed by December 2008.

## **5. MEC MIGRATION**

### **5.1 MEC MIGRATION**

MEC migration due to naturally occurring phenomena (flooding, erosion, drought, etc.) is not a realistic concern since the area is flat and thickly vegetated. Frost heave is not an issue since the temperature rarely goes below freezing and never for extended periods.

## **6. QUALITY CONTROL/QUALITY ASSURANCE**

### **6.1 QUALITY DOCUMENTATION**

Quality oversight of project work will be implemented by a MEC-specific addendum to the project Quality Control Plan and by a Navy Quality Assessment Project Plan (QAPP).

### **6.2 PERSONNEL QUALIFICATIONS**

The qualifications of all UXO Technicians performing MEC-related functions will meet or exceed the requirements of DDESB TP18 for their respective jobs.

### **6.3 QUALITY CONTROL IMPLEMENTATION**

Quality control (QC) measures will be implemented in accordance with the QC requirements contained in a Mechanical Soil Screening Addendum to the original TCRA work plan. The Mechanical Soil Screening Addendum will implement personnel, equipment, and data QC measures for all site operations. QC measures will insure that the quality of the post-excavation geophysical survey data and the effectiveness of mechanical soil screening activities meet the established data quality objectives (DQOs) for the project. The project DQOs are both qualitative and quantitative statements specifying the quality of data required to support the project.

The following DQOs were identified for the Digital Geophysical Mapping (DGM) survey and the associated data processing and anomaly selection processes:

- Geophysical sensor data are of acceptable precision, sensitivity, accuracy, and completeness.
- Navigation and position data are precise and accurate.
- Data are reproducible and defensible in supporting project objectives.
- Data of sufficient density and quality to detect smallest item in area of interest per metric in addition to larger features (i.e. caches).
- Data processing to decrease noise and lower false positives.

- Signals undergo standardization to support anomaly prioritization.
- Validate anomaly selection criteria positional accuracy.
- Confirm low-amp anomalies are not processing.

Corrective action for any identified discrepancies will be determined by the project geophysicist, and may include whatever actions considered appropriate, including the resurvey of affected grids and the reprocessing of data.

QC requirements applicable to the soil excavation and screening relate primarily to the effectiveness of the screen process in removing MEC. Metallic “seed” items (representative of the anticipated MEC items (20mm, 1.1”, and 40mm projectiles) placed into soil prior to screening will demonstrate the effectiveness of the screen plant in removing all MEC items. QC inspections of a portion of soil that has successfully passed through the screen plant will also assist in validating the screening process. Identification of MEC or seed items in screened soil will result in correction of the root cause and rescreening of the soil.

Proper control of recovered munitions debris and non-munitions scrap will be maintained through use of DD 1348 (Transfer of Custody) forms signed by a contractor UXO Technician and a qualified Navy representative (munitions debris), or by two contractor UXO Technicians (non-munitions debris). The primary concern is to prevent the inadvertent release of MEC or munitions scrap to an unauthorized recipient.

#### **6.4 QUALITY ASSURANCE IMPLEMENTATION**

A QA Plan will be developed at the Navy’s discretion to independently assess the quality of project work. The QA plan will be implemented by an independent third party.

## **7. DETECTION TECHNIQUES**

### **7.1 DETECTION EQUIPMENT, METHOD, AND STANDARDS**

An AN-19/2 Ordnance Locator and Schonstedt magnetometer will be used to support the soil excavation phase of the project. Satisfactory operation of the handheld instruments will be verified daily using an established onsite test target.

A Geonics EM61 MK 2 electromagnetic system will be used for the verification DGM survey of the MRS to be performed after soil excavation activities are completed. The Geophysical Prove-Out (GPO) Plan based on the use of an existing GPO grid will verify the effectiveness of equipment, operators, and data processing techniques utilizing a test grid established in similar soil conditions. Targets in the test grid include those typically found at other Mare Island dredge outfall locations, including 20mm, 40mm, and 3-inch anti-aircraft projectiles. The GPO evaluation will demonstrate the capability of the equipment to locate items as small as 20-mm projectiles at the detection limits of the instrument in similar soil conditions.

All geophysical survey instruments will be used in accordance with the Hazards of Electromagnetic Radiation to Ordnance (HERO) restrictions specified in NOSSA Letter Serial N482/1243 of August 23, 2005 (NOSSA, 2005).

### **7.2 NAVIGATIONAL EQUIPMENT, METHOD, AND STANDARDS**

A Trimble Real Time Kinematic (RTK) Global Positioning System (GPS) receiver will be used with the EM61 system to determine and record anomaly position information with an expected accuracy of 0.1 feet.

### **7.3 DATA COLLECTION AND STORAGE**

Performance of the Geonics EM61 MK 2 data collection personnel and equipment will be demonstrated at the existing Geophysical Prove-Out area in the South Shore Area that was established to support the 2006 geophysical surveys of the Production Manufacturing Area and

South Shore Area. The system will also be checked at the beginning and end of each workday following the QC criteria (i.e., equipment warm-up, sensor nulling, static, static spike, cable shake, etc.). Additional function checks may be performed throughout the day, as the operator deems necessary. The data from each sensor test will be compared with data collected on previous days. If there is a significant change in results, the instrument will be rechecked. If the difference in the data cannot be accounted for, the instrument will be taken out of service until repaired.

Navigation accuracy of the RTK GPS system will be verified each day at a known control point to ensure an accuracy of less than 0.1 feet offset.

#### **7.4 DATA COLLECTION AND STORAGE**

The geophysical teams will provide raw instrument data, digital records, and field notes to the Site Geophysicist within 24 hours after it is collected. The digital data will be an ASCII-delimited file (XYZ) format suitable for data analysis. All data related to the DGM surveys will be managed using specialized techniques that include the use of U-Hunter and Oasis Geosoft software. Descriptive attribute information about the field surveys, targets, and dig lists will be stored and maintained in a centralized, project master database in a Microsoft® format. This database will contain all QC statistics and processing parameters collected, performed, and calculated on the DGM data. All spatial data will be managed using GIS, and will be stored in ESRI-compatible GIS file formats, primarily ArcInfo coverage's and ArcView shape files. All data will be provided electronically to the Navy and will be backed up on the contractor's internal network and project workstation.

## **8. RESPONSE ACTIONS**

### **8.1 RESPONSE TECHNIQUE**

#### **8.1.1 Vegetation Removal**

The site was previously cleared to support the initial contaminated soil removal that led to the discovery of MEC. Any vegetation that may interfere with the soil removal operations or subsequent geophysical survey will be cut using only handheld string trimmers.

#### **8.1.2 Munitions Response Techniques**

Soil within the MRS will be excavated in 12-inch layers utilizing mechanized equipment (backhoe/excavator). Excavation of the soil in layers will continue until no additional metallic anomalies or radiological items can be detected utilizing hand held survey instruments. A post-excavation digital geophysical survey utilizing an EM61-MK2 system will be completed in concert with a high-density radiological survey to confirm that all remaining items have been removed. Any detected metallic or radiological anomalies will be investigated.

#### **8.1.3 MEC Investigation and Recovery Processes**

All MEC items recovered from dredge outfall sites to date have been unfired and therefore are categorized as discarded military munitions (DMM).

The excavated soil will be placed into off-road haul trucks and transported to the nearby screen plant location. Soil will be stockpiled pending screening and, if excessively wet, spread out and allowed to dry or combined with drier soil using earth-moving equipment to facilitate the screening process. The soil will be placed into the screen plant that will consist of a 6-inch grizzly, and vibratory 2-inch and ¾-inch screens. Magnets will be positioned above the conveyors before the 2-inch screen and after the ¾-inch screen. Ferrous material collected by the magnets will be discharged in separate hoppers for later inspection and categorization by UXO Technicians. The screen plant will run unattended, except for the loading of unscreened soil and the movement of oversized (reject) material and sifted soil to facilitate continued plant operation.

Equipment operators performing soil handling operations and other essential personnel remaining inside the established exclusion zone (maximum fragment distance) during screen plant operations will be protected against fragments and blast overpressure by fragment shielding and by maintaining a minimum K24 distance from the screen plant. DDESB-approved overpressure-mitigating engineering controls (standard hearing protection devices) may be used to provide an equivalent level of protection (2.3 psi) to allow a reduction in the K24 distance to K18. All other personnel will retreat outside the exclusion zone during operation of the plant. Cleaning of screens will be performed only while the screen plant is shut down.

Recovered material will be categorized and managed appropriately as either MEC, material potentially presenting an explosive hazard (MPPEH), or non-munitions related scrap.

#### **8.1.4 Munitions Handling Equipment**

Recovered MEC is anticipated to be smaller items (20-mm to 3-inch ammunition) that will not require mechanized handling equipment. Items will be packaged in metal ammunition cans with inert filler material. Cans will be sealed and secured in a wooden pickup bed liner for transport to the storage magazine.

### **8.2 OPERATIONAL RISK MANAGEMENT**

The inherent risks involve the possibility of inadvertent detonation of MEC items and the resulting fragmentation and blast overpressure hazards to site workers and the public. The public will be protected from fragments and blast overpressure by the established EZ and/or by shielding. To allow a reduction in the size of the required soil excavation EZ to minimize impact on adjacent public streets and inhabited buildings, an excavation shield positioned by a second excavator will be utilized if the 40mm MK2 contingency MGFDF is encountered. The excavation shield will consist of a three sided box constructed of 3-inch thick cast Plexiglas or ½-inch thick mild steel as shown in Figure 8-2. The excavation shield will be positioned so that it surrounds the excavator bucket on three sides during use. The 3-inch cast Plexiglas material was determined to be adequate protection for the site MGFDF and contingency MGFDFs by the USACE, Huntsville (Michelle Crull). E-mail correspondence supporting this determination for a

previous Mare Island MEC removal project (Marine Corps Firing Range) is included in Appendix B. The adequacy of ½-inch mild steel as shielding for the 40mm round is indicated on the 40mm MK2 Master Review Data Form dated 12/31/07 with 31 January 2008 DDESB changes (Appendix B). Use of the excavation shield will allow a reduction in size of the soil excavation exclusion zone for the 40mm MK 2 contingency MGF to 855 feet per the Barricade Angle Calculator, Version 1 (Appendix B). The use of the excavation shield will preclude the need to evacuate the two nearby inhabited buildings (Bldg 505 and the Vallejo School District Administrative Building) shown on Figure A-3. However, closure of sections of Azuar Drive and adjacent streets within the established site EZ will still be required during soil excavation activities.

Should a 3-inch/50 cal contingency MGF be identified at any time during the soil excavation, handling, or screening process, expansion of the soil excavation EZ will not be feasible due to the large number of inhabited buildings and public streets that would be impacted. Therefore, if a 3-inch/50 cal MEC item is encountered, an interim geophysical survey and removal step would be implemented to identify and remove any discrete anomalies with instrument response readings high enough to indicate the potential for 3-inch/50 cal MEC items at one foot depth prior to the mechanical excavation of each additional 1-foot lift of soil. The digital geophysical survey would be performed utilizing the Geonics EM61 MK2 system, as described in Section 7. Anomalies identified by the survey would be investigated by UXO Technicians, and any encountered MEC items removed. The 3-inch/50 cal HFD of 301 feet would be implemented as the EZ during the discrete investigation of anomalies. The interim survey and removal step will allow the continued use of the 40mm MK2 EZ for the mechanical soil excavation and screening operations.

Equipment operators (essential personnel) performing tasks within the established exclusion zones will be protected by 3-inch cast Plexiglas fragment shielding and a K24 blast overpressure distance. DDESB-approved overpressure-mitigating engineering controls (standard hearing protection devices) may be used to provide an equivalent level of protection (2.3 psi) to allow a reduction in the K24 distance to K18.

The dumping of excavated soil from haul trucks at the screen plant site is considered to be a non-mechanized operation. However, the following operations associated with this project are considered mechanized operations and will require an exclusion zone based upon the greater of the maximum fragment distance or K328 of the MGF D:

- Mechanized soil removal using an excavator/backhoe.
- Using mechanized equipment such as a grader to spread out wet soil and/or adding dry soil (the use of a smaller piece of equipment such as a skid loader or a large excavator may be used as a non-mechanized operation).
- Dumping of excavated soil into the screen plant grizzly.
- Operation of the screen plant equipment.

The dumping of excavated soil into the metal bed of an off-road haul truck would also normally be considered a mechanical operation. However, the following precautions to minimize the shock to potential MEC entrained in the excavated unscreened soil are considered sufficient to allow the loading of trucks to be considered a non-mechanized operation:

- A layer of clean (or screened) soil approximately 6-inches thick will be placed into the beds of the haul trucks prior to loading with excavated unscreened soil.
- Excavator operators will exercise caution when loading the trucks to reduce the distance soil falls from the excavator bucket into the bed.

### **8.3 MEC HAZARD CLASSIFICATION, STORAGE, AND TRANSPORTATION**

MEC that is determined safe to move and transport by the UXO Safety Officer (UXOSO) will be packaged and transported to the MEC storage magazine on dredge pond levee roads (items will not be transported over public roads). The location and corresponding Inhabited building distance (IBD) explosives safety quantity-distance (ESQD) footprint of the existing Naval Ordnance Center (NOC) (NOSSA) site approved storage magazine (Building A180 Magazine) is shown on Figure A-4 of Appendix A. The storage site, with an established 1,250 foot ESQD footprint (IBD) and a limit of 1,000 lbs NEW, was site-approved for the storage of recovered MEC in 1997 (site approval is attached as Appendix C). Access into the ESQD is controlled by

the Navy and is restricted by a series of fences and locked gates. Items will remain in temporary storage in Building A180 Magazine pending thermal treatment at the onsite treatment range.

## **8.4 MEC AND MPPEH DISPOSITION PROCESSES**

### **8.4.1 MEC Disposition**

Recovered MEC will be thermally treated (detonated) at the onsite treatment range. The location and corresponding exclusion zone footprint of the existing NOC (NOSSA)-approved treatment range (Disposal Range #2) is also shown on Figure A-4 of Appendix A. The range was approved for the disposal of recovered MEC in 1994 (site approval is attached as Appendix D), with an established 1,250 foot exclusion zone that is controlled by the Navy and is restricted by fencing and gates. Since an established demolition area exists, no in-grid consolidated shots will be required. Treatment of MEC items with MFDs exceeding the established range EZ of 1,250 ft will utilize sand cover, as discussed in Section 6 of DDESB Technical Paper 16 (DDESB, 2005), to reduce the size of the required exclusion zone to bring it within range limits.

### **8.4.2 MPPEH Disposition**

MPPEH will be segregated and placed into a locked container for storage, under the control of the SUXOS, pending transfer for disposal. MPPEH will be inspected and certified to be free of explosives or related materials by the project Senior Unexploded Ordnance Supervisor (SUXOS) and a qualified Navy representative before being transferred to a qualified munitions scrap recycling contractor for demilitarization and disposal. MPPEH determined to contain explosives will be thermally treated as described in Section 8.4.1. All MPPEH management procedures will be in accordance with Section 13-15 of NAVSEA OP 5.

## **8.5 EZ ACCESS**

Access to an EZ while munitions response operations are occurring will be limited to essential personnel and authorized visitors. The UXOSO will determine the maximum number of persons (essential personnel and authorized visitors) that can be in the EZ at a given time. Visitor access

to the site will be based on the operational risk analysis of the scheduled MEC operations and availability of escorts, as well as on a demonstrated visitor need and the completion of visitor safety briefings.

## **8.6 MECHANIZED MEC PROCESSING OPERATIONS**

As described in Section 8.2, engineering controls are proposed for the soil excavation and soil loading operations that will allow them to be categorized as non-mechanized operations.

Mechanized screening equipment will be used to separate potential MEC items from the excavated soil. The screen plant will consist of a 6-inch static grizzly, 2-inch and ¾-inch vibratory screens, two magnets, and a discharge stacking conveyor. The screen plant will run unattended except for the loading of unscreened soil and the movement of oversized (reject) material and sifted soil by fragment-shielded equipment operators to facilitate continued plant operation. Maintenance and cleaning of the screen plant will be performed with the plant shut down. A diagram of the planned screen plant arrangement is shown on Figure 8-1.

The following operations associated with the operation of the screen plant are considered mechanized operations and will require establishment of an exclusion zone based upon the greater of the maximum fragment distance or K328 for the specific MGF (see Sections 2.1 and 3.1 for specific exclusion zone information):

- Using mechanized equipment such as a grader to spread out wet soil and/or adding dry soil. The use of a smaller piece of equipment such as a skid loader or a large excavator may be used as a non-mechanized operation.
- Dumping excavated soil into the screen plant grizzly.
- Operation of the screen plant.

The dumping of excavated soil from haul trucks at the screen plant site is not considered to be a mechanized operation.

## **8.7 EXPLOSIVES SOIL**

No known explosives soil is present in the MRS.

## **8.8 CONTAMINATED BUILDINGS**

No buildings are located in the MRS.

## **9. ENVIRONMENTAL, ECOLOGICAL, CULTURAL, AND/OR OTHER CONSIDERATIONS RELATED TO THE MANAGEMENT OF MEC**

### **9.1 ENVIRONMENTAL, ECOLOGICAL, CULTURAL, AND/OR OTHER CONSIDERATIONS RELATED TO THE MANAGEMENT OF MEC**

The MRS is primarily an upland area surrounded by non-tidal wetlands presumed to be suitable habitat for the endangered salt marsh harvest mouse (SMHM). A magnetometer-assisted sweep of the pickleweed-dominated wetlands immediately adjacent to the upland portion of the area indicated that buried metal debris extends into the wetlands for 25 to 75 feet, primarily along the southern and western extent of the upland. Therefore, an Endangered Species Act formal consultation with the U.S. Fish and Wildlife Service (USFWS) has been initiated to address the potential step-out into the adjacent pickleweed wetlands. An existing informal consultation with USFWS was completed in 2007 for the upland portion of the site, which includes appropriate mitigation measures to avoid impacts to the SMHM.

In addition to MEC hazards, the site is known to contain low-level radiological items. The excavation will proceed in one-foot intervals with individual scan surveys using radiation detectors before each lift to locate and remove radiological items prior to mechanical screening of the soil/debris for removal of MEC. A post-excavation high-density radiation survey using an ultrasonic range and detection system (USRADS) will be performed similar to the DGM survey previously described.

## **10. TECHNICAL SUPPORT**

### **10.1 EOD, UXO CONTRACTOR, OR OTHER MUNITIONS RESPONSE PERSONNEL**

The team of UXO Technicians performing the MEC screening should require no additional munitions response support. The only exception would be the discovery of a MEC item that could not be safely moved, since donor explosives are not stored onsite and are not available on short notice. In that event, the Travis Air Force Base EOD unit that has an agreement with the Navy could provide the necessary support.

### **10.2 PHYSICAL SECURITY**

The MRS is located in a restricted wetland area not readily accessible to the public. The site is secured by a combination of natural barriers (wetlands) and a gate on the only access road to the site as shown on Figure 1-2. Access to both the MRS excavation site and the soil screening facility will be strictly controlled during operation.

Even with implementation of the engineering controls described in Section 8.2, the soil excavation exclusion zone for the eastern portion of the PWA will extend into public streets. The anticipated locations of roadblocks are noted on Figure 10-1. Establishment and enforcement of the road blocks will be performed by a subcontractor licensed in the State of California to perform traffic control functions.

No donor explosives will be stored onsite; explosives for treatment operations will be brought in daily by a local supplier. The MEC storage facility is an existing site-approved magazine structure located in a restricted area and protected by several layers of fencing/gates.

## **11. RESIDUAL RISK MANAGEMENT**

### **11.1 LAND USE CONTROLS**

Not applicable (time-critical removal action).

## **11.2 LONG-TERM MANAGEMENT**

Not applicable (time-critical removal action).

## **12. SAFETY EDUCATION PROGRAM**

### **12.1 SAFETY EDUCATION PROGRAM**

The site is currently restricted and is under the control of the Navy. To ensure that all persons who may enter the site in the future are aware of the potential hazards associated with possible remaining munitions, a safety education program will be implemented. The education program will place emphasis on potential future passive use by recreational visitors (public trail) and also will include appropriate covenants, deed restrictions, and intrusive work procedures.

## **13. STAKEHOLDER INVOLVEMENT**

### **13.1 STAKEHOLDER INVOLVEMENT**

All potential stakeholders have been involved throughout the planning stages of the TCRA. A fact sheet, summarizing the planned TCR remedial activities, was prepared and mailed to all Mare Island residents, landowners, and tenants, and to several hundred other potentially interested individuals and organizations in Vallejo and the surrounding communities. Presentations to the public detailing progress of previous soil removal activities including discovery of MEC and radiological items at the PWA, and planning for the current MEC and radiological item removal project at the PWA have been made at recent meetings of the Mare Island Restoration Advisory Board.

## **14. CONTINGENCIES**

### **14.1 CONTINGENCIES**

Contingency MGFs have been identified in Section 3.2. No other contingency actions are anticipated.

## 15. REFERENCES

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- DOD. 1997. *DOD Contractor's Safety Manual for Ammunition and Explosives*. 4145.26M. September.
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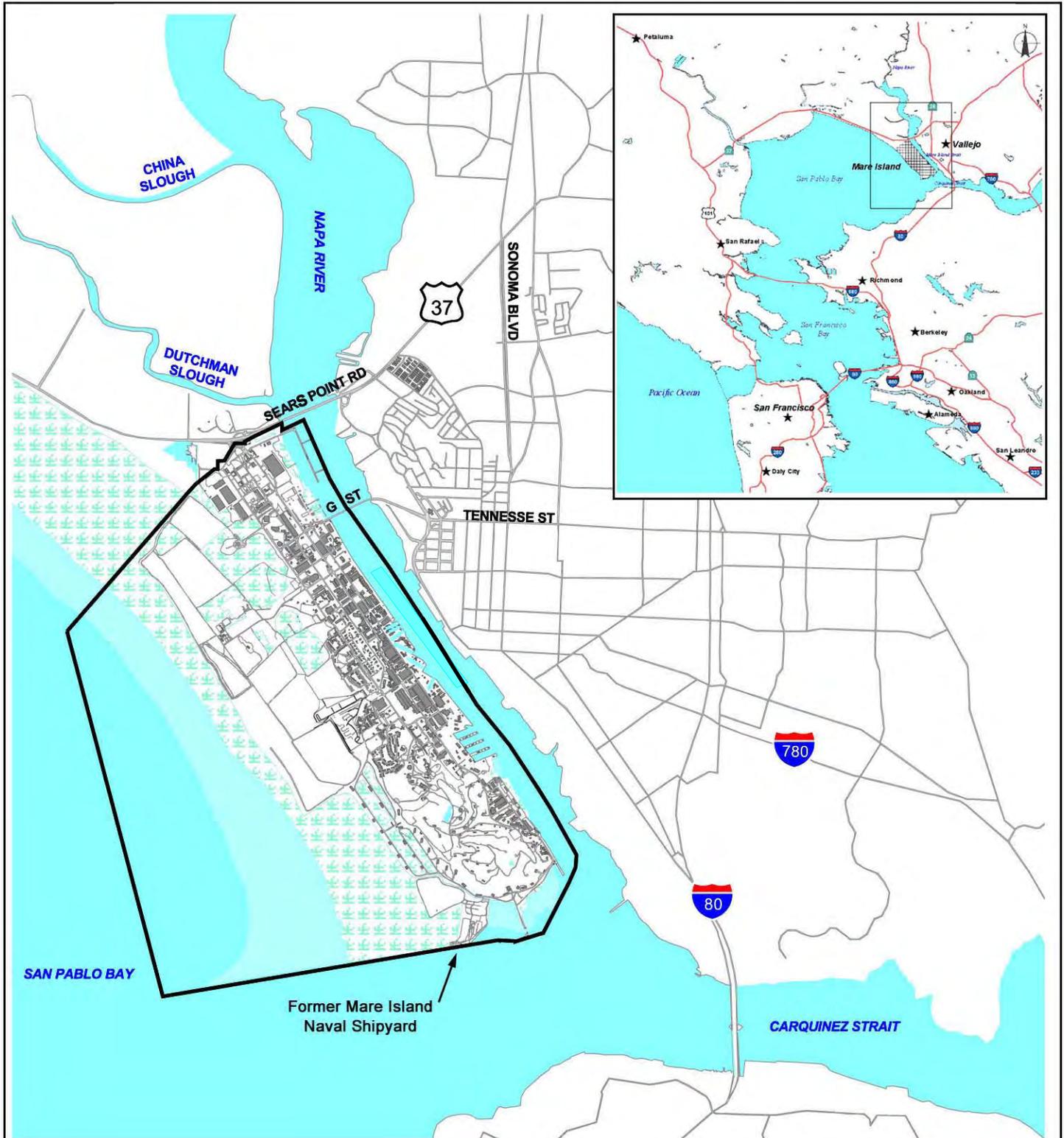
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## **FIGURES**



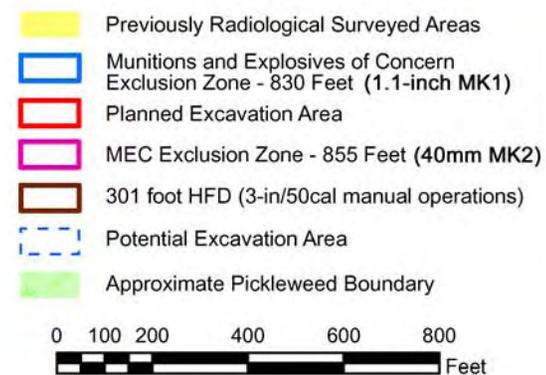
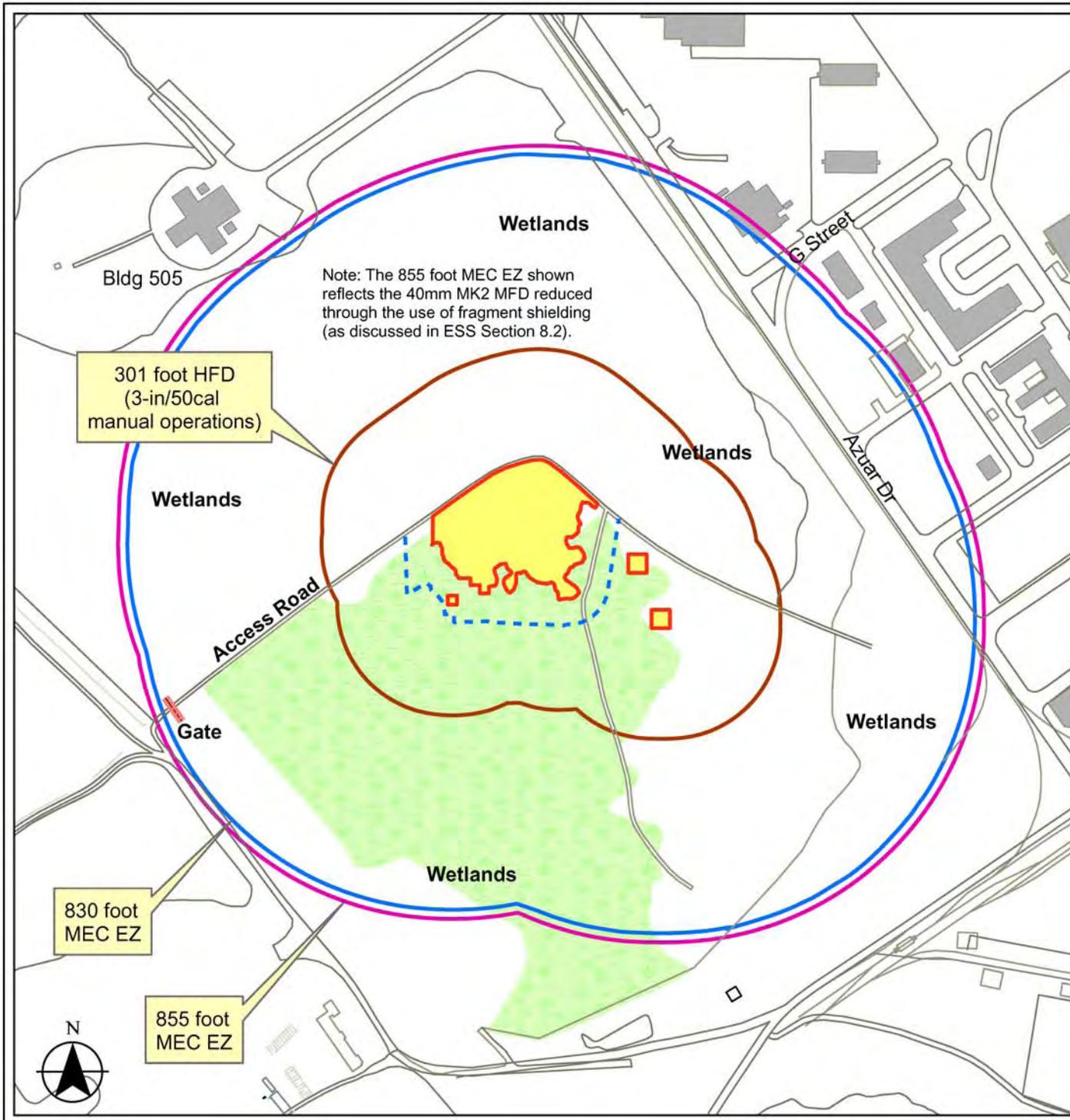
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BRAC Program Management Office West  
San Diego, California

### FIGURE 1-1 REGIONAL MAP

PWA ESS Time-Critical Removal Action  
Former Mare Island Naval Shipyard, Vallejo, California



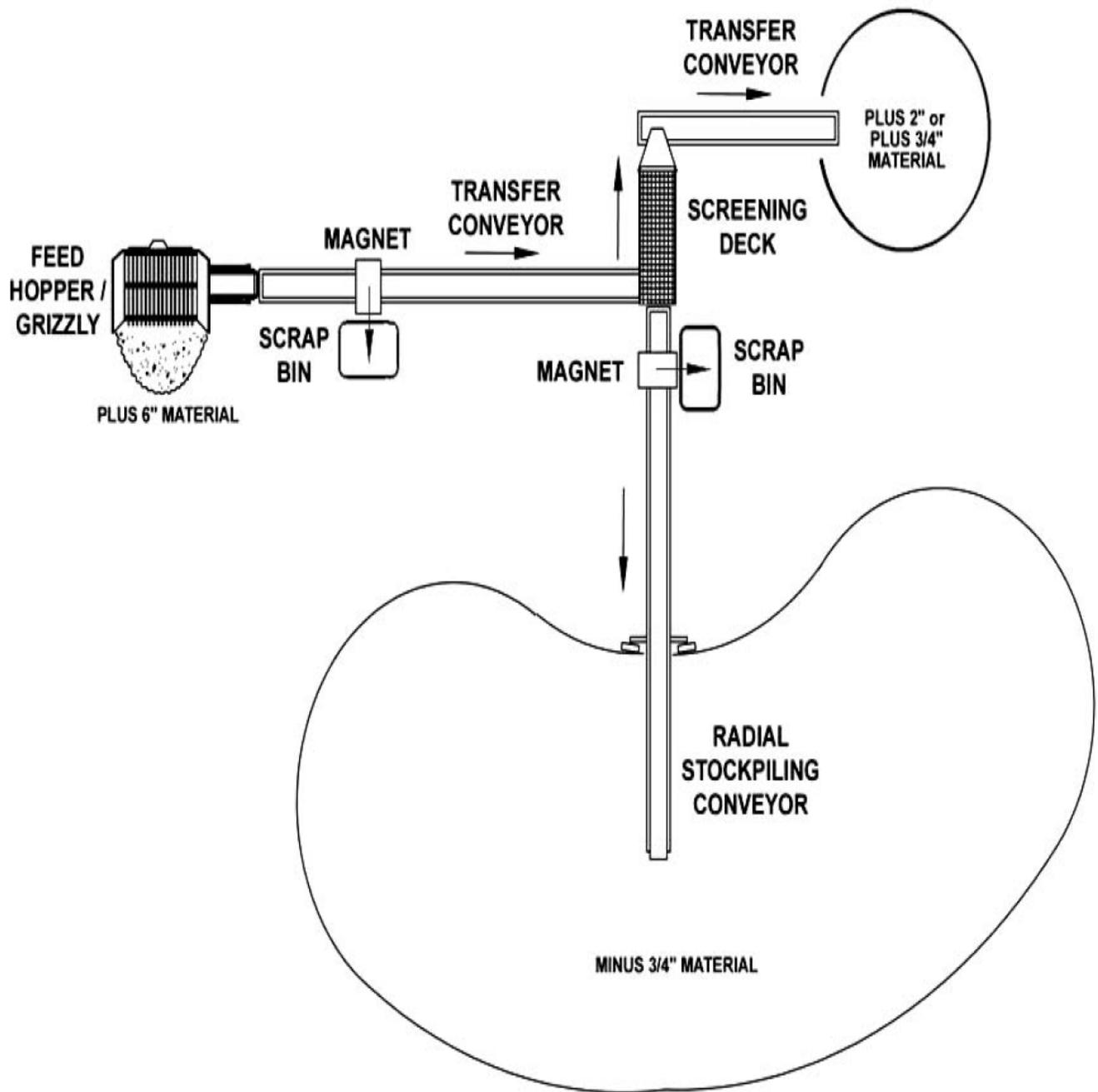


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San Diego, California**

**FIGURE 1-2  
SITE LOCATION MAP**

PWA Time-Critical Removal Action  
Former Mare Island Naval Shipyard, Vallejo, California





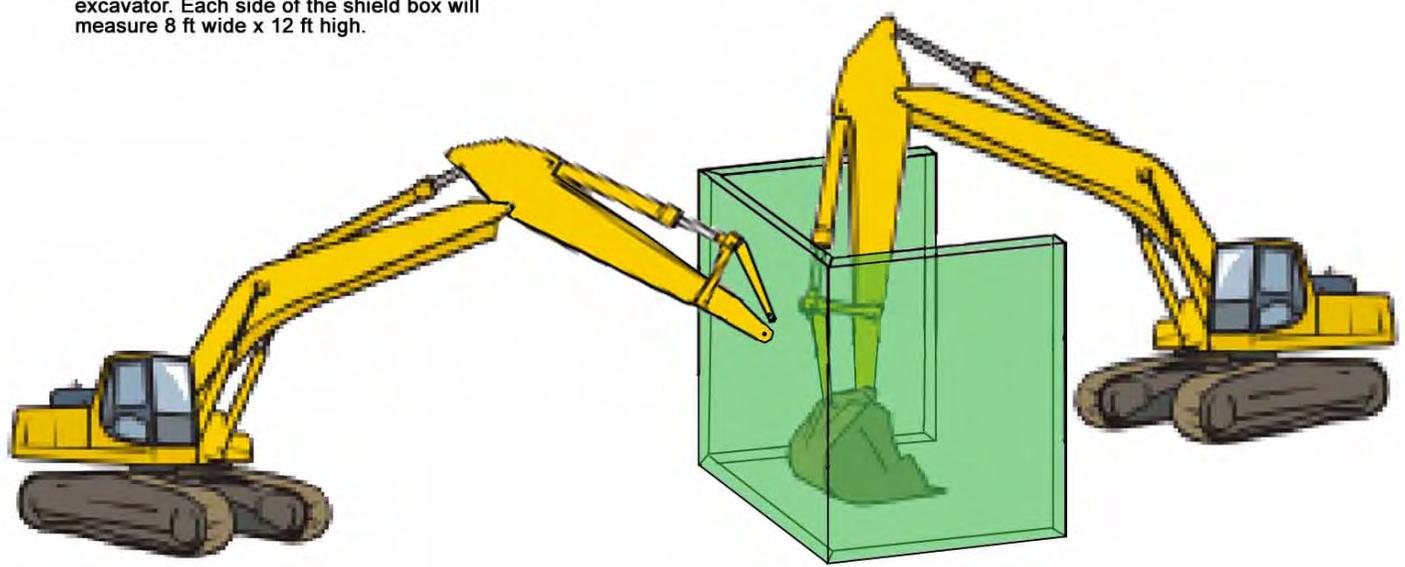
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San Diego, California

**FIGURE 8-1**  
**SOIL SCREENING PLANT ARRANGEMENT**

PWA ESS Time-Critical Removal Action  
Former Mare Island Naval Shipyard, Vallejo, California



Note: Shield box constructed of 3-inch thick cast Plexiglas and/or 1/2-inch mild steel held in a steel frame attached to the boom of a second excavator. Each side of the shield box will measure 8 ft wide x 12 ft high.

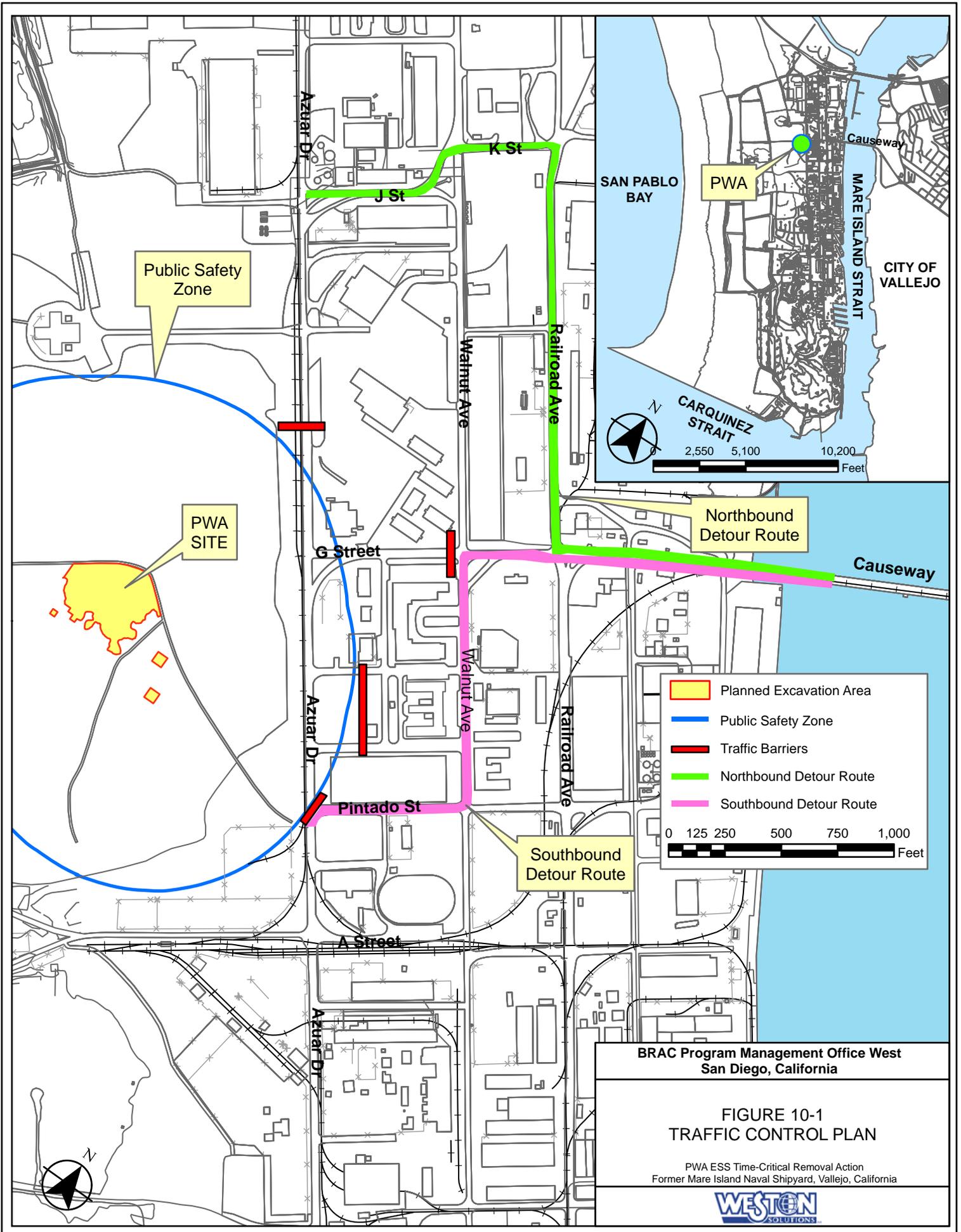


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**FIGURE 8-2  
EXCAVATION FRAGMENT  
SHIELD BOX**

PWA ESS Time-Critical Removal Action  
Former Mare Island Naval Shipyard, Vallejo, California





**APPENDIX A**  
**NAVFAC 11010/31 REQUEST FOR**  
**SITE APPROVAL/EXPLOSIVES SAFETY**  
**CERTIFICATION PACKAGE**

**REQUEST FOR PROJECT SITE APPROVAL/EXPLOSIVES SAFETY CERTIFICATION NAVFAC 11010/31 (REV. 5-2001)**

**PART I**

**INSTRUCTIONS IN NAVFACINST 11010.45**

**SECTION A – INSTALLATION SUBMISSION**

1. To: **Naval Ordnance Safety and Security Activity (N7)**      2. From: **Naval Facilities Engineering Command Southwest**

3. Program Year:      4. Cost (\$000):      5. Type Funding      6. Activity UIC **N68711**      7. Date: **September 2008**

8. Category Code and Project Title: **Paint Waste Area Time-Critical Removal Action, Former Mare Island Naval Shipyard, Vallejo, California**      9. Project Number **N/A**

10. Type of Project:

<input type="checkbox"/> New Construction	<input type="checkbox"/> Relocation of Structure	<input checked="" type="checkbox"/> Other
<input type="checkbox"/> Change Use	<input type="checkbox"/> Maintenance and/or Repairs	
<input type="checkbox"/> Addition to Existing Facility	<input type="checkbox"/> Repair by Replacement	
<input type="checkbox"/> Major Modification to Existing Facility	<input type="checkbox"/> Demolition	

11. Type of Request:

<input type="checkbox"/> Airfield Safety Site Approval
<input checked="" type="checkbox"/> Explosives Site/Safety Certification
<input type="checkbox"/> EMR Site Approval
<input type="checkbox"/> Resubmittal or Standard Site Approval (No Safety Criteria Involved)

12. Project Description

The project will supplement the chemically contaminated soil removal activities already completed at the site by removing and mechanically screening soil to recover dredge outfall debris that could represent Munitions and Explosives of Concern (MEC).

See attached Explosives Safety Submission for details.

13. 4 Sets of Project Maps Attached      14. 4 Sets Part II Division(s) A Attached

**SECTION B – EFD REVIEW**

1. Name/Code/Phone No. of Reviewer/E-Mail Address:      2. Date Received:

3. Evaluation:

4. Safety Review Requested: (check appropriate box(es))

<input checked="" type="checkbox"/> NOSSA	<input checked="" type="checkbox"/> DDESB	<input type="checkbox"/> SPAWAR	<input type="checkbox"/> NAVAIR	<input type="checkbox"/> CNO	<input type="checkbox"/> OTHER
---	---	---------------------------------	---------------------------------	------------------------------	--------------------------------

5. Date Forwarded:

6. Date of Safety Certification:      NOSSA      DDESB      SPAWAR      NAVAIR      CNO      OTHER

**SECTION C – FINAL SITE APPROVAL ACTION**

1. Approvals: <input type="checkbox"/> Site Approved <input type="checkbox"/> Site Disapproved <input type="checkbox"/> Deferred/Returned <input type="checkbox"/> Explosives Safety Certification Approved <input type="checkbox"/> Explosives Safety Certification DISAPPROVED <input type="checkbox"/> Interim Construction Waiver Approved	2. Certification Identification:
	3. Remarks

4. Other Approvals       Airfield Safety Waiver Required  
 Required       Final Explosives Safety Review Required

5. Approving Official:      6. Date:

**PART II DIVISION A-EXPLOSIVES SAFETY**

**INSTRUCTIONS IN NAVFACINST 11010.45**

1. NEW/Class/Division/ESQD area\* of project:  
See Section 3 of the attached Explosives Safety Submission.

2. CNO Waivers and Exemptions:  
N/A

3. Personnel: (numbers):  
**MEC storage facility:** Three persons may be present during storage and removal of MEC at Magazine A180.  
**MEC treatment facility:** Four persons may be present during placement of MEC and donor charges.  
**Excavation site:** Six persons may be present at any time within each MEC exclusion zone.  
**Soil Screen Plant:** One person (soil loader) may be present during plant operation.

	Proposed	Existing
Military:		
Civilian:	19	
Other:		
Total:	19*	

\* Total number of personnel will be less than 19 since all tasks will not be performed concurrently.

4. Facility Number/Type	Personnel	NEW	Class/Division	Distance* Actual/Required
Paint Waste Area	6	(0.037 lbs NEW) 1.1-inch anti-aircraft round	1.1	830 ft / 830 ft
Soil Screening Site	6	(0.037 lbs NEW) 1.1-inch anti-aircraft round	1.1	830 ft / 830 ft
Magazine A180 (MEC storage)	3	1,000 lb	1.1	1,250 ft / 1,250 ft
Disposal Range #2 (MEC treatment)	4	25 lb maximum	1.1	1,250 ft / 1,250 ft

5. Siting Rationale:

Proposed siting rationale will adequately protect the public and essential/non-essential site personnel from the effects of an intentional or unintentional detonation of the site MGFD.

See attached Explosives Safety Submission for details.

\*Distance from project. Specify IB, (Inhabited Building); IL, (Intraline); IM, (Intermagazine); PTR, (Public Transportation Route); B (Barricaded); UB, (Unbarricaded)

6. Signature of Public Works/Basis Civil Engineer (Name/Code) Incl E-Mail Address

*Janet Lear* Janet.Lear@Navg.Mil

6. Signature of Explosive Safety Officer/Installation Safety Officer

Incl. E-Mail Address  
*L. Maggini*  
L.Maggini@WestonSolutions.com

7. Telephone Numbers:

(619) 532-0976  
DSN

8. Date:

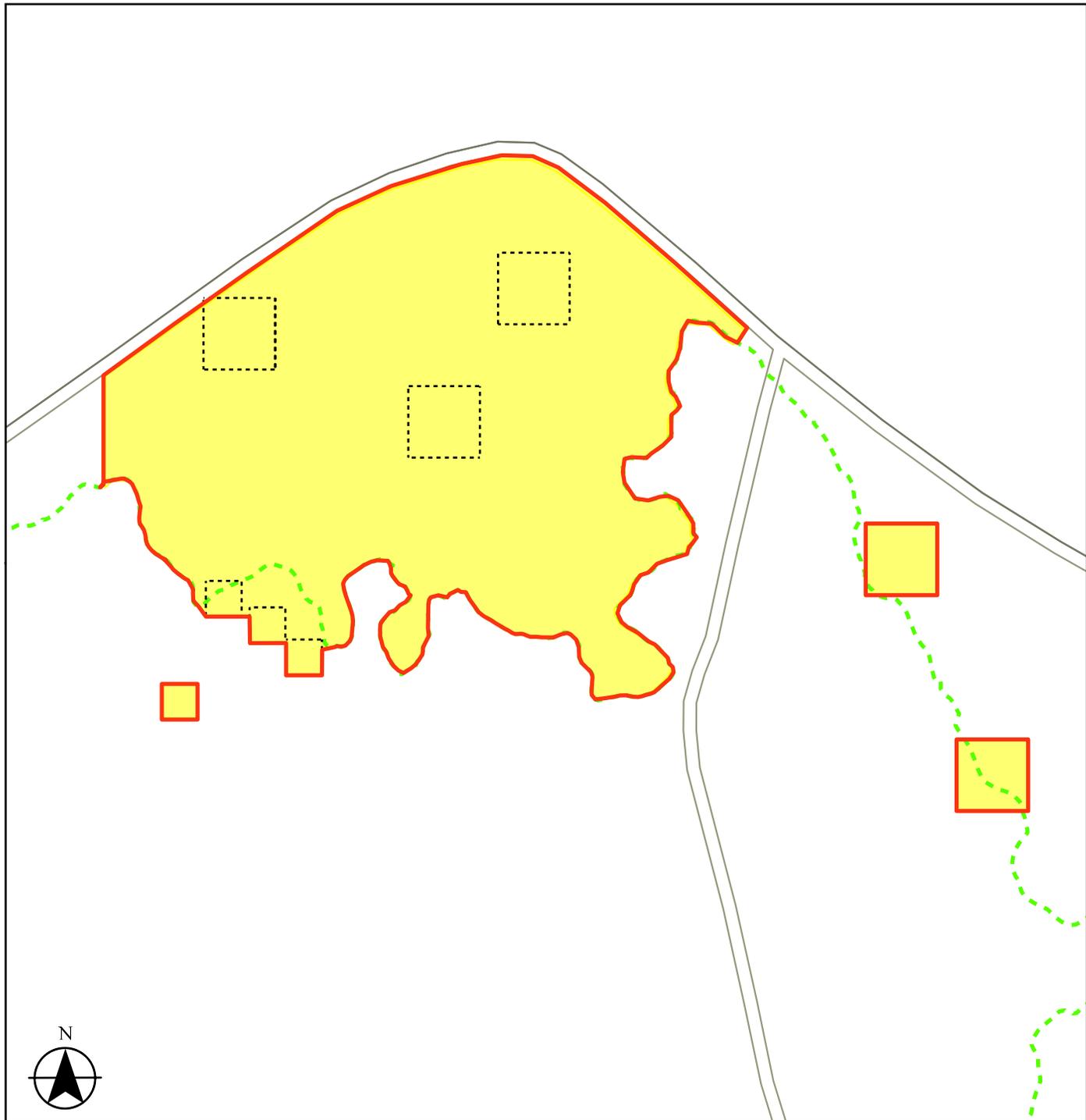
September 2008

10. Telephone Numbers:

(707) 562-3310  
DSN

11. Date:

September 2008



- Previously Radiological Surveyed Areas
- Planned Excavation Boundary
- Non-Rad Hotspot Area
- Pickleweed Boundary

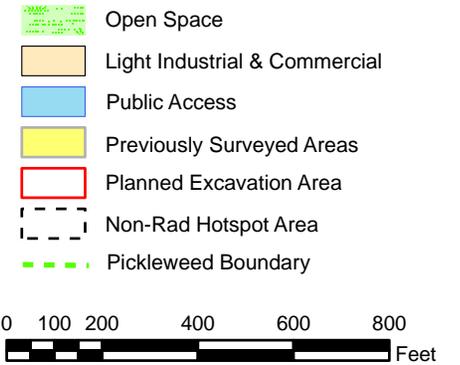
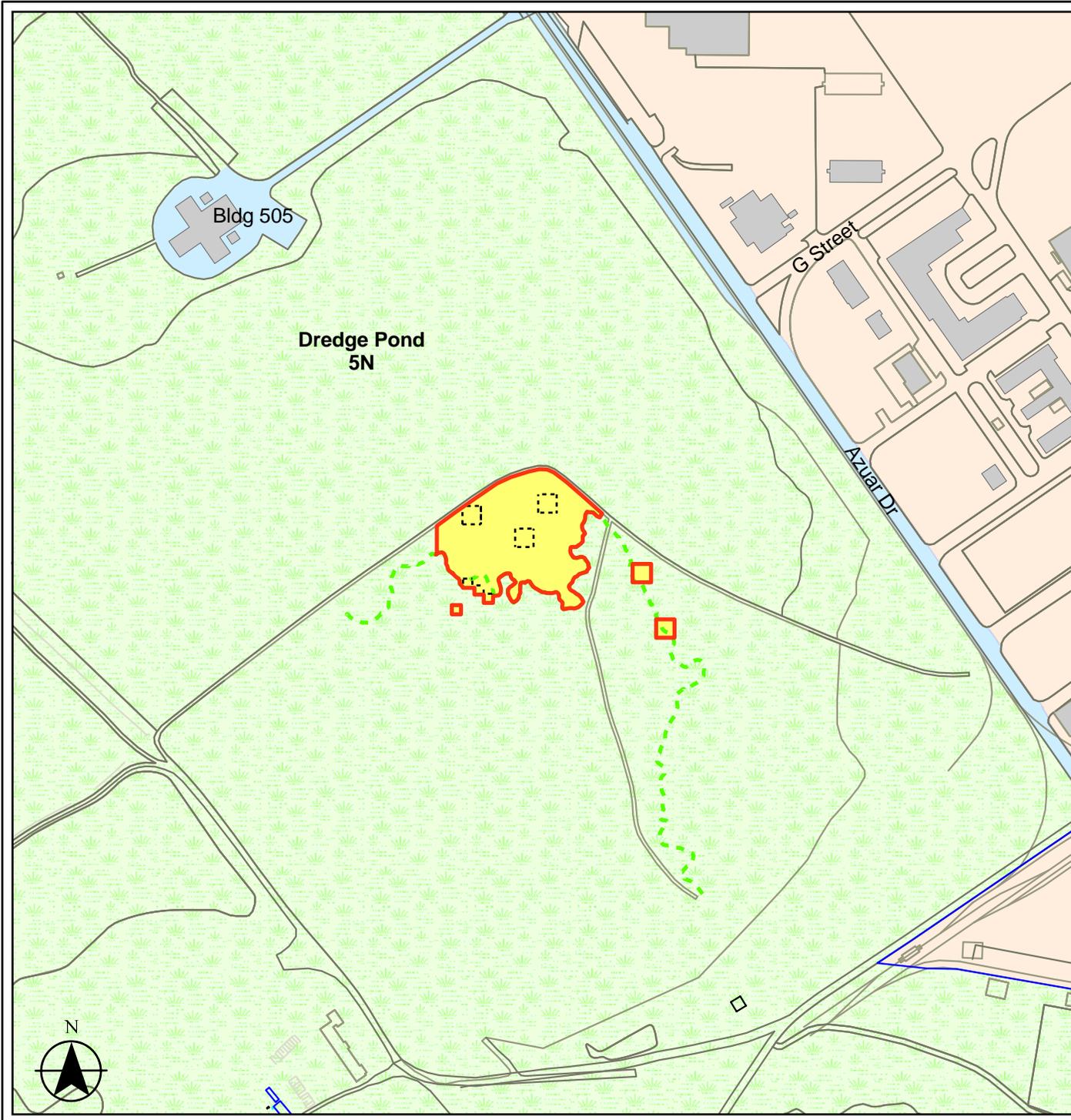


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**FIGURE A-1  
SITE MAP**

PWA ESS Time-Critical Removal Action  
Former Mare Island Naval Shipyard, Vallejo, California



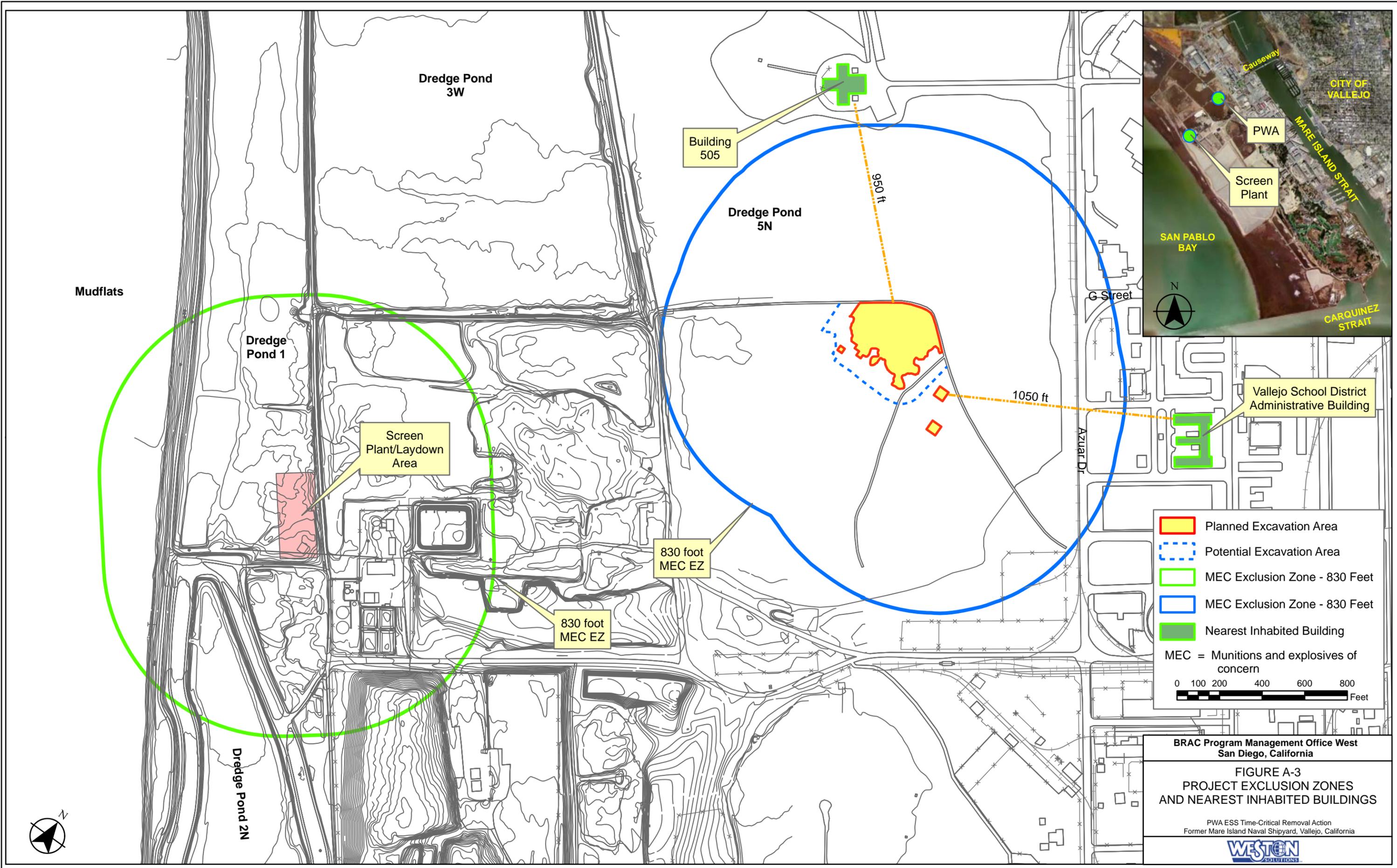


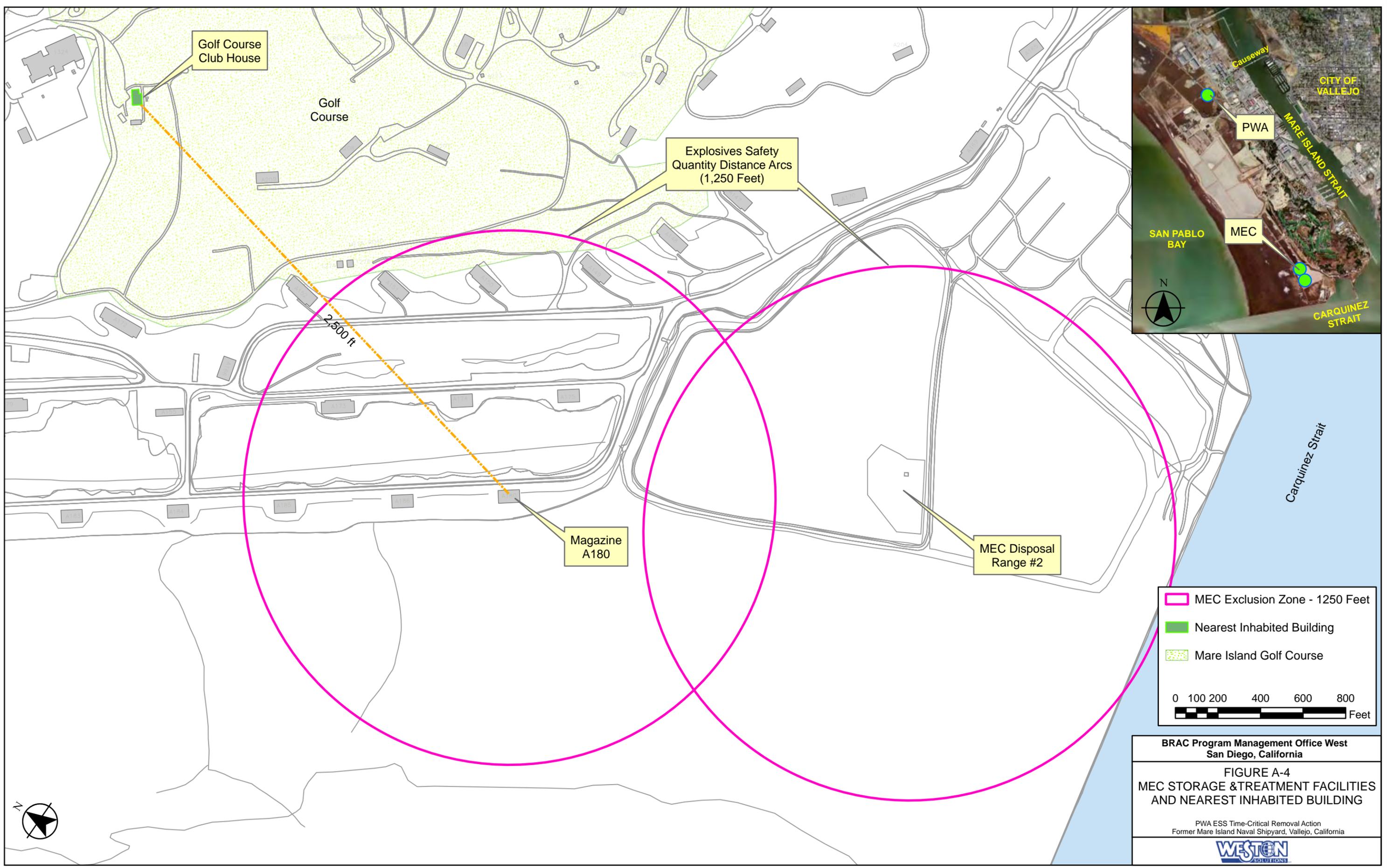
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San Diego, California**

**FIGURE A-2  
ADJACENT LAND PARCELS  
CURRENT AND FUTURE USE**

PWA ESS Time-Critical Removal Action  
Former Mare Island Naval Shipyard, Vallejo, California







BRAC Program Management Office West  
San Diego, California

FIGURE A-4  
MEC STORAGE & TREATMENT FACILITIES  
AND NEAREST INHABITED BUILDING

PWA ESS Time-Critical Removal Action  
Former Mare Island Naval Shipyard, Vallejo, California



**APPENDIX B**  
**CORRESPONDENCE SUPPORTING**  
**ADEQUACY OF FRAGMENT**  
**PROTECTION SHIELDING**

# FRAGMENTATION DATA REVIEW FORM

Database Revision Date 12/31/07

Category:	HE Rounds	DODIC:	B562
Munition:	40 mm MK2	Date Record Created:	7/30/2004
Primary Database Category:	projectile	Last Date Record Updated:	7/9/2007
Secondary Database Category:	40 mm	Individual Last Updated Record:	Crull
Munition Case Classification:	Robust	Date Record Retired:	

## Munition Information and Fragmentation Characteristics

Explosive Type:	TNT
Explosive Weight (lb):	0.18700
Diameter (in):	1.5748
Max Fragment Weight (lb):	0.033061
Critical Fragment Velocity (fps):	3605

## Theoretical Calculated Fragment Range

HFD [Range to No More Than 1 Hazardous Fragment per 600 Square Feet] (ft):	131
MFR-V [Vertical Range of Max Weight Fragment] (ft):	847
MFR-H [Horizontal Range of Maximum Weight Fragment] (ft):	1095

## Overpressure Distances

Inhabited Building Distance (12 psi), K40 Distance:	24
Inhabited Building Distance (09 psi), K50 Distance:	30
Intentional MSD (0065 psi), K328 Distance:	199

## Minimum Thickness to Prevent Perforation

4000 psi Concrete (Prevent Spall):	2.17
Mild Steel:	0.40
Hard Steel:	0.33
Aluminum:	0.86
LEXAN:	3.41
Plexi-glass:	2.08
Bullet Resist Glass:	1.63

## Required Sandbag Thickness

Max Fragment Weight (lb)SB:	0.033061
Critical Fragment Velocity (fps)SB:	3605
Kinetic Energy 106 (lb-ft <sup>2</sup> /s <sup>2</sup> )SB:	0.2148
Required Wall Roof Sandbag Thickness (in)SB:	12
Expected Maximum Sandbag Throw Distance (ft)SB:	25
Minimum Separation Distance (ft)SB:	200

## Water Containment System and Minimum Separation Distance:

Max Fragment Weight (lb)W:	0.033061
Critical Fragment Velocity (fps)W:	3605
Kinetic Energy 106 (lb-ft <sup>2</sup> /s <sup>2</sup> )W:	0.2148
Water Containment System:	5 gal carboys/ inflatable pool
Minimum Separation Distance (ft)W:	200/200



Print This Form

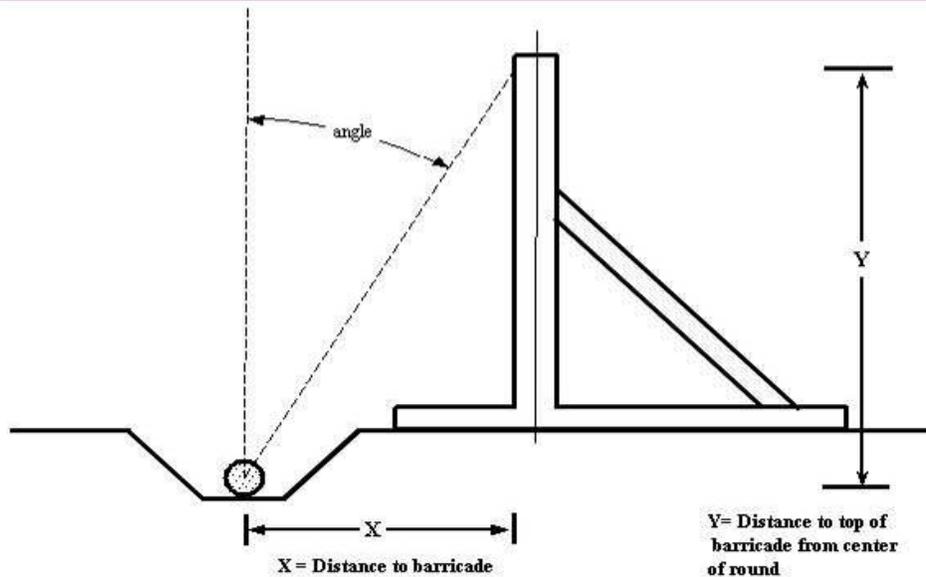
Close Form

# BARRICADE ANGLE CALCULATOR

(Version 1.0)

## ENGLISH UNITS

<p><b>SELECT ITEM DESCRIPTION</b></p> <p>40 mm MK 2 (anti-aircraft) ▼</p> <p><b>SELECT INITIATION MODE</b></p> <p>Design Mode ▼</p>	<p><b>SELECT UNITS</b> English ▼</p> <p><b>ENTER FRAGMENT RANGE (ft)</b> <span style="border: 1px solid black; padding: 2px;">855</span></p> <p><b>NUMBER OF ROUNDS</b></p> <p>Single ▼</p>
<div style="border: 1px dashed black; width: 50px; height: 15px; margin: 0 auto;"></div>	
<p>SINGLE ITEM MAXIMUM FRAGMENT WEIGHT (lbs) <span style="float: right; border: 1px solid black; padding: 2px;">0.0331</span></p> <p>SINGLE ITEM MAXIMUM FRAGMENT VELOCITY (ft/s) <span style="float: right; border: 1px solid black; padding: 2px;">3,605.0</span></p> <p>FRAGMENT WEIGHT USED IN CALCULATIONS (lbs) <span style="float: right; border: 1px solid black; padding: 2px;">0.0331</span></p> <p>FRAGMENT VELOCITY USED IN CALCULATION (ft/s) <span style="float: right; border: 1px solid black; padding: 2px;">3,605.0</span></p>	
<p><b>BARRICADE ANGLE</b></p> <p>MEASURED FROM HORIZONTAL (°) <span style="float: right; border: 1px solid black; padding: 2px;">46</span></p> <p>MEASURED FROM VERTICAL (°) <span style="float: right; border: 1px solid black; padding: 2px;">44</span></p>	
<p><b>BARRICADE LOCATION</b></p> <p><b>SELECT KNOWN DISTANCE</b> Horizontal Distance to Barricade, X (ft) <span style="float: right; border: 1px solid black; padding: 2px;">11.3</span></p> <p>Horizontal Distance, X ▼ Vertical Distance to Top of Barricade, Y (ft) <span style="float: right; border: 1px solid black; padding: 2px;">11.7</span></p>	



**Maggini, Larry**

---

**From:** Crull, Michelle M HNC [Michelle.M.Crull@hnd01.usace.army.mil]  
**Sent:** Thursday, January 13, 2005 8:38 AM  
**To:** Maggini, Larry; Crull, Michelle M HNC  
**Cc:** murraydl@ih.navy.mil; Gemar, Dwight  
**Subject:** RE: Blast Shielding Confirmation

Larry,  
Yes, the numbers below are correct. These are based on the THOR equations and analysis in accordance with DDESB TP 16. Plexiglas always results in a lower required thickness than LEXAN. Don't ask me to explain that because I can't but the THOR equations are based on tests done on all of these various materials.  
Michelle

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**From:** Maggini, Larry [mailto:L.Maggini@WestonSolutions.com]  
**Sent:** Monday, January 10, 2005 2:56 PM  
**To:** Crull, Michelle M  
**Cc:** murraydl@ih.navy.mil; Dwight Gemar (Gemar, Dwight)  
**Subject:** Blast Shielding Confirmation

Michelle,

Doug Murray at NOSSA suggested that I contact you. Weston has been contracted by the Navy to complete a Mare Island MEC removal project previously awarded to TetraTech FW (Marine Corps Firing Range and 4S Dredge Outfall). The approved ESS for the project contained details of required equipment shielding materials and thicknesses (table below) that were provided by Huntsville. The MPM is a 3 inch-50 cal anti-aircraft round (0.74 lbs Comp A/TNT filler). I'd like confirmation that the table is correct (the Plexiglas and Lexan thickness don't look right in our experience). Thank you.

<b>Construction Material</b>	<b>Required Thickness</b>	<b>Comments</b>
Plexiglas (cast)	2.96"	Most recommended. May be layered. Available COTS.
	Lexan® 4.45"	Single Pane
Bullet-resistant Glass	2.46"	Least recommended

**Larry Maggini**

Weston Solutions, Inc.  
Unexploded Ordnance Program  
Mare Island Site Office, 750 Dump Road  
P.O. Box 2135  
Vallejo, CA 94592-0135  
(707) 562-3310  
Fax (707) 562-3266  
L.Maggini@WestonSolutions.com

**APPENDIX C**  
**NOC LETTER 8020 OPR N711**  
**SER N71/5590 OF 29 JAN 97**  
**(SITE APPROVAL FOR MAGAZINE A-180)**



DEPARTMENT OF THE NAVY  
NAVAL ORDNANCE CENTER  
FARRAGUT HALL BLDG D-323  
23 STRAUSS AVENUE  
INDIAN HEAD MD 20640-5555

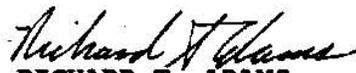
8020  
OPR N711  
Ser N71/5590  
29 Jan 97

FIRST ENDORSEMENT on SUPSHIP Portsmouth ltr 8020 Ser 120/272  
of 18 Dec 96

From: Commander, Naval Ordnance Center  
To: Supervisor of Shipbuilding, Conversion, and Repair, USN,  
Portsmouth, Director, SSPORTS Environmental Detachment,  
Vallejo, CA

Subj: SITE APPROVAL CHANGE REQUEST FOR MAGAZINE A-180, MARE  
ISLAND, VALLEJO, CALIFORNIA

1. Forwarded for continuing action.
2. This project, to reduce the explosives limit of torpedo Magazine A-180 to allow storage of C/D 1.1 explosives in support of removal of buried ordnance, has been reviewed with respect to and meets the explosives safety criteria of reference (a).
3. The new limit for Magazine A-180 is 1,000 pounds net explosives weight (NEW) C/D 1.1 material for dud-fired/unserviceable ammunition.

  
RICHARD T. ADAMS  
By direction

Copy to:  
NAVORDCEN ESSOPAC (Code 004) ←  
ENGFLDACT West (Code 20)

**APPENDIX D**  
**NOC LETTER 8020 OPR N711**  
**SER N71/5857 OF 4 NOV 94**  
**(SITE APPROVAL FOR DISPOSAL RANGE NO. 2)**

**REQUEST FOR PROJECT SITE APPROVAL/EXPLOSIVES SAFETY CERTIFICATION NAVFAC 11010/31 (REV. 4-87)**  
**PART I**  
**INSTRUCTIONS ON REVERSE AND NAVFACINST 11010.44E**

**SECTION A**

1. To: COMMANDER, WESTERN DIVISION, NAVAL FACILITIES ENGINEERING COMMAND			2. From: COMMANDER, MARE ISLAND NAVAL SHIPYARD		
3. Program Year: 95	4. Cost (\$000): N/A	5. Type Funding: N/A	6. Activity UIC: N00221	7. Date: 9-13-94	
8. Category Code and Project Title: ORDNANCE DISPOSAL RANGE 148-20				9. Project Number: N/A	
10. Type of Project: <input type="checkbox"/> New Construction <input type="checkbox"/> Change Use <input type="checkbox"/> Addition to Existing Facility <input type="checkbox"/> Major Modification to Existing Facility			<input type="checkbox"/> Relocation of Structure <input type="checkbox"/> Maintenance and/or Repairs <input type="checkbox"/> Repair By Replacement <input checked="" type="checkbox"/> Other		11. Type of Request: <input type="checkbox"/> Site Approval <input checked="" type="checkbox"/> Explosives Safety Certification <input type="checkbox"/> Resubmittal
12. Project Description: Convert existing approved demolition training range No. 2 (Ordnance demolition) to an ordnance disposal range with a maximum NEW of 25 pounds. Existing ESQD Arc will not change.					
13. <u>6</u> Sets of Project Maps Attached			14. <u>5</u> Sets Part II Division(s) <u>A</u> Attached		

**SECTION B**

1. Name/Code/Phone No. of Reviewer: <i>June Packinlean, Code 09FNP, DSN 494-3767</i>		2. Date Received: <i>27 SEP 94</i>
3. Evaluation:		
4. EFD Action: (check appropriate box(es))		
<input type="checkbox"/> Site Approved <input type="checkbox"/> Site Disapproved <input type="checkbox"/> Returned <input type="checkbox"/> Additional Data	<input type="checkbox"/> Requires NAVFACHQ Approval <input checked="" type="checkbox"/> Explosives Safety <input type="checkbox"/> Airfield Safety <input type="checkbox"/> Electromagnetic Radiation Safety	
5. Date Approval/Forwarding: <i>9-30-94</i>	6. Signature of Approving/Forwarding Official: 	

**SECTION C**

1. Name and Code of Reviewer:		2. Date Received:
3. Safety Review Requested: (check appropriate box(es))		4. Date:
<input type="checkbox"/> NAVSEA <input type="checkbox"/> CNO <input type="checkbox"/> DDESB <input type="checkbox"/> SPAWAR <input type="checkbox"/> NAVAIR <input type="checkbox"/> OTHER		
5. Date of Safety Certification: <u>NAVSEA</u> <u>CNO</u> <u>DDESB</u> <u>SPAWAR</u> <u>NAVAIR</u> <u>OTHER</u>		

**SECTION D**

1. Approvals:- <input type="checkbox"/> Site Approved <input type="checkbox"/> Site Disapproved <input type="checkbox"/> Deferred/Returned <input type="checkbox"/> Explosives Safety Certification Approved <input type="checkbox"/> Explosives Safety Certification DISAPPROVED <input type="checkbox"/> Interim Construction Waiver Approved		2. Certification Identification:	
		3. Remarks:-	
4. Other Approvals Required: <input type="checkbox"/> Airfield Safety Waiver Required <input type="checkbox"/> Final Explosives Safety Review Required		5. Approving Official:	6. Date:

*ENCL 1*

**REQUEST FOR PROJECT SITE APPROVAL/EXPLOSIVES SAFETY CERTIFICATION NAYFAC 11010/31 (REV. 4-87)  
PART II DIVISION A—EXPLOSIVES SAFETY  
INSTRUCTIONS ON REVERSE AND NAYFACINST 11010.44E**

1. **NEW/Class/Division/ESQD area\* of project:** Convert the existing site approved demolition training range (Demolition Range #2) to a disposal range with a maximum limit of 25 pounds NEW for use by Navy Explosive Ordnance Disposal personnel in support of Mare Island unexploded ordnance removal operations.

2. **CNO Waivers and Exemptions:** None

3. **Personnel (numbers)**

No Change

	Proposed	Existing
Military:	0	0
Civilian:	0	0
Contractor:	0	0
Other:	0	0
<b>Total:</b>	<b>0</b>	<b>0</b>

4. **Facility Number/Type**

Disposal Range

Personnel

0

NEW

25 pounds maximum\*

Class/Division

1.1, 1.2 (except  
(18) frag material),  
1.3, and 1.4

Distance\*

1250 feet

\* Actual quantities will be kept as small as possible to mitigate noise impact on surrounding communities.

5. **Siting Rationale:**

The range will be used for the treatment, by open burning/open detonation, of recovered unexploded ordnance materials. The range is a Class D detonation site generating a 1250 foot ESQD arc per OP 5 Volume 1, Table 13-1 Note 4.

The range is exempt from Federal, State, and local permit requirements in support of on-site response actions pursuant to Section 104 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and Sections 300.120(c) and 300.400(e) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP, 40 CFR Part 300).

There are no IBD, PTR, or IM arc interfaces. No structures of any type are located in the immediate range area.

\*Distance from project. Specify IB, (Inhabited Building); I, (Intraline); M, (Intermagazine); PTR, (Public Transportation Route); B (Barricaded); UB, (Unbarricaded)

6. **Point of Contact:**

John Randell, Mare Island Naval Shipyard Code 106.4

8. **Requested By:**

CDR R. J. WESTBERG, JR.

7. **Telephone Number:**

Commercial (707) 646-6430. DSN 253-6430

9. **Date:**

SEP 16 1994



**DEPARTMENT OF THE NAVY**  
ENGINEERING FIELD ACTIVITY, WEST  
NAVAL FACILITIES ENGINEERING COMMAND  
900 COMMODORE DRIVE  
SAN BRUNO, CALIFORNIA 94066-2402

105  
IN REPLY REFER TO:

11010  
Ser 09F1JP/P1-212

001 -5 1994

From: Commanding Officer, Engineering Field Activity, West  
To: Commander, Department of Defense Explosive Safety Board  
Via: Commander, Naval Ordnance Center (N711)

Subj: SITE APPROVAL REQUEST TO INCREASE NET EXPLOSIVE WEIGHT  
FOR EXISTING ORDNANCE DISPOSAL RANGE NO. 2, NAVAL  
SHIPYARD, MARE ISLAND

Ref: (a) OPNAVINST 8020.8J  
(b) NAVFACINST 11010.44E  
(c) NAVSEA OP-5, Vol. 1 (Fifth Rev)

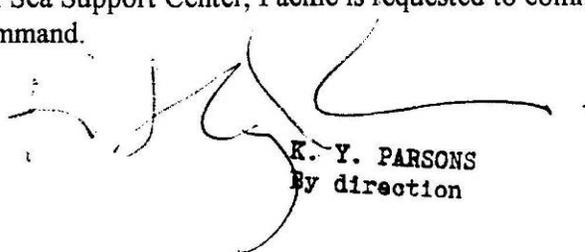
Encl: (1) NAVFAC Form 11010/31 (w/Part II, Div.A)  
(2) Site Data Sketch dtd 27 Sep 94  
(3) Station Map

1. In compliance with references (a), (b) and (c), enclosures (1) and (2) are forwarded to obtain site plan approval and final explosive safety review. Enclosure (3) is provided as additional information.

2. Site approval is requested to increase the Net Explosive Weight (NEW) of Disposal Range No. 2 from 5 pounds of Class 1.1 to 25 pounds of Class 1.1, 1.2 (except (18) frag material), 1.3, and 1.4 material. This is not a change in function nor does it increase or change the existing Explosive Safety Quantity Distance (ESQD) arc already approved for this range. The range will be used for the treatment, by open burning/open detonation, of recovered unexploded ordnance materials. The range is a Class D detonation site.

3. The existing site is compatible with related, planned, and existing facilities and land use. There is no cost associated with this project.

5. By copy of this letter, Naval Sea Support Center, Pacific is requested to comment directly to Naval Ordnance Command.

  
K. Y. PARSONS  
By direction

Copy to:  
NAVSEACENPAC (w/encls)  
NAVSHIPYD Mare Island (Code 106.4) (w/encls (1) and (2))

C-861



DEPARTMENT OF THE NAVY  
NAVAL ORDNANCE CENTER  
FARRAGUT HALL BLDG D-323  
23 STRAUSS AVENUE  
INDIAN HEAD MD 20640-5555

8020  
OPR N711  
Ser N71/5857  
4 Nov 94

FIRST ENDORSEMENT on EFA West ltr 11010 Ser 09F1JP/P1-212  
of 5 Oct 94

From: Commander, Naval Ordnance Center  
To: Commanding Officer, Engineering Field Activity West, Naval  
Facilities Engineering Command

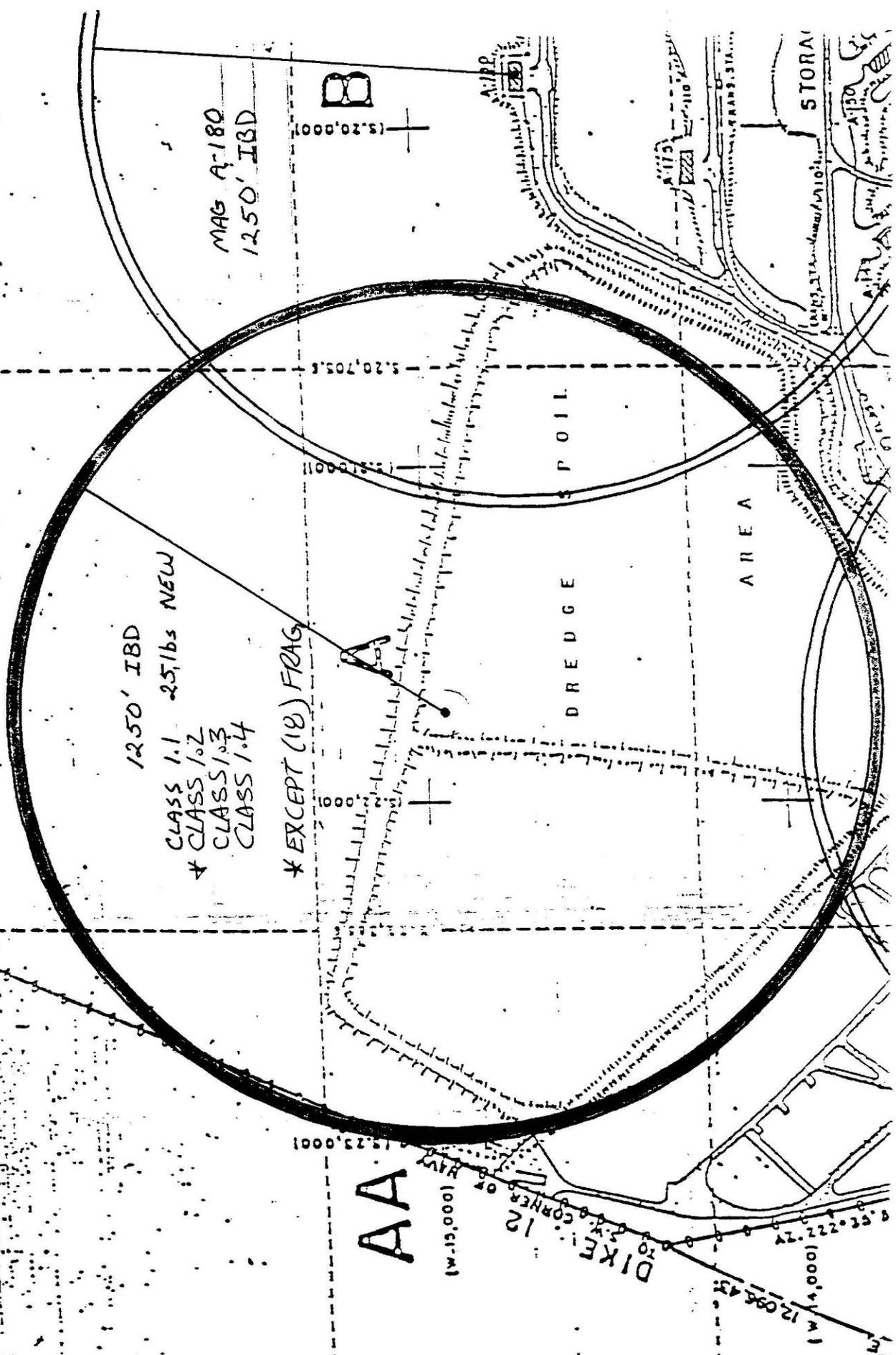
Subj: SITE APPROVAL REQUEST TO INCREASE NET EXPLOSIVE WEIGHT FOR  
EXISTING ORDNANCE DISPOSAL RANGE NO. 2, NAVAL SHIPYARD,  
MARE ISLAND

1. Readdressed and returned for continuing action.
2. This project has been reviewed with respect to and meets the explosives safety criteria of reference (c). Accordingly, the project is granted both explosives safety site and final safety approvals. The following stipulations must be satisfied:
  - a. The revised explosive limit for Ordnance Disposal Range No. 2 is 25 pounds net explosive weight (NEW) of all classes/divisions (C/D) of explosives except C/D 1.2 (18), which may not be disposed of on the range.
  - b. All other provisions of existing approvals for this range remain in effect.

  
EDWARD W. KRATOVIL  
By direction

Copy to:  
NAVSEACENPAC (Code 950)  
NAVSHIPYD Mare Island (Code 106.4)

C-861



MAG A-180  
1250' IBD

15.20,000

1250' IBD  
CLASS 1.1 25lbs NEW  
CLASS 1.2  
CLASS 1.3  
CLASS 1.4  
\* EXCEPT (18) FRAG

AA

DREDGE POIL

AREA

STORA

AA

DIKE CORNER 12

12096.45

15.23,0001

14.0001

14.0001

5.20,705.5

15.20,000

8.66,222.74

14.0001