RCRA PART B PERMIT APPLICATION

for the

BURRO CANYON

OPEN BURN/OPEN DETONATION

FACILITY

NAVAL AIR WEAPONS STATION
CHINA LAKE, CALIFORNIA

DECEMBER 2007
(Eighth Revision)

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LIST OF ACRONYMS

ANSI	American National Standard Institute
BCTF	Burro Canyon Treatment Facility
CCR	California Code of Regulations
CL/SWPL	China Lake/Salt Wells Propulsion Laboratory
DBOS	Demolition/Burn Operations Supervisor
DDESB	Department of Defense Explosive Safety Board
DoD	Department of Defense
DoDIC	Department of Defense Identification Code
DTSC	Department of Toxic Substances Control
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
ERA	Ecological Risk Assessment
ESQD	Explosive Safety Quantity Distance
FFSRA	Federal Facility Site Remediation Agreement
GBUAPCD	Great Basin Unified Air Pollution Control District
HRA	Health Risk Assessment
HWSTF	Hazardous Waste Storage & Transfer Facility
MEI	Maximum Exposed Individual
MIDAS	Munition Items Disposition Action System
MMR	Military Munitions Rule
MRC	Maintenance Requirement Card
MRIP	Munitions Rule Implementation Policy
NALC	Navy Ammunition Logistic Code
NAWS	Naval Air Weapons Station
NAWC	Naval Air Warfare Center
NIIN	National Item Identification Number
NEW	Net Explosive Weight
OB	Open Burn
OD	Open Detonation
PCBSB	PCB Storage Building
PEP	Propellants, Explosives & Pyrotechnics
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation & Recovery Act
R&D	Research & Development
RDT&E	Research, Development, Testing & Evaluation
RRCF	Range Residue Collection Facility
SAP	Sampling and Analysis Plan
SOP	Standard Operating Procedures
SRP	Spill Response Plan
SWMU	Solid Waste Management Unit
TCLP	Toxic Constituent Leaching Procedure
USGS	United States Geological Survey
UXO	Unexploded Ordnance
VOCs	Volatile Organic Compounds
WAP	Waste Analysis Plan
WET	Waste Extraction Test

I. Identification of Facility

A. Facility

1. **Name:** Naval Air Weapons Station (NAWS), China Lake

   The Burro Canyon Treatment Facility (BCTF) includes the following two units:

   Open Detonation (OD) Unit
   Open Burn (OB) Unit

2. **Environmental Protection Agency (EPA) Identification Number**

   CA2170023152

3. **Location**

   NAWS China Lake is located in the northwestern part of the California Mojave desert and approximately 150 miles northeast of Los Angeles (Figure 1.0). The China Lake land area consists of 1.1 million acres and is comprised of two major areas, the China Lake Complex or North Range (Figure 2.0) and the Randsburg Wash/Mojave B Complex or South Range. China Lake lies in portions of three counties: Kern, Inyo and San Bernardino. The BCTF is located near the southern border of Inyo County on the North Range. It is approximately 12 miles northeast of the China Lake Mainsite and approximately 3 miles directly east of the G-2 Tower Road. The nearest China Lake property boundary is 7 miles to the east and the nearest town is Trona 10 miles to the southeast. The BCTF is 17 miles to the nearest property boundary in the prevailing wind direction.

4. **Mailing Address**

   Naval Air Weapons Station
   Environmental Division
   Code N45NCW
   429 East Bowen Road; Stop 4014
   China Lake, CA 93555-6108

5. **Telephone Number**

   Refer to Section I.F.

6. **Description of Business**

   China Lake is one of the principal sites of the Naval Air Warfare Center (NAWC), Weapons Division. The NAWC's mission is to be the principal Navy research, development, test, and evaluation (RDT&E) center for air warfare systems (except antisubmarine warfare systems) and missile weapons systems. The NAWC manages and conducts the complete weapon development process, from concept formulation through the entire lifetime of a weapon system, including fleet and production support.

7. **Description of Activity Requiring Permit**

   a. **Facility Description**

      In support of the NAWC mission China Lake treats the reactive waste generated from its RDT&E activities. The total size of the BCTF is 15 acres (~650,000 sq ft). This area includes both units and is based on the area where little to no vegetation occurs. The size

of the OD unit (where OD events typically occur) is 1.03 acres. The OB unit consists of a burn pan in a metal tray and has dimensions of 18 feet x 30 feet. The OB unit is on the western one-quarter of the BCTF. The China Lake Explosive Ordnance Disposal (EOD) detachment operates the BCTF.

b. Types of Energetic Wastes

Items that meet the definition of a reactive hazardous waste are treated at the BCTF. Small arms ammunition which meets the definition of ignitable hazardous waste are also treated at the BCTF. In order for a material or item to meet the definition of a reactive hazardous waste, it must first meet the definition of "waste". Waste is defined in Title 22, California Code of Regulations (22 CCR) δ66261.2 as any discarded material of any form (e.g. liquid, gas, solid). In particular, 22 CCR δ66261.2(c) defines a "discarded material" as materials that are being relinquished by being disposed, burned, or incinerated.

Once the material is declared a waste, the waste must then meet the definition of a hazardous waste. In order to meet the definition of a hazardous waste, the waste must meet any one of a number of criteria listed in 22 CCR δ66261.3. One of these criteria is the characteristic of reactivity. In particular, the definition of the reactivity characteristic (22 CCR δ66261.23) includes the following three criteria:

(1) the waste is capable of detonation or explosive reaction if is subjected to a strong initiating source or if heated under confinement (22 CCR δ66261.3(a)(6));
(2) the waste is readily capable of detonation or explosive reaction at standard temperature and pressure (22 CCR δ66261.3(a)(7)); and
(3) the waste is a forbidden explosive, a Class A explosive, or a Class B explosive (22 CCR δ66261.23(a)(8)).

Any one of the above three reactivity criteria may cause a waste to be defined as a hazardous waste. A waste that exhibits the characteristic of reactivity has the Hazardous Waste Code of D003 (22 CCR δ66261.23(b)). Wastes may also be designated with other waste codes (refer to Section I.I), along with the D003 Waste Code. The reactive wastes include propellants, explosives, and pyrotechnics (PEP), and are more commonly known as "energetics" or "energetic items".

A diverse energetic wastestream is generated from activities associated with China Lake's RDT&E mission. Department of Transportation, Department of Defense (DoD), and Navy regulations prohibit the transport of most of this RDT&E energetic wastestream on public roadways, either because the wastes are research and development materials that have not been fully classified with respect to explosive safety, or because the energetics have been altered or damaged in some RDT&E process. Therefore, most of the energetic wastestream must be treated at China Lake.

For simplicity the energetic wastestreams are broken into two categories:

(1) Laboratory Wastestream

The first type of wastestream is generated from research and development (R&D) laboratory-type activities (such as the R&D of new solid explosive/propellant formulations or scaleup of new explosives/propellants). The energetic component of these wastes is experimental in nature which means that the composition and explosive stability may be poorly defined. The majority of these wastes are not identifiable with a military specification number. Those wastes that can be identified with a military specification number have been modified or disassembled for some R&D purpose. In addition, the majority of laboratory R&D waste is not packaged in a casing such as a bomb or missile motor or warhead.

The laboratory wastestream consists of five types:

(a) "Trash" or energetic-contaminated rags, wipes, and personal protection equipment, such as overalls and gloves. They can be contaminated with a liquid organic solvent. These items are typically contained in a velostat bag,
(b) "Leftovers" from mixes and castings of solid explosives and propellants. These wastes are containerized in a plastic buckets, cardboard boxes, metal cans, or similar item. Where possible, a velostat bag is used to line the container. Typically if safety allows, the bag with the "leftover" energetic is removed from the secondary container for treatment. The primary container whether it is a velostat bag or a plastic bucket is always treated along with the energetic;
(c) Small size samples from mixes and castings of solid explosives and propellants held for observation and/or testing purposes and residues from test sample preparation. These items are typically contained in a velostat bag;
(d) Small miscellaneous ordnance items, such as fuses, leads, thermal batteries, or detonators. These items may be considered standard munition items. However, laboratory R&D type work, such as failure analysis, environmental (heating, pressure) and quality testing, is conducted on these items. These items are always removed from their metal ammunition containers (if present) prior to treatment. However, their metal casings which serve as their container are treated along with the energetic component; and
(e) Miscellaneous liquid solvents contaminated with energetics. "Solvents" are defined in the hazardous waste regulations as chemicals used to mobilize or dissolve other constituents; e.g. toluene in paint used to thin (or mobilize) the paint constituents. The solvents are used to remove energetics from ordnance items. Where possible, water is used instead of solvents. The washing is conducted to support an R&D type activity. The solvents are always contained in a container, such as a plastic bucket or metal can.

(2) Munitions Wastestream

The second type of wastestream includes munition items that meet the definition of a military munition as defined in the U.S. Military Munitions Rule (MMR), promulgated as a Federal regulation in 1997. The MMR defines military munitions as all ammunition products and components produced by or for the U.S. DoD or the U.S. Armed Services for national defense and security, including military munitions under the control of the DoD, the U.S. Coast Guard, the U.S. Department of the Energy, and National Guard personnel. Military munitions include but are not limited to warheads, bombs, pyrotechnics, guided and ballistic missiles, small arms ammunition, mines, torpedoes, and bulk propellants/explosives. According to the MMR, the definition of military munitions does not include homemade or improvised explosive devices, chemical warfare agents, chemical munitions, or nuclear weapons devices or components.

Small arms ammunition that is 50 caliber or less is also part of the munitions wastestream but is not characterized as reactive (i.e. energetic). The ammunition will be treated at the BCTF as a D001 waste (waste that exhibits the characteristic of ignitibility).

Only conventional munitions are treated at the BCTF. No nuclear, biological, or chemical munitions are treated.

The munitions wastestream consists of two major types:

(a) Standard Munitions: These items are completely identifiable with a military specification number and are designated waste for a specific reason, such as the item is declared expired or excessed, the item is no longer useful to China Lake's RDT&E operations or to DoD's combat readiness, or the item is designated defective.

(b) Nonstandard Munitions: Prototype hardware containing energetics ranging from heavy, non-flight weight hardware to flight weight hardware used for test and evaluation. These items are not yet qualified as standard military munitions. These items are generated from RDT&E operations at China Lake (such as weapons testing) and are designated as no longer useful for RDT&E purposes. This type of waste includes standard munitions that are subjected to some RDT&E activity, such as impact tests, slow heating, experimental upgrades, physical reconfigurations, etc. Nonstandard munitions also include items that are acquired for a particular RDT&E activity and are later declared waste. The origin of these items can be foreign countries, manufactured at China Lake, or purchased in the open market.

c. Designation of Waste

(1) Laboratory Wastestream

The designation of each type of waste follows:

(a) "Trash" or energetic-contaminated rags, wipes, and personnel protection, such as gloves and overalls are designated waste when the item can no longer be used. For example, rags can no longer be used due to the excessive quantity of energetic on the rag, or gloves are torn.
(b) "Leftovers" from mixes, castings, etc., of explosives and propellants are designated waste when the item can no longer be used and the responsible individual for the item determines that no other use for the item exists. Even if the "leftover" energetic is designated by EOD as donor for an OD event (i.e. it appears to still have a use as donor in the event and is not waste) the energetic is managed and tracked as waste.
(c) "Samples" from mixes and castings of explosives and propellants are designated waste when all observations and tests are completed and the responsible individual for the item determines that no other use for the item exists.
(d) Small miscellaneous "ordnance" items, such as fuses and leads, are designated waste when R&D activities are completed on the item and the responsible individual for the item determines that no other use for the item exists.
(e) "Solvents" contaminated with energetics are designated waste when they are "spent". "Spent" is defined in the hazardous waste regulations as when the solvent is used and no longer fit for use without being regenerated, reclaimed, or otherwise reprocessed.

(2) Munitions Wastestream

The definitions of when items included in this wastestream become waste are addressed in the U.S. EPA MMR. Guidance for implementation of this regulation was published on 27 Jul 98 and is known as the Military Munitions Rule Implementation Policy (MRIP). This guidance is identical for all the military services. These definitions are found in Chapters 3, 4, and 5 of the MRIP.

To understand the definitions of when a munition becomes a waste, the difference between "used" and "unused" military munitions as defined in the MMR and the MRIP are presented below.

"Unused" military munitions (Chapter 4, MRIP) include those that have NOT been fired, dropped, launched, placed, or otherwise used. They include military munitions that are:

(a) In the active inventory and available for issue and use in training or operations;
(b) Issued for a use, but were not used and returned to storage; or
(c) Rejected during the manufacturing process or before use.

"Used" military munitions (Chapter 5, MRIP) include those that:

(a) Have been fired, dropped, launched, projected, placed, or otherwise used;
(b) When used as intended, malfunction or misfire (e.g., fail to fire or detonate); or
(c) Are munition fragments, such as shrapnel, casings, fins, and other components, such as arming wires and pins, and result from the use of military munitions.

Conditions when military munitions become waste are listed below:

(a) "Unused" military munitions that are declared waste become waste when they are removed from magazine storage for the purpose of treatment (i.e., OB/OD). The MRIP refers to this condition as the "igloo-door rule". It is important to note that the igloo-door rule does NOT apply to "used" military munitions.

(b) An entire class of "unused" munitions is designated waste by an Authorized Military Official (AMO).

(c) "Unused" military munitions that are damaged or deteriorated to a point that they cannot be made serviceable or recycled become waste immediately on issuance of a Notice of Ammunition Reclassification (NAR) or similar document that requires treatment of the item within 60 days at a permitted treatment facility, such as the BCTF. The "igloo-door rule" does NOT apply to this provision.

(d) Both "unused" and "used" items that are intentionally buried as a field expedient means of disposal are waste immediately on burial. Intentional burial is illegal and strictly prohibited. Items found from remediation of a "historic" landfill are also waste on discovery. For clarification, an item that is buried from the "intended use" of the item (e.g., buried on impact from testing) on a military range is not a waste upon burial.

(e) "Unused" and "used" military munitions that are disposed (i.e., abandoned or thrown away) by being burned, detonated, incinerated, or simply "dumped" are waste. Exceptions to this provision include detonation of an unused item as a consequence of "intended use" on a military range, as well as destruction of a military munition as part of an emergency response, as part of an EOD training exercise, or in range clearance.

(f) When an "unused" military munition is returned to the magazine after it is removed for the purpose of treatment (i.e., OD at China Lake's OB/OD facility), the item must now be managed as energetic waste. This condition occurs when a treatment event is cancelled or delayed. This condition also applies to "used" military munitions. Items that are removed from a magazine as donor charges or initiating devices for the treatment event and

are still useable (other than donor or initiators in an OD event) do not meet the definition of waste and do not need to be managed as waste when returned to the magazine. An exception to this provision in regard to the "leftover" energetic waste is discussed above.

(g) The "used" military munition that is transported off a designated China Lake range for reclamation (i.e., process to recover a useable product), treatment, disposal, or for storage before reclamation, treatment, or disposal is a waste. Additionally, the "used" military munition that is located in an area NOT designated as a China Lake range for reclamation (i.e., process to recover a useable product), treatment, disposal, or for storage before reclamation, treatment, or disposal is a waste.

(h) Conversely, "used" military munitions transported off a designated China Lake range for repair/reuse, or for additional evaluation (e.g., testing for RDT&E purposes at China Lake or another installation, malfunction or misfire investigations, or evaluation of possible repair or reuse) are NOT waste, but become waste after the required evaluation is completed, and the user determines that the item has no further value.

(i) Reclamation is defined in the MRIP as the process to recover a useable product. "Breakdown" or disassembly of an energetic item (typically after a test or test series) to recover a piece of the item for further evaluation is defined as reclamation. Many times reclamation also generates unwanted energetic items that are no longer useful to the China Lake mission. These unwanted items are designated waste.

(j) The used or fired item that lands off a designated China Lake range and is not "promptly" rendered safe or retrieved is a waste.

d. Operation of the BCTF

The BCTF is operated and maintained by personnel from the Navy's EOD unit stationed at China Lake. Trained explosive haulers deliver the energetic wastes to the BCTF. Detailed instructions for OB/OD operations conducted by EOD personnel are outlined in the Standard Operating Procedures (SOP), known as EODMUTHREEDETCLINST 3120.5(series). Besides the environmental requirements outlined in this permit application, the BCTF also operates under the following explosive handling and safety procedures:

(1) DoD Level: DoD Explosive Safety Manual, DoD 6055.9-STD. This document applies to all the military services;
(2) Navy Level: "Ammunition and Explosives Ashore Safety Regulations for Handling, Storing, Production, Renovation and Shipping"; Naval Sea Systems Command (NAVSEA) OP 5 Volume 1. This document contains many Navy specific procedures not included in the DoD 6055.9-STD. It is referred to as "OP-5" by Navy personnel and in this permit application; and
(3) China Lake Level: NAWSINST 8020.14 "Explosive Safety Policy". This instruction contains China Lake specific requirements not included in OP-5 (e.g. red flashing warning lights).

Treatment by OD is conducted directly on the ground surface (i.e. wastes are not buried), while treatment by OB is conducted in a burn pan. Complete descriptions of OD and OB operations are presented in Section IV.D.

e. OB versus OD

Almost all treatment of energetic waste at China Lake is accomplished by OD. Virtually all wastes which are treated by OB can also be treated by OD. Special situations, such as a spill of an experimental energetic onto soil or some other media, may require OB instead of OD. In this case, OD may just spread or break apart the media, not treating all of the energetic waste contaminant. EOD personnel will decide whether to use OB or OD, depending on the situation.

Treatment by OD is preferred over treatment by OB for the following reasons:

(1) Hazard analyses have determined that OD is the safest method to treat sensitive research compounds and damaged ordnance items.
(2) A mix of bulk explosives and munitions are normally treated at the BCTF. Conducting one large OD event is logistically simpler than conducting two separate smaller events (i.e. one for OD of munitions and one for OB burnable wastes);
(3) Similarly, because only one type of waste can normally be treated by OB at one time, many more operations at Burro Canyon would be needed than the range schedule and manpower limitations allow;
(4) Treatment by OD consumes all of the energetic waste, whereas OB leaves ash and residue in the burn pan which requires handling and disposal;
(5) OB takes longer than OD to set up, longer than OD for the actual treatment, adds diesel fuel to the event, and requires a cool down period (four hours minimum, two hours if the residue is wetted after the burn) before successive burns or residue cleanup; and
(6) Because the BCTF is sited for detonation of up to 15,000 pounds of energetics per event, the use of a large quantity of donor explosives is possible. A one to one ratio of waste to donor is sometimes necessary for hard to initiate materials (such as bags of energetic-contaminated trash). At other installations, these items are normally OB'ed.

f. Frequency of OB and OD Operations

Since the late 1980s, OB operations have been conducted infrequently (less than once annually). The last OB event was August 1998. Typically OD treatment events have occurred on average at least once per month.

g. Breakdown of OB and OD Wastes

A breakdown of wastes that can be treated by OB or OD per OP-5 is listed below.

Wastes that *can* be treated by OB include:

Black powder
Limited quantities of dynamite in bulk
Floating smoke pots or similar ammunition
Bulk high explosives
Nitrocellulose
Primers
Pyrotechnics
Small arms ammunition
Smokeless powder
TNT demolition blocks
Tracer mix and other pyrotechnic mixtures
Rocket motor propellant grains

Wastes that *must* be treated by OD include:

Detonators, both electric and percussion

Large quantities of dynamite in bulk
Explosive loaded grenades
High explosive bombs
Mortar ammunition
Projectiles
Rocket/Missile warheads
Mines
Bulk initiating explosives

In contrast to OP-5, the Health Risk Assessment (HRA) (Appendix A) dictates that all pyrotechnics and energetic-contaminated items (e.g. rags with energetics) *must* be treated by OD.

8. **North American Classification System Code**

National Security – Navy 928110

Corresponding Standard Industrial Classification Directory Codes

National Security – Navy 9711

9. **Permit Application History**

The BCTF has been operating under interim status authorization since June 1988. The original hazardous waste facility permit application for storage only was submitted to the State of California in November 1983. A permit was issued in 11 May 1984. The permit was renewed in June 1991 and again in August 2001 for a 10-year period for storage of hazardous waste in six units at the Hazardous Waste Storage & Transfer Facility (HWSTF) and the PCB Storage Building (PCBSB). Request for a Class 2 modification of the August 2001 permit was submitted in April 2002 and approved in July 2003. This modification included addition of the Bin Storage Area and transfer dock to the Container Storage Unit of the HWSTF as well as the addition of F001 (tetrachloroethylene only) and D039 wastes to the Liquid Petroleum Waste Tanks 1 and 2 (both Class 2 Modifications). Additional Class 1 and Class 1* modifications have been made as required for changes in administrative procedures and compliance dates. Copies of the permit application for the HWSTF & PCBSB and the Part B permit are maintained at the Environmental Division office and the office of the HWSTF.

The permit modification application for the BCTF was submitted to the CA Department of Toxic Substance Control (DTSC) on 30 April 91. Revisions to the permit modification application were submitted on 22 Nov 91, 8 Nov 94, 26 Jun 96, 29 Jan 98, 1 Oct 98, 11 Apr 05, 29 Sep 05, and 10 Dec 07. Copies of the BCTF permit application are maintained at the Environmental Division office and at the EOD office.

10. **Latitude and Longitude**

Latitude	35° 48' 17" N
Longitude	117° 32' 49" W

11. **Scale drawing showing past, present, future hazardous waste management areas**

Refer to Section I.B.1

12. **Photographs**

Photographs of the BCTF are included as Figure 3.0.

B. USGS Topographic Maps

A U.S. Geological Survey (USGS) topographic map of the China Lake North Range is included as Figure 2.0. In addition, Figure 4.0 is a USGS 7.5 minute topographic map (Burro Canyon Quadrangle) of the area surrounding the units. Figure 4.0 shows a one-mile radius of area surrounding the units.

1. All hazardous waste management units at facility

Figure 2.0 shows all hazardous waste management units at China Lake, including the BCTF.

2. Property Boundaries

Property boundaries of the China Lake North Range are shown in Figure 2.0.

3. Intake and Discharge Structures

No intake and discharge structures are located on China Lake property.

4. Injection Wells

No injection wells are located within the one-mile radius of the BCTF.

5. Location of

a. Monitoring Wells

One monitoring well is located downgradient of the units within one-mile of the BCTF, just beyond the western edge of the non-vegetated area.

b. Springs &
c. Surface Water Bodies

No naturally occurring surface water bodies including perennial lakes or streams are located on China Lake property. However, a number of freshwater springs and seeps are documented. The nearest spring (also a wetlands) to the BCTF is located just over four miles northeast in the Sweetwater Wash. The nearest wetlands is located approximately four miles west of the BCTF at a site known as Paxton Ranch. Both are shown on Figure 4.0.

The Burro Canyon Wash is an intermittent stream which flows in a westerly direction along the edge of the BCTF only during periods of heavy precipitation. The Burro Canyon Wash is indicated on Figure 4.0.

d. Drinking Water Wells

Locations of drinking water wells for the City of Ridgecrest and China Lake are shown on Figure 5.0 (Ridgecrest North Quadrangle) and are located approximately 14 to 16 miles southwest of the BCTF. In addition to these wells, the Ridgecrest Community Hospital and most homes located west of Mahan Road on County land are equipped with individual drinking water wells.

e. Public Water Supply Systems

No aqueducts are located within one mile of the BCTF.

6. **Hazardous Waste Facilities**

See Section I.B.1

7. **Each building and its use**

No buildings are associated with operation of BCTF.

C. **Owner**

U.S. Department of the Navy
Commanding Officer, Naval Air Weapons Station, China Lake

D. **Operator**

Same as Owner

E. **Indian Lands**

China Lake is not located on Indian Lands.

F. **Facility Contact**

Naval Air Weapons Station
Environmental Division
China Lake, CA 93555
(760) 939-2750

DTSC will be notified of the current facility contact and advised whenever the contact person changes.

G. **Preparer of Permit Application**

Ms. Lauren Zellmer
Environmental Engineer
Naval Air Weapons Station
Environmental Division
China Lake, CA 93555
(760) 939-3219

H. **Construction Permits & Approvals**

Construction permits and approvals were not necessary for the BCTF.

I. **List of RCRA and CA wastes and annual amounts to be handled**

1. **Federal Waste Codes**

All wastes treated at the BCTF must first be designated with a RCRA Hazardous Waste Code of D003, according to 22 CCR §66261.23, except for 50 caliber or less ammunition which is designated with a D001 Waste Code. The D003 Waste Code represents the characteristic of reactivity (i.e. energetic). Wastes may also be designated with one or more additional waste codes. All possible codes for wastes treated at the BCTF are outlined in Table 1.0.

2. **State of CA Waste Codes**

CA Waste Codes include:

181 - Other Inorganic Solids
212 - Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)
281 - Adhesives
291 - Latex waste
343 - Unspecified Organic Liquid Mixture
352 - Other Organic Solids
551 - Laboratory Waste Chemicals
611 - Contaminated soil from site clean-ups

3. **Maximum Annual and Monthly Amounts Treated**

An accurate prediction of the amount and types of wastes that will be treated is not possible due to the RDT&E nature of China Lake's mission. Type and amount of energetic waste vary as the RDT&E programs that generate energetic wastes come and go. Historical annual amounts of waste treated (excluding the weight of casings) are list below:

YEAR	POUNDS
CY02	66,362
CY03	61,457
CY04	38,783
CY05	53,479
CY06	43,272

Factors that limit the amounts of waste that can be treated by both OB and OD as set by the permit are:

1) Health Effects - A HRA (Appendix A) was prepared to quantify emissions from OB and OD operations and to track their potential effects on human health. Health effects addressed in the HRA include the lifetime risk of developing cancer, the potential for chronic noncancer effects, and the potential for acute noncancer effects.

2) Air Quality Standards – OB/OD activities at the BCTF must operate under the Great Basin Unified Air Pollution Control District's Rule 432 which addresses not only health effects but also Federal air quality standards, known as National Ambient Air Quality Standards for six criteria pollutants and State air quality standards, known as CA Ambient Air Quality standards that include three additional pollutants.

3) Explosive Safety - The BCTF must be operated according to the site approval by the Department of Defense Explosive Safety Board (DDESB). In addition, China Lake has a self-imposed limit for safety.

4) Noise – A noise assessment (addressed under Section II.H) limits OD operations to amounts that do not exceed local standards or damage thresholds to persons or property offsite.

5) Logistics – Several factors contribute to the logistical limitation, namely limited range time and limited EOD staff. Logistics limits OD operations to two 15,000 pound events or one 30,000 pound event per hour. Logistics limits OB operations to one event per hour (up to 1,000 pounds energetics plus 1,000 pounds donor wood and/or diesel fuel). Additionally, logistics limits operations to an annual amount of one event per day (average) for a total of 5,475,000 pounds per year for OD and for a total of 365,000 pounds per year for OB.

Table 3.0 lists the maximum amounts of waste that can be treated for each category of waste on both an hourly and annual basis for both OB and OD activities. As a means of providing operating flexibility for OB/OD operations, an equivalency system was developed to calculate maximum annual treatment quantities for each of the energetic families. Under this equivalency system, the maximum permitted limit annually or per hour for any given category, or fraction of the maximum limit for several different categories, can be treated provided that the sum of all fractions (ratio of the actual treated quantity to the maximum allowable limit) does not exceed 1.0.

These limitations and associated amounts are explained in the Tracking Database Report (Appendix B).

Considering the above permit limitations, the maximum annual amount treated will never be greater than 5,475,000 pounds (assuming an *average* of one 15,000 pound OD event per day for an entire year) as set by the logistical factor.

J. Description of all processes and types of units to be used for transferring, treating, storing and disposing of hazardous wastes and the design capacity of these items

1. Transport & Treatment of Wastes

Detailed descriptions of the OB and OD transport and treatment operations are presented in Section IV.D. Briefly, energetic wastes generated onsite and designated for treatment are transported to the BCTF by trained and certified explosive haulers from the Main Magazines, from the China Lake/Salt Wells Propulsion Laboratory (CL/SWPL), and from other RDT&E activities at China Lake. EOD immediately unloads the energetic wastes by hand or all terrain forklift and configures the items for an OB or OD event. OB events occur in a burn pan, while OD events occur directly on the ground surface (i.e. wastes are not buried). Wastes are treated as soon as possible after unloading.

The ash residue from OB operations is safe to handle approximately 4 hours (2 hours if it is wetted) after the burn event is complete. Once it is safe to handle, it is transferred by hand shovel or similar tool from the burn pan to appropriate containers and analyzed for proper disposal (see Section III.C.4 for analysis details).

No other treatment activities (other than OB and OD) are related to operation of the BCTF.

2. Design Capacities

The design capacity or range limit is approved by the DDESB. The DDESB site approval for the BCTF allows for the OB or OD of rocket motors with 50,000 pounds of propellant. This amount excludes the casing weight and includes donor explosives. However, a self-imposed logistical and safety limit of 15,000 pounds energetics plus 15,000 nonenergetics is used for OD events. The energetic amount excludes casing weight and includes donor explosives. The nonenergetic is the weight of the "trash" component of the laboratory wastestream and packaging. Similarly, a self-imposed logistical and safety limit of 1,000 pounds energetic plus 1000 pounds nonenergetic is used for OB events in the Burn Pan. The nonenergetic is the weight of donor wood and/or diesel fuel.

Note that even though the DDESB site approval for the BCTF allows for the detonation/burning of up to 50,000 pound rocket motors, this type of event is limited to special emergency-type circumstances, such as security problems, an extreme safety hazard, or a national defense emergency. If a detonation/burn of this magnitude is necessary, China Lake will notify DTSC two weeks prior to the event that the special limit will be in effect for the event. Also note that except for this situation, all OB events are conducted in the Burn Pan.

3. **Disposal of Wastes**

Disposal activities are not a part of the BCTF operations. Ash residue generated from OB events (no longer designated as reactive) is characterized and disposed at an offsite facility permitted to handle the waste.

4. **Accumulation of Wastes**

As outlined in Section I.A.7.b, two types of energetic wastestreams are generated at China Lake, the Laboratory Wastestream and the Munition Wastestream. Designation of the items as wastes is discussed in Section I.A.7.c. All items once declared a waste and designated for treatment via OD or OB are managed as hazardous wastes in 90-day or satellite temporary accumulation areas, since China Lake is not permitted for longer storage of energetic hazardous wastes. The exception to this process is when unused military munitions are designated waste and the "igloo-door" rule is applied (Section I.A.7.c(2)).

Ninety-day and satellite accumulation areas are located throughout China Lake (e.g. mainly at the Main Magazine Facility and CL/SWPL). Munitions wastes are normally accumulated at the China Lake Main Magazine Facility, while laboratory wastes are almost entirely accumulated in the CL/SWPL area (Figure 6.0). All magazines at the Main Magazine facility may be used as a temporary accumulation area of wastes. Items designated wastes may be stored next to items not designated wastes in the same magazine, as long as all items in the magazine are compatible for storage and wastes are segregated from non-wastes with signs or physical barriers. Compatibility of energetics is discussed in Section III.C.5.

K. Owner/Operator Signature and Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature: [redacted]
Name: M. K. GLEASON, Captain, U.S. Navy
Title: Commanding Officer

Date: 12/10/7

L. Confidentiality requests & justifications

Not applicable.

M. Disclosure Statement

CA Health & Safety Code §25200.4(a) exempts Federal facilities from this requirement.

II. Facility Location

A. Detailed Topographic Map

1. Map Layout

a. Scale: The scale of Figure 7.0 is one inch equals 100 feet.

b. North arrow: Included on Figure 7.0.

c. Date map completed: Included on Figure 7.0.

d. Figure 4.0 covers a 2000-foot area around the BCTF.

e. Location of the facility

(1) Latitude: 35º 48' 17" N

(2) Longitude: 117º 32' 49" W

(3) Township: 24 South

(4) Range: 41 East

(5) Section: 34

(6) Principle Meridian: Mt. Diablo

(7) Assessor's Parcel Number: Not applicable, Federal facilities do not have an assessor's parcel number.

(8) Location of each Solid Waste Management Unit (SWMU): Location of SWMUs is being addressed under the Visual Site Inspection phase of the RCRA Facility Assessment per the signed Federal Facility Site Remediation Agreement (FFSRA).

2. Land Characteristics

a. Existing contours and elevations: Indicated on Figures 4.0 and 7.0.

b. Proposed final contours and elevations: Not applicable, the facility already exists.

c. Appropriate Contour Intervals

(1) Surface water flow patterns: During periods of heavy precipitation, large volumes of water can flow in intermittent washes in route to a number of dry lake playas. Figures 4.0 and 7.0 show the major drainage route, known as the Burro Canyon Wash, through the BCTF in route to the China Lake playa.

(2) Facility topographic profiles: Indicated on Figure 7.0.

d. 100-Year Floodplain: Figure 7.0 shows the 100-year floodplain.

e. Surface waters including intermittent streams: See Sections I.B.5.c and II.A.2.c(1).

f. Prevailing Wind Speed and Direction

Four wind roses are provided as Figure 8.0. The meteorological data for preparation of the wind rose was obtained from the meteorological station at the Greenpoint observation area at China Lake. Greenpoint is located one mile south of the BCTF.

All equipment at the meteorological station is audited every six months by a qualified, independent contractor. Data from the site undergo rigorous quality assurance/quality control review prior to being released. In addition the data is remotely monitored daily for any problems. If any problems are found, they are usually corrected quickly by a local engineer. The data used was based on hourly readings recorded over a span of four years for daytime hours when OB/OD operations occur.

g. Land Uses and Zoning

The land is owned by the federal government and is used for military RDT&E purposes.

3. Facility Characteristics

a. Legal Boundaries

The legal description for NAWS China Lake is included in Appendix C. This boundary is shown on Figure 2.0 for the North Range. The BCTF is located on the North Range.

The OB and OD units are located within the BCTF. The coordinates of the OD unit are shown on Figure 3.0a. The OD unit is a 1.03 acre (~45,000 sq ft) area with little to no vegetation.

b. Permanent Access Roads

The locations of permanent access roads into the China Lake Mainsite are indicated in Figure 5.0. The location of permanent access roads into the BCTF are indicated in Figures 4.0 (Burro Canyon 7.5 Minute Quadrangle) and 6.0 (Lone Butte 7.5 Minute Quadrangle).

c. Permanent Internal Roads

Only one road which ends at the facility is associated with access to the BCTF, as indicated on Figure 4.0.

d. On and Off-Site Traffic

(1) Pattern

The traffic pattern for China Lake functions like a civilian community with main arterial streets and smaller side streets. Specific hauling routes for ordnance are marked and used. Ordnance hauling routes are indicated on Figure 9.0.

However, in association with treatment operations at the BCTF, most waste energetics generated onsite are hauled directly from the Main Magazines at the intersection of Knox Road and G-2 Tower Road (Figure 6.0) directly to the BCTF. The only access to the BCTF is north on the G-2 Tower Road and then east on the Burro Canyon Access Road (Figure 4.0). The BC Access Road ends at the facility where vehicles turn around and return to their points of origin via the same route.

The waste generated at the CL/SWPL is hauled via a little-used road and then through a locked gate to the Main Magazines (Figure 6.0). Then the waste is transported along the same route to the BCTF as outlined above.

Ordnance hauling routes indicated in Figure 9.0 do not pass by sensitive receptors, such as schools, or hospitals.

Off-site traffic patterns do not apply.

(2) Control Methods

The traffic pattern for China Lake functions like a normal community. Control methods include stop signs, yield signs, and turning lanes as well as signs which mark the ordnance hauling route.

(3) Location of Control Signals

Control signals (yield and stop signs only) are located throughout China Lake's road network. Ordnance hauling route signs are located at key positions to adequately mark turns, etc. in the route.

(4) Surface Type and Bearing Capacity

Primary access roads throughout China Lake are paved with asphaltic concrete in accordance with American Association of State Highway and Transportation Officials H-20 loading specifications with a bearing capacity of 80,000 pounds.

The BC Access Road consists of two segments. Segment 1 is a paved roadway extending east 1.0 mile from the G-2 Tower Road. Segment 2 extends 2.0 miles east from the end of the paved road to the BCTF. Segment 1 is approximately 24 feet wide with a thin layer of asphalt concrete pavement. Segment 2 is approximately 18 feet wide and is not paved, but has a firm base suitable for the loads transported on it. It is graded when road conditions warrant maintenance. Because treatment may not occur during precipitation events, travel on the BC Access Road is not necessary during these types of adverse conditions.

Some storms (especially 25-year storms or flash floods) have the potential to cause significant damage to the road so that the road becomes impassable. Because prolonged storage of some energetic wastes generated at China Lake is unsafe, repair of the road will be a priority, so that treatment operations at the BCTF may resume as soon as possible.

e. Security Fencing

All access roads to the North Range (Figure 2.0) of China Lake are controlled by fencing and locked or guarded gates. There is no separate fence surrounding the BCTF. Security fencing surrounds most of the North Range. However, fencing is not installed along the East boundary due to its remoteness and rugged terrain.

f. Access Control

(1) Locations: Access to the North Range where the BCTF is located is controlled via the following gates.

(a) the Main Gate on Inyokern Road to Mainsite and then the Lauritsen Road Gate to the North Range;
(b) the Richmond Road Gate to Mainsite, and then the Lauritsen Road Gate to the North Range and;
(c) the Sandquist Road Gate directly to the North Range.

When the gates are open to allow access to the various China Lake areas, all gates are guarded by security personnel and monitored by China Lake Police. Changes in security procedures due to potential terrorist activity are common. Therefore, access times are not included.

Entrance through the Sandquist Road Gate and the Lauritsen Road Gate is limited to personnel with official passes. The general public is not allowed access through these gates. Once through the Lauritsen or Sandquist Gates, access north on the G-2 Tower Road (see North Range Access Point on Figure 6.0) is limited by the Range Control Center.

Access to the BCTF is controlled *at all times* by the locked gate located approximately 2 miles east from the intersection of the Burro Canyon Access Road with the G-2 Tower Road (refer to Figure 4.0).

(2) Types (e.g. locked gates, 24-hour security guards, etc.)

See (e) and f (1) above.

g. Names, location, and dimensions of past, present, and future facilities

(1) Treatment Facilities

Past: Refer to Section II.A.1.e(8). RCRA closure was completed on the Fluorescent Tube Crusher. Tubes are now recycled and not crushed. RCRA closure was also completed on the incinerators at T Range and B Mountain and on an acid neutralization unit in the CL/SWPL area that operated under the CA-only permitting system. RCRA closure activities are in the site investigation phase at the T Range Open Burn unit.

Present: In addition to the BCTF described in this permit application, two treatment units operate under the CA-only permitting system. They include a drum crusher located within the boundary of the HWSTF and a treatment system for photochemicals at the Photo Laboratory in Michelson Laboratory.

Also, an industrial wastewater treatment unit for energetic-contaminated wastewater and a number of oil/water separators operate at China Lake but are exempt from Federal and State permitting requirements.

Future: No treatment facilities are planned.

(2) Storage Facilities

Past: Refer to Section II.A.1.e(8). Additionally, RCRA closure was completed on the PCB Storage Yard and the original PCB Storage Building. RCRA corrective action is in progress on the PCB Transformer Storage Pit.

Present: Current hazardous waste storage units are listed below:

- Present hazardous waste storage units which operate under a RCRA Part B permit include five units associated with the HWSTF (Container Storage Unit and 4 Liquid Petroleum Waste Tanks) and the current PCBSB. These facilities are not permitted for storage of energetic hazardous wastes.

- Numerous accumulation areas (90-day and satellite) are in use for the temporary accumulation of hazardous waste prior to storage at the HWSTF or treatment at the OB/OD unit. The Environmental Division maintains a current list of these areas.
- In addition to the numerous accumulation areas stated above, thirty-day (≥ 50 ppm PCBs) and 90-day (5 to 49 ppm PCBs) temporary storage areas for PCB wastes are used, where necessary, as PCB wastes are generated. Because PCB wastes are generated sporadically throughout China Lake at constantly changing locations, a list of 30- and 90-day areas is not maintained by the Environmental Division. A 90-day temporary accumulation area is located adjacent to the PCBSB for storage of large PCB Articles, per Title 40,Code of Federal Regulations (40 CFR) §761.65(c)).
- Fourteen tanks are used for temporary accumulation (< 90 days) of energetic-contaminated wastewater at the CL/SWPL area.

Future: No storage facilities are planned for the future.

(3) Disposal Facilities

Past: Refer to Section II.A.1.e(8). In addition, no disposal facilities have undergone RCRA closure or corrective action.

Present: No disposal facilities are presently used at China Lake.

Future: No disposal facilities are planned for the future.

(4) Loading and Unloading Equipment

Energetic hazardous wastes are unloaded within the OD unit at the BCTF via an all terrain explosive-rated forklift. The forklift unloads waste items from transport vehicles, unloads waste items from their package (i.e. pallet or crate), and places them in the proper position for the OD operation. Equipment is not needed for loading/unloading for OB operations.

Loading of waste items at the Main Magazine area and at CL/SWPL and at other RDT&E activities are accomplished at each magazine where the waste is accumulated. Depending on the size of the magazine, the magazine may be equipped with a transfer dock. Depending on the size of the waste item, the item is loaded by hand or forklift onto the transport vehicle.

Both the Container Storage Unit and the four Liquid Petroleum Waste Tanks at the HWSTF are equipped with loading/unloading areas. In addition, loading/unloading areas are in association with the PCBSB, and the temporary accumulation areas mentioned above. Also, several equipment cleaning areas are currently in use for steam cleaning vehicles and targets. A list of these areas is maintained at the Environmental Division.

(5) Tanks

Four Liquid Petroleum Waste Tanks are associated with the HWSTF. No tanks are used in association with the BCTF.

(6) Decontamination Facilities

If needed, equipment contaminated with energetics can be decontaminated at one of the numerous facilities in the CL/SWPL area that are connected to the industrial wastewater treatment system. The water washout facility typically used for rocket motors can also be used for larger items. Wastewater generated from this cleaning

can also be treated at the industrial wastewater treatment system. Equipment contaminated with nonenergetic wastes can be decontaminated at the HWSTF.

(7) Buildings

No buildings are in association with the facility.

(8) Barriers, for drainage and flood control, and other containment structures

Open burns are conducted in a elevated steel burn pan equipped with a steel containment liner inside of a concrete containment pad.

(9) Buffer Zones

The BCTF is located in a remote part of the base with little or no surrounding activity or personnel. The closest area is the Burro Canyon Test Facility located approximately 2 miles away. This test facility is used only intermittently and its activities are coordinated by China Lake Range Control. Because only one road exists in/out of the area, access is easy to control.

(10) Other Structures

No other structures are located within the boundary of the BCTF. The meteorological station is located at Greenpoint observation area and a steel metal shield is located at the western boundary of the non-vegetated area.

(11) Facilities for controlling surface and subsurface drainage

Surface drainage through the facility is controlled naturally by the Burro Canyon Wash. It is located along the southern edge of the facility.

(12) Injection and withdrawal wells

No injection and withdrawal wells are associated with the BCTF.

h. Locations of

(1) Power lines
(2) Pipelines: No power lines or pipelines are associated with or are located in the vicinity of the BCTF.

(3) Easements: No easements exist in the area around the BCTF.

i. Distances from hazardous waste management units to

(1) Property boundaries: The closest China Lake property boundary from the BCTF is approximately 7 miles directly east.

(2) Buildings on-site: Closest China Lake buildings (test facilities) to the BCTF are approximately 1.5 to 2.0 miles west. The buildings are unoccupied except for occasional test operations.

Building off-site: Closest offsite buildings are associated with the City of Trona and are approximately 10 miles southeast of the BCTF.

(3) Public roadways: The closest public roadways are 12 miles to the south.

(4) Passenger Railways: None exist in the local area.

(5) Closest human or environmental receptors

Potential health impacts from OB/OD operations on human receptors are addressed in the human HRA (Appendix A). Hypothetical human receptors at the China Lake boundary are used to calculate health risks. Actual human receptors (both residential and occupational) are indicated on Figure 10.0 of this permit application.

Health affects on ecological receptors (wildlife and plants) are addressed in the Ecological Risk Assessment (ERA) (Appendix D). This assessment was conducted on the ecological receptors adjacent to the BCTF.

Distance to other environmental receptors (e.g. drinking water wells, springs, groundwater, etc.) are specified in Section I.B.5.

4. Additional topographic map requirements for regulated units

The BCTF is not defined as a regulated unit.

5. Summary of Pre-application Meeting

This section does not apply.

B. Information associated with maps

1. Written legal description

A written legal description of the property occupied by China Lake is included in Appendix C.

2. Estimated Volume of Traffic

a. & b. Number & Type of Vehicles

Amount of energetic wastes transported in a vehicle depends on the type of vehicle and on the type of energetic waste. Type of vehicle as well as the type of energetic waste and maximum amount of waste the vehicle can transport are listed below:

VEHICLE	CARGO	MAXIMUM AMOUNT
EOD		
All Terrain Forklift	Large/Bulk Items*	6,000 lbs
1 x 3/4-Ton 4-WD Pickup Trucks	Large/Bulk Items* & Personnel	1500 lbs; 5 Persons
2 x 3/4-Ton 4-WD Pickup Trucks	Large/Bulk Items* & Personnel	1500 lbs; 2 Persons
2 x 3/4-Ton 4-WD Pickup Truck	Personnel & Equipment	1500 lbs; 5 Persons
Main Magazines		
1 x 2-Ton Stakebed Truck	Large/Bulk Items*	4,000 lbs
1 x 5-Ton Stakebed Truck	Large/Bulk Items*	10,000 lbs
2 x 3/4-Ton Pickup Trucks	Large/Bulk Items*	1500 lbs
1 x 10-Ton Tractor Trailer (Flatbed)	Large/Bulk Items*	20,000 lbs
CL/SWPL		
22 x .5-Ton Pickup Trucks	Small Items**	1000 lbs
2 x 1-Ton Pickup Trucks	Small Items**	2000 lbs

1 x 2-Ton Pickup Trucks	Small Items**	4000 lbs
1 x 5-Ton Flatbed Truck	Large/Bulk Items*	10,000 lbs

* Large Items = Missiles, Warheads, etc.
** Small Items = Ammunition Cans, Small Crates, etc.

The above vehicles are operated by trained and certified personnel from EOD, the Main Magazine Facility, or the CL/SWPL. EOD operates the forklift, while Main Magazine and CL/SWPL personnel transport the waste items to the BCTF for treatment.

Traffic associated with the BCTF is usually about 5 vehicles for each OB or OD operation. This number includes one or two explosive hauling vehicles from the Main Magazines or from the CL/SWPL, the all terrain forklift, two vehicles for EOD personnel transport, and at times, one or even two vehicles for transport of visitors (e.g. Environmental Division or Safety Office personnel or regulatory or safety inspectors). Two personnel are required for each vehicle that transports energetic items.

3. Characteristics of permanent access roads

a. Surface.
b. Load-bearing Capacity.

Refer to Section II.A.3.d(4).

4. Existing facilities only, aerial or surface photographs clearly showing

a. Structures.
b. Treatment, storage, and disposal areas.
c. Future areas for waste treatment, storage or disposal.

Refer to Section I.A.12.

C. Distance from Holocene Faults

1. Is facility within 3000 feet of a Holocene fault?
2. If yes to item 1., geologic analysis demonstrating that no Holocene faults pass within 200 feet of portions of facility used for hazardous waste management.
3. Analysis demonstrating that facility can withstand a maximum credible earthquake.
4. Sources of data.

The purpose of the seismic assessment was to address local Holocene fault activity influencing the Burro Canyon site.

The seismic assessment (Appendix E) included a review of available maps, documents, and literature concerning Holocene faults within 3000 feet of the BCTF.

As illustrated in Figure 2.0 (Fault Trace Vicinity Map) of Appendix E (MAA Engineering Report) several unnamed faults are mapped in the immediate vicinity of the site. The nearest major fault is the Garlock Fault approximately 20 miles to the south. Nilsen and Chapman (1973), describe the Garlock fault zone as traversing from east to west forming a boundary between the Sierra Nevada and Basin Ranges geomorphic provinces to the north and the Mojave Desert geomorphic province to the south. The region is characterized by major north-trending, normal faults along the eastern margin of the Sierra Nevada and along the west margins of the Basin Ranges province. Lesser faults trend both northwest and northeast across the ranges.

Locally, based on Trona Sheet Renderings (1962), the Wilson Canyon Fault trends north/northwest, three miles north of the center of the BCTF. Two northwest trending components of this fault system project through the BCTF. Two inferred trace components of this fault system are located approximately 3/4 of a mile northeast and southwest of the center of the BCTF.

Presently the State of California Special Studies Zone - Preliminary Review Maps (Alquist-Priolo) is considered the most reliable source of Holocene fault delineation. The map series considers "Active Faults" as to have been active during Holocene time (0.10 Mya). The active faults are delineated as Special Studies Zones.

The Special Studies Zones Maps are based on the best available data, however, quality of data used varies. The BCTF is located in a region referred to as the East Shore. At this time, no Special Studies Zone are delineated directly within 3000 feet of the BCTF.

The closest Special Studies Zones are in the Ridgecrest North & South Quadrangles located immediately southwest and south/southwest of the subject site, respectively. The delineated zones trend north/south at approximate longitude of 117°40'W. The delineated zones are approximately 7 miles to the west of the center of the BCTF at the closest approach. Although the Burro Canyon/East Shore area was examined and no delineations made, this does not insure lack of fault existence or potential for surface fault rupture, either within the Special Studies Zones or outside their boundaries.

D. Hydrogeologic Conditions

General Hydrogeologic Setting

Burro Canyon is located in the Indian Wells Valley, which lies at the southwestern edge of the Basin and Range physiographic provinces, just north of the Mojave Desert province. The valley contains deposits of unconsolidated Quaternary alluvium ranging from alluvial fan gravel and boulder deposits to lacustrine clays. The average depth of basin fill is 2,000 feet and the maximum depth is 6,500 feet. Mesozoic plutonic and metamorphic rocks of granitic composition underlie the alluvial basin fill material and form the surrounding mountains. The Indian Wells Valley is bordered on the west by the southern end of the Sierra Nevada, on the east by the Argus Range, on the south by the El Paso Mountains and the Spangler Hills and to the north by the White Hills.

The depositional history of the Indian Wells Valley is dominated by the ancestral Owens River, which was periodically impounded in the valley. The present China Lake playa is the dry remnant of one of several large lakes that existed along the Owens River during the Pleistocene. China Lake acted as a vast settling pond for the sediment-laden Owens River, forming alluvial-fluvial-deltaic sediments in the northern portions of the valley and lacustrine deposits in the other areas. Sedimentation during the Holocene has been relatively minor and sporadic compared to the rapid deposition that occurred during the Pleistocene. Holocene deposits range from a few feet thick in the area surrounding the China Lake playa, to over 200 feet of alluvial fan deposits along the margins of the basin. Burro Canyon is located on alluvial fan sediments, which consists of heterogeneous, lenticular beds of unconsolidated clay, silt, sand, gravel, and boulders. (TtEMI 2003).

The base-wide hydrogeologic characterization (BHC) study, conducted by China Lake in support of its Installation Restoration Program, identified three hydrogeologic zones in the Indian Wells Valley; shallow, intermediate, and deep (TtEMI 2002). This modification from the shallow and deep aquifers of previous investigations (such as Bernbrock and Martin, 1991) was required by the observed difference in flow conditions between the units. The deep aquifer is essentially the same as the deep hydrogeologic zone (DHZ), but the shallow aquifer has been divided into the intermediate hydrogeologic zone (IHZ) and the shallow hydrogeologic zone (SHZ).

Burro Canyon is located over the SHZ. This zone is characterized by groundwater under unconfined conditions, and is bounded at its base by the low-permeable lacustrine clays of the IHZ. In general, groundwater in the SHZ flows from the basin margins toward the China Lake playa. In areas under natural conditions, similar to Burro Canyon, the measured groundwater gradient roughly follows the

ground contours. The estimated groundwater gradient at Burro Canyon is to the southwest. The nearest exploratory soil boring from the BHC (TTWV-SB23) is located three miles west of Burro Canyon, near a small, unnamed playa. It intercepted 65 feet of SHZ sediments, the remaining 670 feet of the boring intercepted IHZ sediments.

Groundwater is the only source of potable water supply in the Indian Wells Valley. It is produced by several large systems, including the Navy's, small private systems, individuals, and agricultural systems of various sizes. Production is from the DHZ, and comes from the southern and western portions of the valley. Burro Canyon is on the opposite side of the valley from the production zones, and the thick IHZ sediments separate the groundwater below the facility from the DHZ (if it even exists in this area).

Burro Canyon Monitoring Well

A groundwater monitoring well was installed on the western edge (downgradient) of the OB/OD Facility in the Fall of 2000 by the Navy Military Construction Battalion. The location of the well, along with well log and construction information, are included in the "Workplan for the Sixth Site Investigation (Soil & Groundwater) at the Burro Canyon OB/OD Facility; NAWS China Lake, CA; May 2003; Draft Final". Baseline groundwater conditions are referenced in Appendix F (Groundwater Investigation Report). Depth to groundwater was measured at over 400 feet.

E. Potential for Migration of Wastes through the Soil

The volume, physical and chemical characteristics of the energetic wastes treated at the BCTF are described in Sections I and III. In order to ensure that soil is not impacted from OB/OD operations, a Monitoring Plan will be implemented (Appendix G). This Monitoring Plan includes trigger levels of potential contamination. A number of factors minimize the potential for migration of the energetic wastes and ash residue through the soil and are discussed below:

1. Standard Operating Procedures - Detonations are purposefully designed to enhance the afterburning of the detonation and achieve a complete conversion of the energetic compounds to nontoxic compounds. This reaction is accomplished by adding supplementary explosive and by not burying the waste items. The detonation reaction is explained in detail in supporting documentation for the human HRA. In addition, any liquids that are detonated are containerized. The containers are placed directly on the soil. The containers and liquids are consumed instantaneously in the fireball of the OD, not allowing for leakage on the soil;

2. Results of Site Assessments – Soil investigation reports (Appendices H and I) at the BCTF reveal little contamination from over 30 years of operations. Surface and subsurface soil/ash samples were analyzed for explosives, CCR metals, Volatile Organic Compounds (VOCs), semiVOCs, TPH (diesel fuel), acute aquatic toxicity, reactivity, and ignitability. Analytical results of soil and ash residue indicate that migration of energetic wastes or reaction compounds into the soil is minimal;

3. Depth of Groundwater - As discussed in Section II.D., the groundwater elevation is measured at over 400 feet below the BCTF. This depth protects the groundwater from migration of contaminants through the soil column, if migration were to occur;

4. Local climate - The China Lake area is arid. A low precipitation and a high evaporation rate is typical. The average rainfall for the Indian Wells Valley region, where China Lake is located, is 4 to 6 inches per year (St. Amand, 1986). The annual evaporation rate is approximately 100 inches. The excessive evaporation rate as compared to the low precipitation rate prevents water from rapidly seeping into the soil. Most of the water is evaporated by winds or transpired by plants before reaching the subsurface. These conditions minimize leaching of OD residues into the subsurface; and

5. Use of the Burn Pan - Small quantities of diesel fuel are used to supplement open burn operations. As discussed before, all OB operations are conducted in a burn pan equipped with

secondary containment. The burn pan is constructed of 1" thick steel plates and is inspected before and after each use. This procedure minimizes the potential for undetected leaks and eliminates migration of contaminants into the soil. In addition, burning is carefully controlled to ensure that the integrity of the burn pan is not compromised. Ash resulting from the burn pan operations is managed as described in the Section IV.A.5. to ensure that contamination does not occur.

F. 100-Year Floodplain Analysis

If facility lies within 100-year floodplain, provide the information specified in CA Code of Regulations, Title 22 (22 CCR), δ66264.18(b) which states: "A facility located in a 100-year floodplain… shall be designed, constructed, operated, and maintained to prevent washout of any hazardous waste by a 100-year flood…, unless the owner or operator can demonstrate to the Department's satisfaction that procedures are in effect which will cause the waste to be removed safely, before flood… waters can reach the facility,…"

1. 100-Year Floodplain

The 100-year floodplain limits are shown on Figure 7.0. The figure indicates that only the Burro Canyon Wash is included in the 100-year floodplain, not the active portions of the facility (OD operations area or the burn pan). The calculations used to determine the 100-year floodplain are included in Appendix J.

Even though the operational parts of the facility are not located in the 100-year floodplain, the access roads to the BCTF are within the 100-year floodplain, (particularly the G-2 Tower Road). If access to the BCTF is delayed for a number of days or even weeks, treatment operations at the BCTF will not be possible. Even though magazine space is limited and the prolonged storage of energetic wastes is not safe, storage of generated wastes will be necessary. If the 90-day temporary accumulation limit will be exceeded, then DTSC will be notified prior to that date.

2. Flash Flooding

a. Introduction
Flash flooding during periods of heavy precipitation at the BCTF is possible. Flash flooding may occur if at an elevation topographically higher than the BCTF a portion of Burro Canyon is blocked by debris, e.g. dead vegetation. The wave created by this blockage would not pass through the entire facility, but follow the Burro Canyon Wash, i.e. floodplain.

b. OD Residues
Some erosion/removal of soil would occur near the Burro Canyon Wash, away from OD operations. In order to ensure that soil is not impacted from OB/OD operations, a Monitoring Plan (Appendix G) will be implemented. This Monitoring Plan (Appendix G) includes trigger levels of potential contamination.

c. Wastes Already Configured for Treatment
Treatment operations do not occur during precipitation events. Wastes are not configured for treatment until the weather forecast is favorable.

d. OB Ash Residue
All ash will be removed immediately after the OB operation can be handled (about 4 hours). Therefore, flash flooding will not affect ash residue from OB operations. In addition, the burn pan is located above the 100 -year floodplain.

3. Effects from Runoff

Downstream soil contamination from precipitation runoff of OD residues is possible. As stated above in order to ensure that soil is not impacted from OB/OD operations, a Monitoring Plan will be implemented (Appendix G).

The surface of the BCTF is graded so that onsite precipitation is carried in a southwesterly direction to the Burro Canyon Wash (Figure 7.0). Devices such as diversion channels are not practical because they would be damaged by the blast wave and ground vibration of the OD operations. Surface and subsurface samples along the Burro Canyon Wash did not indicate the presence of any contaminants from over 30 years of operation.

G. For each regulated unit, provide information on environmental monitoring and response programs (22 CCR 66270.14(c)), where applicable

1. Data obtained under 22 CCR §66265.90 through §66265.99 and §66265.710 through §66265.714:

Not applicable, applies only to surface impoundments, waste piles, land treatment units or landfills.

2. Groundwater aquifer information:

Refer to Section II.D.

3. Delineation of waste management area: Refer to Section II.A.3.a.

Property boundary: Refer to Section II.A.3.a
Proposed point of compliance under 22 CCR §66264.95 (Chapter 14 Article 6) (The "point of compliance" is defined as "a vertical surface, located at the hydraulically downgradient limit of the waste management area that extends through the uppermost aquifer underlying the unit"): Not applicable, applies only to regulated units.
Proposed location of monitoring points under 22 CCR §66264.95 (Chapter 14 Article 6): Not applicable, applies only to regulated units.
Proposed location of monitoring points under 22 CCR §66264.705 (Chapter 14, Article 17): Monitoring points for soil are addressed in the Monitoring Plan (Appendix G)

4. Describe any plume of contamination migrated from the regulated unit:

Based on results of soil investigations (Appendices H and I) and sampling of the groundwater monitoring well (Appendix F), a plume of contamination was not identified.

5. Describe the proposed environmental monitoring program to meet the requirements of 22 CCR, Chapter 14, Articles 6 and 17:

The proposed monitoring program is provided in the Monitoring Plan (Appendix G). This plan will address groundwater and soil monitoring only. The human HRA (Appendix A) will address monitoring of air emissions. Because the nearest surface water to the BCTF is approximately 4 miles west of the facility, the Monitoring Plan will address potential releases to surface water indirectly by monitoring potential releases to soil. Because of the nature of OD treatment events, soil-pore gas and soil-pore liquid contamination is impossible.

6. Describe the detection monitoring program under 22 CCR §66264.91 and/or 22 CCR §66264.701:

Not applicable, applies only to regulated units.

7. Describe the evaluation monitoring program under 22 CCR §66264.91 and/or compliance monitoring program under 22 CCR §66264.701:

Not applicable, applies only to regulated units.

8. Corrective action program:

Refer to Section XIII.

H. Noise Analysis

A noise analysis of activities conducted at the BCTF was conducted and presented in Appendix K. The analysis considers potential impacts from long-term noise exposure, single-event noise exposure, and vibrations and takes into account effects from local topography around the facility.

III. Characteristics of Hazardous Wastes Handled at the Facility

A. Introduction

This Waste Analysis Plan (WAP) provides characterization procedures for hazardous waste that is generated at China Lake and treated at the BCTF. The WAP was prepared in accordance with 22 CCR, §66264.13, General Waste Analysis. Under this section a written WAP that describes the procedures for characterization of HWs treated is required. According to 22 CCR §66264.13(b), the written WAP must specify the following information:

- *Parameters* for which each hazardous waste will be analyzed and the *rationale* for the selection of these parameters;
- *Test methods* which will be used to test for these parameters;
- *Sampling and sample management methods* which will be used to obtain a representative sample of the hazardous waste to be analyzed;
- *Frequency* with which the initial analysis of the hazardous waste will be reviewed or repeated to ensure that the analysis is accurate and up to date; and
- Methods which will be used to meet the additional waste analysis requirements for specific waste management methods. Applicable methods include those for reactive hazardous waste and hazardous waste restricted from *land disposal*. Land disposal restrictions (LDRs) are provided in 22 CCR §66268 (Chapter 18).

B. Energetic Hazardous Waste Generation at China Lake

1. Types of Energetic Hazardous Wastes

To perform its RDT&E mission as outlined in Section I.A.6, China Lake is engaged in a number of activities which generate reactive (or energetic) hazardous waste. These activities conducted by laboratories, firing ranges, and test facilities vary from small-scale research and development through full-scale testing and evaluation.

Types of energetic wastes generated at China Lake are outlined in Section I.A.7.b. Type and amount of energetic waste varies as programs that generate the energetic waste are funded. Therefore, an accurate prediction of the amounts of each type of energetic waste generated at China Lake (and treated at the BCTF) is not possible.

2. Energetic Hazardous Waste Treated at the BCTF

A description of the BCTF and its associated two treatment units is provided in Section I.A.7.a. Design capacity of the units is outlined in Section I.J.2.

Maximum annual and event amounts treated are presented in Section I.I.3.

3. Internal Generators & Hazardous Waste Determination

All energetic waste treated at the BCTF originates from the point of generation (i.e. internal generator location) onsite at China Lake, typically at the Main Magazine Facility or at the CL/SWPL. Very minor amounts are also generated at other locations at China Lake. China Lake policy dictates that each internal generator is responsible for: (1) determining whether the waste is hazardous (i.e. energetic) or nonhazardous; and (2) characterizing the waste's hazardous constituents (e.g. contains acetone as a solvent). More specifically, internal generators use the following method outlined in 22 CCR §66262.11:

Step 1: The generator will determine if the waste is listed as a hazardous waste in Article 4 of Chapter 11 (22 CCR) or in Appendix X of Chapter 11 (22 CCR).

Step 2: If the waste is listed in Appendix X of Chapter 11 but not listed in Article 4 of Chapter 11, the generator may determine that the waste generated is not a hazardous waste by either:

(1) testing the waste according to the methods set forth in Article 3 of Chapter 11; or
(2) applying knowledge of the hazard characteristic of the waste in light of the materials or processes used to generate the hazardous waste.

Step 3: For the purposes of compliance with Chapter 18 (LDRs) or if the waste is not listed as hazardous waste in Article 4 of Chapter 11 or Appendix X of Chapter 11, the generator will determine if the waste exhibits any of the characteristics set forth in Article 3 of Chapter 11 by either:

(1) testing the waste according to the methods set forth in Article 3 of Chapter 11; or
(2) applying knowledge of the hazard characteristic of the waste in light of the materials or processes used to generate the hazardous waste.

4. Temporary Accumulation Areas

Prior to transfer to the BCTF for treatment, waste is temporarily accumulated in a satellite or 90-day accumulation area. The exception to this process is when unused military munitions are designated waste and the "igloo-door rule" is applied (Section I.A.7.c(2). A complete and detailed list of temporary accumulation areas for energetic hazardous waste (as well as nonenergetic hazardous waste) at China Lake is maintained at the Environmental Division. The list includes the following information: contact name, contact phone number, contact code, location of the area (including County), type of area (satellite or 90-day), and typical wastes accumulated.

5. Transfer of Energetic Waste to the BCTF

Once an energetic waste is generated, internal generators are responsible for completing the "EOD Job Request Form" form (NAWS 8027/2 or /2A). This form serves as an internal (i.e. China Lake) hazardous waste manifest. An example of a completed form is provided in Figure 11.0. Generators are also responsible for transfer of their waste from their temporary accumulation area to the BCTF for treatment, as well as packaging the waste for transfer, prior to the end of the waste's accumulation time limit (e.g. 90-days). EOD personnel are responsible for coordinating timely scheduled treatment events.

6. Waste Profile

The completed NAWS 8027/2 or /2A form also serves as the waste profile for the energetic waste items. The form provides characteristics of the waste to enable proper tracking per the requirements of the human HRA (Section I.I.3). The NAWS 8027/2 or /2A form includes the following information:

generator information (contact name, code, phone number)
location of accumulation area
description of the waste
contents & composition of the waste
type and weight of packaging (when applicable)
amount of waste (energetic weight and gross weight for items that are not munitions)

number of waste items

7. Tracking System Responsibilities

Tracking of the wastes treated for the purposes of safety limitations is the responsibility of the operator of the BCTF (EOD), specifically the Demolition/Burn Operations Supervisor (DBOS) for each event.

Tracking of the wastes treated for the purposes of health risk limitations according to the HRA is the responsibility of both EOD and the Environmental Division. Presently, EOD and the Environmental Division work together to ensure that information included in the tracking system is complete and accurate. To ensure accuracy of the information provided to EOD by the generator, EOD may visually review each waste designated for treatment a day or two prior to the scheduled treatment event. Characterization information of each waste item as outlined in Section III.B.6. is provided via the completed NAWS 8027/2 or /2A form from internal generators to EOD. The forms are then provided by EOD to the Environmental Division.

The Environmental Division evaluates the completeness and accuracy of the information provided by the generator on the NAWS 8027/2 form. Generators are contacted for clarification if needed. Once the data is determined to be accurate and complete, the Environmental Division assigns the energetic components of each waste item to the proper energetic family(s) and assigns waste codes. Packaging of the waste item, along with any nonenergetic components of the Laboratory Wastestream, that will be treated along with the energetic, is placed in the "W" family as energetic-contaminated waste. If a munition item contains a guidance & control system (nonenergetic), this component is placed in the "M" category. The Environmental Division then inputs the data into the tracking database. The tracking database uses Microsoft Access software and calculates the cumulative annual and single event quantities to determine whether the event complies with the health risk monitoring per the results of the HRA (Appendix A). The Tracking Database Report (Appendix B) explains how the software is used.

Once waste items are transferred to the BCTF for treatment, the designated EOD DBOS assigned to that particular event is responsible for verification that all wastes removed from the transport vehicles and configured in the event are included on the accompanying NAWS 8027/2 forms. Items that are not included are rejected and transferred back to the generator.

The "Facility Contact" for the BCTF permit referred to in Section I.F. (or authorized backup) is responsible for all Environmental Division tasks regarding the tracking system. The EOD DBOS for the event has the responsibility for all EOD tasks regarding the tracking system.

C. Waste Analysis Plan

1. General Procedures

Characterization of waste is the primary prerequisite for proper hazardous waste management (whether the waste is energetic or not). Identification and quantification of the constituents in a specific hazardous waste comprise this characterization. More specifically, characterization of waste designated for treatment at the BCTF is used to:

- Determine which wastestreams are hazardous waste and identify corresponding hazardous characteristics
- Comply with health risk tracking requirements for OB/OD events
- Collect sufficient information to determine hazardous waste incompatibilities and container specifications during waste accumulation

- Comply with all California and Federal hazardous waste management regulatory requirements
- Provide information to generators, haulers, and EOD for safe handling of the waste

As stated previously, characterization is performed at the point of generation by the internal generator of the hazardous waste. Proper characterization of wastes requires data from generator knowledge or laboratory analysis, as described in the following sections.

a. Generator Knowledge

Due to the R&D nature of hazardous waste generated at China Lake (whether energetic or not), generator knowledge of the waste or its raw materials is the primary means of characterizing the waste. Many times the specific product or chemical name can be used to identify the constituents that comprise the end waste. The activity from which the waste is generated must also be considered. If the composition of a substance is somehow changed in the course of its use, then the generator may not be able to use his knowledge to determine the composition of the waste generated. Section III.C.3 outlines the methods for identification and characterization of energetic hazardous wastes in detail.

b. Analysis of the Waste by a CA-Certified Laboratory

Methods
Laboratory analysis is conducted when necessary to ensure a thorough characterization of a waste. Only laboratories certified by the State of CA to conduct a specific method are used. A waste is analyzed for hazardous waste constituents by collecting a representative sample of the waste and by testing it with appropriate sampling and analytical test methods. Analytical methods are described in 22 CCR §66261, Appendix III, "Chemical Analysis Test Methods". This appendix refers to the following document: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, Third Edition and Updates. This document is known as "SW-846".

SW-846 describes in detail standard EPA methods for the analysis of hazardous waste. EPA methods are cited on the chain-of-custody and documentation forms and on reports for the various analytical procedures. EPA test methodologies are designed primarily for trace determinations and are not always best suited for a given sample. Therefore, if a non-EPA method is needed to characterize a waste, a variance from DTSC must be granted (22 CCR §66260.21).

Table 4.0 provides a list of commonly used EPA methods along with corresponding parameters. For example, EPA Method 1010 may be used to determine the waste's flashpoint (D001 Waste Code).

Level of Analysis
The level of analysis is dependent upon user/generator knowledge of the process generating the waste and known or suspected contaminants. Laboratory analysis is performed in sufficient detail to adequately characterize the waste and to meet the analysis requirements specified for concentration levels as outlined in 22 CCR §66261.

Rationale for Parameters Chosen
The rationale for selecting analytical schemes is based on the generator's knowledge of the waste and its ultimate treatment/disposal method.

The rationale for selecting parameters that characterize hazardous constituents is dependent on user and/or HWSTF personnel knowledge of processes and the resulting hazardous waste. The following rationale are used for selecting test parameters:

- If the generator is not familiar with the generating process and, thus, the resulting constituents of the hazardous waste, the generator will test the waste for all possible parameters.

- If the generator has some knowledge of the generating process, the generator will limit the test parameters to those more likely to characterize the waste adequately.

- If the generator is certain of the presence of certain constituents but not the concentrations, the generator will analyze to determine the constituent concentrations.

2. Elements of the Waste Analysis Plan

Two elements of the WAP are addressed in the following sections and are:

1) Characterization of energetic hazardous wastes designated for treatment; and
2) Handling of the residual ash generated from open burn events

Identification of OD residues as hazardous waste during the operational life of the facility will be addressed in the Monitoring Plan (Appendix G).

3. Element 1 - Characterization of Energetic Hazardous Wastes

a. General

Identification of the waste prior to handling and treatment is not only essential for the safety of personnel, but also for compliance with the environmental requirements of the treatment permit for the BCTF. Without identification of the wastes treated at the BCTF, compliance to the following requirements is not possible: waste code designation, tracking for health risk purposes, remediation of unplanned releases of waste, and recordkeeping. Noncompliance with any of these requirements may lead to the endangerment of human health and/or the environment.

China Lake's own internal policy requires all wastes to be identified and labeled by the individual generator prior to collection for accumulation or treatment. Generators are trained to determine which wastes are hazardous and which hazardous waste criteria apply according to State and Federal regulations. Wastes are screened in accordance with 22 CCR §66261.4 (Section III.B.3).

Generator knowledge is the primary means to characterize energetic waste. Sampling energetic waste for laboratory analysis, especially at an off-China Lake laboratory, is extremely unsafe and with cased munitions items is difficult. Methods for identification and characterization are discussed in the following sections.

b. Inventory Tracking System

All energetics whether designated wastes or not from all energetic activities are entered into the inventory database tracking system to monitor their status (Condition Code) and

location (magazine number) while at China Lake. The inventory database is maintained by the Weapons Department (Main Magazine) personnel as well as trained, qualified and certified Satellite Inventory Managers.

Items are given one of two types of tracking numbers:

(1) A standard 4-digit inventory tracking number, known as a DoD Identification Code (DoDIC) or a Navy Ammunition Logistic Code (NALC). This number serves as a military specification number for a DoD munition item. Standard munition items (whether designated wastes or not) are designated with a DoDIC or NALC which allows for their identification by generator knowledge. Publications (Section III.C.3.d) may be used to determine specific characteristics (total weight, weight of energetic, type of energetic, type of casing, etc.) of the waste item, if necessary; or

(2) A 5-digit tracking number known as a "local NIIN" (National Item Identification Number). All China Lake generated NIIN's are ultimately included in the DoD-wide inventory control system. Nonstandard munition items as well as all items generated by R&D laboratory activities carry a NIIN.

All containers holding energetics must have an identification tag or label which includes the NALC or local NIIN prior to placement in a magazine. If the identification tag or label is missing or damaged, the item should contain other markings which will be used to identify the item or relate the item to a specific person or project file as outlined in the next section.

c. Documentation

In almost all instances the hazardous constituents and characteristics of wastes generated from laboratory R&D activities are known. Handling of unknown items is discussed in Section III.C.3.e. The generator is a chemist, engineer, or trained technician whose job description includes handling (i.e. mixing, casting, sampling, and/or testing) of various experimental explosive or propellant formulations. The ingredients of the formulation are known prior to the start of its preparation. Sampling and testing the material (prior to its designation as a waste) for various physical and chemical properties is always part of the R&D process. All details of the R&D process are entered into the scientist's or technician's notebook.

d. Publications

Publications may be used to identify the physical and chemical characteristics of some energetic items. These documents are used to determine specific characteristics (total weight, weight of energetic, type of energetic, type of casing, etc.) of a waste item. One or more of the following documents are used:

1) EOD Bulletins or EOD 60 series. Each publication addresses a specific ordnance item. The publications include information on obsolete, classified, and foreign ordnance items, as well as all standard munitions. They are classified documents and used exclusively by EOD;
2) "Demolition Materials and Properties" NAVSEA SWO60-AA-M-AA010. This publication is used as a reference by personnel who use explosives regularly as part of their profession, such as the Safety Office personnel, the Seabee Construction battalion, Firing Officers for various tests, and EOD. It lists national

stock numbers and DoDICs/NALCs (if available) for each item. This document is not classified;

3) "Transportation and Storage Data for Ammunition Explosives and Related Hazardous Materials" NAVSEA SWO20-AC-SAF-010. This document includes 8000 Navy items and lists national stock numbers and DoDICs/NALCs (if available) for each item. This document is not classified;
4) "List of Explosives for Navy Munitions" NAVSEA SW010-AG-ORD-010. This document lists all energetics used in current Navy munitions;
5) Munitions Items Disposition Action System (MIDAS). This database was developed by the Army and contains characteristics for thousands of standard munition items. Items continue to be added to the database. This database is not classified.
6) Material Safety Data Sheets (MSDSs). MSDSs provide hazardous constituent information from the vendors of raw materials (i.e. name(s) of constituents and their respective concentrations and proper handling procedures). Even when the name of a waste is not available, the manufacturer's name, with or without a stock number, can be used to find the MSDS for a specific waste. However, due to the R&D nature of the hazardous waste generated at China Lake, an MSDS is not always available for a particular waste.

e. Unknowns

Instances where the composition of a reactive (energetic) waste is completely or partially unknown are rare. Typical scenarios include:

(1) Discovery of an ordnance item on the China Lake ranges after years of abandonment. Due to the immense size of the China Lake ranges (over 1.1 million acres), this scenario is probably the most common; and

(2) Discovery of an item in a magazine, due to human error or oversight, or the retirement of personnel. This scenario is most common with the laboratory wastestream, due to the nature of R&D laboratory type work, i.e. various mixes of an energetic formulation are prepared, saved for future evaluation, and later overlooked. Extension of the inventory tracking system to all laboratory R&D items (as well as munition items) in the past several years has decreased the occurrence of this scenario drastically.

In the instance that a munition is not identifiable by its inventory tracking number and/or accompanying documentation, any or all of the following methods to identify the energetic item are used by EOD personnel:

- EOD experience and training
- Experience of other active or retired China Lake employees familiar with weapons systems, especially those developed at China Lake
- Publications available to EOD (discussed above)
- X-ray of the item using EOD's portable x-ray unit or China Lake's large x-ray unit to determine if the cavities of the item are hollow or contain energetic materials
- Disassembly of the item, using remote cutting, etc. if necessary, in order to collect a sample of the energetic material inside the casing of the munition. EOD conducts a test burn on the sample and/or submits a sample for analysis to the local China Lake laboratory.

However, the more likely scenario is that EOD will determine that the unknown is unsafe to handle (i.e. possibly decomposed and unstable) in order to implement the above methods or to treat at the BCTF. Instead, EOD will destroy the item as an emergency. The emergency destruction will occur at or near the generating location or at the designated China Lake emergency detonation area, known as B Mountain (Figure 6.0), depending on its stability for transport.

4. Element 2 - Handling of the Ash from OB Events

All open burn operations are conducted in the burn pan. Residual ash is collected from the burn pan and placed in a sealed and labeled DOT approved container (refer to Section IV.A.). The ash is then transferred to the HWSTF with a safe certification document signed by EOD personnel or any other certified/qualified personnel. This certification guarantees that the ash is safe to handle and transport on- or off-China Lake. It does not guarantee that the ash does not contain minor concentrations of energetics. Even though these minor concentrations do not pose a safety hazard, the offsite disposal/treatment facility may need to know the concentration for permitting requirements.

A sample of ash from each OB event is collected for waste profile purposes by Environmental Division personnel. Ash residues from different OB events are handled separately until analytical testing is complete. Ash residues are mixed only when compatible according to waste profiles.

Samples of the residual ash from OBs are analyzed for waste profile purposes by the methods indicated in Table 4.0, as outlined below:

Metals
If the waste item prior to treatment contained any of the CCR metals, then the residual ash will be analyzed as follows:

- A Toxicity Characteristic Leaching Potential (TCLP) extraction. The extract will be analyzed for the Federal metal(s) (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver);
- A Waste Extraction Test (WET). The extract will be analyzed for the CCR metals; and/or
- Analysis for total concentrations of CCR metals.

VOCs
If solvents are part of the formulations of the wastes treated, the residual ash is analyzed for volatile organic compound (VOC) concentrations. In the unlikely event that concentrations from the total analysis are high enough, a TCLP Extraction will also be conducted and the extract analyzed for VOC concentrations.

Explosives
The residual ash is always analyzed for explosives. A test for reactivity is not necessary since a safe certification is provided for the ash by EOD.

If the ash is characterized as a hazardous waste, the ash is transported from the HWSTF to the appropriate offsite disposal /treatment facility depending on its waste profile. The ash residues may require treatment before they can be land disposed in accordance with Land Disposal Restrictions (LDRs) (CCR, Title 22, §66268). Treatment would occur at the offsite disposal facility.

Because the ash is managed through the Part B permitted HWSTF, compliance with LDRs, sampling procedures, and laboratory quality assurance/quality control for the ash are addressed in the Operation Plan for the HWSTF (refer to Section III.C. – Waste Analysis Plan).

5. Additional Requirements for Ignitable, Reactive, or Incompatible Wastes

All wastes treated at the BCTF are designated reactive (energetic) hazardous wastes. They can also be toxic, extremely shock sensitive, and/or ignitable.

Not only is the waste identified for compliance with hazardous waste regulations, but it is also marked for safety purposes. For all energetic items (wastes as well as nonwastes) the generator marks the waste with a "Hazard Classification". This Hazard Classification involves a hazard class & division and a compatibility group. The hazard class for energetics is always "1". This hazard class of "1" consists of six divisions as shown in Table 5.0.

A compatibility group accompanies the hazard class to complete the hazard classification designation. Compatibility groups are based on a number of factors including chemical and physical properties, amount and type of explosive, and packaging. They are used for storage and transportation purposes, in order to minimize the probability for an accident or magnitude of an accident. Compatibility groups are designated as letters A, B, C, D, E, F, G, H, J, K, L, N, and S. Examples are listed in Table 6.0.

For treatment by OD at the BCTF segregation of wastes is not necessary, i.e. all wastes accepted for treatment may be treated in the same OD event. Waste segregation for OB events is addressed in Section IV.D.2 (Waste Configuration). For transportation and storage purposes, segregation of energetic wastes is necessary and is based on the compatibility groups. A segregation chart for transportation is provided as Table 7.0. A segregation chart for storage is provided as Table 8.0. If two wastes are not compatible according to these tables, the wastes are not stored or transported together.

D. Update of Waste Analysis Plan

The Environmental Division is responsible for updating and modifying the waste analysis plan. The plan will be modified when necessary to reflect changes, e.g. modifications to federal and state regulations. The Environmental Division will review the plan annually and any modifications will be forwarded to the EOD unit and the DTSC.

IV. Major Waste Management Devices Used at the Facility

A. Use of Containers

1. General Requirements

China Lake's Explosive Safety Policy (NAWSINST 8020.14) (refer to Section I.A.7.d) includes safety procedures associated with handling, storage, transport and associated hazards of explosives. Wastes treated at the BCTF and their associated containers must comply with requirements in the NAWSINST 8020.14 policy. Those requirements applicable to this permit application are listed below.

a. Store all energetic materials in closed containers of sufficient quality to prevent spillage or damage to contents during normal handling procedures;
b. Containers must withstand a drop of 30 inches, prevent contamination of the contents, and offer resistance to rapid spread of fire;
c. Items such as large rocket motors, where the motor case serves as the container, should have all openings covered with materials of sufficient durability to protect the energetic materials from contamination; and
d. Do not use materials having high static producing characteristics, such as nonconductive plastics, as containers, or on the outside or inside the containers, if the energetic materials are or are suspected to be static sensitive.

2. Munition Wastestream

As stated above in Section IV.A.1., the metal casing of a munition waste item is considered the container for the waste. The munition wastes are completely enclosed in the casing. The casings are designed to withstand mishandling, dropping and rolling, impacts from airborne debris, and fire.

Bulk explosives are also part of the munition wastestream. They are typically packaged in a cloth satchel, a plastic wrapping, a wood crate, a metal ammunition box, a fiber drum/barrel, and/or a velostat bag. These containers must also meet the requirements outlined above in Section IV.A.1.

3. Laboratory Wastestream

Depending on the type of laboratory R&D waste (refer to Section I.A.7.b), the waste item may be contained in a number of different types of containers ranging from velostat bags of various sizes, plastic buckets, metal containers, and/or ammunition boxes (wood or metal). An item included in the ordnance type of laboratory wastestream has a metal casing similar to the munition items. These containers also meet the requirements outlined above in Section IV.A.1.

4. Hazardous Waste Labeling Requirements

Designation of an energetic item as a waste is discussed in Section I.A.7.c. If the item or lot of items are being accumulated as waste in the magazine, then a hazardous waste label will be placed either directly on the item or on a placard or sign in front of a lot of similar items. If an unused item is designated a waste as it leaves the magazine door for treatment ("igloo-door policy"), then a hazardous waste label will *not* be placed on the item, solely for the purpose of transporting the item to the BCTF for treatment.

The hazardous waste labels such as shown in Figure 12.0 are used in the generator areas (temporary accumulation areas). If the waste is accumulated in a satellite area, then the "Satellite Accumulation Container" label is used. If the waste is accumulated in a 90-day area, then the "90-Day Accumulation Container/Tank" label is used. Both labels are used for wastes that move from a satellite area to a 90-day area. The labels are preprinted with the "Generator Information" completed. The generator of the waste completes the information on the label and places the label on the container holding hazardous waste.

Note: Formatting revisions of labels may be necessary in the future to maintain and improve efficiency of hazardous waste management. The information on the labels will comply with 22 CCR requirements.

5. Ash Residue from OB Operations

Ash residue generated from OB operations will be removed immediately (about 4 hours after the burn is complete or about 2 hours if it is wetted) from the burn pan and placed in an appropriate container. Containers compatible with ash residue from open burns, e.g. steel open-top 55-gallon drums (DOT type 17H), or steel open-top 5-gallon containers (DOT 37C), are used for temporary accumulation of the ash. (Note: Polypropylene containers are also compatible with residual ash and may be used but are more expensive than steel containers.) Open top containers remain closed except when waste is being added or removed.

Hazardous Waste Labeling Requirements

Once ash is placed into the container, it is labeled with either the 90-day accumulation or the satellite accumulation hazardous waste label (Figure 12.0), depending on the quantity of ash generated. The generator (EOD personnel) of the residue completes the following information on the label:

a) "Start Date" block. The generator provides the date when the burn was conducted;
b) "Contents/Composition" block. Generator writes "Ash Residue from Open Burn Event – Pending Analysis";
c) "Physical State" block. The generator checks "solid";
d) "Hazardous Properties" block. The generator checks "toxic".

The container of residue is immediately transferred to the permitted HWSTF for analysis and storage. A safe certification document is provided by signed by EOD personnel or any other certified/qualified personnel. This certification guarantees that the ash is safe to handle and transport on- or off-China Lake. Per information provided by EOD on the "Hazardous Waste Disposal Request Form", HWSTF personnel process the ash with the original waste codes of the waste prior to treatment, *excluding* the D003 waste code (reactivity), the D001 waste code (ignitability), if used, and any other waste code based on a reactive or ignitable characteristic (e.g. F003 for acetone), if used. These waste codes are eliminated after treatment is designated complete by EOD. Once at the HWSTF, analysis of the residue for waste profile purposes will follow the procedures outlined in Section III.C.4. Offsite disposal/treatment of the residue will be based on its analytical results and corresponding waste profile.

B. Use of Tanks

The burn pan is the only waste management device at the BCTF. The burn pan is used for treatment of energetic wastes by OB. It does *not* meet the definition of a tank in 22 CCR §66260.10.

C. Underground Storage Tanks

Underground Storage Tanks are not associated with operation at the BCTF.

D. Treatment in Hazardous Waste Management Devices

1. Treatment by OD

Arrival of Waste at Unit
Energetic wastes for OD are transported to the BCTF from their temporary accumulation areas primarily at the Main Magazine facility and at CL/SWPL. Accumulation of waste is discussed in Section I.J.4. Transport vehicles and their use for operations are listed and discussed in Section II.B.2.a&b. Section II.A.3.d. outlines explosive hauling routes for energetic waste.

Removal of Waste from Transport Vehicle
Waste is removed from the transport vehicles by EOD personnel by hand or all-terrain forklift as required and placed on a level area as directed by the DBOS for the event. The all-terrain forklift may also be used to unload waste items from their package (i.e. pallet or crate) and place them in the proper position for the OD operation.

Preparation of the OD Area
Maintenance of the OD area is discussed below. No other preparation of the area for OD operations is necessary.

Waste Configuration, Use of Donor, and Initiation of OD Event
The waste is configured in such a way as to ensure that all material is consumed. Although no two OD events are exactly alike and much of the planning is based on experience, some common principles apply to most OD operations. Usually larger military munitions containing large amounts of high explosives, such as bombs and large warheads, are placed to the outside of the pile, whereas ordnance items containing harder to initiate energetics, such as rocket motors, are placed to the inside of the pile. This allows the stronger wave of detonation created by the high explosive to initiate the harder to initiate energetics. Small items, such as hand grenades and propellant samples, are also placed to the inside of the pile to ensure their complete consumption in the blast with no kickout as shrapnel. Often the fuse wells of bombs and other munitions are packed with explosives which cause the item to detonate as designed.

Typically bulk explosives, such as TNT or Comp A-3, in cardboard boxes, metal cans, or bags surround the pile of waste. Small blocks (brick size) of donor explosives, such as C-4 or tetrytol, are placed on top of the waste pile and connected with detonation cord. EOD also considers other waste items that are easy to initiate, such as bombs or warheads, as donor. However, these items are still tracked as waste for environmental purposes.

The OD event is initiated by an igniter which is connected to a time fuze to allow EOD personnel time to reach the Greenpoint observation area (location is indicated on Figure 4.0). The time fuze is connected to a blasting cap which is connected to detonation cord to the waste pile.

In the unlikely event that that the treatment event is postponed after or during setup at the BCTF, due to sudden changes in weather or range closure schedules, the DBOS for the event decides the course of action. Waste items which are already unloaded, unpackaged, and placed in the waste pile are not loaded back on the transport vehicle. However, waste items that are not yet removed from the vehicle or waste items that are removed from the vehicle and not yet unpackaged may be loaded back onto the transport vehicles, then placed back in the appropriate magazine or remain on the vehicle in the Safe Haven, a fenced and locked compound, at the Main Magazine Facility. EOD will remain at the site to complete the event when weather or range schedule permits.

Weather Limitations
Prior to conducting an OD operation EOD personnel contact the Weather Office for the latest forecast. OD operations are not conducted during periods of heavy or low total overcast,

thunderstorms within five miles, presence of an inversion layer, or static conditions over 2,000 volts per meter.

In addition, the Great Basin Unified Air Pollution Control District (GBUAPCD) requires that all OB/OD events occur on permissible "Burn Days" for the Great Basin Valleys Air Basin. EOD contacts the GBUAPCD office at least 72 hours prior to the scheduled event. GBUAPCD then provides confirmation of Burn Day status by noon the day prior to the event.

Personnel Requirements

Personnel requirements vary with the size of the event and also the type of munitions. Small items that require a lot of unpacking require more manpower. Large items where heavy equipment is used require less manpower. For all events, at a minimum, two EOD personnel (a DBOS and an Assistant DBOS) are required, along with a Hospital Corpsman (not part of the EOD detachment). If the all-terrain forklift is used for an event, an operator for the forklift is also involved. Typically, at least six EOD technicians are required for an event.

Equipment Requirements

Equipment needed for almost all OD events includes: transport vehicles with radios, all-terrain forklift (explosive-rated), lifting slings, common hand tools, such as band cutters, crowbars, hammers and cap crimpers.

After OD event

After an OD event, the DBOS and an additional EOD technician return from the Greenpoint observation area to inspect the site. The two EOD personnel verify that the OD is complete, that no kickouts which need to be rendered safe are visible, and that no fires are visible which need to be extinguished. Fires are extinguished with hand shovels that are carried on the EOD vehicles. Undetonated waste is re-ignited (not flashed or burned). The two EOD personnel can request additional EOD personnel for assistance if needed. After ensuring that no followup work is necessary, the EOD personnel leave the BCTF, closing and locking the gate, lowering the warning flags, and turning off the flashing red danger lights to indicate that the range activity is complete.

An Explosive Safety Quantity Distance (ESQD) circle with a radius of about 1,400 feet surrounds the BCTF. Eighty percent of all kickout (unreacted energetics expelled from the detonation site from the OD event will land within this circle and may need immediate attention (e.g. extinguish fire) after the OD event.

Maintenance of the Unit

Periodically, portions of the OD area of the BCTF are graded to fill in craters left by previous OD operations and to provide level surfaces on which to configure OD events. Prior to the grading, the surface of the OD area is cleared of shrapnel from previous OD events. The clearance of shrapnel is necessary to avoid damage to vehicle tires and injuries due to tripping and laceration. Ideally, this maintenance occurs after 4 to 6 OD events. During grading operations, the area is wetted with water via a tanker truck to minimize dust emissions. If manpower is available, the hillsides around the BCTF are cleared also (ideally twice per year).

All EOD personnel can certify shrapnel safe for on-Station transport and storage. An official memorandum signed by the EOD Officer-in-Charge designates each EOD technician as a safe certifier. Shrapnel from OD operations is processed per China Lake policy (NAWSINST 8027.1 "Management and Deposition of MPPEH and Inerting Operations") and placed in the Range Residue Collection Facility (RRCF). The RRCF is maintained by the Range Ground Operations personnel. It is a fenced yard used to collect, segregate, and log China Lake's range residue. Location of the RRCF is indicated on Figure 6.0. Shrapnel from OD events is logged as originating from the BCTF and segregated from other range residue. Certified personnel sign the transfer document stating that the shrapnel is safe for on-site transfer and storage at the

RRCF prior to transport to the RRCF. The RRCF is locked at all times, except when personnel are working in the yard.

Documentation

(1) Upon taking custody of the energetic waste items at the BCTF, EOD personnel sign the EOD Job Request Forms and give a copy to the generator of the waste items or the generator's representative;
(2) After the event is complete, the generator of the waste item(s) or designated representative change the status of the item from "asset" to "expended" in the inventory tracking system used for all energetic items;
(3) If necessary, Environmental Division personnel revise the health risk tracking system to reflect actual amounts and types of waste treated. These revisions are necessary for items that do not show up for the event or to adjust for container/packaging removed prior to the event by EOD.
(4) EOD places all event documentation into the Operating Log for the BCTF. The Environmental Division maintains a copy of the documentation for environmental tracking responsibilities.

Description of the OD Unit
The OD unit is a 1.03 acre area in the center of a naturally-occurring bowl, surrounded by rugged terrain. The floor of the unit is sandy alluvial soil. The mountain peak directly to the north of the BCTF rises 1400 feet above the unit while the peak to the south rises 700 feet above the unit. Along the south edge of the BCTF, is a wash that flows in a westerly direction only during periods of heavy precipitation.

2. Treatment by OB

Arrival of Waste at Unit
Energetic wastes for OB are transported to the BCTF from their temporary accumulation areas primarily at the Main Magazine facility and at the CL/SWPL. Accumulation of waste is discussed in Section I.J.4. Transport vehicles and their use for operations are listed and discussed in Section II.B.2.a&b. Section II.A.3.d. outlines explosive hauling routes for energetic waste.

Removal of Waste from Transport Vehicle
Waste is removed from the transport vehicles by EOD personnel by hand and placed in the burn pan as directed by the DBOS. An all-terrain forklift is rarely necessary for OB operations.

Preparation of the OB Area (Burn Pan)
Maintenance of the burn pan after the OB event is discussed below. Prior to the OB event, blow sand is removed from the burn pan and secondary containment and placed within the BCTF. In the unlikely event that rainwater is present in the burn pan at the time of the OB event, personnel from the HWSTF are contacted to pump the burn pan prior to the event. The rainwater will be discharged to the domestic sewer system.

Waste Configuration for OB Event
Configuration of the waste for an OB event is much less complicated than for an OD event. Limitations to OB events are required by NAVSEA OP-5. OP-5 states that "only one kind or type of explosive shall be burned at one time on any one pad, except that small quantities up to 25 pounds total of mixed explosives derived from various production operations may be spread and burned as a single explosive unless larger quantities are authorized…" Special configuration of the wastes for OB events is not necessary, as it is for OD events.

Use of Donor

Depending on the type of waste treated by OB, diesel and wood (if necessary) is added to supplement combustion. Due to GBUAPCD mandate, only commercially available fire wood may be used for OB.

Initiation of OB Event
The burning is initiated with an igniter connected to a time fuze which is connected to a bag of smokeless powder (or similar) soaked in diesel fuel.

Weather Limitations
OB operations may not be conducted with winds in excess of 15 miles per hour. All OB/OD events occur on permissible "Burn Days" as confirmed by GBUAPCD.

Personnel Requirements
Personnel requirements for OB events are the same as outlined in Section IV.D.1 for OD events.

Equipment Requirements
Equipment requirements for OB events are the same as outlined in Section IV.D.1 for OD events.

After OB event
Procedures for OB events are the same as outlined in Section IV.D.1 for OD events.

Maintenance of the Unit
Ash removal from the burn pan and subsequent handling is discussed under Section IV.A.5. EOD personnel will normally be responsible for the ash removal. Personnel from the permitted HWSTF may also handle the ash removal. After removal of the ash, a dry decontamination of the burn pan is conducted. Personnel wipe the burn pan with rags. The rags are placed in the container along with the ash residue.

Followup Documentation
Followup documentation for OB events is the same as outlined in Section IV.D.1 for OD events.

Description of the Burn Pan
The dimensions of the burn pan are 239" L x 96" W x 27-9/64" H. It is fabricated with one-inch thick steel plates (AISI 1020). Figures 13.0 and 14.0 show the dimensions of the burn pan.

The burn pan is raised 12 inches above a 30 foot by 18 foot by 8-inch thick concrete pad. The concrete containment pad for the burn pan is shown in Figure 15.0. The pad extends 60 inches on all sides of the pan to contain any unreacted energetics that may be expelled from the pan during the OB event. The 12 inch spacing between the bottom of the pan and the concrete pad provides ample space to conduct visual inspections of the bottom of the pan for leaks or spills, etc. For additional protection, because of cracks in the concrete containment due to adjacent OD events, a steel liner fits snugly inside the concrete containment. The berm of the steel liner is higher than the concrete containment.

Because the residual ash is removed immediately after the burn is safe to approach, a lid for the burn pan is not necessary. Handling rainwater in the burn pan is discussed above in "Preparation of the OB Area". In addition, because of the proximity to OD operations, shrapnel as well as the force of the blasts would damage a lid regularly.

The design of this burn pan is approved by the DTSC. Appendix L is DTSC's approval letter. In addition, Appendix M is the structural certification report of the burn pan by an independent engineer.

V. Facility Equipment and Devices

A. Waste handling equipment including associated safety features.

1. Equipment:

Equipment associated with OB/OD operations includes:

(1) One all terrain forklift
(2) Explosive-Hauling Vehicles
(3) Personnel transportation vehicles
(4) Lifting Slings
(5) Common hand tools

2. Safety Features

Safety features associated with operation of the BCTF includes:

(1) A brief is held before each OB/OD operation to outline operational and safety procedures;
(2) Time delay fuse with a minimum of 20 minutes delay are used for OB/OD operations;
(3) All trucks used for transportation of energetic wastes have safety-lined beds;
(4) Seat belts are installed at the driver's seat and at the right, front, out-board seat of each vehicle;
(5) The all terrain forklift is equipped with a rollover cage;
(6) An Underwriters Laboratory (UL) rated 18 B:C or greater capacity fire extinguisher is carried in each truck;
(7) Two fire blankets are stored in the trucks onsite;
(8) First Aid kits are stored in the trucks onsite;
(9) Two "Burn Paks" are stored in the trucks onsite;
(10) The exhaust system of each vehicle is not exposed to an accumulation of grease, oil, gasoline or other fuel;
(11) The exhaust system of each vehicle is equipped with a spark and flame arresting device in the exhaust line;
(12) All tools used are spark resistant;
(13) EOD personnel normally dress in Desert Camouflage uniforms but depending on the wastes handled (e.g. white/red phosphorous) may dress in fire protective clothing;
(14) All personnel wear American National Standards Institute (ANSI) safety glasses;
(15) All personnel wear safety-toed shoes;
(16) Sand bags;
(17) The base hospital is alerted prior to conducting OB/OD operations and an emergency unit is on standby with a helicopter. In addition, a medical technician accompanies EOD to the unit on all OB/OD operations;
(18) Two telephones on BC Access Road;
(19) China Lake Fire Department on standby;
(20) Onsite Medical Corpsman;
(21) Radios are used for communication between EOD and range control personnel.

The NAWSINST 8020.14 “Explosive Safety Policy” outlines other mandatory safety features and are reproduced below:

(22) “Warning Devices. Warning devices will be provided at all locations where remotely controlled energetic materials operations are being performed. Warning devices include, but are not limited to: barricades, signs, lights or other signal devices to warn approaching

personnel of the dangers, to give direction, and to prevent inadvertent exposure to hazards.

(a) "Red Flags. Prominently display red flags at buildings, magazines, test areas, or firing sites only when personnel and energetic materials are both present. At all other times the flag is lowered/removed.

(b) "Flashing Lights. Red flashing lights that are visible from all normal approaches in addition to the red flags, warn personnel of the presence of a significant hazard such as a remotely controlled operation or a test firing in progress.

(c) "Orange Fire Symbol. These symbols represent the four energetic materials divisions (1 through 4). Post the symbol that represents the energetic material with the greatest hazard (1.1 being greater that 1.2, etc.) on the exterior of facility or magazine. Locate the symbol so it is visible during daylight for a minimum distance of 500 feet. When energetic materials are removed from facilities or magazines post "empty" signs."

(23) "Access Controls. Use barriers at the entrance to all hazardous areas in which operations, tests, handling, and storage is of such a nature that it is necessary to control access of personnel and vehicles into the area."

(24) "Grounding

(a) "Bond and ground to a common ground all machinery, equipment, etc., used in energetic materials operations to prevent the accumulation of static electricity. The maximum bond resistance to ground is 1 ohm. When operations involve mating/unmating or assembly/ disassembly of ordnance components and systems, a separate isolated ordnance ground must be provided.

(b) "Grounding checks will take place every 24 months, using the grounding system test plan. A separate test plan will be developed for each building or area. New ground systems will be checked every month for the first year. The results from the ground test will be displayed on the outside of the structures (magazines or operating building) in three-inch high black letters on a yellow background noting: (1) The test date (month and year) and (2) The test results in ohms.

(c) "Test results will be retained for a minimum of five test cycles. Results will be provided to the cognizant operating codes. The shop performing the test will correct discrepancies found during the tests or will initiate paperwork for the correction."

B. Identify equipment to be used for safely unloading and handling containers of hazardous waste from vehicles.

The NAWSINST 8020.14 "Explosive Safety Policy" addresses safe unloading/loading under the Ordnance Handling Equipment (OHE) (Crane, hoist, etc.):

1. "Select the proper type of hoisting equipment (OHE) for the situation involved, based on considerations such as the capacity of the equipment, type of power, type of hoisting arrangement, and height of lift. The OHE is governed under NAVSEA Technical Manual SG420-AP-MMA-010, Periodic Testing Arrangements for Ordnance Handling Equipment. Maintenance and Certification Management of Weight Handling Equipment (WHE) is governed by NAVFAC P-307.

2. “Post on the chassis of all cranes within view of the operator the allowable hoist loads for the angles of lift, as well as the positions and loads requiring the use of outriggers or blocking. Overloads are not permitted at any time.

3. “All personnel who are assigned duties involving the operation of Navy shore based category 1, category 2, cab-operated category 3, or category 4 cranes will be qualified and licensed per the provisions of NAVFAC P-307.

4. “Facilities Department personnel have the responsibility for testing cranes, hoists, and lifting equipment. In general, ordnance-lifting equipment (WHE) will be tested at least once every 12 months. Equipment that satisfactorily passed the testing will show as a minimum, the name of the testing facility, the date tested, and the safe working load.

5. “Use safety (low-sparking) hooks on ordnance lifting equipment where exposed energetic materials, hazardous concentrations of energetic materials dusts, or flammable vapors or gases exist or could exist.

6. “The OHE will be tested once every 4 years.

7. “Immediately before use and from time to time during use, inspect slings and other lifting devices for any evidence of wear, fraying, fracture, distortion, holes, mildew, dry rot, severe abrasions or deterioration due to contact with foreign material like oil, fuel, solvents, caustic fluids, dirt, lye, stencil ink, etc., or other defects that could jeopardize the safe use of the equipment. If any such defects are noted, remove the equipment from service until proper repairs are made. Twists, knots, and similar distortions will be corrected before use.”

C. Safety & Emergency Equipment

1. Safety Equipment

(a) Scott Air Packs or gas masks are used for protection from fumes and vapors from OB/OD operations when necessary;
(b) EOD personnel use respirators when energetic wastes containing white phosphorous or other toxic substances are treated;
(c) EOD personnel wear Desert Camouflage uniforms but depending on the wastes handled (e.g. white/red phosphorous) may dress in fire protective clothing;
(d) EOD personnel wear ANSI-approved safety glasses and protective gloves;
(e) EOD personnel wear safety-toed shoes;
(f) Two fire blankets are stored onsite in the trucks;
(g) Two "Burn Paks" are stored onsite in the trucks;
(h) Friction meters located at various points on the base are used to monitor conditions. When the electric field reaches 1000 volts per meter, a warning is issued to personnel involved in ordnance operations. When the electric field reaches 2000 volts per meter, all ordnance operations are halted including handling, transportation and treatment; and
(i) MSDSs are readily accessible at the EOD office

2. Emergency Equipment for use at the facility

(a) A medical unit is alerted and is on standby with a helicopter during OB/OD operations. In addition, a medical technician accompanies EOD on all OB/OD operations;
(b) Each vehicle is equipped with a Motorola MCX 100 Mobile Radio;
(c) The China Lake Fire Department is on standby (10 minutes away from the BCTF) for all activities at China Lake at all times;

(d) First aid equipment for treatment of white phosphorus burns is available onsite when energetic wastes containing phosphorous are treated;
(e) Scott Air Packs and gas masks are available if toxic/hazardous fumes are encountered during OB/OD operations;
(f) Each EOD vehicle has a UL rated 18 B:C or greater capacity fire extinguisher, 25 feet of 3/8" tow chain, ten sand bags, one flash light, one long handled shovel and one set of three traffic hazard triangles;
(g) One first aid kit for burns is available in the vehicles at the BCTF during an operation;
(h) Two burn kits are available in the vehicles at the BCTF during an operation;
(i) Two “Burn Paks are available in the vehicles at the BCTF during an operation; and
(j) Two fire blankets are available in the vehicles at the BCTF during an operation.

3. Describe the schedule for testing and maintaining safety and emergency equipment

All inspections of safety and emergency equipment is outlined in the EOD SOP and in OPNAVINST 4790.4(series), titled "3-M Maintenance, Material, Management Manual". Based on these requirements, EOD uses over 200 specific Maintenance Requirement Cards (MRCs) to log and track inspections and any necessary maintenance and testing on all of their safety, emergency and operational equipment. The MRCs are updated quarterly. Because the MRC's so frequently change, listing the specific schedules for testing and maintenance of over 200 items in this permit application is not practical.

Testing and maintenance of flashing red lights is covered in the EOD SOP for operation of the BCTF. Prior to the event, the red light is turned on. If the red light is not functioning properly, the event is postponed until the light is repaired.

D. Security Measures Used at the Facility

1. Access Control Measures

Refer to Section II.A.3.e & f.

2. Other Access Control Measures

Refer to Section II.A.3.e & f. In addition, the NAWSINST 8020.14 “Explosive Safety Policy” addresses access controls and is presented below:

a. “Use barriers at the entrance to all hazardous areas in which operations, tests, handling, and storage is of such a nature that it is necessary to control access of personnel and vehicles into the area. There is no restriction as to the type of barrier if it will accomplish its intended purpose.

b. “Have barriers open at all times except during the periods when barriers are required by circumstances to prevent personnel or vehicles from proceeding beyond that point.

c. “When closed, barriers should be clearly posted, locked, or guarded in such a manner that personnel or vehicles cannot go beyond without a key or permission, or without fulfilling requirements of some other control measure.

d. “Periodically review signs used to give directions for travel to the range and test areas and those on closed barricades to determine that the information is correct and readily understood.

e. "Establish a contact point that personnel needing to know if the area is open for travel can call for each range and test area. List the phone number of the contact point at each controlled area entrance."

3. Barriers capable of preventing unauthorized entry of persons or animals

Refer to Section II.A.3.e & f.

4. Warning Signs

a. Posted on the perimeter fence at locations which trespassers might enter (e.g., trails, major drainages, ridges) indicating that the facility, or the hazardous waste area of the facility, contains hazardous waste.
b. Posted on access roads to hazardous waste areas of facilities open to the public.
c. Posted at the boundary of areas where hazardous waste is stored or treated (e.g., the berm around a container storage area or at the dike around a tank).
d. Legible from a distance of 25 feet; indicate the following characteristics of signs:

(1) Locations.
(2) Sizes. (A letter size and style of one inch sans serif, gothic or block will meet the requirements of this section.)
(3) Wording (must be in English, "Caution -- Hazardous Waste Area -- Unauthorized Persons Keep Out"; and Spanish, "Cuidado! Zona De Residuos Peligrosos. Prohibida La Entrada A Personas No Autorizadas").

"Hazardous Waste Area" signs, as described above, are posted at the east boundary of the BCTF (approximately two miles east from the intersection of the Burro Canyon Access Road with the G-2 Tower Road) and at the gate west of the BCTF. Figure 4.0 indicates the locations of these two signs.

Access to the BCTF is controlled *at all times* (other than during OB/OD events) by the locked gate at this same location (approximately 2 miles east from the intersection of the Burro Canyon Access Road with the G-2 Tower Road). Warning signs are posted at this same gate that state "Danger Demolition Area Do Not Enter" (Figure 4.0).

Explosive warning signals (red flag and flashing red light) are indicated on Figure 4.0 and are located approximately three quarters of a mile east from the intersection of the Burro Canyon Access Road with the G-2 Tower Road (at the fork in the Burro Canyon Access Road). In addition, the gate at this location is locked during OB/OD events at the BCTF.

E. Artificial Lighting; If wastes are handled at facility during hours of darkness, indicate:

1. Types.
2. Locations.

No wastes are handled after dark. Therefore, the BCTF is not equipped with artificial lighting.

F. Water Supply

1. An adequate supply available for fighting fires, cleaning equipment, dust control.

Water required for fire fighting is supplied by the Fire Department which is 10 minutes from the BCTF. Water for dust control, if necessary, may also be provided via tanker truck.

2. An onsite supply not approved for drinking must have warning labels in English and Spanish on all taps connected to that supply. Describe locations of taps.

All drinking water is brought onsite during OB/OD operations. The BCTF is not equipped with water lines (potable or nonpotable).

G. Backflow Protection Devices for Water Supplies

1. Types of devices.
2. Locations.

Not Applicable.

VI. Operational Procedures

A. Use of the Manifest

Not applicable.

B. Control of hazardous wastes in general.

1. Describe Operational Procedures

a. Wastes are placed inside designated areas (e.g., procedures for unloading wastes to ensure placement within the proper area, instructions to haulers regarding placement methods, supervision of waste handling, etc.).

Prior to unloading wastes from the vehicle at the BCTF, the EOD DBOS checks that all wastes are properly packaged and that the accompanying paperwork coincides with the waste items on the vehicle. Once these inspections are accomplished, the waste items are unloaded from the vehicles and placed at the designated detonation area for OD or in the burn pan for OB according to the DBOS' instruction. Any waste items that are not properly packaged or do not coincide with the accompanying paperwork remain on the vehicle and are returned to the generator for temporary storage in a designated hazardous waste accumulation area.

b. All persons are properly protected from exposure to, or contamination with, hazardous wastes (e.g., procedures for use of protective clothing and devices, maintenance of wash facilities, design and capacity of ventilation systems).

All personnel wear personal protective clothing when handling energetic wastes, including fire retardant coveralls, safety glasses, safety boots, and Scott Air Pack respirators, when necessary.

c. Dispersal of wastes is prevented (e.g., covering or wetting of powdered wastes).

All energetic wastes accepted for treatment at the BCTF are properly packaged to prevent dispersal or leakage. Wastes which are not properly packaged are returned to the generator.

EOD personnel monitor kickouts which need to be rendered safe and visible fires which need to be extinguished during and immediately after the OD or OB event. If a kickout is spotted in the surrounding area, EOD personnel wait for visual signs of smoke and/or fire. EOD monitors the intensity of the smoke/fire. If the intensity does not lessen but worsens, then EOD personnel contact the China Lake Fire Department (who are on standby for all OB and OD events) to assist with the mishap.

OD operations are purposefully designed to achieve complete conversion of energetic compounds to nontoxic compounds by adding supplementary (or donor) explosives. Remaining shrapnel is collected periodically (refer to Section IV.D.1 "Maintenance of Unit").

OB operations are conducted in a burn pan with secondary containment. Residual ash is containerized to prevent dispersal immediately after the burn pan is safe to handle (about 4 hours, 2 hours if wetted).

d. Production of hazardous gases, mists, or vapors is prevented (e.g., limitations on types of wastes deposited in open tanks or control methods).

Emissions of gases/vapors from ODs and OBs (both direct and indirect emissions) are discussed in detail in the HRA (Appendix A).

e. Equipment contaminated with waste is decontaminated before being serviced or used in other than hazardous waste area.

Energetic wastes are packed in secure containers for shipment. In general, equipment does not come into contact with the wastes. Any equipment used at the BCTF is decontaminated, if it comes in contact with the energetic wastes, prior to other uses.

Hand tools to remove residual ash from the burn pan are stored onsite for repeated use. The burn pan is decontaminated with dry rags after the residues from OB operations are removed. The rags are placed in the container with the ash residues.

f. Aisle space is sufficient to allow unobstructed movement of emergency equipment and personnel is provided. Specify height and width of aisles.

The size of the operational area of the BCTF (1.03 acres) allows for adequate movement of emergency equipment and personnel. No buildings or other structures (except for the burn pan) are located at the site. Emergency equipment can enter the site via the Burro Canyon Access Road.

2. Identify methods of collection and disposal of washwater used to decontaminate equipment.

No sources of water exist at the unit. Therefore, if necessary, equipment will be decontaminated at the HWSTF via steam cleaning. The washwater will be added to the energetic-contaminated wastewater generated at the CL/SWPL.

3. Describe operational procedures to ensure that chance of fire or explosion is minimized.

OB/OD operations are designed to treat energetic wastes via burning or detonation. Fires and explosions are started intentionally under controlled conditions as described Sections IV.D.1.& 2. However, fire fighting units from the China Lake Fire Department are alerted prior to any OB/OD operation and are within 10 minutes from the unit.

General precautions for working around reactive (energetic) materials/wastes, including prevention of accidental ignition, are outlined in the EOD SOP and in the NAWSINST 8020.14 “Explosives Safety Policy”. Some of these precautions include proper grounding, conductive floors, conductive shoes, warning devices, record maintenance, prohibition of smoking, etc.

C. Control of hazardous wastes handled in specific ways.

1. Containers -- describe operational procedures to ensure that:

a. Wastes in poor containers are transferred to good containers or are otherwise managed to prevent release of wastes.

All containers are inspected upon receipt at the BCTF by the EOD DBOS. Any waste items that are not properly packaged are immediately returned to the generator for repackaging and temporary storage in a designated hazardous waste accumulation area.

b. Containers or their liners are compatible with the wastes contained.

Selection of proper containers and liners for energetic wastes is outlined in Section IV.A. Containers may be lined with cloth, paper bags, or velostat bags, depending on the type of energetic waste.

c. Containers are kept closed except when waste is added or removed.

Containers with energetic wastes remain closed except when waste is added or removed.

d. Containers are handled such that leaking is prevented.

Energetic waste containers are handled with extreme care at all times because energetic wastes are shock sensitive. This extreme care prevents damage to containers and avoids leaks.

e. Containers are inspected weekly for evidence of deterioration.

According to 22 CCR δ66262.34, the containers for energetic items that are designated as wastes are inspected weekly, if the waste is stored in 90-day accumulation areas. Waste stored in satellite accumulation areas are exempt from this requirement.

f. Containers of ignitable or reactive waste are stored 50 feet from property line.

Energetics (waste and nonwaste) are stored according to explosive safety instructions (e.g. NAVSEA OP-5) outlined in Section I.A.7.d. These standards define a Quantity Distance (QD) for each storage unit. The QDs do not allow for storage of energetics within the explosive range of any occupied building including the property line.

g. Incompatible wastes are not placed in the same container.

Energetic wastes are not commingled according to the explosive safety instructions (e.g. NAVSEA OP-5) outlined in Section I.A.7.d. Incompatible wastes are not placed in the same containers. All containers are labeled to clearly identify their contents and any hazards their contents may present.

For treatment purposes at the BCTF segregation of wastes is not necessary, i.e. all wastes accepted for treatment may be treated in the same OB or OD event. However, for transportation and storage purposes, segregation of energetic wastes is necessary. A segregation chart for transportation is provided as Table 7. A segregation chart for storage is provided as Table 8. If two wastes are not compatible according to these tables the wastes are not stored or transported together.

h. Waste is not placed in an unwashed container that had previously held an incompatible waste.

The NAWSINST 8020.14 “Explosive Safety Policy” addresses reuse of containers as stated below:

(1) “Before reuse or salvage, thoroughly inspect all empty containers used for the shipment of energetic materials. Label all empty containers "EMPTY".

(2) “Inspect all containers that previously were used for energetic materials before shipment to other activities for storage, reuse, or salvage. These inspections will ensure that the containers are empty and determine whether the containers are serviceable or economically repairable before shipment. Remove all previous markings from empty containers.

(3) “When items containing energetic materials are removed from containers and then replaced in these same containers on completion of operations, it is not necessary to obliterate the markings on these containers and stencil the word "EMPTY", provided they are to be reused in the near future. Keep empty containers that are not marked "EMPTY" in segregated storage designated for empty containers. This is temporary storage only, not to exceed the time of the operation being supported.”

i. Containers holding wastes incompatible with wastes nearby are separated by a dike or other barrier from those nearby wastes.

Energetic wastes designated for treatment are not stored at the BCTF.

For treatment purposes at the BCTF segregation of wastes is not necessary, i.e. all wastes accepted for treatment may be treated in the same OB or OD event. However, for transportation and storage purposes, segregation of energetic wastes is necessary. A segregation chart for transportation is provided as Table 7.0. A segregation chart for storage is provided as Table 8.0. If two wastes are not compatible according to these tables the wastes are not stored or transported together.

j. Empty containers contaminated with hazardous waste are handled as hazardous waste.

Empty containers which are contaminated with energetics are treated at the BCTF.

k. Containers subject to deterioration from the weather are protected.

Storage standards for energetics (whether waste or nonwaste) require that containers are not subject to deterioration from weather.

l. Containers holding PCBs or devices containing PCBs are managed in accordance with Part 761, Title 40, Code of Federal Regulations.

PCB wastes are not treated at the BCTF.

2. Burn Pan -- Describe operational procedures to ensure that:

a. Treatment or storage of wastes in the burn pan precludes uncontrolled reactions.

Treatment of energetic wastes in the burn pan is conducted according to the EOD SOP which outlines precautions taken for OB operations.

b. Wastes and treatment chemicals added to the burn pan cannot cause failure.

Normal use of the Burn Pan will not cause failure. See Appendix M.

c. Appropriate controls and practices to prevent overfilling.

Liquid wastes are treated in the burn pan. Liquid wastes are typically contained in 5-gallon containers. Therefore, in order to prevent overfilling of the burn pan, liquids are added to the burn pan in five gallon increments. If overfilling does occur the burn pan is equipped with secondary containment to contain spills.

d. Waste analyses and trial tests are conducted whenever a different treatment process is used or a different waste is treated in the burn pan.

The burn pan is only designed for treatment by OB of energetic waste.

e. The following equipment is inspected daily:
(1) Discharge and overfilling
(2) Data from monitoring equipment
(3) Level of waste in tank

Not Applicable.

f. The following equipment is inspected weekly:
(1) Construction materials
(2) Discharge confinement structures

The burn pan is inspected prior to and after use.

g. Ignitable or reactive waste is not placed in the burn pan.

The burn pan is designed to treat reactive wastes.

h. Describe procedures for handling reactive wastes

Operational procedures for treating reactive wastes in the burn pan are described in the EOD SOP and in Section IV.D.2.

i. Incompatible wastes are not placed in the same burn pan unless uncontrolled reactions are prevented.

Only wastes designated for treatment by OB are placed in the burn pan. Limitations for OB events are discussed in Section IV.D.2.

D. Facility inspection.

1. Describe the general inspection checklist and schedule including (i.e., include a copy):

a. Equipment to be inspected:

(1) Monitoring equipment.
(2) Safety Equipment.
(3) Emergency response equipment.
(4) Security devices.
(5) Structural equipment (e.g., dikes) relevant to health and environmental protection.
(6) Operating equipment (e.g., sump pumps) relevant to health and environmental protection.

b. Types of problems to be inspected for (e.g., eroding dike, inoperative sump pump, etc.).

c. Frequency of inspection based on probability of deteriorating or malfunction on frequencies specified in Items VIII.C.1.e, 2.f, g.) above, whichever is more frequent. (Areas subject to spills, such as loading and unloading areas, must be inspected daily when in use.)

All inspections of safety and emergency equipment is outlined in the SOP and in OPNAVINST 4790.4(series), titled "3-M (Maintenance, Material, Management) Manual". Based on these requirements, EOD uses over 200 specific MRC's to log and track inspections and any necessary maintenance and testing on all of their safety, emergency and operational equipment. The MRC's are updated quarterly. Because the MRC's so frequently change, outlining specific schedules for testing and maintenance of over 200 items in this permit application is not practical. The China Lake EOD 3-M system is inspected semi-annually by their parent command, EOD Mobile Unit Three.

Inspection and maintenance of equipment specific to operation of the BCTF are outlined below. Generally, maintenance and inspection requirements are listed in NAVSEA OP-5. Table 9.0 outlines these requirements.

The EOD technician that is designated as the Maintenance Officer functions as the “3-M Maintenance Supervisor”. This person administers the maintenance system. The EOD technician doing the actual maintenance is called a “Maintenance Man”. A “Maintenance Man” must meet Navy qualifications which entail completing a Personnel Qualification Standard book.

2. Describe Procedures

a. Any deterioration or malfunction discovered during inspection is corrected such that no health or environmental hazard results.

Any deterioration or malfunction discovered during inspections is corrected by the EOD personnel or the Public Works Department. Any deteriorations relating to energetic wastes, containers, etc., are corrected by personnel at the Main Magazine Facility. Malfunctions of equipment are corrected by the Public Works Department or EOD. The Public Works Department has automotive repair personnel, electricians, mechanics, welders and a complete engineering staff. In the case of the burn pan, any defects will be repaired by a certified welder from the Public Works Department. The burn pan will be decontaminated by triple rinsing prior to any repair. Wastewater from the triple rinsing will be sampled and analyzed for proper disposal.

b. The written inspection checklist and schedule is kept at the facility.

EOD maintains the inspection checklist at the EOD Office.

c. Records of inspection including the following items are maintained for three years:

(1) Date of inspection.
(2) Time of inspection.
(3) Name of inspector.
(4) Observations made.
(5) Date of any repairs or remedies.
(6) Nature of any repairs or remedies.

Inspection records (i.e. MRC's) are maintained at the EOD office for three years. They indicate the date of inspection, time of inspection, name of inspector, observations, date of repairs or remedies and a description of the repairs or remedies.

3. Schedule and Procedures for Assessing the Condition of each Tank:

Not applicable.

4. Ignitable or reactive waste is not placed in the tanks:

Not applicable.

5. Describe procedures for handling ignitable wastes:

Not applicable.

6. Incompatible wastes are not placed in the same tank:

Not applicable.

7. Corrosion protection devices:

Not applicable.

VII. Personnel

A. Describe the training program (i.e., include a copy).

1. Outline the training programs used to prepare persons to operate or maintain the facility safely. Include both:

a. Introductory program.

EOD personnel operate the BCTF and undergo an extensive introductory program which lasts for fifty-six weeks, as described below.

(1) Fifty-six weeks of rigorous training begins with ten weeks of second class diver training at the Naval Diving and Salvage Training Center (NDSTC), Panama City, FL. Students receive training in diving physics/medicine, scuba, surface supplied hard hat diving, hyperbaric chamber operation, and underwater tools/ welding.

Upon the completion of dive school, students transfer to the new NAVSCOLEOD detachment facility at Eglin Air Force Base, Fort Walton Beach, FL. Training at Eglin is 46 weeks, consisting of core courses, demolition of explosives, EOD tools and methods, chemical munitions, including decontamination and hotline procedures, and publications.

Ground Ordnance - Land mines, grenades, booby traps, and projected munitions (projectiles, mortars, and rockets).

Air Ordnance - Bombs, missiles, egress systems, gun systems, and aircraft explosive hazards.

Improvised Explosive Devices - Homemade bombs and their render safe procedures.

Underwater Ordnance - Torpedoes, mines, underwater explosive devices, search techniques, and foreign ordnance exploitation.

Nuclear Weapons - Basic nuclear physics and radiation monitoring, decontamination procedures, and nuclear weapon render safe procedures.

(2) Once at China Lake, all EOD personnel are trained in accordance with EODMU THREEDETCLINST 3120.5(series) which includes training in operational requirements and the emergency response/contingency plan. This instruction serves as the SOP for treatment of energetic wastes at the BCTF.

(3) All EOD personnel are trained in First Aid and CPR.

Personnel responsible for the transportation of energetic wastes to the BCTF undergo the following introductory training program

(1) An 8-hour indoctrination course on explosives given by the China Lake Safety Office.

(2) An 8-hour China Lake safety class on driving vehicles carrying explosives.

(3) A complete physical.

b. Continuing program.

(1) All EOD personnel are required to maintain proficiency in OB/OD operations by performing such tasks at least once a month.

In addition, prior to assignment as a DBOS (EOD technician in charge of the event), EOD personnel must have at least three years in the EOD and perform, under the direct supervision of a certified DBOS, three demolition and three burn operations. They must requalify every year.

(2) Explosive haulers undergo an annual recertification procedure which consists of a written test.

2. For each program, indicate:

a. Type of training:

(1) Classroom,
(2) On the job, or
(3) Both.

The type of training consists of both classroom and field training.

b. Training completed by, or other qualifications of, the director of the training program.

The instructors at the Navy's EOD schools are experienced EOD technicians and conduct training routinely as their principal job function.

The personnel in China Lake's Safety Office who conduct the explosive hauler training are experienced safety professionals. They conduct training on a routine basis. It is an essential part of their job responsibilities.

The Explosive Hazardous Waste liaison in the Environmental Division conducts the Explosive Hazardous Waste training and is experienced in hazardous waste regulations, including the MMR, China Lake spill response procedures, and treatment activities conducted at the BCTF.

c. Content of the training program (include all elements described below):

(1) Training in hazardous waste management procedures, including contingency plan implementation, relevant to the employees' positions.

All EOD personnel attend the China Lake Explosive Hazardous Waste course tailored for EOD activities. This course includes: hazardous waste regulations overview, including the MMR, types of energetic hazardous wastes generated at China Lake, accumulation of hazardous waste (e.g. labeling, container requirements), EOD emergency operations per the MMR, and turn-in documentation for energetic items designated for treatment at the BCTF.

(2) Training in, and competence to perform, field tests for identification of hazardous wastes (e.g., for pH and flammability).

EOD personnel are trained to visually identify and handle all types of munitions, regardless of their designation as a waste.

(3) Training in emergency procedures, equipment, and systems including:

(a) Procedures for using, inspecting, repairing, and replacing emergency and monitoring equipment.
(b) Key parameters for automatic wastefeed cutoff systems.
(c) Communications or alarm systems.
(d) Proper response to fires or explosions.
(e) Proper response to incidents or groundwater contamination.
(f) Shutdown operations.
(g) Accident prevention.
(h) Respiratory protection.
(i) Confined space procedures.

Training in items (a)-(i) is included for all emergency response personnel. Emergency response is provided by the Fire Department, the EOD unit, and emergency response personnel from the Resource Conservation & Recovery Act (RCRA)-permitted HWSTF, as discussed in the Spill Response Plan, see Section VIII. The Fire Department personnel are trained to respond to fires, accidents and general emergencies. EOD personnel are trained to respond to emergencies involving all types of energetic wastes in a multitude of settings. HWSTF personnel are trained in spill response cleanup and hazardous waste handling.

3. For each job title related to hazardous waste management, indicate:

All EOD personnel are involved with operations at the BCTF. However, the EOD DBOS' handle documentation for OB/OD operations. This job requires no additional training other than what is outlined here.

a. Introductory training:

(1) Type, and
(2) Amount.

Refer to Section VII.A.1.a. In addition, all EOD personnel are trained in:

(1) Health and Safety Refresher for Hazardous Waste Workers (Annual 8 Hour Course) which satisfies OSHA 29 CFR §1910.120 regulations. The training that all EOD technicians are required to complete prior to becoming an EOD technician satisfies the initial 40-Hour Course as equivalency training, except for training in hazardous waste regulations. This requirement is satisfied with the following training;

(2) China Lake's Explosive Hazardous Waste course (tailored to EOD activities). This course also satisfies the Navy's requirement per the MRIP for training in the MMR.

b. Continuing training:

(1) Type, and
(2) Amount.

Refer to Section VII.A.1.b. In addition, all EOD personnel are trained in:

(1) Health and Safety Refresher for Hazardous Waste Workers (Annual 8 Hour Course) - Course to meet OSHA 29 CFR §1910.120 regulations;

(2) China Lake's Explosive Hazardous Waste course (tailored to EOD activities);

(3) All EOD personnel are required to maintain proficiency in OB/OD operations by performing such tasks at least once per month.

c. How training will be designed to meet actual job tasks.

The training outlined above provides EOD personnel with an adequate knowledge to manage energetic hazardous waste prior to treatment at the BCTF.

4. Describe the implementation of the training program to ensure that:

a. All facility personnel complete or will complete within six months after date of employment, or change of duties, the training program.

Only personnel that have completed the training outlined in Section VII.A.1 & 2. within the first six months of their job duties associated with the BCTF may participate in BCTF operations. In addition, personnel must be certified per the appropriate qualifications/certification safety instruction by Department Head or Military Commander, prior to conducting any activities involving energetics.

b. Until they successfully complete training, facility personnel work only in supervised positions.

No untrained personnel are allowed to work with energetic wastes.

c. Facility personnel participate in annual review of training.

EOD personnel have continued training as described in Section VII.A.1.b. All energetic waste hauling personnel have to pass a written test each year as part of their recertification.

5. Describe the records kept at the facility of training given, including the following:

a. For each position related to hazardous waste management:

(1) Job title;
(2) Name of employee filling job; and
(3) Written job description including:

(a) Required qualifications (e.g., skill, education, etc.).
(b) Duties assigned.

b. Records documenting that training has been given to, and completed by, facility personnel.

Records of training for current EOD personnel are kept on file at the EOD office until closure of the facility. Transferring EOD personnel bring training records from their previous duty station.

Records of training for current and former explosive haulers are kept on file at the Transportation Office as long as the individual is in Federal employment.

6. Identify the length of time that training records are kept, including:

a. Records on current personnel (retain until facility closes).
b. Records on former personnel (retain three years).

Refer to Section VII.A.5.

B. Describe employees required to operate the facility, including:

1. Number of employees.
2. Deployment.

A minimum of two EOD personnel are needed to conduct an OB/OD operation. The team consists of one certified DBOS and one EOD technician. The DBOS is responsible for assigning personnel for the OB/OD operations, obtaining equipment, notifying other departments and supervising the OB/OD operations. The EOD technician performs tasks assigned by the DBOS. However, usually 6 to 10 EOD personnel are deployed for each OB/OD operation.

VIII. Contingency Plan & Emergency Procedures

SPILL RESPONSE PLAN (SRP) IS UNDER SEPARATE COVER

The SRP addresses spills of hazardous substances, including energetics, but does not address response to natural disasters such as earthquakes. Catastrophic events are addressed in the China Lake Emergency Management Plan.

IX. Environmental Control Permits

A. Local city or county land use zoning or permits

The BCTF is located on the land owned by the U.S. Government and withdrawn from the Department of Interior to the Department of the Navy. Local land use and zoning permits are not applicable. A permit is not required.

B. Regional or Local Air Pollution Control District or Air Quality Management District permits

In May 1996 the GBUAPCD adopted Rule 432 to address OB/OD operations. Rule 432 requires that all activities at the BCTF operate under a Burn Plan in lieu of the permit to operate.

The BCTF also operates under a Title V Federal Operating Permit number V-1. The Title V permit is included as Appendix O. Conditions of the Title V permit are the same as the requirements of Rule 432.

C. Regional Water Quality Control Board Waste Discharge Requirements

Not Applicable.

D. Any other permits which relate to hazardous waste storage or treatment.

The BCTF has range limits for treating energetic wastes via OB/OD from the Naval Sea Systems Command. The range limit for OD is 50,000 pound rocket motors per event. The range limit for open burning is 1,000 pounds of energetics per event. This type of event is limited to very special circumstances, such as security problems or extreme safety hazard. If a detonation/burn of this magnitude is necessary, China Lake will notify DTSC two weeks prior to the event that the special limit will be in effect for the event. The EOD SOP (EODMUTHREEDETCLINST 3120.5(series)) for the BCTF places a local treatment limit of 15,000 pounds energetics.

X. Records and Reports

A. Describe procedures to ensure that the following records and reports are kept and submitted to DTSC if applicable:

1. Operating record.

a. Must be written.
b. Must be maintained until closure of facility.
c. Must contain:

(1) For each load of wastes at the facility, the following information:

(a) Waste producer.
(b) Hauler.
(c) Processor.
(d) Facility operator.

i. Name.
ii. Address.
iii. Telephone.

(2) For each load of wastes received, the following information:

(a) Source
(b) Identity
(c) Composition
(d) Volume
(e) Type of container

The EOD Office maintains detailed records (NAWS 8027/2A forms) of all energetic wastes treated at the BCTF. The records indicate the type of energetic waste, its origin, the generator's name, address, and telephone number. The waste processor is not applicable to operations at the BCTF.

(3) For each load of wastes received, the processing or disposal method used.

The method of treatment (i.e. OB or OD) used for each waste is also recorded.

(4) For each load of wastes received for storage, the date of receipt.

Energetic wastes designated for treatment are not stored at the BCTF.

(5) Location of each waste in facility and quantity at each location.

Not Applicable.

(6) Records and results of waste analyses conducted in accordance with the waste analysis plan.

Results of waste analyses are maintained in the operating log at the EOD office.

(7) Summary reports of incidents involving contingency plan implementation.

Any reports on incidents involving the contingency plan are recorded in the Operating Record at the EOD office.

(8) Results of inspections.

All inspections are recorded in the Operating Record at the EOD office.

(9) Results of monitoring, testing, or analytical data.

Results of monitoring, testing and analytical data are maintained in the Operating Record at the EOD office.

(10) Notices to waste generators informing them that facility can accept their wastes (offsite facilities).

Not applicable.

2. Reports of Accidents (submitted to DTSC within 24 hours after occurrence) which could result in a hazard to public health and safety, domestic livestock or wildlife, or result in a discharge of hazardous waste outside of an area designated in the permit application.

Copies of all accident reports on incidents which could result in a hazard to public health and safety, domestic livestock or wildlife, or result in a discharge of hazardous waste outside of the BCTF are maintained in the Operating Record at the EOD office. These reports will be submitted to DTSC within 24 hours of the accident occurrence (EOD notifies the Environmental Division and they in turn will notify DTSC.)

After an accident or release DTSC will be notified prior to resuming operation of the unit, as required.

3. Unmanifested Waste Report (submitted to DTSC within 15 days of receipt of unmanifested hazardous waste) consisting of:

a. EPA identification number, name and address of facility.
b. Date facility received waste.
c. EPA identification number, name, and address of producer.
d. EPA identification number, name, and address of hauler.
e. Description and quantity of each unmanifested hazardous waste received.
f. Method of treatment, storage, or disposal for each hazardous waste.
g. Certification signed by owner, operator or representative.
h. Brief explanation of why waste was not manifested, if known.

Not applicable.

B. Describe procedures to ensure that:

1. Required records are available for inspection by DTSC, State Water Resources Control Board, or the Regional Water Quality Control Board.

2. Records are retained for periods identified.

The Operating Record includes operational records/forms, accident reports, inspection records, waste analyses results, annual reports, any video records of operations, and annual summaries of information generated from the operations. These records are maintained until closure at the EOD Office or the Environmental Division and are available for inspection upon request by any regulatory agency.

C. Biennial and Annual EPA/DTSC Report

An annual report is submitted by March 1 of each year to DTSC. This report specifically includes EPA identification number, name, and address of facility; calendar year covered by report, description and quantity of the energetic waste treated during the previous year, and certification signed by operator or representative.

All components of the Operating Record (Section X.A) (except tracking records for health risk purposes) are maintained at the EOD Office for the life of the facility. Tracking records for compliance with the HRA are maintained at the Environmental Division for the life of the facility. These records are available for inspection upon the request of DTSC or any other regulatory agency. In addition, all records pertaining to unresolved enforcement orders are maintained until the enforcement order is resolved.

D. Waste Minimization Efforts

1. CA Senate Bill 14 Requirements

Under the CA Senate Bill 14 (SB14), known as the Hazardous Waste Source Reduction & Management Review Act of 1989, China Lake has developed a plan to reduce the quantity and toxicity of waste generated. The most recent report is included as Appendix O.

2. Waste Minimization Certification

Pursuant to CA Health & Safety Code 25202.9, China Lake has a program in place to reduce the volume and toxicity of all hazardous wastes identified in this permit application to the extent that these waste minimization procedures are economically practicable.

In addition, the method of storage/treatment is the only practicable method or combination of methods currently available which minimizes the present and future threat to human health and the environment.

Owner/operator signature and certification (22 CCR §66270.11) applicable to this waste minimization certification are found in Section I.K.

XI. Closure

A. Introduction

The following Closure Plan specifically addresses closure of the OB and OD treatment units at the BCTF at the NAWS China Lake. The Closure Plan is prepared in accordance with State requirements of the 22 CCR δ66264.110 to 147 and δ66264.603 which are summarized in the draft working copy "Permit Writer Instructions for Closure of Storage and Treatment Facilities", June 14, 1993 and revised January 1994.

B. Closure Performance Standard

The unit will be closed in order to meet the closure performance standard specified in 22 CCR δ66264.111. This closure performance standard not only includes soil contamination and groundwater contamination (although unlikely), but also unexploded ordnance (UXO). Because of Standard Operating Procedures, the OD area should be free of unexploded ordnance. These procedures mandate that all unexploded ordnance generated from an OD operation be treated immediately once discovered after the initial detonation.

C. Closure Scenarios

Depending on the nature and extent of contamination a number of scenarios may occur which will effect the extent of the closure efforts. For all scenarios, a site survey (refer to Section XI.G.) will be completed, prior to the beginning of closure.

To address soil contamination, the area designated for closure includes the six acre area of the OD unit as well as the burn pan and the soil surrounding the burn pan. Additional cleanup of contamination caused by OB and/or OD activities outside of these areas is addressed under Corrective Action. However, scrap metal on the surface in the surrounding impact area (15 acre area with little to no vegetation) will also be removed as part of closure.

For clarification, ash or residue remaining in the burn pan will be removed and containerized for proper disposal, although standard practice mandates that ash be removed about 4 hours (2 hours if wetted) after an OB event is complete. The burn pan and its secondary containment (steel tray) will be decontaminated.

To address groundwater contamination, analytical results will be obtained from existing groundwater monitoring wells installed for the Monitoring Plan (Appendix G) and any additional wells required for the Sampling and Analysis Plan (SAP) (refer to Section XI.I.).

The SAP will be prepared at the time of closure and will be implemented to determine the nature and extent of soil and groundwater contamination. Results of the soil and groundwater sampling will be compared to cleanup goals (refer to Section XI.D.) to determine the need for closure activities. Closure activities are based on the closure scenarios outlined below:

- Clean Closure - No Action
  Soil and groundwater analytical results indicate that residual contamination is below cleanup goals. The need for further closure activities or post-closure maintenance will not exist, other than recontouring the surface of the OD area. Revegetation will occur naturally.

- Clean Closure – Excavation (Soil Only)

Soil and groundwater analytical results indicate that residual contamination is above cleanup goals. If the amount of soil contamination is not too extensive, the contaminated soil will be excavated and transported to an offsite treatment/disposal facility.

- Clean Closure - Insitu or Exsitu Treatment
  Soil and groundwater analytical results indicate that residual contamination is above cleanup goals. Insitu and exsitu treatment techniques will be evaluated and implemented at the time of closure.

D. Cleanup Goals

1. Soil

Cleanup goals for soil will be based on non-residential risk-based exposures. UXO and scrap metal will also be addressed. The evaluation procedures that will be used to establish soil cleanup activities are outlined as follows:

a. Step 1 - Comparison with Background

If background values are not exceeded for a parameter it will be eliminated from further consideration. For those parameters for which background values are exceeded, a quantitative risk analysis (Step 2 below) using site-specific sampling results will be conducted.

(1) Metals

Background soil concentrations for metals in the China Lake document, “Site Investigation Report for the Sixth Site Investigation (Soil Only) at the Burro Canyon OB/OD Facility; NAWS China Lake, CA; October 2003; Version 1” will be used for closure purposes. CCR metals (including hexavalent chromium and mercury) will be included in the evaluation. Metals that are identified as elements of concern in the interim before the unit is closed will be added as requested by DTSC. Although unexpected since they are not included in the treated wastestreams, uranium isotopes will be included. Contamination for metals above background will be indicated if soil concentrations at the units exceed the background mean plus two times the standard deviation (95 percent confidence interval using a one-tailed t-test).

(2) Other Compounds

For contaminants that do not occur naturally, any concentration above the method detection limit is considered above background and indicates contamination. In this case, explosives, volatile organics, semivolatile organics, perchlorate, cyanide, asbestos, and dioxins/furans will be evaluated.

(3) UXO and Scrap Metal

UXO will be removed to a depth consistent with the future intended land use. Scrap metal will be removed from the top 2 feet which is the penetration depth from a passive electromagnetic survey. Scrap metal that is not detected by this method will remain in place.

b. Step 2 - Quantitative Risk Assessment

A human health risk assessment will be prepared to determine the potential impacts to humans for those carcinogenic and noncarcinogenic compounds that exceed background

levels in soil. This health risk assessment will account for future land use of the area (non-residential) and will be prepared in accordance with the U.S. EPA Risk Assessment Methodology contained in the U.S. EPA Risk Assessment Guidance (EPA/540/1-89-002) and the Screening Procedure for the Preliminary Endangerment Assessment contained in the Permit Writer Instructions referenced in Section XI.A. An ecological risk assessment may also be prepared to determine the potential impacts to animal and plant life for those carcinogenic and noncarcinogenic compounds that exceed background levels in soil.

If the cumulative incremental cancer risk (from all routes of exposure for all carcinogens detected above background) does not exceed the acceptable carcinogenic risk, no further analysis of potential carcinogenic effects will be conducted. The soil will be considered clean from the standpoint of carcinogenic contamination.

If the cumulative Hazard Index calculated for noncarcinogenic contamination does not exceed the acceptable noncarcinogenic risk, no further analysis of potential systemic toxicants will be conducted. The soil will be considered clean from the standpoint of noncarcinogenic contamination.

c. Step 3 - Implement Remediation Action

If risk-based cleanup goals are not met, closure activities as outlined in Section XI.C. will be necessary. Locations for soil remediation will be based on analytical results of samples collected according to the Soil Sampling and Analysis Plan (Section XI.I.) which will be prepared at the time of closure. Confirmation sampling will be conducted after remediation is complete to determine that all contaminants that exceed cleanup goals are mitigated.

2. Groundwater

Cleanup goals for groundwater will be based on the future groundwater use. The evaluation procedures that will be used to establish groundwater cleanup activities are outlined as follows:

a. Step 1 - Comparison with Background

If background values are not exceeded for a parameter it will be eliminated from further consideration. For those parameters for which background values are exceeded, a release from the unit is indicated. The release will be addressed under Corrective Action (refer to Section XIII).

(1) Metals

Background groundwater concentrations for metals in the China Lake document, “Site Investigation Report for the Sixth Site Investigation (Groundwater Only) at the Burro Canyon OB/OD Facility; NAWS China Lake, CA; October 2003; Version 1” will be used for closure purposes. CCR metals (including hexavalent chromium and mercury) will be included in the evaluation. Metals that are identified as elements of concern in the interim before the unit is closed will be added as requested by DTSC. Although unexpected since they are not included in the treated wastestreams, uranium isotopes will be included since they are not part of the wastestream. Contamination for metals above background will be indicated if groundwater concentrations at the units exceed the background mean plus two times the standard deviation (95 percent confidence interval using a one-tailed t-test).

(2) Other Compounds

For contaminants that do not occur naturally, any concentration above the method detection limit is considered above background and indicates contamination. In this case, explosives, volatile organics, semivolatile organics, perchlorate, cyanide, asbestos, and dioxins/furans will be evaluated.

b. Step 2 - Implement Corrective Action

If background values are exceeded, the indicated release from the units will be addressed under Corrective Action. Note that even though a release is indicated, the source of the release (the OB and OD units) may still be closed.

E. Partial Closure Activities

Closure of only the OB unit or OD unit is not anticipated but is possible. Estimated closure date for both units is 2050. Groundwater monitoring wells will not be closed until both units are closed.

F. Maximum Waste Inventory

1. OD Unit

The maximum waste inventory at the BCTF designated for treatment by OD at any one time is 15,000 pounds of energetics. At the time of closure all waste energetics awaiting OD treatment will be treated. No inventory of wastes requiring treatment will remain.

2. OB Unit

The maximum waste inventory at the BCTF designated for treatment by OB at any one time is 1,000 pounds. At the time of closure all waste energetics awaiting OB treatment will be treated. No inventory of wastes requiring treatment will remain.

Maximum amount of ash generated from an OB event is expected to be 25 pounds. Standard practice mandates that ash be removed about 4 hours (2 hours if wetted) after the OB event is complete. Therefore, all ash will be removed at the time of closure.

G. Site Survey and Clearance

1. OD Unit

A survey and UXO clearance of the OD unit and the surrounding impact area (15 acre area with little to no vegetation) will be conducted in accordance with the state Munitions and Explosives of Concern Investigation and Remediation Requirements in effect at the time of closure. At a minimum, these will include submittal of a survey workplan and UXO clearance workplan.

The survey workplan will include relevant activities listed in the U.S. Army Corps of Engineers Regulation 200-3-1, Formerly Used Defense Sites (FUDS) Program Policy (10 May 2004). Specifically, the survey workplan will include the technical approach and criteria for determining the best demonstrated available technology for the detection and re-acquisition of buried UXO, a Quality Control/Quality Assurance plan that includes seeding both in the test bed and in known or potential UXO release areas, and identification of software used for processing geophysical data.

The UXO clearance workplan will provide a preferred UXO clean up approach based on future intended land use and on corresponding clearance depth.

All surface debris from OD operations within the 15 acre area will be collected as well as debris detected from a geophysical survey within the six acre OD area. If debris cannot be certified inert (is designated UXO), then the debris will be either moved to the OD area for treatment (if found outside the OD area), or if unsafe to move, treated in place. Such treatments will not require an emergency permit or other authorization from DTSC. Debris that is not designated UXO will be managed according to the procedures in Section IV.D.1. Because of Standard Operating Procedures, the OD area itself should be free of unexploded ordnance. These procedures mandate that all unexploded ordnance generated from an OD operation be treated immediately once discovered after the initial detonation.

2. OB Unit

A site survey is not needed for the OB unit since no debris (other than ash) is generated.

H. Decontamination Procedures for Equipment, Structures, and Buildings

1. OD Unit

The only structure associated with the OD unit of the BCTF is the metal shed at the Greenpoint Observation area. This shed will not need decontamination, since it is not exposed to waste or waste residue.

2. OB Unit

The only structures associated with the OB unit are the burn pan and its secondary containment (steel tray). The burn pan and secondary containment will be decontaminated in place at the BCTF. If necessary, steam cleaning will be used with a detergent. If necessary, the items will be scrubbed with a hand brush or similar. Cleaning wastewater will be collected in 55-gallon drum(s). The wastewater will be sampled and analyzed for proper disposal. Wastewater will be handled as a hazardous waste until the analytical results indicate that it is nonhazardous. The burn pan and the steel secondary containment will be removed and sold as scrap metal.

Samples of the concrete pad underneath the steel tray of the burn pan will be collected and analyzed. The concrete will be broken into pieces and transported to the proper disposal facility based on the analytical results (most likely a recycling facility).

The effectiveness for decontamination procedures for the burn pan and its secondary containment will be determined by visual evaluations so that only bare metal is left following decontamination.

3. Both Units

During closure activities, other items (such as hand tools, backhoe bucket, etc.) will require either proper disposal or decontamination. If disposed, the items will be placed into an appropriate container (steel open-top 55-gallon drum) and transported to an offsite disposal facility permitted to handle that type of waste. Decontamination of the items will occur in buckets or tubs using water and an appropriate detergent at the BCTF.

For decontamination of larger items, construction of a decontamination pad at the BCTF will be necessary. The pad will consist of a compacted earthen foundation surrounded by earthen berms. The foundation and berms will be overlain by a 30-mil thickness (minimum) liner of sufficient durability to withstand decontamination activities. Sand or similar material will be spread on top of the liner to prevent tearing. The pad will be graded to slope towards a corner, where the liner forms a sump in a depression dug into the ground to allow for collection of

decontamination fluids. Decontamination wastewater will be collected with a vacuum truck. It will be sampled and analyzed for proper disposal.

The effectiveness of decontamination procedures for any other miscellaneous items will be determined by visual evaluations so that only bare surfaces are left following decontamination.

I. Nature and Extent of Contamination

1. OD Unit – Soil Contamination

a. Description of Sampling

A SAP will be prepared at the time of closure and will be implemented to determine the presence and extent of surface and subsurface contamination associated from OD operations. Soil samples will be collected from the 1.03 acre OD unit.

b. Sampling Locations and Depths

Ten soil sampling sites will be located in a grid across the 1.03 acre OD unit. Soil samples at each of the ten sampling locations will be collected as composites to a depth of two feet below the deepest crater.

If hazardous constituents are discovered at concentrations that exceed background or risk-based levels, a second round of samples will be collected to more completely characterize the nature and extent of the contamination. Samples will be collected as necessary to define the full horizontal and vertical extent of contamination. Samples will be collected at a greater depth than the initial sampling locations to define the vertical extent of contamination. If necessary, samples will be collected at a greater distance beyond the OD unit to determine the horizontal extent of contamination. Contamination that is located beyond the unit boundary and caused by activities at the BCTF will be addressed under Corrective Action.

c. Types of Soil Samples & Sample Collection

All samples will be collected with a stainless steel auger with 2-inch brass sleeves. Samples sleeves will be covered with Teflon sheeting, capped, taped, labeled, and placed on ice for storage according to EPA protocol until analysis is performed. Chain of custody forms will be completed for laboratory transfer.

The auger will be decontaminated between holes. Decontamination will include hand washing with the proper cleaning solution. Wastewater will be collected and temporarily stored onsite until analytical results determine proper disposal methods.

Because of the sandy nature of the soil, auger holes are expected to collapse once the auger is removed. Therefore, backfilling the holes with cement is not needed.

d. Quality Control Samples

Two field duplicates (one at a one foot depth and one at a three foot depth) will be collected for Quality Assurance/Quality Control (QA/QC) purposes within the OD unit.

e. Chain of Custody & Sample Labeling, Packaging, and Transportation

All soil samples will be preserved using standard EPA procedures, e.g. 4° C. All samples will be properly labeled/tagged and logged. Chain of custody forms will be completed for

laboratory transfer. Sample containers will be packed securely in a cooler, along with ice and chain of custody forms for transfer to the laboratory.

f. Analytical Test Methods

All laboratory work will be performed by a laboratory approved by the State of CA Department of Health Services Environmental Accreditation Program. All soil samples will be analyzed for the following example parameters using standard EPA procedures as outlined in SW-846 at the time of closure: Volatile Organics, SemiVolatile Organics, CCR Metals (Total), Mercury, Hexavalent Chromium, Perchlorate, Cyanide, Dioxins/Furans, and Asbestos. Other parameters may be added at the time of closure per regulatory input.

g. Documentation

Documentation for all sample collection will include the following:

Date and time of entry
Purpose of sampling
Sampling equipment used and procedures followed
Names and affiliation of all sampling team members
Name and address of field contact
Description of sample
Sample number, location, depth, and size of sample collected
Description of sampling point
Date and time of sample collection
Maps/sketches or photographs of sampling site
Field observations

2. OB Unit – Soil Contamination

a. Description of Sampling

A SAP will be prepared at the time of closure and will be implemented to determine the presence and extent of surface and subsurface contamination associated from OB operations. Soil samples will be collected in the area around the burn pan.

b. Sampling Locations and Depths

Four soil sampling sites will be located two feet from each of the four sides of the burn pan secondary containment. Soil samples at each of the four sampling locations will be collected as composites to a depth of one and three feet (8 samples total).

If hazardous constituents are discovered at concentrations that exceed background or risk-based levels, a second round of samples will be collected to more completely characterize the nature and extent of the contamination. Samples will be collected as necessary to define the full horizontal and vertical extent of contamination. Samples will be collected at a greater depth than the initial sampling locations to define the vertical extent of contamination. If necessary, samples will be collected at a greater distance beyond the OB area to determine the horizontal extent of contamination.

c. Types of Soil Samples & Sample Collection

Same as described for the OD unit.

d. Quality Control Samples

One field duplicate at a one foot depth will be collected for QA/QC purposes.

e. Chain of Custody & Sample Labeling, Packaging, and Transportation

Procedures are the same as described for the OD unit.

f. Analytical Test Methods

Parameters are the same as described for the OD unit with the addition of total petroleum hydrocarbons as diesel.

g. Documentation

Documentation is the same as described for the OD unit.

3. Groundwater Monitoring Well(s)

a. Rationale for Sampling

A SAP will be prepared at the time of closure and will be implemented to determine the presence and extent of groundwater contamination associated from OD operations. Three samples will be collected from each groundwater monitoring well. Note that more wells may be installed at the time of closure or prior to closure as a permit provision. Three samples will provide enough data points to determine any outlying values caused by field or laboratory contamination.

b. Sample Collection Procedures

(1) Well Development

The well will be developed prior to sampling by one of the following methods or combination of methods:

- Swabbing or surging;
- Pumping (requires containerization and characterization of waste); and/or
- Bailing (requires containerization and characterization of waste)

Air development will not be conducted since it can affect the results of VOC sampling. Swabbing or surging are the most desirable methods since water is not brought to surface and therefore wastewater would not require disposal.

Upon development of the well a secure cap will be installed to prevent debris from entering the well and tampering.

(2) Purge Method

The well will be purged using one of the following methods:

- Pumping with a submersible pump for three to five well volumes or until pH, conductivity and temperature stabilize. Field measurements for stabilization will be collected at ten minute time intervals, and recorded on the purge/sampling log sheet. Stabilization of field measurements will be achieved when measurements are the same or within 1% difference, for three consecutive measurements. All purge waste will be containerized for characterization to determine the appropriate disposal method; or

- Micropurge method with a low flow pump system. Using a micropurge method requires that only the tubing volume be removed before collecting the sample. Volume of flow to collect the sample will be less than 1 liter per minute. While continuous measurements of field parameters are not required using this method, a field measurement of pH, conductivity and temperature will be recorded when the sample is collected. The tube volume generated using this method will be containerized for characterization to determine the appropriate disposal method.

The micropurge method is preferred since it greatly lowers the amount of purge waste that is generated and reduces the volatilization of any VOCs that may be present. It also reduces the risk of over pumping the well "dry", which may occur using Method #1 if the well has low yield.

If the well is low yielding, collection of three samples may not be possible. If this is the case, the well will be purged until dry, time after purge recorded, then one sample collected.

(3) Documentation of Purging/Sampling

Groundwater sampling will be recorded on a log that documents time purging is started, time and volume of water removed at the time of each field measurement, and the cumulative volume of water purged. The log will also note the following:

Date and time of sample collection
Sample identification number
Names of sampling personnel
Preservative used
Filtering dependent on the laboratory analysis method required
Weather conditions
PPE used
Deviations from the SAP (as prepared at the time of closure)
Any additional observations
Signature

(4) Sample Filtration

Samples that are to be analyzed for metals will be filtered in the field with a disposable 0.45 micron filter prior to placing the sample liquid in the container. The disposable filter will be kept until sample analysis has been completed to determine appropriate disposal method for the filter.

(5) Handling of Wastewater Generated

Any groundwater from well development and purging will be collected onsite in appropriate containers (e.g. 55-gallon drums) and marked with labels that state "Pending Analysis". Once analytical results are available, the purge water will be discharged to ground, discharged to the domestic sewer system, or treated/disposed as hazardous waste at an offsite facility.

(6) Sample Handling

To eliminate cross-contamination between samples, all non-dedicated sampling equipment will be washed with distilled water and Alconox, then rinsed with distilled

water. Rinsate will be collected and combined with wastewater generated from development and purging.

Samples will be collected and placed in sterilized containers provided by the laboratory. Any necessary preservatives for the specific analytical method will be added by the laboratory prior to sampling. Preservation methods, sample volumes and type of container will be determined for the specific analytical methods.

A label will be placed on each sample container and marked with sample date, sample time, sample identification number (designated by the Contractor), and POC contact name (China Lake, L. Zellmer). All sample containers will be placed in a cooler maintained at 4°C with blue ice.

A chain of custody form will be completed for laboratory transfer. The form will include facility and sampler information, sample identification numbers, date/time, number of containers per sample, and analytical methods requested. For shipping, the sample containers will be packed securely in coolers, along with ice and chain of custody forms. Samples will be shipped via overnight mail to the laboratory.

c Background Samples

The 2001 Background Groundwater Study (or the most current study at the time of closure) will be used to compare analytical results of the three samples from the monitoring well.

d. Sample Analysis

All laboratory work will be performed by a laboratory approved by the State of CA Department of Health Services Environmental Accreditation Program. All groundwater samples will be analyzed for the following example parameters using standard EPA procedures as outlined in SW-846 at the time of closure: Volatile Organics, SemiVolatile Organics, CCR Metals (Total), Mercury, Hexavalent Chromium, Aluminum, Explosives, Perchlorate, and General Mineral (calcium, magnesium, sodium, potassium, pH, chloride, fluoride, sulfate, nitrate, carbonate, bicarbonate, total dissolved solids). Other parameters may be added at the time of closure per regulatory input.

e. Quality Control/Quality Assurance

For QA/QC purposes, a trip blank provided by the laboratory will be analyzed for the parameters outlined in the SAP.

f. Well Closure

Once closure activities involving groundwater are complete, the well will be closed under the applicable regulations of the Department of Water Resources.

J. Conceptual Site Model for Potential Human Exposure

A conceptual site model for potential human exposure for contamination at the OB unit and/or the OD unit follows.

1. Location of Human Receptors

Sensitive human receptors are discussed in the BCTF Human Health Risk Assessment (Appendix A). Receptor locations are indicated on Figure 10.0.

2. Contaminants of Concern

Potential contaminants are listed in Section XI.I.1 for soil and Section XI.I.3 for groundwater. Potential contaminants for air are listed in the BCTF Human Health Risk Assessment (Appendix A).

3. Pathways to Human Receptors

a. Surface and Subsurface Pathway

Dermal Contact

Security and access controls for the BCTF are described in Sections II.A.3.e. and f. Access to persons not associated with the BCTF is practically impossible at all times. Therefore, exposure to Ridgecrest and China Lake residents as well as China Lake workers in the area to contaminated surface or subsurface soil at the BCTF via direct (dermal) contact is not possible and does not constitute a complete pathway.

Exposure to surface and subsurface soil via direct (dermal) contact by occasional visitors and periodic workers (i.e. EOD) is possible and does constitute a complete pathway.

Exposure to surface and subsurface soil via direct (dermal) contact by construction workers consolidating soil for closure purposes is possible and does constitute a completed pathway.

In the unlikely event that a new facility is constructed at the BCTF or adjacent to the BCTF, construction site workers would be exposed to the surface and subsurface soil via direct contact on a full-time basis (40-hour work week) for the duration of the construction. Because no facility construction plans for the BCTF site exists, this exposure scenario is unlikely and does not constitute a complete pathway.

Ingestion

Ingestion of surface and subsurface soil by receptors likely to be at the site (visitors and workers) is not realistic. Therefore, exposure to surface and subsurface soil via ingestion of contaminated soil does not constitute a completed pathway.

b. Air Pathway

Inhalation – Vapor Source

Due to the nature of OB/OD events (breakdown of toxic compounds) and the exposure of the soil to the intense heat of the desert, the presence of volatile compounds in the soil as an inhalation source is highly unlikely and does not constitute a complete pathway.

Inhalation – Dust

Exposure of dust generated by wind to occasional visitors and periodic workers at the site via inhalation of dust is possible and does constitute a complete pathway.

Exposure of dust generated by the wind or earth moving equipment via inhalation by construction workers consolidating soil for closure purposes does constitute a complete pathway.

The prevailing wind direction is predominantly from the southwest. Therefore, Ridgecrest and China Lake residents would not be exposed to the dust generated from contaminated soil. In addition, other test facilities where China Lake personnel work are not located in the downwind direction. Therefore, exposure via inhalation of dust to China Lake and Ridgecrest residents, as well as China Lake workers in the area, is not likely and does not constitute a complete pathway.

c. Surface Water Pathway - Dermal Contact and Ingestion

Surface water may be present for short times during heavy rainstorms. However, occasional visitors and periodic workers would not visit the site during these times. Therefore, exposure of contaminated surface water by all human receptors does not constitute a complete pathway.

d. Groundwater Pathway - Dermal Contact and Ingestion

Groundwater is documented at over 400 feet and is not used for drinking water. Therefore, exposure of contaminated groundwater by all human receptors does not constitute a complete pathway.

K. Conceptual Site Model for Potential Environmental Exposure

A conceptual site model for potential environmental exposure to contamination at the OB unit and/or the OD unit follows.

1. Assessment Endpoint, Measurement Endpoints, and Indicator Species

Assessment endpoints, measurement endpoints, and indicator species are discussed in the Ecological Risk Assessment (Appendix D).

2. Contaminants of Concern

Potential contaminants are listed in Section XI.I.1 for soil and Section XI.I.3 for groundwater. Potential contaminants for air are listed in the BCTF Human Health Risk Assessment (Appendix A).

3. Pathways to Environmental Receptors - Animal

a. Surface and Subsurface Pathway

Dermal Contact - Animal

Exposure to surface and subsurface soil via direct (dermal) contact by small, herbivorous mammals, large predatory birds, and Desert tortoise is possible and does constitute a complete pathway.

Ingestion - Animal
Ingestion of surface and subsurface soil by small, herbivorous mammals, large predatory birds, and Desert tortoise is possible and does constitute a complete pathway.

b. Air Pathway

Inhalation – Vapor Source
Due to the nature of OB/OD events (breakdown of toxic compounds) and the exposure of the soil to the intense heat of the desert, the presence of volatile compounds in the soil as an inhalation source is highly unlikely and does not constitute a complete pathway.

Inhalation – Dust
Exposure to dust generated by OD events and wind to small, herbivorous mammals, large predatory birds, and Desert tortoise via inhalation of dust is possible and does constitute a complete pathway.

c. Surface Water Pathway - Dermal Contact and Ingestion

Surface water may be present for short times during heavy rainstorms. However, the indicator species are likely to meet their water needs by metabolic production and moisture in food. Therefore, exposure of contaminated surface water by ecological receptors does not constitute a complete pathway.

d. Groundwater Pathway - Dermal Contact and Ingestion

Groundwater is documented at over 400 feet and is not accessible to ecological receptors. Therefore, exposure of contaminated groundwater does not constitute a complete pathway.

e. Plant and Animal Tissue - Ingestion

Small, herbivorous mammals and Desert tortoise subsist on plants. Therefore, exposure to contaminated plant tissue is possible and does constitute a completed pathway

Large, predatory birds may ingest animals subsisting on contaminated plants. Therefore, exposure to contaminated animal tissue is possible and does constitute a completed pathway.

4. Pathways to Environmental Receptors - Plant

a. Ambient Air

Exposure to ambient air by plants is possible and does constitute a complete pathway.

b. Soil

Exposure to soil by plants is possible and does constitute a complete pathway.

L. Remediation Activities

Depending on the analytical results of the soil samples collected, one of the three scenarios outlined in Section XI.C. will be implemented for either or both units to address soil contamination, if present above cleanup levels. China Lake will submit to DTSC for review and approval a detailed remediation plan once the results of the SAP are available. This plan will contain details on the proposed remediation activities.

In addition, depending on the analytical results of the groundwater samples collected, Corrective Action will be implemented to address groundwater contamination.

M. Worker Health & Safety

Only properly trained personnel (minimum 40-hour HAZWOPER) will conduct closure activities for both units. Only licensed hazardous waste companies will transport and handle contaminated wastes.

If a Contractor conducts the closure activities, a health & safety plan will be prepared and submitted for Government (China Lake) approval prior to the start of work on the site. Separate plans will be prepared for soil remediation and for UXO mitigation. If the Government conducts the closure, qualified Government personnel will complete the plan. In either case the plan will be submitted and reviewed by DTSC. The health and safety plan will address the following:

- Hazard identification

- Hazard evaluation
- Personnel protective equipment
- Site work zones
- Decontamination of workers
- Emergency procedures

N. Schedule for Closure

1. Year of Closure

Regulations require that a closure date be specified in order to assess the adequacy of financial assurance provisions. Federal facilities are exempt from these requirements. Closure of either the OB or OD unit is not anticipated prior to the year 2050.

2. Closure Schedule

The OB unit and/or the OD unit will be closed in accordance with the schedule provided in Table 10.0, once the decision for closure is made and funding is provided.

3. Extensions of Closure Time

If unforeseen problems are encountered during closure of the BCTF, an extension of the required closure time (180 days) may be necessary to allow sufficient time to conduct sampling events and to receive and interpret sampling data. Demonstrations required for an extension of closure time will be made in accordance with the requirements of and within the time required (within 150 days after receiving final volume of waste) in 22 CCR δ66264.113.

O. Closure Certification Report Requirements

Within 60 days of final completion of official closure of each unit, China Lake will submit to DTSC, by registered mail, a certification that the unit is closed in accordance with the specifications in the approved Closure Plan. The certification will be signed by the owner or operator and by an independent qualified professional engineer, registered in California. A Closure Certification Report will be submitted to DTSC upon completion of closure implementation and will contain the following:

- Certification by an independent registered professional engineer
- Supervisory personnel description
- Description of unit
- Operational history of unit
- Characteristics of wastes treated
- Summary of closure activities
- Field engineer observation reports
- Sampling data and analytical results
- Discuss of analytical results
- Manifests showing disposal of wastes generated during closure
- Modification and amendments to the Closure Plan
- Photographs

Additionally, the following documents will be maintained at the Environmental Department and will be available to DTSC upon request:

- Approved Closure Plan
- Copy of the independent qualified professional engineer's field observation reports
- Analytical results of all samples

- QA/QC demonstrations
- Documentation showing disposition of waste inventory
- Miscellaneous documentation (e.g. photographs, field notes)
- Closure Certification Report

P. Survey Plat

No later than the submission of the certification of closure for the OB unit and/or the OD unit, China Lake will submit to the local zoning authority and DTSC a survey plat that indicates the location of the area restricted to non-residential land uses and the type and quantity of the waste left in place, if any. This location will be marked with permanently surveyed vertical and horizontal benchmarks. This plat will be prepared and certified by a professional land surveyor licensed in California.

Q. Post-Closure Plan

In the event that post-closure activities are required, China Lake will develop and submit a detailed post-closure plan. The following issues will be addressed.

1. Inspection Plan

Inspections will be conducted during the post-closure care period to mitigate the migration of contamination to soil, groundwater (unlikely), surface water, and air and to protect public health and safety and the environment. Inspections will be conducted at a minimum semi-annually.

2. Post Closure Monitoring Plan

Post closure monitoring will be conducted as described in a Post Closure Monitoring Plan. Monitoring equipment (if any) will be inspected.

3. Post-Closure Maintenance Plan

Deficiencies noted during inspections will be corrected to maintain the integrity of the closed unit. Telephone numbers for emergency notification and maintenance will be posted at the closed unit. Records of inspections and maintenance activities will be maintained by the Environmental Department.

4. Land Use Controls Implementation Plan

A Land Use Controls Implementation Plan will be prepared at the time of post-closure and will outline specific land use controls for the site. A fence around the area will probably not be necessary, since access is already controlled as described in Sections II.A.3.e. and f. The Land Use Controls Implementation Plan will be added to the appropriate appendix of China Lake's Comprehensive Land Use Management Plan.

R. Closure and Post-Closure Cost Estimates

As a Federal facility, China Lake is exempt from these sections of the Closure Plan requirements, according to 22 CCR δ66264.140(c).

S. Financial Assurance Mechanism for Closure and Post-Closure

As a Federal facility, China Lake is exempt from these sections of the Closure Plan requirements, according to 22 CCR δ66264.140(c).

T. Liability Requirements

As a Federal facility, China Lake is exempt from the regulatory standard which requires submission of a copy of an insurance policy or other documentation of liability coverage.

U. Closure Plan Amendment

China Lake will maintain this Closure Plan to ensure that it is current and accounts for anticipated closure activities. This Closure Plan will be amended when the following events or contingencies occur:

- Results of initial closure sampling determines that additional rounds of sampling are needed
- Changes in operating plans or facility design that affect the Closure Plan. These changes include, but are not limited to, the need to modify the BCTF or to expand capacity.
- New information, excluding new analytical methods, is discovered that significantly changes the underlying assumptions or procedures outlined in this Closure Plan
- Unexpected events occur during closure that require significant modification of this Closure Plan

Certain events and/or contingencies are anticipated in this Closure Plan and do not warrant formal amendment. For example, the need to extend the anticipated schedule of some closure activities by a few days (provided the overall time schedule is not exceeded). DTSC will be notified via official correspondence of such events and contingencies, but formal amendment of the Closure Plan will not be requested.

Whenever events or contingencies requiring formal amendment of this Closure Plan occur, a written request for permit modification will be submitted to the DTSC. Such requests will be signed by the person responsible for China Lake oversight and sent by certified mail. Any requests for amendment will describe in detail the necessary Closure Plan changes.

XII. Financial Responsibility

As a Federal facility, China Lake is exempt from this section of the permit application (CCR, Title 22, §66264.140(c) and §66265.140(c)).

XIII. Corrective Action Plan

A. Facilities with existing contamination shall submit a corrective action plan to DTSC.

The corrective action plan must describe:

1. **Contamination.**
2. **Enforcement actions taken against facility.**
3. **Time schedule for implementation of corrective action.**
4. **Financial mechanism used to ensure completion of corrective action.**

B. Facilities without an effective settlement agreement between EPA and the State of California shall also submit:

1. **Corrective action study report.**
2. **Workplan for corrective action.**
3. **Program for implementation of corrective action.**

All Corrective Action is addressed in the Federal Facility Site Remediation Agreement signed by the Navy and the State.

TABLES

TABLE 1.0 FEDERAL WASTE CODES

WASTE CODE	CRITERIA	CONTAMINANT
Primary Waste Designation		
D003	Characteristic - Reactive	Propellants, Explosives, Pyrotechnics
D001	Characteristic – Ignitability *(Only applies to 50 Caliber or Less Small Arms Ammunition)*	Propellant
Secondary Waste Designation		
D001	Characteristic - Ignitability	N/A
D002	Characteristic - Corrosivity	Acidic or Basic
D004	Characteristic - Toxic	Arsenic
D005	Characteristic - Toxic	Barium
D006	Characteristic - Toxic	Cadmium
D007	Characteristic - Toxic	Chromium
D008	Characteristic - Toxic	Lead
D009	Characteristic - Toxic	Mercury
D010	Characteristic - Toxic	Selenium
D011	Characteristic - Toxic	Silver
D021	Characteristic - Toxic	Chlorobenzene
D022	Characteristic - Toxic	Chloroform
D030	Characteristic - Toxic	Dinitrotoluene
D036	Characteristic - Toxic	Nitrobenzene
F002	Listed - NonSpecific Sources	Spent Halogenated Solvents
F003	Listed - NonSpecific Sources	Spent NonHalogenated Solvents
F004	Listed - NonSpecific Sources	Spent NonHalogenated Solvents
F005	Listed - NonSpecific Sources	Spent NonHalogenated Solvents
K044	Listed – Specific Sources – Manufacturing Explosives	Wastewater treatment sludges
K045	Listed – Specific Sources – Manufacturing Explosives	Spent carbon from the treatment of wastewater containing explosives
K046	Listed – Specific Sources – Manufacturing Explosives	Wastewater treatment sludges from lead-based initiating compounds
K047	Listed – Specific Sources – Manufacturing Explosives	Pink/red water from TNT operations
P006	Listed - Unused or Off-Specification Commercial Chemical Products	Aluminum Phosphide
P009	Listed - Unused or Off-Specification Commercial Chemical Products	Ammonium Picrate or Phenol, 2,4,6-trinitro-,ammonium salt
P042	Listed - Unused or Off-Specification Commercial Chemical Products	1,2-Benzenediol, 4-[1-hydroxy-2-(methylamino)ethyl]-
P065	Listed - Unused or Off-Specification Commercial Chemical Products	Mercury Fulminate
P081	Listed - Unused or Off-Specification Commercial Chemical Products	Nitrogylcerine or 1,2,3-Propanetriol, trinitrate
P112	Listed - Unused or Off-Specification Commercial Chemical Products	Tetranitromethane or Methane, tetranitro
U117	Listed - Unused or Off-Specification Commercial Chemical Products	Ethyl Ether (If Forms Peroxides)
U213	Listed - Unused or Off-Specification Commercial Chemical Products	Tetrahydrofuran (If Forms Peroxides)

TABLE 2.0
Families for Health Risk Assessment Tracking

EXPLOSIVES	
Melt Cast Explosives	
A1	TNT Based (Comp-B, Cyclotol, Octol)
A2	TNT / Aluminum (H-6)
Plastic-Bonded Explosives (PBXs)	
B1	Nitramine / Binder
B2	Nitramine / Binder / Aluminum
B3	Nitramine / Binder / Aluminum / AP
Other Explosives	
C1	e.g. PbN3, ammonium picrate
PROPELLANTS	
Gun Propellant	
IA_w	Single Base (nitrocellulose [NC]) (with links & tracers)
IA_{wo}	Single Base (NC) (with links & tracers)
IB_w	Double Base (NC / nitroglycerin [NG]) (with links & tracers)
IB_{wo}	Double Base (NC / NG) (with links & tracers)
IC_w	Triple Base (NC / NG / nitroguanidine [NQ])
IC_{wo}	Triple Base (NC / NG / NQ)
Rocket/Missile Propellant	
IIA	Double base with Lead
IIB	Double base without Lead
IIC	AP / Binder / Aluminum
IID	AP / Binder / Aluminum / Nitramines (>50% AP)
IIE	AP / Binder Reduced Smoke
IIF	Nitramine / Energetic Binder / Al / <20% AP
MISCELLANEOUS	
W	Energetic-Contaminated Wastes
M	Munitions Components
P	Pyrotechnics

TABLE 3.0 HEALTH-BASED QUANTITY LIMITATIONS

Emission Category[1]	Family	Sub Family	Permitted Hourly Quantity (lb/hr)	Limiting Factor	Permitted Annual Quantity (lb/yr)	Limiting Factor
Open Burn						
IAw - Single Base (NC) (with links and tracer)	Propellant	Gun	1,000	Logistical Limit	365,000	Logistical Limit
IBw - Double Base (NC / NG) (with links and tracer)	Propellant	Gun	1,000	Logistical Limit	365,000	Logistical Limit
ICw - Triple Base (NC / NG / NQ) (with links and tracer)	Propellant	Gun	1,000	Logistical Limit	365,000	Logistical Limit
IAwo - Single Base (NC) (without links and tracer)	Propellant	Gun	1,000	Logistical Limit	365,000	Logistical Limit
IBwo - Double Base (NC / NG) (without links and tracer)	Propellant	Gun	1,000	Logistical Limit	365,000	Logistical Limit
ICwo - Triple Base (NC / NG / NQ) (without links and tracer)	Propellant	Gun	1,000	Logistical Limit	365,000	Logistical Limit
IIA - Double base with Lead	Propellant	Rocket/Missile	1,000	Logistical Limit	365,000	Logistical Limit
IIB - Double base without Lead	Propellant	Rocket/Missile	1,000	Logistical Limit	365,000	Logistical Limit
IIC - AP / Binder / Aluminum	Propellant	Rocket/Missile	1,000	Logistical Limit	365,000	Logistical Limit
IID - AP / Binder / Aluminum / Nitramines (>50% AP)	Propellant	Rocket/Missile	1,000	Logistical Limit	365,000	Logistical Limit
IIE - AP / Binder Reduced Smoke	Propellant	Rocket/Missile	1,000	Logistical Limit	365,000	Logistical Limit
IIF - Nitramine / Energetic Binder / Al / <20% AP	Propellant	Rocket/Missile	1,000	Logistical Limit	365,000	Logistical Limit
A1 - TNT Based (Comp-B, Cyclotol, Octol)	Explosive	Melt Cast	1,000	Logistical Limit	365,000	Logistical Limit
A2 - TNT / Aluminum (H-6)	Explosive	Melt Cast	1,000	Logistical Limit	365,000	Logistical Limit
B1 - Nitramine / Binder	Explosive	Plastic Bonded	1,000	Logistical Limit	365,000	Logistical Limit
B2 - Nitramine / Binder / Aluminum	Explosive	Plastic Bonded	1,000	Logistical Limit	365,000	Logistical Limit
B3 - Nitramine / Binder / Aluminum / AP	Explosive	Plastic Bonded	1,000	Logistical Limit	365,000	Logistical Limit
C1 - e.g., PbN3, ammonium picrate	Explosive	Other	1,000	Logistical Limit	365,000	Logistical Limit
Diesel	-	-	1,000	Logistical Limit	365,000	Logistical Limit
Wood	-	-	1,000	Logistical Limit	365,000	Logistical Limit
Open Detonation						
IAw - Single Base (NC) (with links and tracer)	Propellant	Gun	30,000	Logistical Limit	5,475,000	Logistical Limit
IBw - Double Base (NC / NG) (with links and tracer)	Propellant	Gun	30,000	Logistical Limit	5,475,000	Logistical Limit
ICw - Triple Base (NC / NG / NQ) (with links and tracer)	Propellant	Gun	30,000	Logistical Limit	5,475,000	Logistical Limit
IAwo - Single Base (NC) (without links and tracer)	Propellant	Gun	30,000	Logistical Limit	5,475,000	Logistical Limit
IBwo - Double Base (NC / NG) (without links and tracer)	Propellant	Gun	30,000	Logistical Limit	5,475,000	Logistical Limit
ICwo - Triple Base (NC / NG / NQ) (without links and tracer)	Propellant	Gun	30,000	Logistical Limit	5,475,000	Logistical Limit
IIA - Double base with Lead	Propellant	Rocket/Missile	16,200	Criteria Pollutant Standard Threshold	1,495,000	Cancer Risk Threshold
IIB - Double base without Lead	Propellant	Rocket/Missile	30,000	Logistical Limit	1,500,000	Cancer Risk Threshold
IIC - AP / Binder / Aluminum	Propellant	Rocket/Missile	30,000	Logistical Limit	1,500,000	Cancer Risk Threshold
IID - AP / Binder / Aluminum / Nitramines (>50% AP)	Propellant	Rocket/Missile	30,000	Logistical Limit	1,500,000	Cancer Risk Threshold
IIE - AP / Binder Reduced Smoke	Propellant	Rocket/Missile	30,000	Logistical Limit	1,500,000	Cancer Risk Threshold
IIF - Nitramine / Energetic Binder / Al / <20% AP	Propellant	Rocket/Missile	30,000	Logistical Limit	5,475,000	Logistical Limit
A1 - TNT Based (Comp-B, Cyclotol, Octol)	Explosive	Melt Cast	30,000	Logistical Limit	5,475,000	Logistical Limit
A2 - TNT / Aluminum (H-6)	Explosive	Melt Cast	30,000	Logistical Limit	5,475,000	Logistical Limit
B1 - Nitramine / Binder	Explosive	Plastic Bonded	30,000	Logistical Limit	5,475,000	Logistical Limit
B2 - Nitramine / Binder / Aluminum	Explosive	Plastic Bonded	30,000	Logistical Limit	5,475,000	Logistical Limit
B3 - Nitramine / Binder / Aluminum / AP	Explosive	Plastic Bonded	30,000	Logistical Limit	5,475,000	Logistical Limit
C1 - e.g. PbN3, ammonium picrate	Explosive	Other	16,200	Criteria Pollutant Standard Threshold	5,475,000	Logistical Limit
P – Pyrotechnics	Pyrotechnic	-	30,000	Logistical Limit	580,000	Cancer Risk Threshold
W - Energetic-contaminated wastes	ECW	-	30,000	Logistical Limit	5,475,000	Logistical Limit
M - Munition Components	Munition Components	-	30,000	Logistical Limit	5,475,000	Logistical Limit
Other						
OD Grading	-	-	12	Logistical Limit	3653	Logistical Limit

[1] Ash handling is not included as a category here since it occurs with every OB event. Ash handling is assumed for 100 lbs. of ash per event and 36,500 lbs per year.

[2] Number of grading events per hour

[3] Number of grading events per year

TABLE 4.0
COMMONLY USED LABORATORY ANALYTICAL METHODS

PARAMETER	CRITERIA	EPA METHOD OR STATE METHOD
Flashpoint	- Ignitability (D001)	1010-S
pH	- Corrosivity (D002)	9045-S 9040-L
Explosives	- Reactivity (D003)* - Listed – Specific Sources (K044 – K047)	8330-S,L
Volatile Organics	- Toxicity – Federal Organics (D-Listed) after Extraction - Toxicity – Organics (CA Only) after Extraction - Spent Solvents (F Listed) - Unused or Off-Specification Commercial Chemical Products (P & U Listed)	8260-S,L
SemiVolatile Organics	- Toxicity – Federal Organics (D-Listed) after Extraction - Toxicity – Organics (CA Only) after Extraction - Spent Solvents (F Listed) - Unused or Off-Specification Commercial Chemical Products (P & U Listed)	8270-S 625-L
Aromatic Volatiles	- Spent Solvents (F Listed) & - Unused or Off-Specification Commercial Chemical Products (P & U Listed)	8020-S 602-L
Halogenated Volatiles	- Spent Solvents (F Listed) & - Unused or Off-Specification Commercial Chemical Products (P & U Listed)	8010-S 601-L
Federal Organics (Extractable)	- Toxicity - Organics (D-Listed)	Zero Headspace - TCLP Extraction
CCR Organics (Extractable)	- Toxicity – Organics (CA Only)	CA WET - Extraction
CCR Metals	- Toxicity – Total Metals (CA Only) - Toxicity – Federal Metals (D Listed) after Extraction - Toxicity – Metals (CA Only) after Extraction	6010 7199-Cr(VI) 7470-Hg
Federal Metals (Extractable)	- Toxicity - Metals (D Listed)	1311-TCLP Extraction
CCR Metals (Extractable)	- Toxicity - Metals (CA Only)	CCR WET-Extraction
CCR Bioassay	- Toxicity (CA Only)	CA-Only Method

"S" = Solid; "L" = Liquid
"TCLP" = Toxicity Constituent Leaching Procedure
"CCR WET" = CA Code of Regulations Waste Extraction Test
* Reactivity Characteristic only applies if total explosives is greater than >10% (NAWCWPNS, 1993 & USATHAMA, 1987)

TABLE 5.0
SIX DIVISIONS FOR HAZARD CLASS OF "1"

Division Designator	Type of Hazard
1	Mass Detonating
2	Non-Mass Detonating - Fragment Producing
3	Mass Fire, Minor Blast or Fragment
4	Moderate Fire, No Blast
5	Very Insensitive Substance (w/ a Mass Explosion hazard)
6	Extremely Insensitive Article

TABLE 6.0
EXAMPLES OF COMPATIBILITY GROUPS

Group Designator	Examples
A	Lead Azide, Mercury Fulminate
B	Detonators, Blasting Caps
C	Rocket Motors, Double-based propellants
E	Artillery Ammunition, Rockets, Missiles
F	None
G	Flares, Signals
H	White phosphorous
J	Liquid or gel filled incendiary ammunition

TABLE 7.0

SEGREGATION CHART FOR ENERGETICS DURING TRANSPORTATION

Compatibility Group	A	B	C	D	E	F	G	H	J	K	L	N	S
A	X												
B		X		4									4/5
C			X	2	2							3	4/5
D		4	2	X	2							3	4/5
E			2	2	X							3	4/5
F						X							4/5
G							X						4/5
H								X					4/5
J									X				4/5
K										X			4/5
L											1		4/5
N			3	3	3							X	4/5
S		4/5	4/5	4/5	4/5	4/5	4/5	4/5	4/5	4/5		4/5	4/5

Numbers and symbols shown in this table are as follows:

A blank space in the table indicates that explosives of different compatibility groups may not be carried on the same motor vehicle, or rail car unless packed in separate freight containers (e.g. two or more freight containers mounted upon the same rail car).

1 - means explosives from compatibility group L may only be carried on the same motor vehicle or rail car with an identical explosive.

2 - means any combination of explosives from compatibility group C, D, or E is assigned to compatibility group E.

3 - means any combination of explosives from compatibility group C, D, or E with those in compatibility group N is assigned to compatibility group D.

4 - means detonators and detonating primers, Division 1.4S (Class C explosives), may not be loaded in the same rail car with Division 1.1 and 1.2 (Class A explosive) materials. When transporting detonators in a motor vehicle, refer to 49 CFR 177.835 (g).

5 - means Division 1.4S fireworks may not be loaded in the same motor vehicle or rail car with Division 1.1 or 1.2 (Class A explosive) materials.

X - indicates that no restrictions apply.

TABLE 8.0

SEGREGATION CHART FOR ENERGETICS DURING STORAGE

GROUPS	A	B	C	D	E	F	G	H	J	K	L	N	S
A	X	Z											
B	Z	X	Z	Z	Z	Z	Z					X	X
C		Z	X	X	X	Z	Z					X	X
D		Z	X	X	X	Z	Z					X	X
E		Z	X	X	X	Z	Z					X	X
F		Z	Z	Z	Z	X	Z					Z	X
G		Z	Z	Z	Z	Z	X					Z	X
H								X					X
J									X				X
K										Z			
L													
N		X	X	X	X	Z	Z					X	X
S		X	X	X	X	X	X	X	X			X	X

NOTES:

1. The marking "X" at an intersection of the above chart indicates that these groups may be combined in storage. Otherwise, mixing is either prohibited or restricted per note 2 below.

2. The marking "Z" at an intersection of the above chart indicates that, when warranted by operational considerations or magazine non-availability, and when safety is not sacrificed, logical mixed storage of some items of different groups may be authorized by NOSSA upon written request. Mixing of limited quantities of some groups, as authorized by note 5 below, does not require a written request. Authorization is not to be considered a waiver. Combinations that violate the principles of paragraph 3-9 require justification by waiver or exemption. Examples of acceptable combinations of class 1 are:

a. Division 1, group A initiating explosives with division 1, group B fuzes not containing two or more independent safety features.

b. Division 3, group C bulk propellants or bagged propelling charges with division 3, group G pyrotechnics without their own means of initiation.

3. Equal numbers of separately packaged components of complete rounds of any single type of ammunition may be stored together. When so stored, compatibility is that of the assembled round; i.e., WP filler in group H, HE filler in groups D, E, or F, as appropriate.

4. Ammunition designated "practice" by NSN and nomenclature may be stored with the fully loaded ammunition it simulates.

5. Mixing of compatibility groups (except items in groups A, K, L and N) in limited quantities is authorized by NOSSA. Such mixed storage is not to exceed a total of 1,000 pounds NEW and will be considered as the highest hazard division included.

6. Group K requires not only separate storage from other groups, but may also require separate storage

TABLE 9.0
MAINTENANCE AND INSPECTION REQUIREMENTS FOR EQUIPMENT USED AT THE BCTF

Equipment	Maintenance	Inspection
Explosive-Hauling Vehicles All-Terrain Forklift	Preventive Maintenance (PM) schedule for all vehicles is every six months or every 6,000 miles whichever arrives first. Reminders from the China Lake Public Works Department are submitted to all personnel in charge of vehicles. "Vehicle Maintenance Service Inspection" checklist is completed	Prior to use; NAVSUP Form 626 is completed by the inspector
Personnel Transportation Vehicles	Same as above	Same as above but at the beginning of each week
Lifting Slings	Weight tested every four years	Visually prior to use for frays, cuts, etc.
Common Hand Tools	None	Visually prior to use for broken parts, etc.
Burn Pan	Removal of ash immediately after OBs; Followed by completion of a dry decontamination	Visually prior to and after each use for structural integrity

TABLE 10.0
CLOSURE SCHEDULE

Action	Cumulative Time (Days)
Notification to DTSC of intent to close for the OB unit and/or the OD unit	-180
Receipt and treatment of final waste for the OB unit and/or the OD unit	0
Prepare & Submit detailed Sampling & Analysis Plan to address potential soil and groundwater contamination & UXO to DTSC; Note that the UXO part of the plan does not apply to the OB unit or to groundwater	0
Sampling & Analysis Plan approved by DTSC for the OB unit and/or the OD unit	15
Complete site clearance for debris & UXO; This action does not apply to the OB unit	30
Decontamination of OB Unit; This action does not apply to the OD unit	30
Complete sampling and analysis of all samples for the OB unit and/or the OD unit	30
Prepare Human Health Risk Assessment and Ecological Risk Assessment for the OB unit and/or the OD unit	60
Human Health Risk Assessment and Ecological Risk Assessment approved by DTSC for the OB unit and/or the OD unit	75
Remediation Plan submitted to DTSC for the OB unit and/or the OD unit	105
Remediation Plan approved by DTSC; Remediation activities begin for the OB unit and/or the OD unit	120
Remediation activities completed; Closure Certification Report submitted to DTSC for the OB unit and/or the OD unit	180

Naval Air Weapons Station China Lake

Class 3 Permit Modification OBOD
Part B

Figures

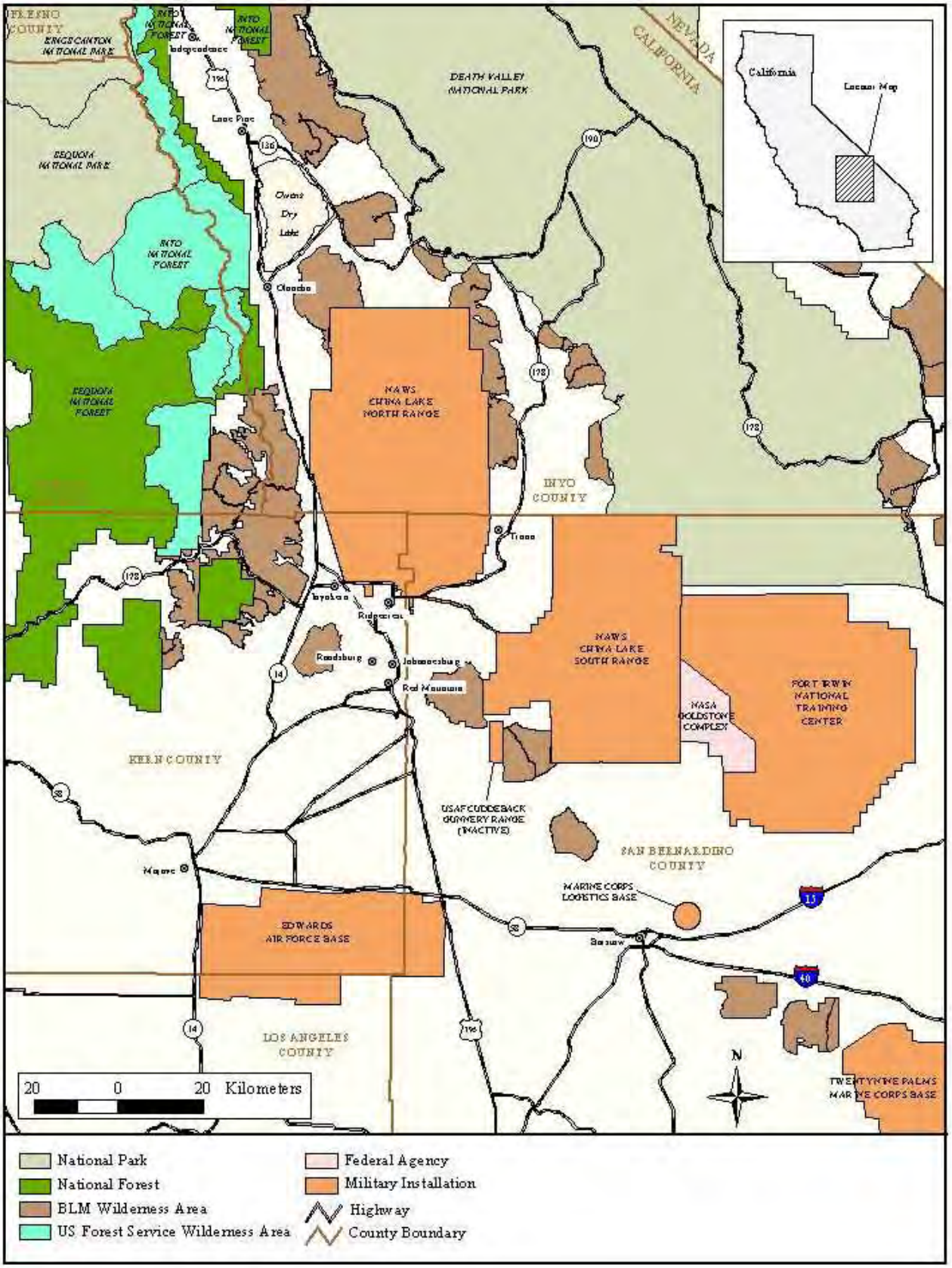


Figure 1.0 – Location of NAWS China Lake

Figure 2.0 is an oversized map of the NAWS China Lake North Range. Contact the project manager to view the map.

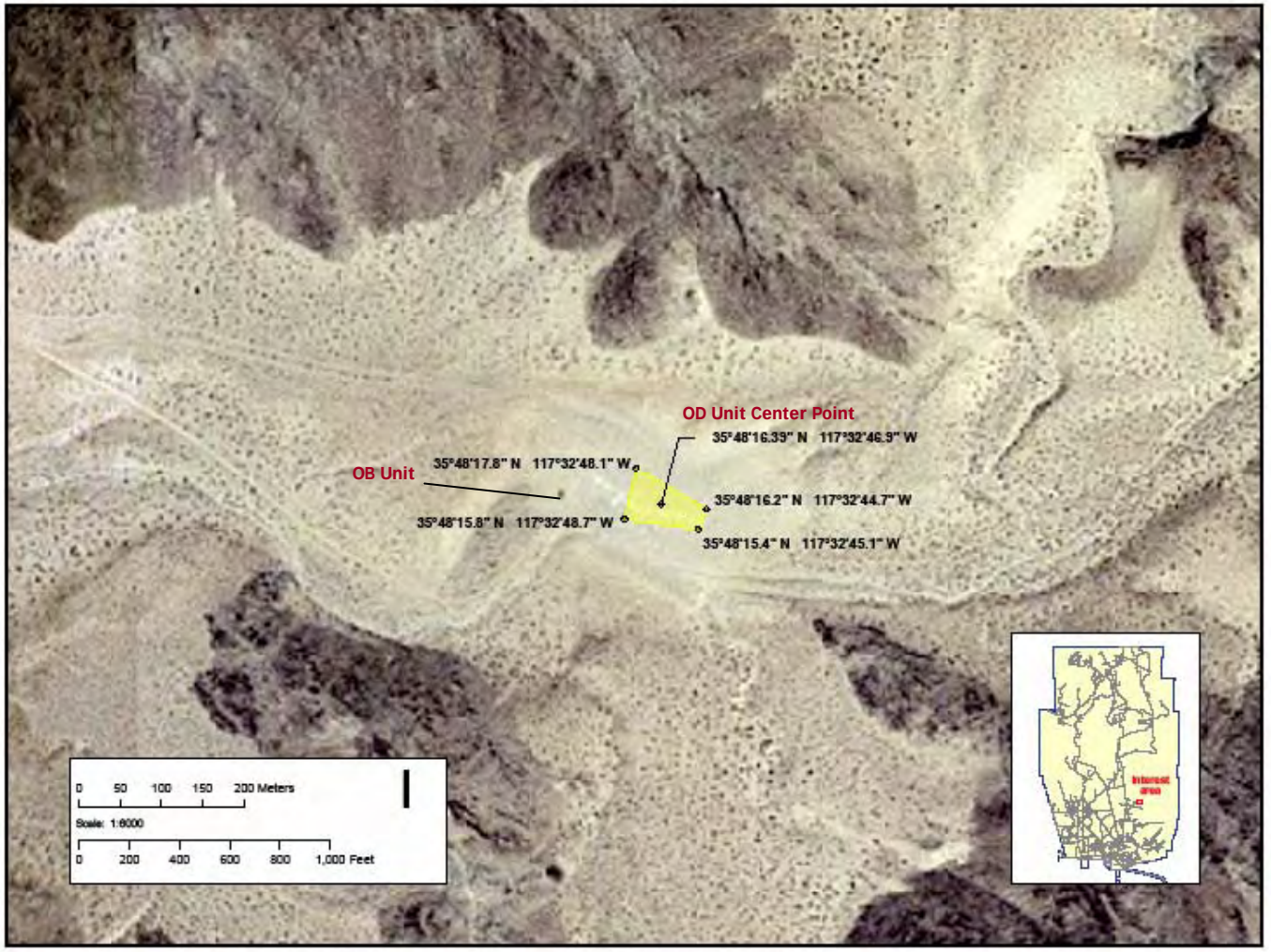


Figure 3.0a – Aerial Photograph of Burro Canyon Treatment Facility

Figure 3.0b – Photograph of Burro Canyon Treatment Facility Looking North from Greenpoint Observation Area (Oval indicates approximate location of OD events; Asterisk indicates approximate location of Burn Pan)

Figure 3.0c – Photograph of Waste on Truck from Main Magazines (left) and Waste Being Unloaded from CL/SWPL Truck (right) Prior to Treatment

Figure 3.0d – Photograph of Waste Prior to Treatment

Figure 3.0e – Photograph of Detonation

Figure 3.0f – Photograph of Plume

(Dispersion Time Increases w/ Photos Left to Right)

Figure 3.0g – Photograph of Detonation Site After Treatment

Figure 3.0h – Photograph of Burn Pan

Figure 4.0 is an oversized map of the Burro Canyon Quadrangle. Contact the project manager to view the map.

Figure 5.0 is an oversized map of the Ridgecrest North Quadrangle. Contact the project manager to view the map.

Figure 6.0 is an oversized map of the Lone Butte Quadrangle. Contact the project manager to view the map.

Figure 7.0 is an oversized topographic map of the Burro Canyon OB/OD Facility. Contact the project manager to view the map.

Figure 8.0a - 1999 Windrose

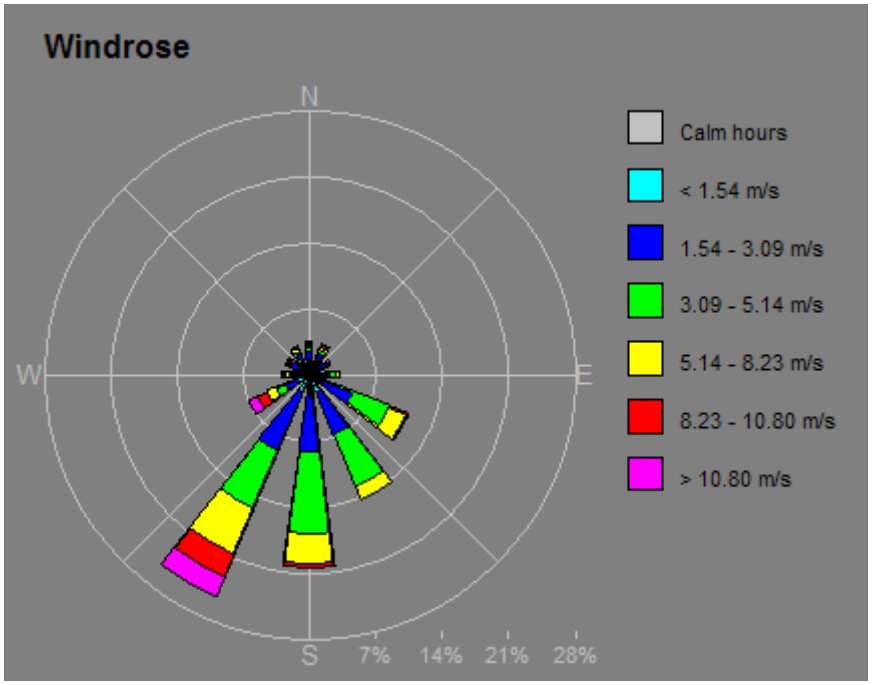


Figure 8.0b - 2000 Windrose

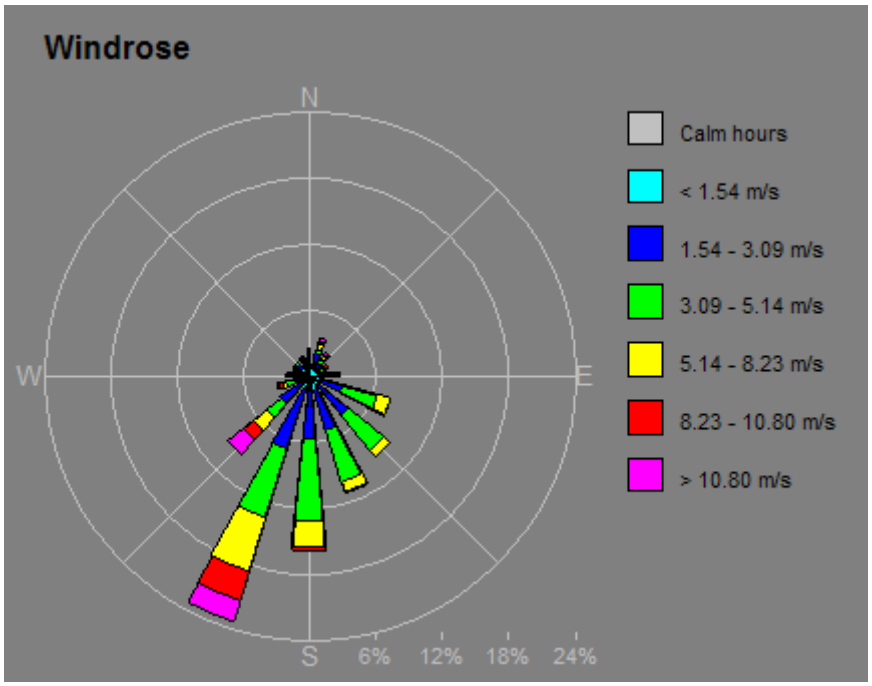


Figure 8.0c - 2001 Windrose

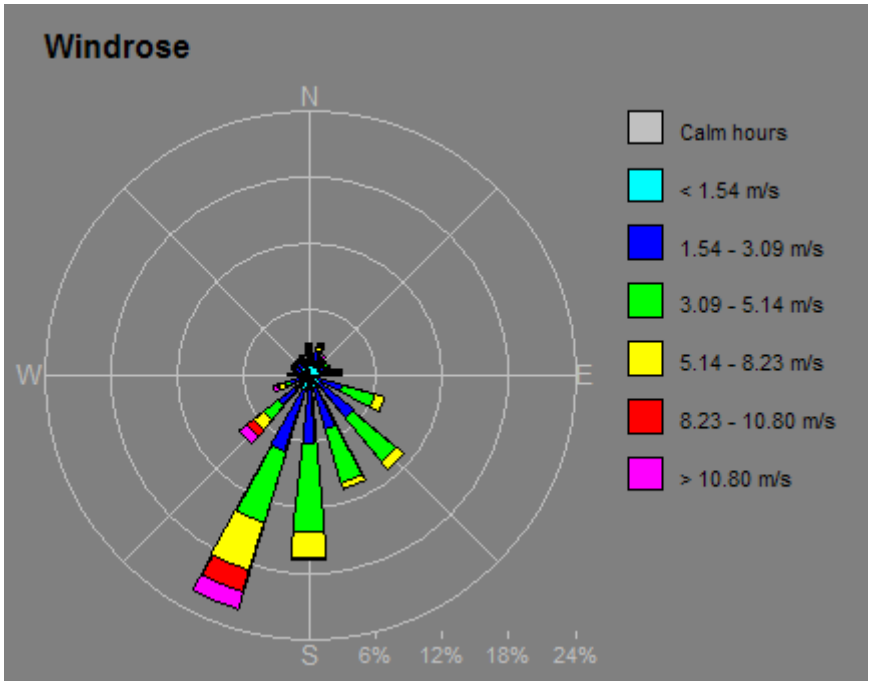


Figure 8.0d - 2002 Windrose

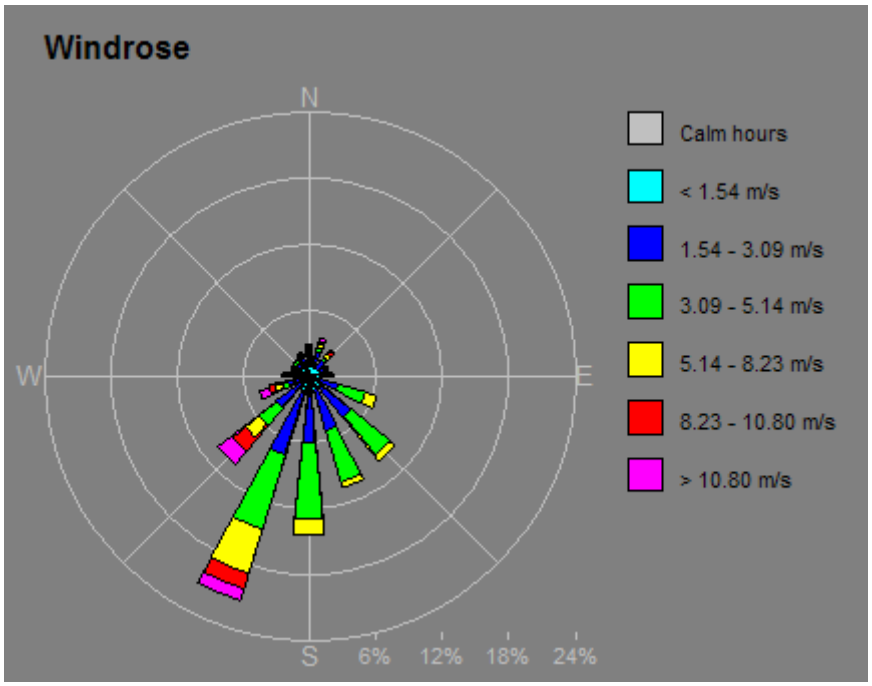
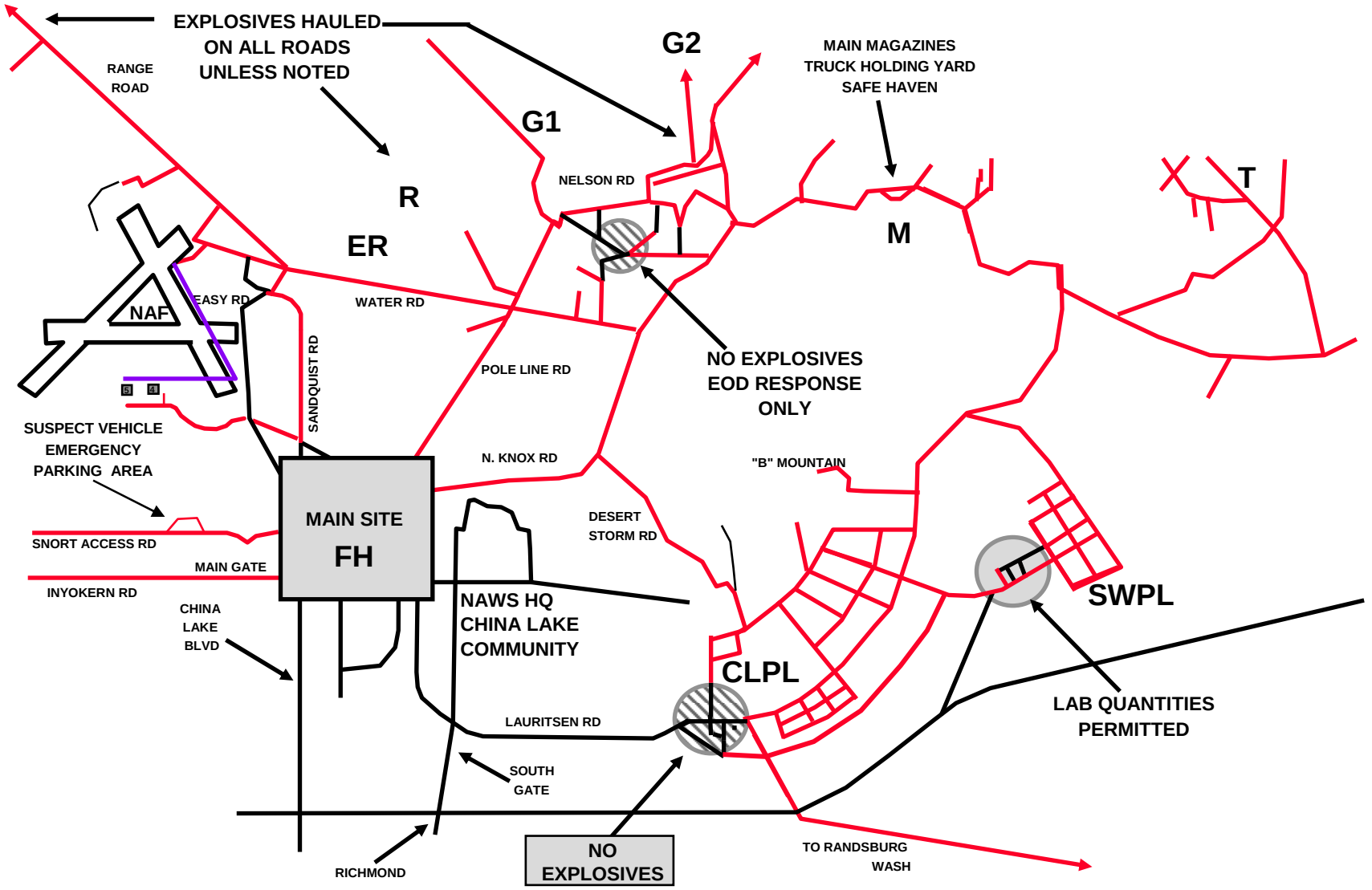


Figure 9.0a - EXPLOSIVES HAULING ROUTES

= EXPLOSIVES HAULING ROUTE

= SPECIAL ACCESS
AIRFIELD MUST BE NOTIFIED PRIOR TO MOVEMENT

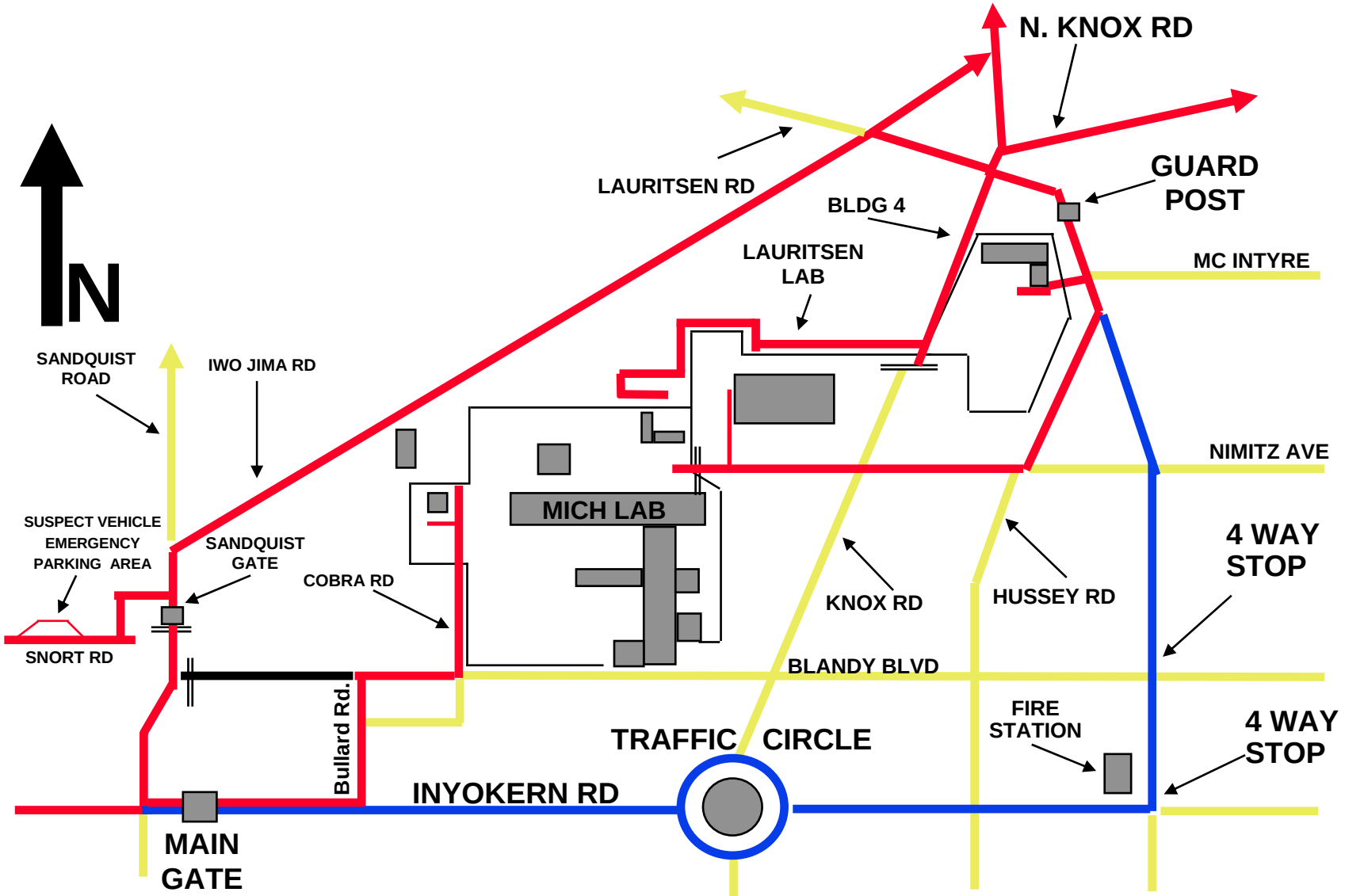


THE EXPLOSIVES HAULING ROUTES ARE AUTHORIZED AND DISTRIBUTED BY THE EXPLOSIVES SAFETY OFFICER CODE 844000D.
IF CORRECTIONS ARE NEEDED PLEASE CONTACT THE SAFETY OFFICE AT EXTENSION 939-2315 FOR ASSISTANCE.

REV5
7/8/02
(1)

Figure 9.0b - EXPLOSIVES HAULING ROUTES

EXPLOSIVES HAULING ROUTE
= PRIMARY
= ALTERNATE

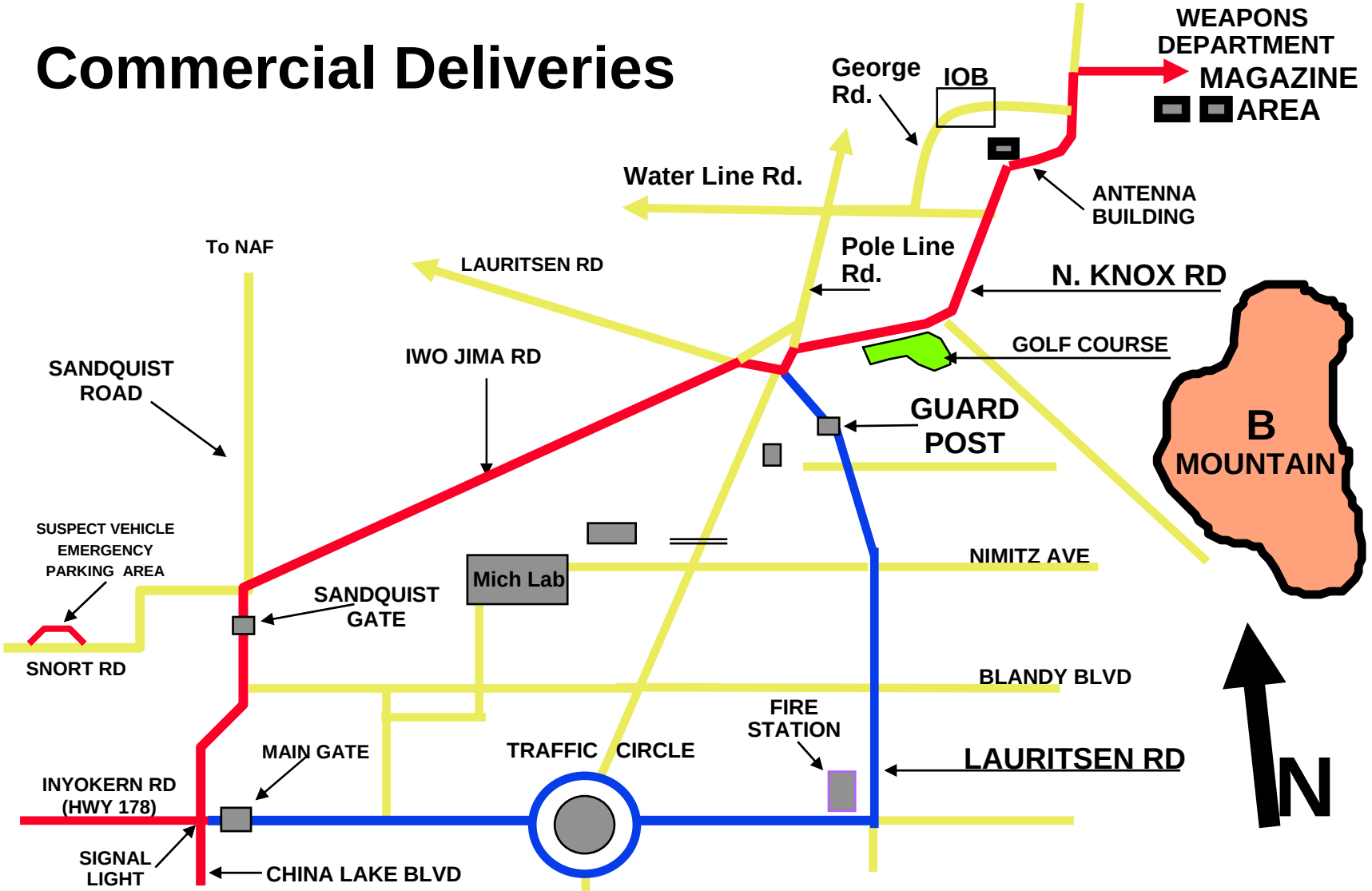


REV5
7/8/02
(2)

THE EXPLOSIVES HAULING ROUTES ARE AUTHORIZED AND DISTRIBUTED BY THE EXPLOSIVES SAFETY OFFICER CODE 844000D.
IF CORRECTIONS ARE NEEDED PLEASE CONTACT THE SAFETY OFFICE AT EXTENSION 939-2315 FOR ASSISTANCE.

Figure 9.0c - EXPLOSIVES HAULING ROUTES

= PRIMARY EXPLOSIVES HAULING ROUTE
= ALTERNATE



THE EXPLOSIVES HAULING ROUTES ARE AUTHORIZED AND DISTRIBUTED BY THE EXPLOSIVES SAFETY OFFICER CODE 844000D.
IF CORRECTIONS ARE NEEDED PLEASE CONTACT THE SAFETY OFFICE AT EXTENSION 939-2315 FOR ASSISTANCE.

REV5
7/8/02
(3)

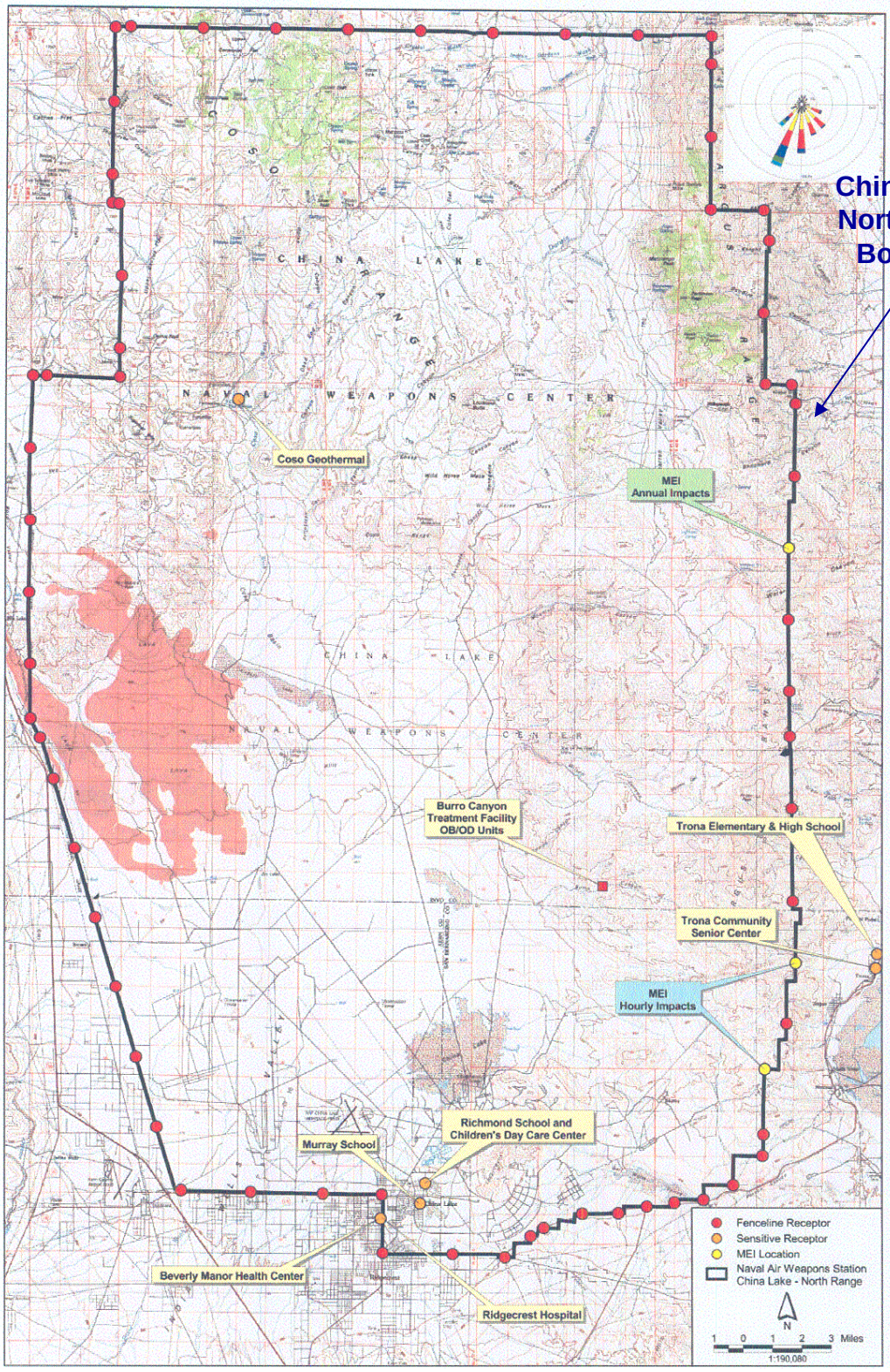


Figure 10.0 – Location of Human Receptors

EXPLOSIVE ORDNANCE DISPOSAL TEAM JOB REQUEST
(CONTINUATION SHEET - DISPOSAL OPERATIONS)

1. You must complete this form before EOD will accept ordnance destined for disposal.
2. The following publications could assist you in locating specific explosives and their compositions: NAVSEA OP 3163 (List of Explosives for Navy Munitions) and NSWC MP 88-116 (Navy Explosives Handbook, Part III).

ITEM NO.	QTY	NIIN AND NOMENCLATURE	LOT/SERIAL NUMBER	BUILDING NUMBER	ITEM TOTAL EXPL WT	ITEM FILLER
		EXAMPLE 8027 for LAB R&D WASTE				
JS-1	3	ZZ123 Sample Propellant Contaminated paper, rags, tissues, Al foil, plastic beakers with explosive residue Everything is in one large velostat bag Total gross weight (incl bag) = 2.0 lbs	GAP-1-1	13100	1.5 lbs	CL-20 - 30% BuNENA - 20% ADN - 40% NC, GAP, BTTN (<10%)
JS-2	1	PBXN-112 Scrap AE424 Velostat Bag inside Cardboard Box Total gross weight (incl bag & box) = 22 lbs	012345	10582	18 lbs	HMX

NAME	CODE / ORGANIZATION NAME	TELEPHONE	DATE OF REQUEST
John Smith	471111D	9-1234	27 Aug 2001

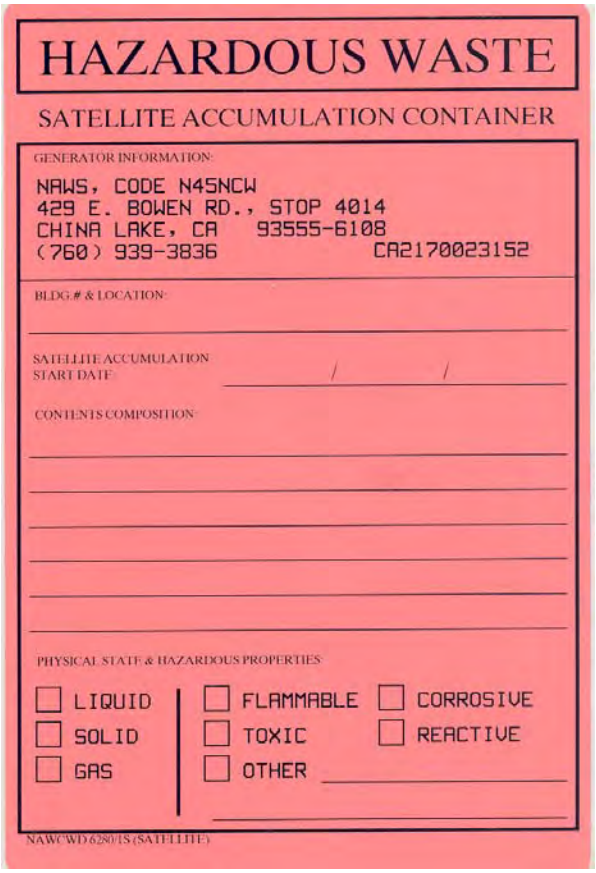
SIGNATURE	JOB ORDER NUMBER	DATE PICKED UP	PICKED UP BY

EPO REP SIGNATURE	DATE	EOD DBOS SIGNATURE	DISPOSAL DATE

NAWS 8027/2A (Rev 9-2000)

Page _____ of _____

Figure 11.0 – Example of Completed NAWS 8027/2 Form



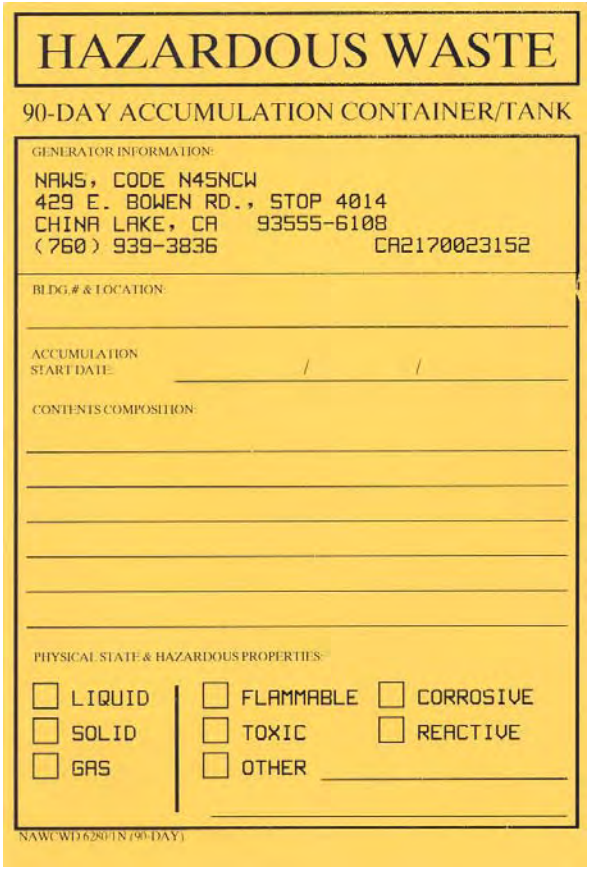
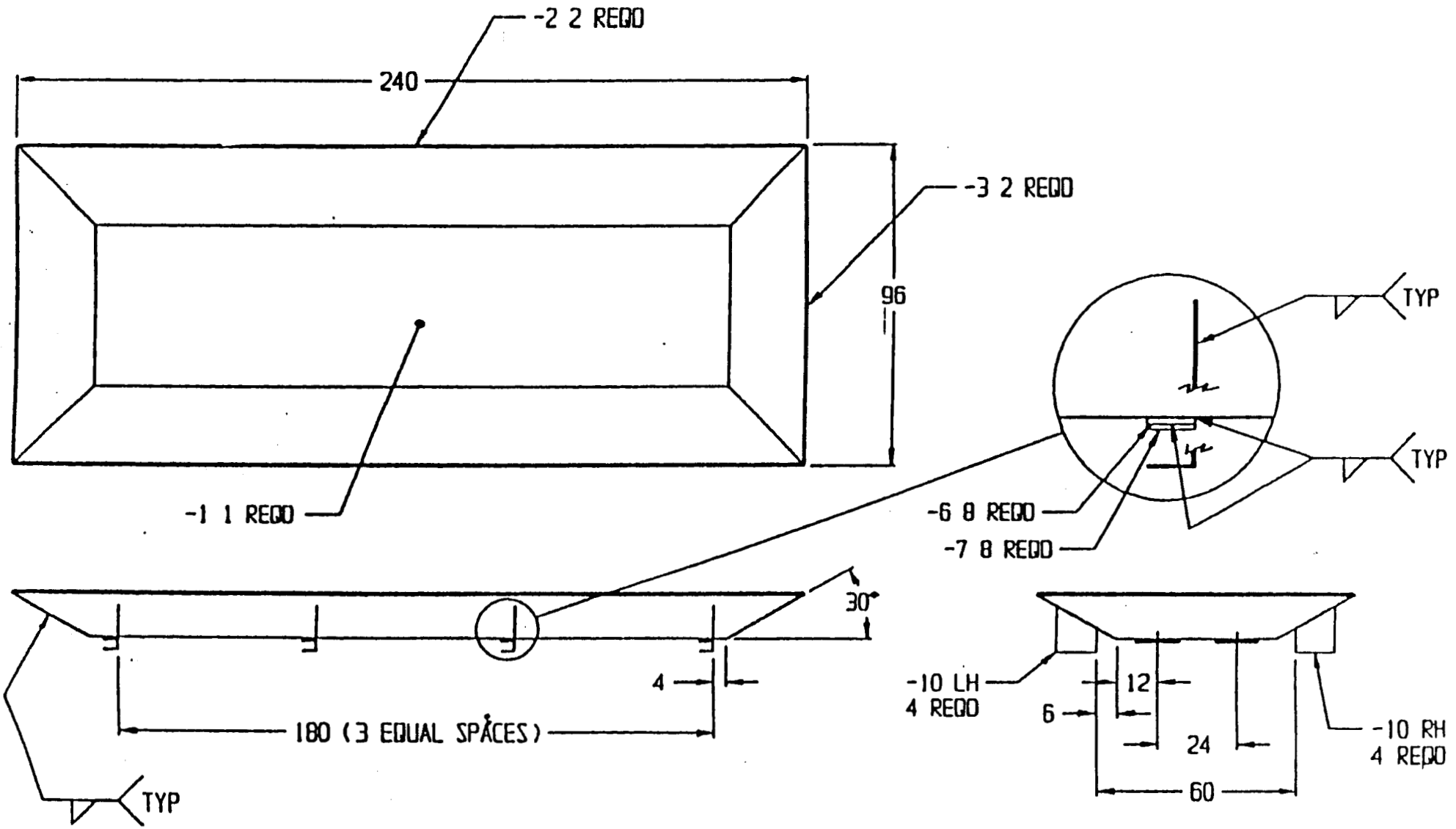


Figure 12.0 – Generator Hazardous Waste Label



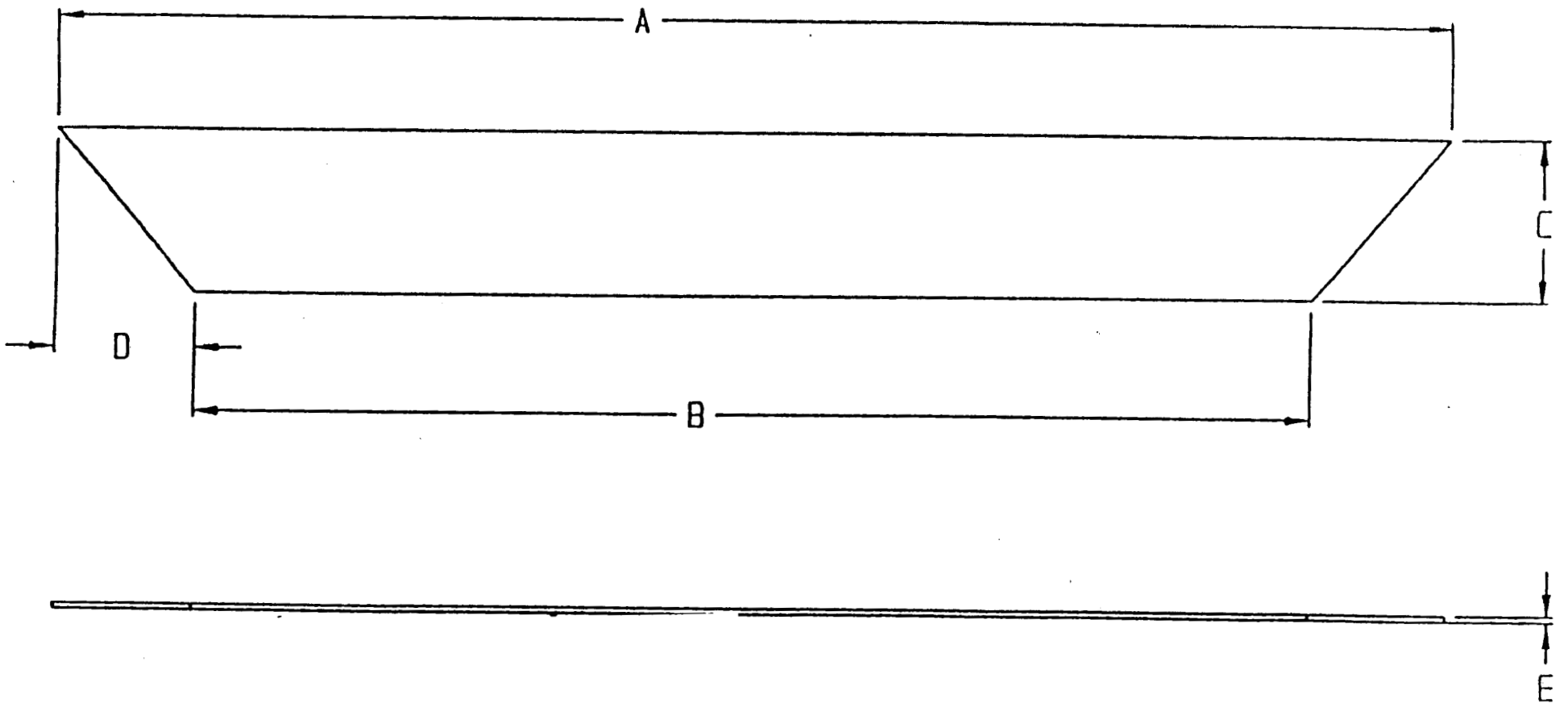
-44 TRAY ASSY
1 REQD

AMMUNITION EQUIPMENT DIRECTORATE
TOOELE ARMY DEPOT
TOOELE, UTAH 84074

FIGURE 13.0 – BURN PAN DIMENSIONS

1. MATERIAL, PLATE STEEL PER AISI 1020 OR EQUAL

D W NO.	REQD	A	B	C	D	E
-2	2	239	192	27 9/64	23 1/2	1
-3	2	95	48	27 9/64	23 1/2	1



DETAIL -2 & -3

AMMUNITION EQUIPMENT DIRECTORATE
TOOELE ARMY DEPOT
TOOELE, UTAH 84074

FIGURE 14.0 – BURN PAN DIMENSIONS

Figure 15.0 is an oversized site plan, sections, and details of the Burn Pan Containment Pad. Contact the project manager to view the figure.

APPENDIX A

Human Health Risk Assessment
(under separate cover)

APPENDIX B

Tracking Database Report
(under separate cover; not yet prepared)

APPENDIX C

Legal Description for NAWS China Lake

FIVE

REAL ESTATE AND RESTRICTED AIRSPACE

This section provides descriptions of the following subjects, current as of March 1980 unless stated otherwise:

- NWC land areas, a real estate summary
- NWC planned actions for acquistion and disposal of land
- restricted airspaces to which NWC has access

NWC LAND AREAS

The NWC land areas consist of the two major land areas, the China Lake Complex and the Randsburg Wash/Mojave B Complex, and several small non-contiguous land areas (see Fig. 7, page 5-2). These land areas and their methods of acquisition are discussed below.

The majority of the land acquired by the Navy is public domain land withdrawn for military use; some NWC land areas have been withdrawn for an indefinite term and others withdrawn for a specific time period. Withdrawal is the withholding for a special purpose, such as military use, of an area of Federal land from settlement, sale, location, or entry under some or all of the general land laws, including the mining or mineral leasing laws. The Navy has acquired fee interest to several areas of land that were formerly segregated from the public domain as State school lands; these lands were acquired by the Federal Government through land exchange conducted by the Bureau of Land Management (BLM), Department of the Interior. The Navy also leases use of certain State school lands. The Navy has acquired certain former privately owned lands and mineral interests through the methods of negotiated purchase in some cases, and through civil complaint in condemnation in others.

CHINA LAKE COMPLEX

The 604,849 acres of the China Lake Complex are located in three counties: Kern, Inyo, and San Bernardino. The land falls in three categories: land withdrawn from the public domain, former State school lands, and former privately owned lands and mineral claims (see Fig. 8, page 5-5).

Disposal-by-sale of 115 acres of land and 600 Wherry housing units was completed in January, 1980. These assets were formerly a part of the NWC China Lake Complex. The figures shown below for acres of former privately owned land in Kern County, and the overall total acres in the China Lake Complex, reflect the completion of the Wherry housing disposal action.

Land Category	Kern County	Inyo County	San Bernardino County	Total Acres
Public Domain	23,233	427,999	73,635	524,867
Former State School Lands	1,040	22,938	1,520	25,498
Former Private Lands (Fee)	46,121	7,309	1,054	54,484
Total	70,394	458,246	76,209	604,849

The public domain land was acquired by withdrawal for an indefinite term by means of Public Land Order No. 431 of 19 December, 1947, as amended by the following Public Land Orders (PLO):

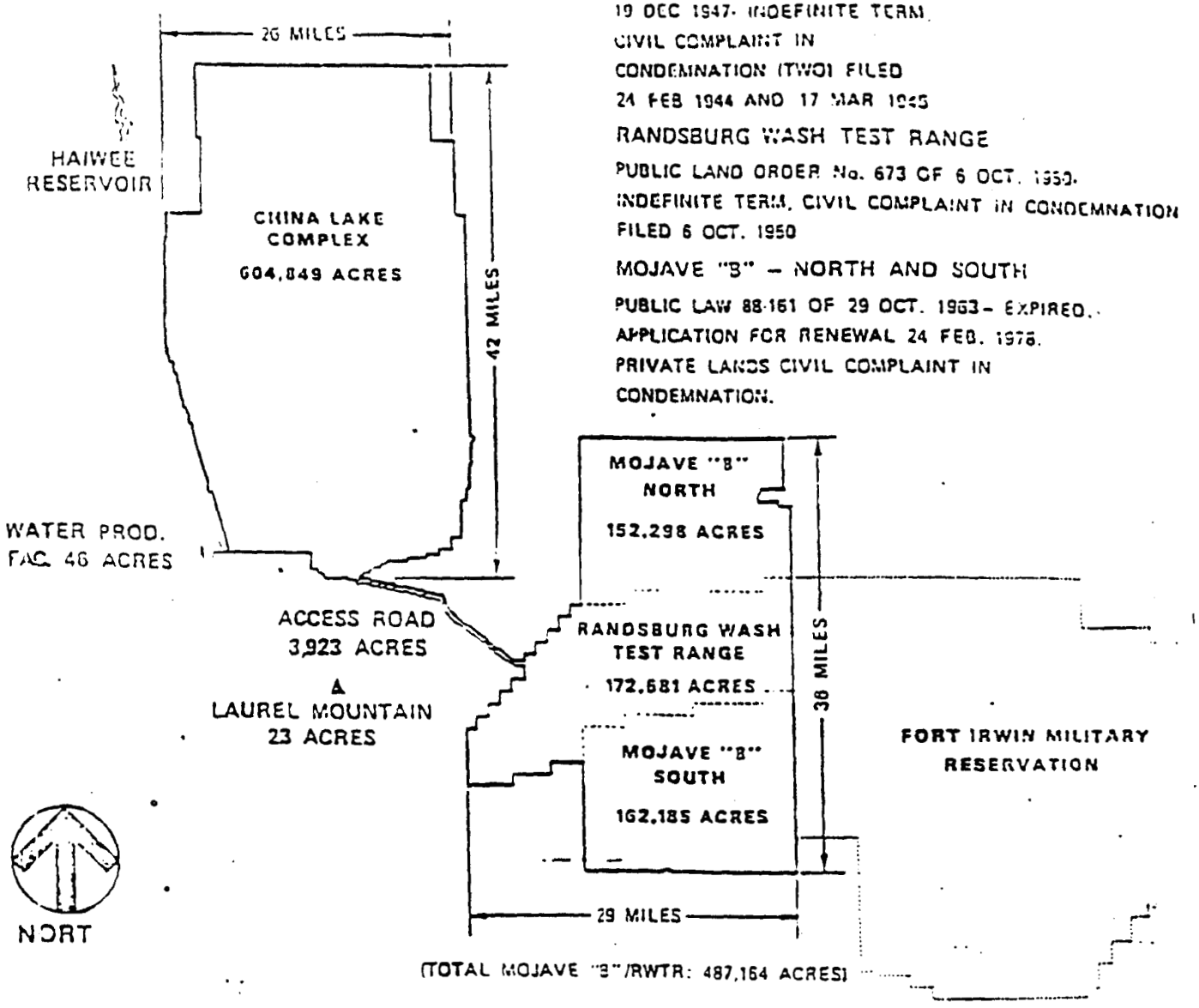
- PLO No. 1005 of 3 September 1954
- PLO No. 2916 of 30 January 1963
- PLO No. 3209 of 30 August 1963
- PLO No. 4300 of 9 October 1967

With the exception of PLO No. 4300, all the Public Land Orders are exclusive withdrawals, meaning that the land is withheld from sale or any other action under the existing general land laws.

The former State school lands were acquired by the Federal Government by means of a land exchange conducted by BLM, Department of the Interior. The State of California conveyed fee ownership of the State school lands in the China Lake Complex to the Federal Government by deed dated 22 July, 1953. The deed of conveyance also included State school lands in Randsburg Wash.

The former privately owned lands and mineral claims were acquired in fee by the following Civil Complaints in Condemnation:

- Civil 3472-H, filed 24 February, 1944
- Civil 311-ND, filed 17 March, 1945



CHINA LAKE COMPLEX

PUBLIC LAND ORDER No. 431 OF 19 DEC 1947- INDEFINITE TERM. CIVIL COMPLAINT IN CONDEMNATION (TWO) FILED 24 FEB 1944 AND 17 MAR 1945

RANDSBURG WASH TEST RANGE

PUBLIC LAND ORDER No. 673 OF 6 OCT. 1950. INDEFINITE TERM. CIVIL COMPLAINT IN CONDEMNATION FILED 6 OCT. 1950

MOJAVE "B" – NORTH AND SOUTH

PUBLIC LAW 88-161 OF 29 OCT. 1963 – EXPIRED. APPLICATION FOR RENEWAL 24 FEB. 1976. PRIVATE LANDS CIVIL COMPLAINT IN CONDEMNATION.

WATER PRODUCTION FACILITIES AT INYOKERN AIRPORT

CIVIL COMPLAINT IN CONDEMNATION FILED 15 MAR 1973

ACCESS ROAD

PUBLIC LAND ORDER No. 3450 OF 23 SEPT. 1964- INDEFINITE TERM–

LAUREL MOUNTAIN

23 ACRES SEE TEXT

SALTON SEA TEST RANGE

21,821 ACRES SEE TEXT

WHIRL TOWER

3,720 ACRES SEE TEXT

TOTAL NWC REAL ESTATE 1,121,546 ACRES *

* TOTAL NWC REAL ESTATE DOES NOT INCLUDE CORONA REAL ESTATE 481 ACRES SEE TEXT

NWC real estate

APPENDIX D

Ecological Risk Assessment
(under separate cover)

APPENDIX E

Seismic Assessment Report by MAA Engineering

MAA ENGINEERING CONSULTANTS, INC.
Geotechnical & Environmental Engineering
201 S. Santa Fe Avenue, Suite 103
Los Angeles, CA 90012
(213) 680-4000 FAX: (213) 680-3726

January 13, 1990

Mr. H.P. Singh
JayKim Engineers
22632 Golden Springs Drive
Suite 110
Diamond Bar, California 91765

Subject: REPORT - GEOLOGIC ASSESSMENT
Burro Canyon Project 6111.09
Explosive Ordnance Disposal Site
Naval Weapons Center
China Lake, California
MAA Job No. 0033-014

Dear Mr. Singh:

This report presents the results of our geologic assessment of the above referenced site (Section 34/Township 24S/Range 41E/M.D.M.). The purpose of this assessment was to address two issues, specifically local Holocene fault activity and groundwater parameters influencing future development of the subject site.

HOLOCENE FAULTS

As illustrated in Figure 1, Geographic Vicinity Map, the subject site is located in the southern portion of Inyo County within the United States Naval Ordnance Test Station. The subject site lies in the base of a spur, tributary to Burro Canyon to the south. Burro Canyon is in turn tributary to a dry playa lake approximately 4 miles to the west. China Lake is approximately 5 miles southwest of the site. The subject site is located at Lat-35°48'20"N, Long-117°32'32"W.

The fault assessment included review of available maps, documents, and literature concerning Holocene faults within 3000 feet of the subject location.

As illustrated in Figure 2, Fault Trace Vicinity Map, several unnamed faults have been mapped in the immediate vicinity of the site. The nearest major fault is the Garlock Fault approximately 20 miles to the south. Nilsen and Chapman (1973), describe the Garlock fault zone as traversing from east to west forming a boundary between the Sierra Nevada and Basin Ranges geomorphic provinces to the north and the Mojave Desert geomorphic province to the south. The region is characterized by major north-trending, normal faults

along the eastern margin of the Sierra Nevada and along the west margins of the Basin Ranges province. Lesser faults trend both northwest and northeast across the ranges.

Locally, based on Trona Sheet renderings (1962), the Wilson Canyon Fault trends north/northwest, approximately 3 miles north of the subject site. Two northwest trending components of this fault system project through the northeast portion of the subject area. Two inferred trace components are located approximately 3/4 of a mile northeast and southwest of the subject site.

Presently the State of California Special Studies Zone - Preliminary Review Maps (Alquist-Priolo) is considered the most reliable source of Holocene fault delineation. The map series considers "Active Faults" as to have been active during Holocene time (0.10 Mya). The active faults are delineated as Special Studies Zones.

The Special Studies Zones Maps are based on the best available data, however, quality of data used varies. The Burro Canyon Facility is located in a region referred to as the East Shore. At this time, no Special Studies Zone has been delineated directly within a 3000-foot radius from the site. Although the Burro Canyon/East Shore area has been examined and no delineations made, this does not insure lack of fault existence or potential for surface fault rupture, either within the special studies zones or outside their boundaries.

The closest Special Studies Zones are in the Ridgecrest North and South Quadrangles located immediately southwest and south/southwest of the subject site, respectively. The delineated zones trend north-south at approximate longitude 117°40'W. The zones are approximately 7 miles to the west of the subject site at the closest approach.

GROUNDWATER PARAMETERS

Based on mapping by Dutcher and Moyle (1973) the subject site lies on the eastern flank of Indian Wells Valley in the Mojave Desert. According to Dutcher and Moyle (1973) pumpage in Indian Wells Valley has gradually increased since 1945, and in 1966 exceeded the average annual water yield.

Moyle (1963) portrays the subject area as straddling non-water bearing basement complex and Quaternary Alluvium. The basement complex is described as undifferentiated plutonic, hypabyssal, and metamorphic rocks yielding little or no water to wells. The alluvium is described as unconsolidated, moderately to well-sorted gravel, sand, silt, and clay yielding large quantities of water to wells.

Properties of the groundwater body in the immediate vicinity of the subject site are not available. Based on local geological and topographical characteristics, the alluvium soils appear to be approximately 100 feet thick, overlying the basement rock. This thickness

should be verified by a drilling program. The permanent groundwater table is believed to be located in the basement rock at an undetermined depth. The water bearing capacity of the basement rock is believed to be poor. Recent investigations in the Eastshore area have yielded a water table elevation of approximately 2,162 feet in Burro Canyon.

Figures 1 and 2 are attached and complete this report.

Very truly yours,

MAA ENGINEERING CONSULTANTS, INC.

[redacted]

Hank Jong, Ph.D.
RG #4746
Senior Engineer

[redacted]

Fred Y.M. Chen
GE #209
President

HJ/FYMC:wpd

Encl: Figure 1, Geographic Vicinity Map
Figure 2, Fault Trace Vicinity Map

REFERENCES

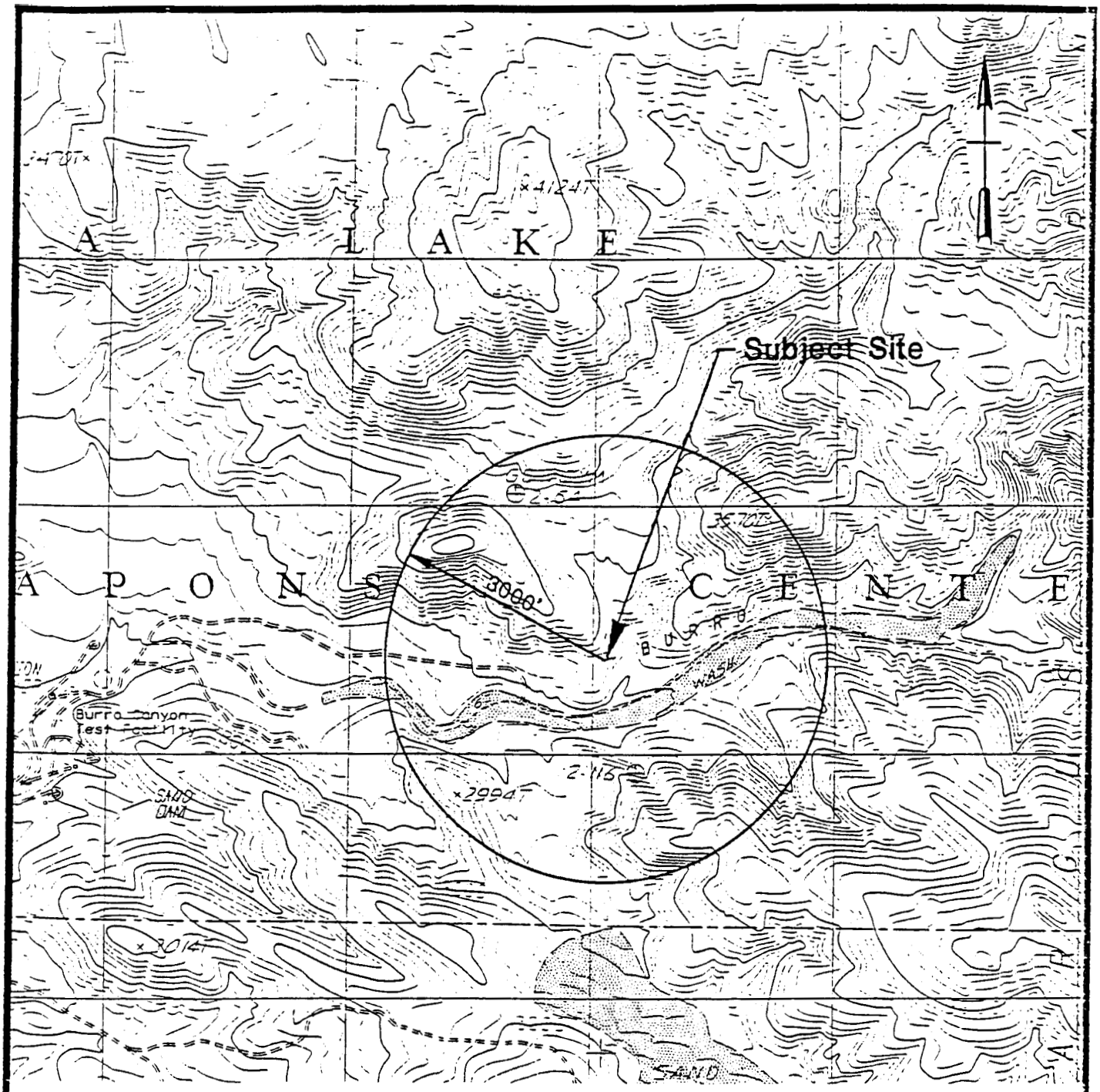
Dutcher, L.C. and Moyle, W.R. Jr., Geologic and Hydrologic Features of Indian Wells Valley, California' Geological Survey Water-Supply Paper 2007, 1973.

Geologic Map of California - Trona Sheet, Charles W. Jennings, John L. Burnett, and Bennie W. Troxel, California Division of Mines and Geology, 1962 (scale 1:250,000).

Moyle, W.R. Jr, Data on Water Wells in Indian Wells Valley Area, Inyo, Kern, and San Bernardino Counties, California, California Department of Water Resources, Bull, 91-9, 243p, 1963.

Nilsen, Tor H, and Chapman, Rodger H., Bouger Gravity Map of California, Trona Sheet: California Division of Mines and Geology, 1973, (scale 1:250,000).

State of California Special Studies Zones - Preliminary Review Map, July 1, 1989, Ridgecrest North and Ridgecrest South Quadrangles, California Division of Mines and Geology, 1989, (scale 1:24,000).



SCALE 1:24 000

1 .5 0 KILOMETERS 1 2

1000 0 METERS 1000 2000

1 .5 0 1

MILES

1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10 000

FEET

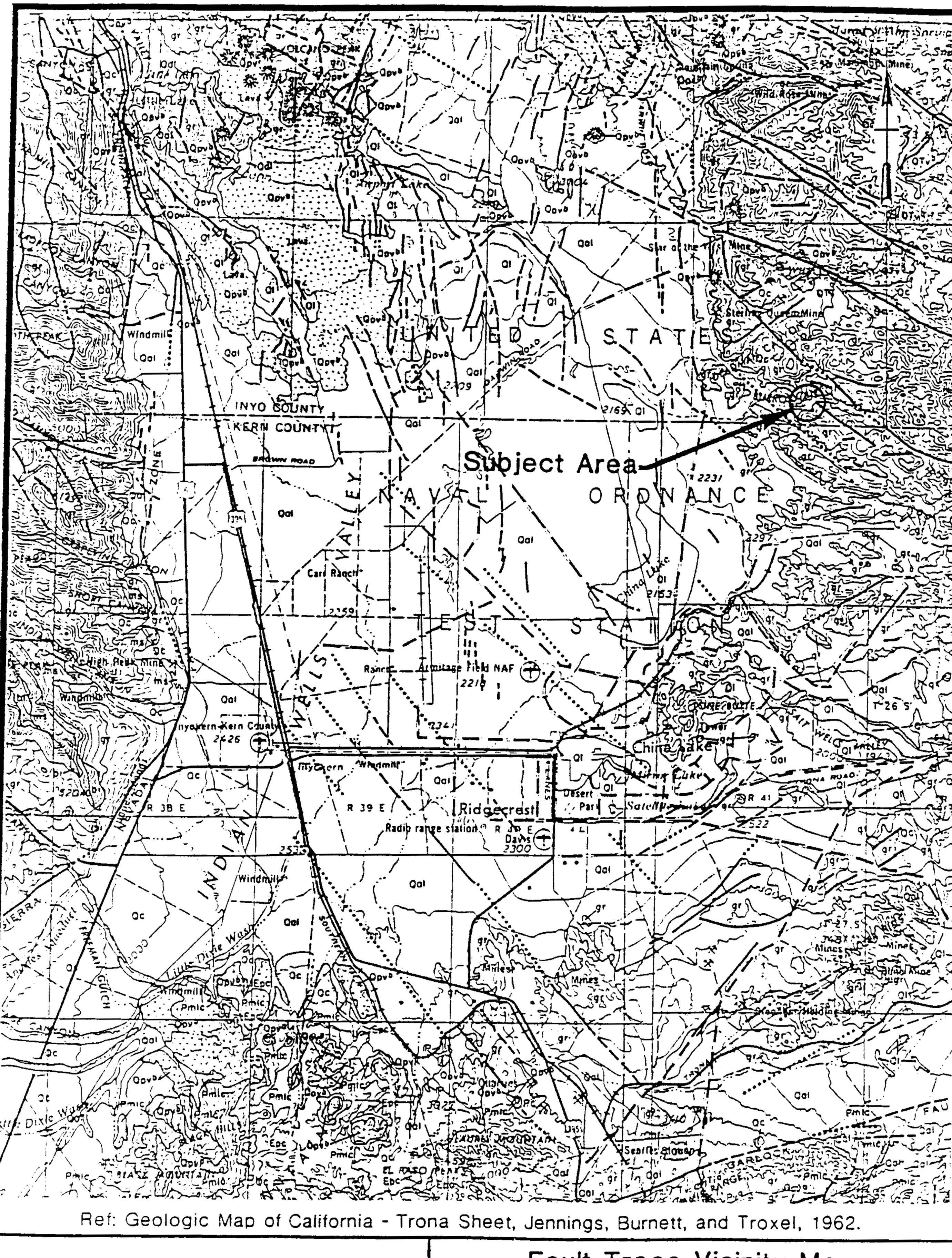
CONTOUR INTERVAL 40 FEET
SUPPLEMENTARY CONTOUR INTERVAL 10 FEET

Ref: Burro Canyon Quad, California., U.S.Geological Survey, 1982.

MAA ENGINEERING CONSULTANTS, INC.
360 East Second Street, Suite 102
Los Angeles, CA 90012

Geographic Vicinity Map

DATE	1/1/90	SCALE	1:24,000
DRAWN BY	D.P.F.	FIGURE	1
APPROVED BY	F.Y.C.	PROJECT NO.	033—014



Ref: Geologic Map of California - Trona Sheet, Jennings, Burnett, and Troxel, 1962.

MAA ENGINEERING CONSULTANTS, INC.
360 East Second Street, Suite 102
Los Angeles, CA 90012

Fault Trace Vicinity Map

DATE	1/1/90	SCALE	1:250,000
DRAWN BY	D.P.F.	FIGURE	2
APPROVED BY	F.Y.C.	PROJECT NO.	033–014

APPENDIX F

Groundwater Investigation Report
(under separate cover)

APPENDIX G

Monitoring Plan
(not yet prepared)

APPENDIX H

Soil Investigation Summary Report for 1989 – 2001 (Jan 02)

(under separate cover)

APPENDIX I

Soil Investigation Summary Report for Sixth Site Investigation (Oct 03)

(under separate cover)

APPENDIX J

100-Year Floodplain Calculations

R.N. TUCKER & ASSOCIATES
Civil Engineers & Surveyors
123 "D" Grande Way
RIDGECREST, CALIFORNIA 93555
(619) 371-1070 378-3992

JOB Jay Kim
SHEET NO. 1 OF 2
CALCULATED BY RNT DATE
CHECKED BY DATE
SCALE

RUNOFF CALCS (SCS METHOD)

I. DRAINAGE AREA

PLANIMETERED FROM QUAD SHEETS

419,437,696 SF

9629 ACRES

II RUNOFF CURVE

GROUP B SOIL

CN = 66

III TIME OF CONCENTRATION

L = 26000 ft Y = 66

T_c = 2.6 HR

IV DESIGN PRECIP 100 YEAR

P_6 = 1.6 IN

P_{24} = 2.5 IN

V. DESIGN RUNOFF (RO)

RO = 0.6

R.N. TUCKER & ASSOCIATES
Civil Engineers & Surveyors
123 "D" Grande Way
RIDGECREST, CALIFORNIA 93555
(619) 371-1070 378-3992

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VI RAINFALL DIST

1.6/2.5 = 0.64

∴ TYPE II DIST

VII DESIGN PEAK DISCHARGE (Q)

$\frac{200/66 - 2/2.6}{} = 0.396$

$g = 115$ CSM/INCH

$Q = \frac{115\ (9629)\ (0.6)}{640} = 1{,}038$ CFS

R.N. TUCKER & ASSOCIATES
Civil Engineers & Surveyors
123 "D" Grande Way
RIDGECREST, CALIFORNIA 93555
(619) 371-1070 378-3992

JOB Jay Kim
SHEET NO. 1 OF 5
CALCULATED BY RNT DATE
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SCALE X-SECTIONS

A S = 0.0345

75 15 ℄ 8 33
750 735 731.5 735 740

B S = 0.0357

70 38 6 ℄ 8 26 GV 78
750 730 729.3 730 735 745

C S = 0.0286

46 10 30 ℄ 3° 15 74
740 730 728 27.6 28 730 734

D S = 0.0362

35 6 ℄ 5 30 53
730 724 723 724 729 730

E S = 0222

43 3 ℄ 3 36
725 720 719.8 720 725

12 F S = 0222
719 ℄ 36
711.0 717

G S = 0294

37 ℄ 38
710 704.0 708

H

48 ℄ 37
704 700.2 705

R.N. TUCKER & ASSOCIATES
Civil Engineers & Surveyors
123 "D" Grande Way
RIDGECREST, CALIFORNIA 93555
(619) 371-1070 378-3992

JOB Jai Kuna
SHEET NO. 2 OF 5
CALCULATED BY RNT DATE
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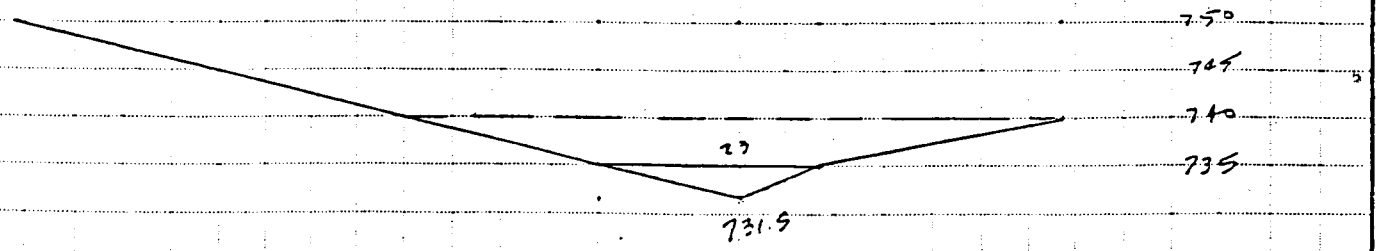
SCALE

SECTION A



$A = \frac{23(3.5)}{2} + \left(\frac{23+66}{2}\right)(5) = 267.75$ SF

$R = A/p = 3.9 \quad S = 0.0345$

$Q = \frac{1.486}{0.03}(267.75)(3.9)^{2/3}(.0345)^{1/2} = 6130$ CFS

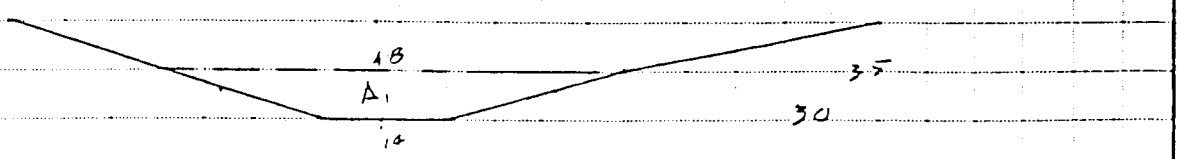
$\frac{1038}{6130} = 0.17$

$(0.17)(2678) = 45.3$

$45.3 - 40.3 = 5.0$ SF

$5/23 = 0.3\pm$ ∴ WSEL 735.3

SECTION B



$A_1 = \frac{48+14}{2}(5) = 155 \quad S = 0.0357 \quad R = 3.2$

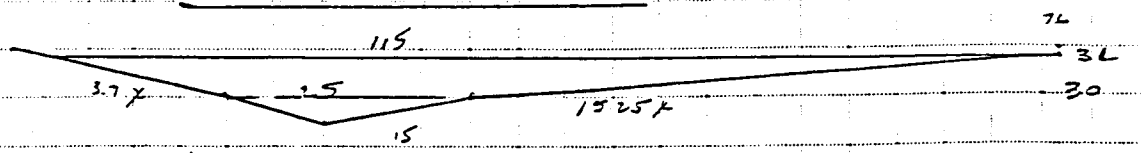
$Q = (49.53)(155)(3.2)^{2/3}(.0357)^{1/2} = 3162$

$\frac{1038}{3162}(155) = 51$ SF ∴ WSEL 732.5

R.N. TUCKER & ASSOCIATES
Civil Engineers & Surveyors
123 "D" Grande Way
RIDGECREST, CALIFORNIA 93555
(619) 371-1070 378-3992

JOB Clay Kuna
SHEET NO. 3 OF 5
CALCULATED BY RNT DATE
CHECKED BY DATE
SCALE

SECTION C S = 0.0286



$A_1 = \frac{(2.4)(25)}{2} = 30\,SF$ $\quad R = \frac{310}{115} = 2.7$

$A_2 = \left(\frac{25+115}{2}\right)(4) = 280\,SF$

$A_{REQD} = \frac{Q_n}{(1.486)(R)^{2/3} S^{1/2}} = \frac{1038(.03)}{1.486\,(2.7)^{2/3}(.0286)^{1/2}} = 63.7$

$\left(\frac{25 + 16x + 25}{2}\right)(x) = 34$

$8x^2 + 25x$

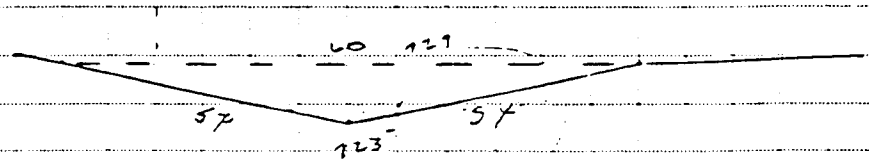
$x^2 + 3.125x + 2.44 = 4.25 + 2.44$

$(x + 1.56)^2 = 6.69$

$x = \sqrt{6.69} - 1.56 = 1$

$\therefore$ WS @ 731.0

SECTION D S = 0.0362



$A = \frac{(6)(60)}{2} = 180\,SF$

$A_{REQD} = \frac{20.95}{(3)^{2/3}(.0362)^{1/2}} = 52.75$

$\frac{10x^2}{2} = 52.75$

$2x^2 = 10.55$

$x = 3.25$ $\quad \therefore$ WS @ 726.5

R.N. TUCKER & ASSOCIATES
Civil Engineers & Surveyors
123 "D" Grande Way
RIDGECREST, CALIFORNIA 93555
(619) 371-1070 378-3992

JOB Hay Run
SHEET NO 4 OF 5
CALCULATED BY RNT DATE
CHECKED BY DATE
SCALE

SECTION E S = 0.0222

8x 6 6.6x

$A = \left(\frac{6+7.9}{2}\right)(x) = 212.50$

$R = 2.68$

$Q = (212.50)(49.53)(2)^{2/3}(.0222)^{1/2}$

$= 3050$ CFS

$\frac{1038}{3050}(212.50) = 72.3$ SF

$\left(\frac{6+14.6x+6}{2}\right)x = 72.3$

$6x + 7.3x^2 = 72.3$

$x^2 + .82x = 9.9$

$(x+.41)^2 = 10.07$

$x = 3.17 - 0.41 = 2.75$ Ft

∴ WS @ 722.8

SECTION F S = 0.0222

66

10.5x 4 6x

A = 132 SF

R = 2

$A_{REQD.} = \frac{20.95}{(2)^{2/3}(.0222)^{1/2}} = 88.4$

$\frac{16.5x^2}{2} = 88.4$

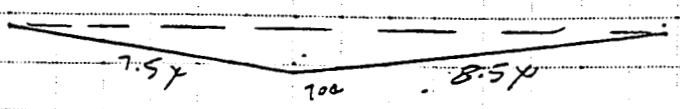
$x^2 = 10.71$

$x = 3.3$ ∴ WS @ 714.0

R.N. TUCKER & ASSOCIATES
Civil Engineers & Surveyors
123 "D" Grande Way
RIDGECREST, CALIFORNIA 93555
(619) 371-1070 378-3992

JOB Jay Kiar
SHEET NO 5 OF 5
CALCULATED BY RNT DATE
CHECKED BY DATE
SCALE

SECTION G S = 0294



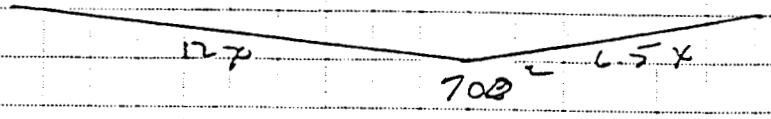
$$A_{REQD} = \frac{20.95}{(2)^{2/3}(.0294)^{1/2}} = 76.8$$

$$\frac{16x^2}{2} = 76.8$$

$$x^2 = 9.6$$

$$x = 3.1 \quad \therefore \text{ WS @ } 707.1$$

SEC. H S = 4%



$$A_{REQD} = \frac{20.95}{(2)^{2/3}(.04)^{1/2}} = 65.8 \text{ SF}$$

$$\frac{18.5x^2}{2} = 65.8$$

$$x^2 = 7.12$$

$$x = 2.7 \quad \therefore \text{ WS @ } 703.0$$

R.N. TUCKER & ASSOCIATES
Civil Engineers & Surveyors
123 "D" Grande Way
RIDGECREST, CALIFORNIA 93555
(619) 371-1070 378-3992

JOB Jay Kim
SHEET NO. 1 OF 2
CALCULATED BY RNT DATE
CHECKED BY DATE
SCALE

RUNOFF CALCS (SCS METHOD)

I. DRAINAGE AREA

PLANIMETERED FROM QUAD SHEETS

419,437,696 SF

9629 ACRES

II RUNOFF CURVE

GROUP B SOIL

CN = 66

III TIME OF CONCENTRATION

l = 26000 ft y = 66

T_c = 2.6 HR

IV DESIGN PRECIP 100 YEAR

P_6 = 1.6 IN

P_{24} = 2.5 IN

V. DESIGN RUNOFF (RO)

RO = 0.6

R.N. TUCKER & ASSOCIATES
Civil Engineers & Surveyors
123 "D" Grande Way
RIDGECREST, CALIFORNIA 93555
(619) 371-1070 378-3992

JOB Jay Kim
SHEET NO. 2 OF 2
CALCULATED BY RNT DATE
CHECKED BY DATE
SCALE

VI RAINFALL DIST

1.6/2.5 = 0.64

∴ TYPE II DIST

VII DESIGN PEAK DISCHARGE (Q)

$\frac{200/66 - 2}{2.6} = 0.396$

q = 115 csm/inch

$Q = 115 \frac{(9629)}{640} (0.6) = 1{,}038$ cfs

R.N. TUCKER & ASSOCIATES
Civil Engineers & Surveyors
123 "D" Grande Way
RIDGECREST, CALIFORNIA 93555
(619) 371-1070 378-3992

JOB Jay Kim
SHEET NO. 1 OF 6
CALCULATED BY RNT DATE
CHECKED BY DATE
SCALE X-SECTIONS

A S = 0.0345

75	15	℄	8	33
750	735	731.5	735	740

B S = 0.0357

70 38	6	℄	8	26	78
750	730	729.3	730	735	745

C S = 0.0286

46 10	30	℄	3°	15	74
740	728	727.6	728	730	734

D S = 0.0362

35	6	℄	5	30	53
730	724	723	724	729	730

E S = 0222

43	3	℄	3	36
725	720	719.8	720	725

12	F	S = 0222	
719	℄	36	
	711.0	717	

G S = 0244

37	℄	38
710	704.0	708

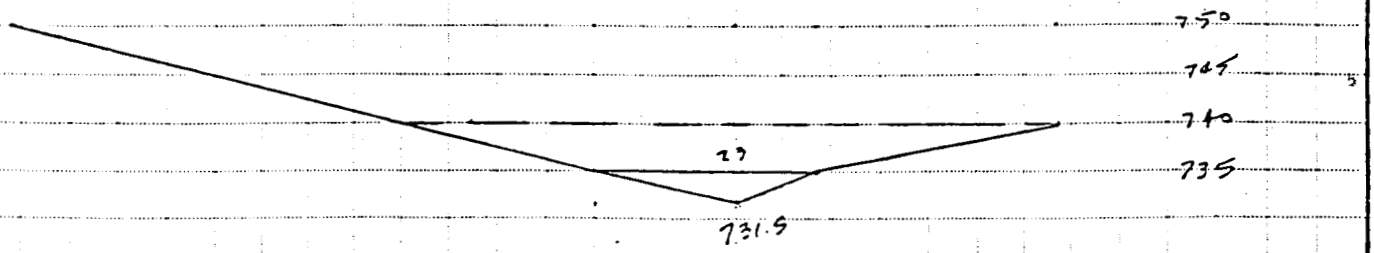
H

48	℄	37
704	700.2	705

R.N. TUCKER & ASSOCIATES
Civil Engineers & Surveyors
123 "D" Grande Way
RIDGECREST, CALIFORNIA 93555
(619) 371-1070 378-3992

JOB Jai Kim
SHEET NO. 2 OF 5
CALCULATED BY RNT DATE
CHECKED BY DATE
SCALE

SECTION A



$A = \frac{23(3.5)}{2} + \left(\frac{23+68}{2}\right)(5) = 267.75$ SF

$R = A/p = 3.9 \qquad S = 0.0345$

$Q = \frac{1.486}{0.03}(267.75)(3.9)^{2/3}(.0345)^{1/2} = 6130$ CFS

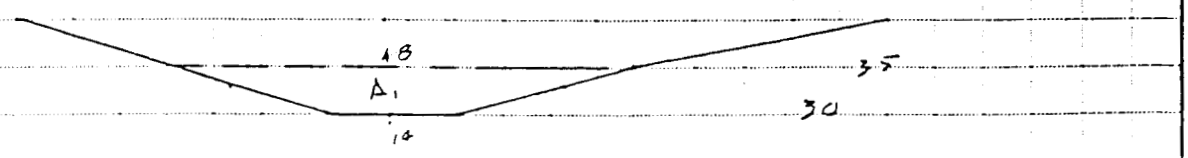
$\frac{1038}{6130} = 0.17$

$(0.17)(2678) = 45.3$

$45.3 - 40.3 = 5.0$ SF

$5/23 = 0.3\pm$ ∴ WSEL 735.3

SECTION B



$A_1 = \frac{48+14}{2}(5) = 155 \qquad S = 0.0357 \qquad R = 3.2$

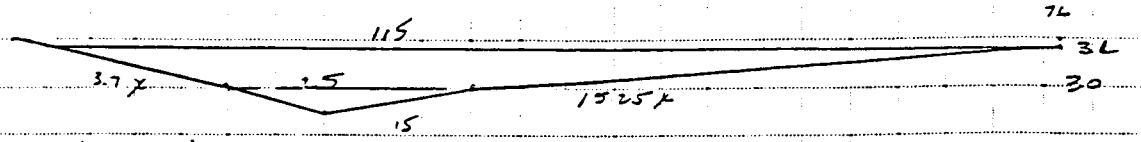
$Q = (49.53)(155)(3.2)^{2/3}(.0357)^{1/2} = 3162$

$\frac{1038}{3162}(155) = 51$ SF ∴ WSEL 732.5

R.N. TUCKER & ASSOCIATES
Civil Engineers & Surveyors
123 "D" Grande Way
RIDGECREST, CALIFORNIA 93555
(619) 371-1070 378-3992

JOB Jay Kuna
SHEET NO. 3 OF 5
CALCULATED BY RNT DATE
CHECKED BY DATE
SCALE

SECTION C S = 0.0286



$A_1 = \frac{(2.4)(25)}{2} = 30\,SF$ $R = \frac{310}{115} = 2.7$

$A_2 = \left(\frac{25+115}{2}\right)(4) = 280\,SF$

$A_{REQD} = \frac{Q_n}{(1.486)(R)^{2/3} S^{1/2}} = \frac{1038(.03)}{1.486\,(2.7)^{2/3}(.0286)^{1/2}} = 63.7$

$\left(\frac{25 + 16X + 25}{2}\right)(X) = 34$

$8X^2 + 25X$

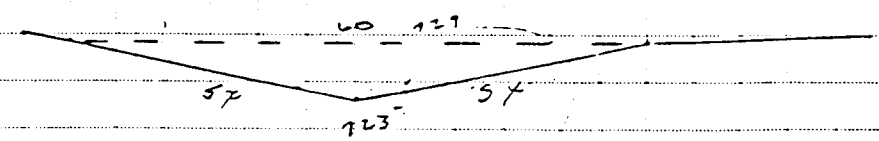
$X^2 + 3.125X + 2.44 = 4.25 + 2.44$

$(X + 1.56)^2 = 6.69$

$X = \sqrt{6.69} - 1.56 = 1$

∴ WS @ 731.0

SECTION D S = 0.0362



$A = \frac{(6)(60)}{2} = 180\,SF$

$A_{REQD} = \frac{20.95}{(3)^{2/3}(.0362)^{1/2}} = 52.75$

$10X^2 = 52.75$

$2X^2 = 10.55$

$X = 3.25$ ∴ WS @ 726.5

R.N. TUCKER & ASSOCIATES
Civil Engineers & Surveyors
123 "D" Grande Way
RIDGECREST, CALIFORNIA 93555
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SHEET NO 4 OF 5

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SECTION E S = 0.0222

8x 6 6.6x

$A = \left(\frac{6+7.9}{2}\right)(5) = 212.50$

$R = 2.68$

$Q = (212.50)(49.53)(2.7)^{2/3}(.0222)^{1/2}$

$= 3050$ CFs

$\frac{1038}{3050}(212.50) = 72.3$ SF

$\left(\frac{6 + 14.6x + 6}{2}\right)x = 72.3$

$6x + 7.3x^2 = 72.3$

$x^2 + .82x = 9.9$

$(x + .41)^2 = 10.07$

$x = 3.17 - 0.41 = 2.75$ Ft

∴ WS @ 722.8

SECTION F S = 0.0222

66

10.5x 4 6x

A = 132 SF

R = 2

$A_{REQD.} = \frac{20.95}{(2)^{2/3}(.0222)^{1/2}} = 88.4$

$\frac{16.5x^2}{2} = 88.4$

$x^2 = 10.71$

$x = 3.3$

∴ WS @ 714.0

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Civil Engineers & Surveyors
123 "D" Grande Way
RIDGECREST, CALIFORNIA 93555
(619) 371-1070 378-3992

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SHEET NO. 5 OF 5
CALCULATED BY RNT DATE
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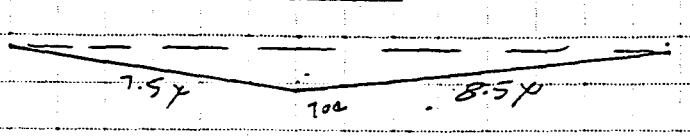
SCALE

SECTION G S = 0.294



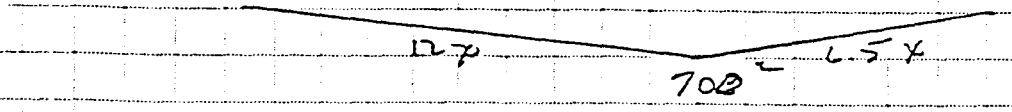
$$A_{REQD} = \frac{20.95}{(2)^{2/3}(.0294)^{1/2}} = 76.8$$

$$\frac{16x^2}{2} = 76.8$$

$$x^2 = 9.6$$

$$x = 3.1 \quad \therefore WS @ 707.1$$

SEC. H S = 4%



$$A_{REQD} = \frac{20.95}{(2)^{2/3}(.040)^{1/2}} = 65.8 \text{ SF}$$

$$\frac{18.5x^2}{2}$$

$$x^2 = 7.12$$

$$x = 2.7 \quad \therefore WS @ 703^{\circ}$$

APPENDIX K

Noise Analysis Report

wyle laboratories

February 11, 2003 J/N 47345

Ms. Laurie Zellmer
Environmental Engineer, Code 8G0000D
Naval Air Weapons Station
China Lake, CA 93555

Reference: Contract N62477-00-D-0056

Dear Ms. Zellmer:

This letter report updates Wyle's 15 January 2002 noise study report[1] for the Burro Canyon Open Burn/Open Detonation (OB/OD) (also known as the Burro Canyon EOD Facility) at the Naval Air Weapons Station (NAWS) China Lake. The purpose of this report is to address comments from the State regulatory agency pertaining to the previous study and to present additional noise analysis in support of the permit for the Burro Canyon EOD Facility.

This analysis specifically considers noise from ordnance ground operations conducted in George Sub-Range. Wyle has analyzed these operations several times previously, for Navy China Lake projects, and used different noise models where appropriate (e.g., depending on availability of new technology or requirements to use a program with certain features). The following paragraphs describe this progression of analyses for the George Sub-Range and report the primary noise results in terms of Community Noise Equivalent Level (CNEL) and un-weighted peak sound level. Appropriate criteria are presented for peak level assessment.

Three recent analyses have been conducted to estimate noise due to ordnance ground operations in George Sub-Range:

The first analysis, completed 14 August 2000[2], used the Bnoise[3] program to estimate long-term noise exposure, in terms of CNEL. At that time, Bnoise employed flat Earth modeling. Therefore, the results do not account for local terrain features that might help mitigate the noise impact from ordnance operations.

The second analysis, completed 15 January 2002, was conducted to improve the accuracy of the CNEL estimates by modeling the effects of local topography in the vicinity of George Sub-Range. This effort was completed using NMSim[4], a noise simulation model, developed by Wyle Laboratories, which includes topography propagation algorithms and ground elevation data for George Sub-Range. Additionally, this study examined the effect of seasonal atmospheric conditions on long-term noise impact. This required use of the Noise Assessment Prediction System (NAPS) [5], which uses ray-tracing algorithms to predict atmospheric effects on sound propagation. NAPS, however, can only be used to compute peak sound levels, so it was used to describe the general effect on the noise environment, rather than to make any definitive CNEL contour estimates.

Wyle Laboratories, Inc. 2001 Jefferson Davis Highway, Suite 70, Arlingtonn, VA 22202-3604 Tel: 703/415-4550, Telecopy: 703/415-4556

In the third (current) analysis, NAPS was used to compute un-weighted peak sound levels for single blast events to estimate noise impact in terms of structural damage and human annoyance. Presented together in this report, the CNEL results from the 15 January 2002 study[1] provide long-term noise exposure estimates for average year activity for the George Sub-Range and the peak level analysis provides noise exposure estimates for single ordnance events. Also, the potential for structural damage due to ground vibration is assessed in connection with the peak sound level analysis.

Long-Term Noise Exposure (CNEL)

To estimate long-term noise exposure due to ground operations conducted in the George Sub-Range, a noise analysis was conducted for the ordnance expenditure scenarios listed in Tables 1 and 2. CNEL contours were calculated for each scenario using the Noise Model Simulation (NMSim) [4] computer program. NMSim uses a database containing characteristics for each ordnance type including noise spectrum and reference levels. For each scenario, the reference levels were adjusted to account for the net explosive weight (NEW) and number of annual operations. NMSim output (e.g., Figure 1) shows C-weighted, Day-Night Average Sound Level (CDNL) contours, overlaid on a digital map of George Sub-Range and vicinity. *Since there are no evening ordnance operations in this analysis, the CDNL result is equivalent to CNEL, the Community Noise Equivalent Level.* All figure titles indicate that the results are presented in terms of CNEL. A map scale is not shown depicted with this output, although the square map region is exactly 200,000 feet by 200,000 feet. Grey colored contours, shown primarily to the east and north of the OB/OD area, represent local topography. For each scenario, NMSim was run in topography mode to determine the effects of local terrain on blast noise propagation. The results for each expenditure scenario (1 through 8) are provided in Figures 1-8.

Table 1. Modeled Average Year Ordnance Expenditures – Existing & Projected For OB/OD Facility

Area/Facility	Ordnance Type	Expenditure Scenario 1	Expenditure Scenario 2	Expenditure Scenario 3	Expenditure Scenario 4
Burro Canyon Test Facility	NEW (lbs)	3,223	3,223	3,223	3,223
Burro Canyon EOD Facility	NEW (lbs)	450,000	750,000	1,125,000	1,500,000
B Mountain EOD Facility	NEW (lbs)	343	343	343	343
-	105 mm Round	9	9	9	9
-	120 mm Round	669	669	669	669
-	155 mm Round	115	115	115	115
-	5" Gun Round	247	247	247	247

Table 2. Modeled Average Year Ordnance Expenditures – Projected For OB/OD Facility

Area/Facility	Ordnance Type	Expenditure Scenario 5	Expenditure Scenario 6	Expenditure Scenario 7	Expenditure Scenario 8
Burro Canyon Test Facility	NEW (lbs)	4,028	4,028	4,028	4,028
Burro Canyon EOD Facility	NEW (lbs)	450,000	750,000	1,125,000	1,500,000
B Mountain EOD Facility	NEW (lbs)	428	428	428	428
-	105 mm Round	11	11	11	11
-	120 mm Round	836	836	836	836
-	155 mm Round	144	144	144	144
-	5" Gun Round	309	309	309	309

CNEL contours were also computed for ordnance ground operations occurring only at the Burro Canyon EOD Facility. These operations consisted of the detonation of ordnance as shown in Table 3. The NMSim results for these five expenditures are shown in Figures 9 through 13.

Table 3. Modeled Ordnance Expenditures at the Burro Canyon EOD Facility

Ordnance Type	Number of Events	Total NEW (pounds)
22,500 pounds NEW per event	26 events per year	585,000
	36 events per year	810,000
	52 events per year	1,170,000
	64 events per year	1,440,000
	365 events per year (one single event per day)	8,212,500

The effect of topography is illustrated by comparing Figures 13 and 14. Figure 13 shows the CNEL contours for 365 ordnance events per year (one single event per day), at the Burro Canyon EOD Facility, with topography. Figure 14 shows the same scenario with flat Earth modeling. In this figure, topography contours are shown in the display but are excluded from the calculations.

In comparing these revised figures to those generated in the 14 August 2000 report[2], it is clear that the revised CNEL contours are significantly smaller. There are two factors that account for this change. The first factor is the influence of local topography on blast noise propagation, as illustrated above. The second factor arises due to more accurate scaling of the strength of individual blast events. Bnoise[3] has a limit on the strength of single blast events of 500 pounds TNT. With no breakdown of individual blast strengths, all events were previously modeled using the appropriate number of 1-pound TNT charges. For example, the 450,000-pound NEW expenditure was modeled using 450,000 1-pound TNT charges. For this follow on study, Wyle was provided with the explosive weight for single ordnance operations at the Burro Canyon EOD Facility. At this facility, single events are represented as composed of 7,500 pounds explosive weight or 11,250 pounds NEW (assuming use of a worst-case TNT-equivalent factor of 1.5 for the common explosive RDX), with a range limit of 15,000 pounds explosive weight. So, in this revised study, the 450,000-pound case is modeled as (40) 11,250-pound NEW blast

events. The result is a much smaller noise impact with fewer, although larger magnitude, blast events. The relationship, illustrating this effect, between sound pressure levels for various blast yields is described in ANSI Standard S2.20-1983[6].

In the next section, peak noise levels are estimated for representative single events associated with the Burro Canyon EOD Facility and average seasonal atmospheric conditions.

Single-Event Noise Exposure (Peak Sound Level)

EOD blasts produce impulsive sonic disturbances (airblast) and ground vibrations similar to those caused by surface mine blasting. For both, an explosion occurs and, depending on the blast confinement, various amounts of rock fragmentation and ground movement take place. This generates a pressure wave in air characterized by an initial rapid rise in level above the ambient. The resulting ground vibration can be described as a time-varying displacement, velocity, or acceleration of a particular point (particle) in the ground.

EOD blasting can be accomplished via untamped (i.e., above ground) shots and tamped (underground) confined shots. The effects of both types of shots depend on the charge weight, distance between the EOD range and receiver location, and weather conditions; tamped shots are also affected by blast design (method of securing the charge).

In this analysis, un-weighted peak sound levels are estimated for (4) single event expenditures; 7,500 pounds NEW, 11,250 pounds NEW, 15,000 pounds NEW, and 22,500 pounds NEW. All blast events are modeled as surface events, similar to the way operations are conducted at China Lake, and the noise impact of each blast event is estimated for four average seasonal atmospheric profiles; spring (March-May), summer (June-August), fall (September-November), and winter (December-February). These average seasonal upper air profiles were obtained from NAVAIR Weather China Lake.

Atmospheric conditions can have a strong effect on sound propagation, particularly where large distances are concerned. The relative humidity and ambient temperature have a substantial effect on the attenuation at high frequencies and long distances through air absorption. The main effect, however, is refraction (a change in direction of the sound waves) produced by vertical gradients of wind and temperature[7]. During the day, the air temperature usually decreases steadily with increasing height above ground, a condition known as temperature lapse. At night, the temperature often decreases with decreasing height (due to radiation cooling of the ground surface), a condition known as temperature inversion, which may extend to 100 meters or more above the ground late at night. Sound refracts (bends) downward during temperature inversions (positive thermal gradient) or when the propagation is downwind. Such downward-refracting conditions are favorable for sound propagation.

To understand how these seasonal atmospheric conditions affect blast noise propagation on George Sub-Range, the upper air profiles were examined in two ways. First, temperature, wind, and speed of sound profiles were examined to determine if a positive gradient existed. Although no positive thermal gradients were found in the average seasonal data, a positive wind gradient exists under certain conditions for the winter data sample. By examining the wind speed and direction, with altitude, it was determined that a positive wind gradient - and speed of sound gradient - existed in the region located approximately 120-130 degrees (measured clockwise) from true north.

To confirm these results, and estimate peak sound levels for the single events described above, involved running the NAPS[5] computer program. The NAPS program was run for all blast strengths and all four seasonal profiles; ray trace and noise contour outputs were examined, for each case. NAPS output confirms the existence of a positive speed of sound gradient for the winter period in the 120-130 degree region. In this region, rays are refracted downward and over the top of the mountain and the resulting noise contour estimate show sound levels propagating approximately twice as far as they do along the other radials. When NAPS is run using the atmospheric profiles for spring, summer, and fall, this anomalous long-range propagation effect is absent. Also, the peak sound level contours for the spring, summer and fall seasons are nearly identical in shape and extent from the blast location; only fine structure in the contours distinguishes these three cases.

For brevity, only the peak sound level contours for spring conditions are shown (Figures 15 through 18, in order of increasing blast strength). Since the spring contours are slightly more conservative than the summer or fall contours, these were chosen to represent the peak levels for all three seasons. Note that the NAPS figures do not display a detailed map of the area, but indicate the essential NAWS China Lake boundaries and several local towns for reference.

Estimated peak sound level contours for the winter season are shown in Figures 19 through 22. These contours extend beyond the eastern property boundary, in the 120-130 degree region, as a result of the positive wind gradient identified in the average winter atmospheric data sample. As discussed previously, this atmospheric effect supports long-range sound propagation and is the cause of the extended contour estimated for the winter season.

The noise impact associated with each blast event (in Figures 15 through 22) is assessed below in terms of both the potential for annoyance and structural damage due to blast-induced vibration. Criteria for assessing these impacts were reviewed and the following standards were determined to be appropriate:

Annoyance due to blast-induced structural vibration

From NRC 1977 and ANSI S3.29, 1983 the threshold of annoyance from blast-induced structural vibration is 0.05 inch/sec. From correlation between airblast and consequent vibration of residential structures by Siskind et al 1980, this corresponds to a peak sound level of 121 dB. A criterion of 120 dB (peak SPL) is therefore recommended.

Damage due to Vibration

There are no standards for avoiding vibration damage. However, data are available for a wide range of experience. From Siskind et al 1980, the threshold for superficial damage in residential structures is 134 dB, and the lowest documented threshold for concern about structural damage is 128 dB. The lower of these values (128 dB) is recommended as a criterion.

Figures 15 through 22 show peak sound level contours for the recommended criteria (120 dB for annoyance and 128 dB for the threshold of damage) and also the less stringent 137 dB contour for damage assessment.

Peak sound levels for ground ordnance operations occurring in the spring, summer, or fall seasons are driven mainly by blast strength. Although, even the 120 dB contour for the highest

yield event (i.e., 22,500 pounds NEW shown in Figure 18) does not extend much beyond the George Sub-Range property line and does not impact nearby populated areas.

During the winter season (Figures 19 through 22), the peak sound levels contained within the George Sub-Range are similar to the levels representing the other seasons, however, there is an extended impact area outside of the range, to the southeast. In this area, peak levels exceed 120 decibels, although not in the populated areas directly east of the range boundary.

It is likely that people living in neighboring communities to the east may hear blast noise, to some degree, and mostly during the winter months. However, this analysis indicates that the potential for noise annoyance and damage due to blast-induced structural vibration is low.

By examining seasonal weather effects on blast noise propagation, for single events, we can better estimate the potential effects on the CNEL contours described earlier in this report. It is important to recall that CNEL is a metric based on average annual conditions. Given typical winter atmospheric conditions, it is expected that some noise impact will occur, beyond the China Lake eastern property border, for some of the high ordnance expenditure scenarios. However, it is not expected that cumulative, daily average levels, east of the border, will exceed CNEL 60 for any of the scenarios presented in this report (Figures 1 through 14).

Vibration Levels

Safe vibration levels for residential structures have been recommended in many studies covering a variety of structural types and vibration sources. Various criteria have been established depending on the type or historical importance of the structure. The criteria are mainly based on particle velocity, which was recommended by the Bureau of Mines[8] as the best single ground motion descriptor; acceleration and displacement, however, are used as well.

The safe particle velocity for structures of typical current construction, as specified by Ashley (cited in Siskind[8]), is 0.2 to 0.8 inches/second. These criteria correspond to particle velocity limits of the ground near the base of the structure. While a range of values is provided to account for different soil conditions, an average value of 0.5 inches/second is used for this assessment.

The Bureau of Mines' studies[8] show that structural response is amplified to varying degrees at mid-wall and corner locations, relative to ground responses. At a typical fundamental frequency of interior walls (e.g., 10-20 Hz), the peak vibration at the center of the wall due to blasting operations ranged from about one to four times the vibration measured at the base of the structure; this amplification factor is between 1 and 1.5 for the wall corners (whole structure). Therefore, to transform the ground velocity criteria to structural velocity criteria, an amplification factor of 1.0 is used in this analysis. Greater factors would imply higher criteria; thus, the choice of 1.0 is conservative.

Using the 1.0 amplification factor, 0.5 inches/second is therefore taken to be the limiting safe peak particle velocity for structures of typical current construction (for mid-wall and whole-structure vibration). The Bureau of Mines has related ground vibration and airblast values that produce an equivalent structural response[8]. In order not to exceed the ground vibration criteria of 0.5 inches/second, the airblast overpressure must be less than about 128 dB (as specified

previously). This discussion primarily shows how ground vibration levels were transformed into peak sound levels for comparison with the peak level contours presented in this analysis.

Referring back to Figures 15 through 22, the 128-decibel contour can be used to delineate the potential for structural damage due to ground vibration. Since this contour falls within George Sub-Range for spring, summer, and fall seasons and the extended contour (winter) does not impact major populated areas, it is therefore unlikely that damage will occur due to any of the individual blast events considered in this analysis.

Structural vibration levels are assessed here in terms of the peak sound level that would generate an equivalent structural response. This analysis does not account for the potential that certain geographic features may support long-range propagation of ground vibration. However, since the Burro Canyon EOD Facility is approximately 10 miles away from the nearest towns - located near the eastern property boundary - it is unlikely that ground-borne vibration from EOD operations will be sufficient to cause structural damage.

If you have any questions about this analysis, please call me at 703/415-4550 ext. 26.

Sincerely,

[redacted]

Kevin A. Bradley signed by Geral L. Long
Senior Engineer

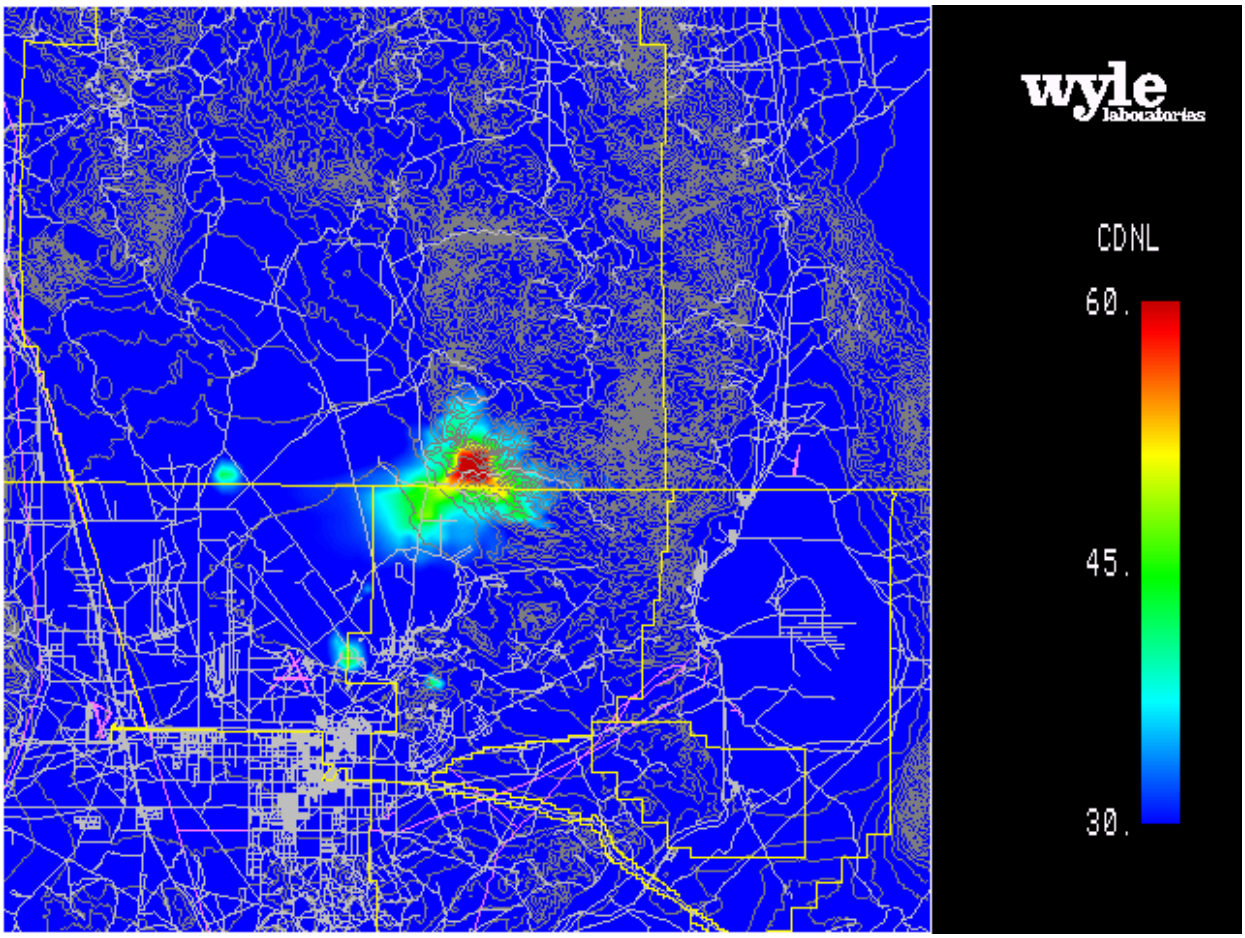


Figure 1. NAWS China Lake George Sub-Range CNEL Contours
For Scenario 1 Ordnance Operations

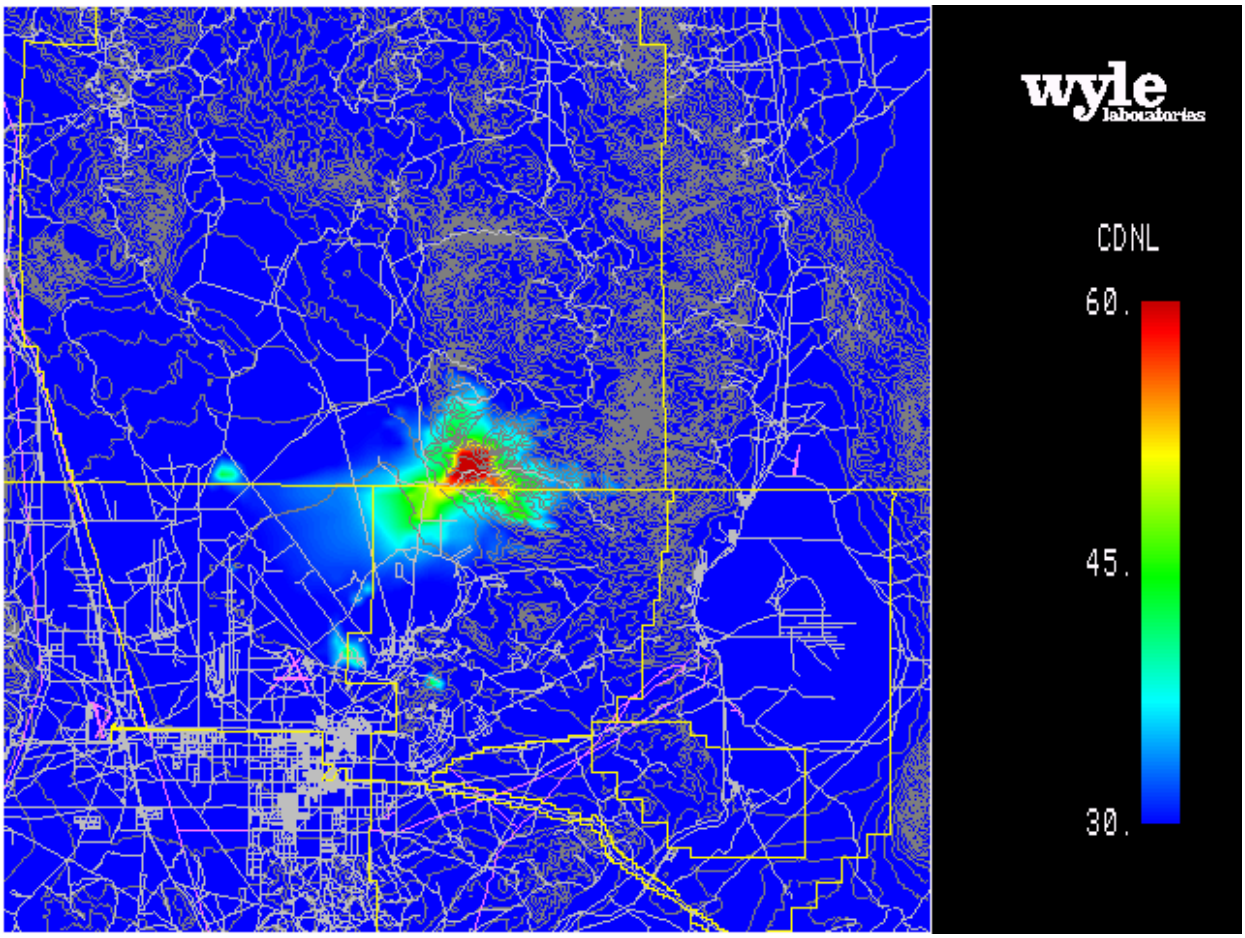


Figure 2. NAWS China Lake George Sub-Range CNEL Contours
For Scenario 2 Ordnance Operations

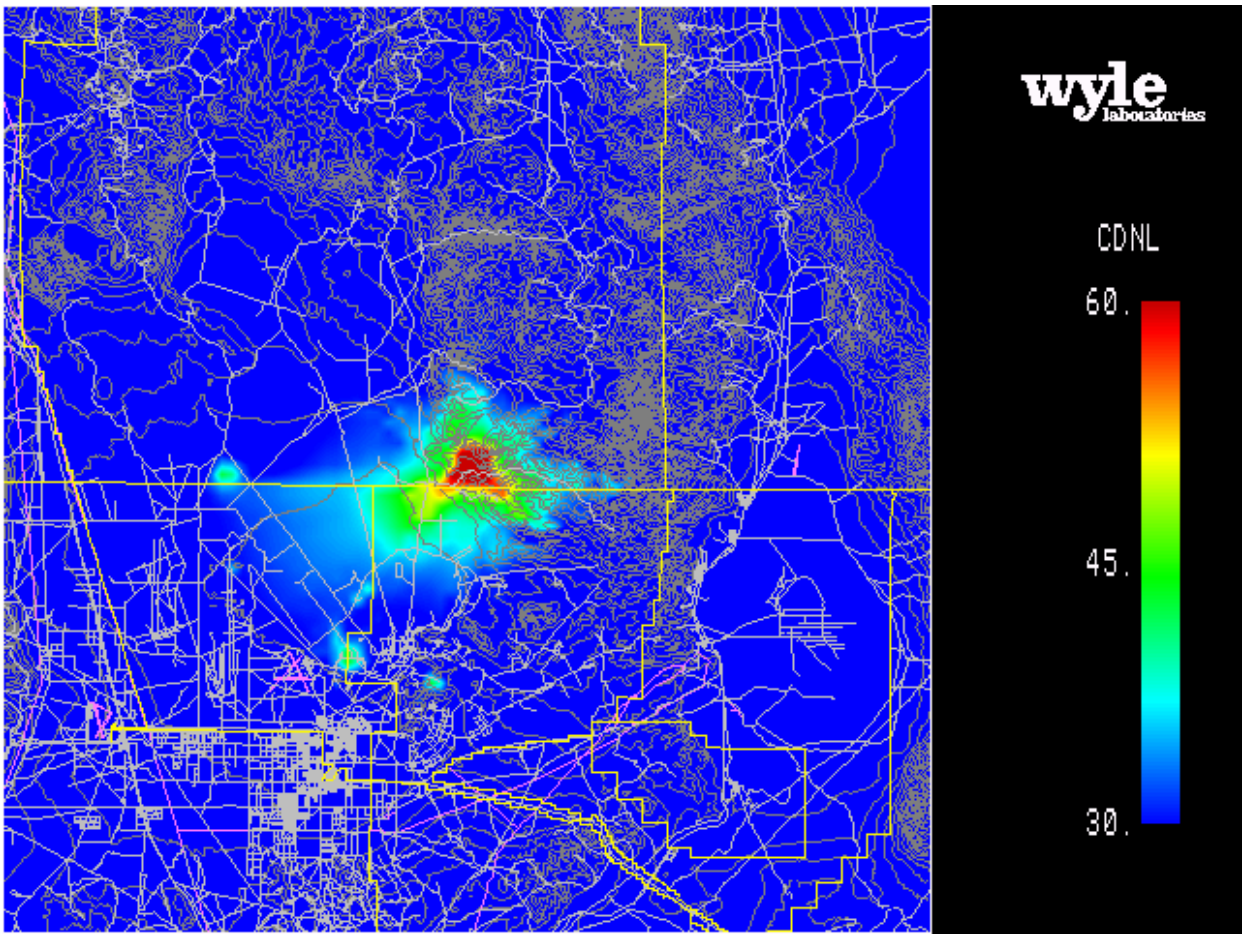


Figure 3. NAWS China Lake George Sub-Range CNEL Contours
For Scenario 3 Ordnance Operations

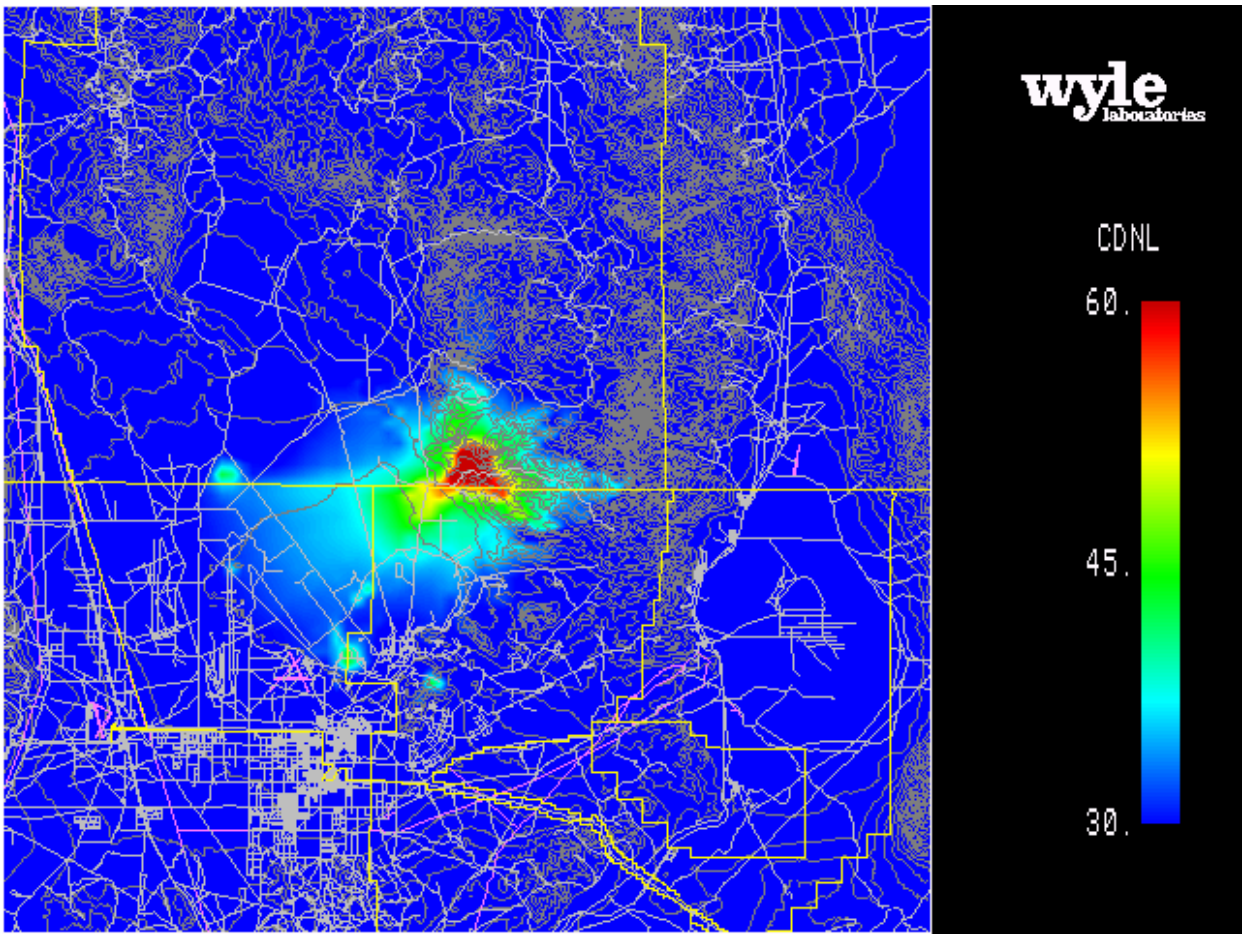


Figure 4. NAWS China Lake George Sub-Range CNEL Contours
For Scenario 4 Ordnance Operations

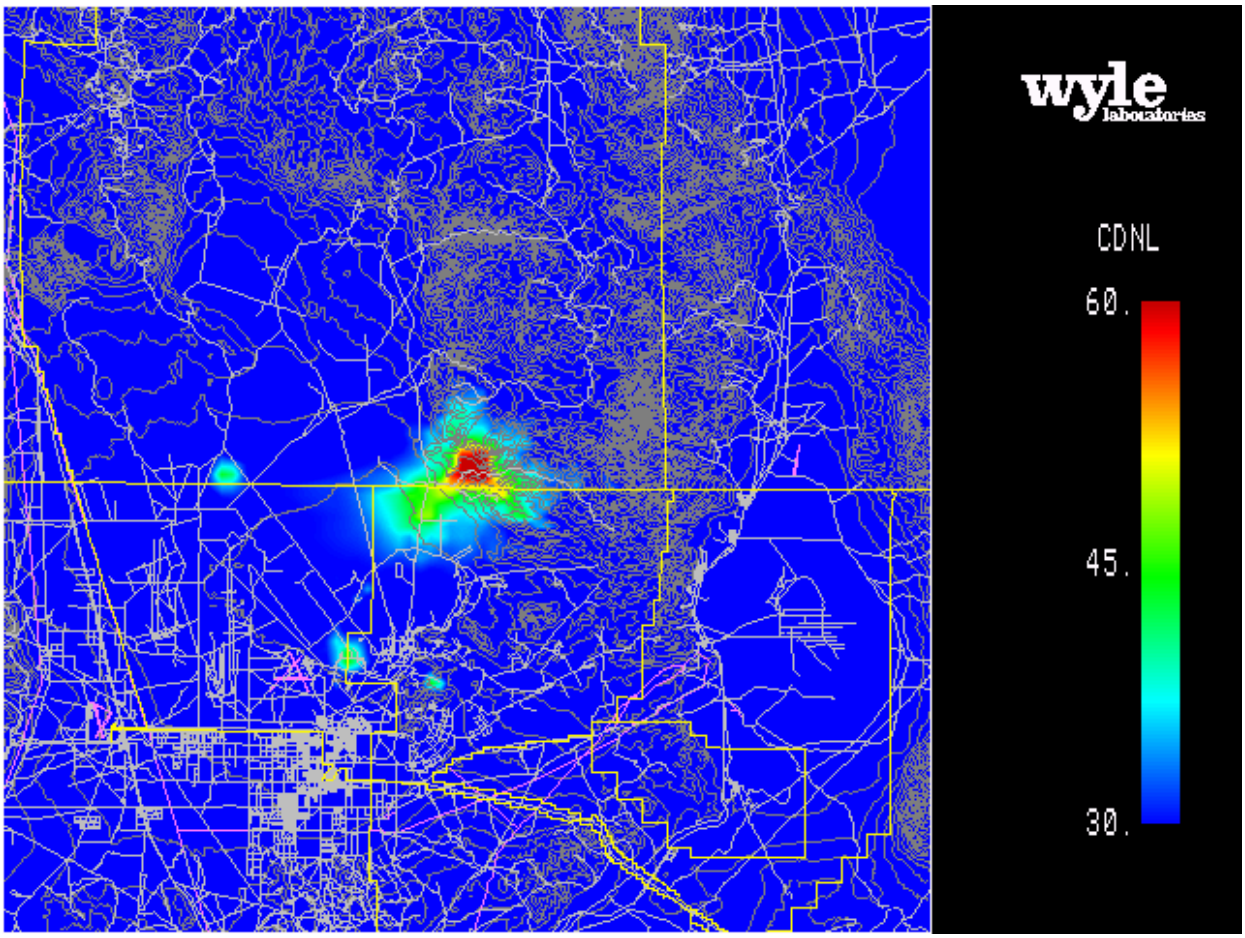


Figure 5. NAWS China Lake George Sub-Range CNEL Contours
For Scenario 5 Ordnance Operations

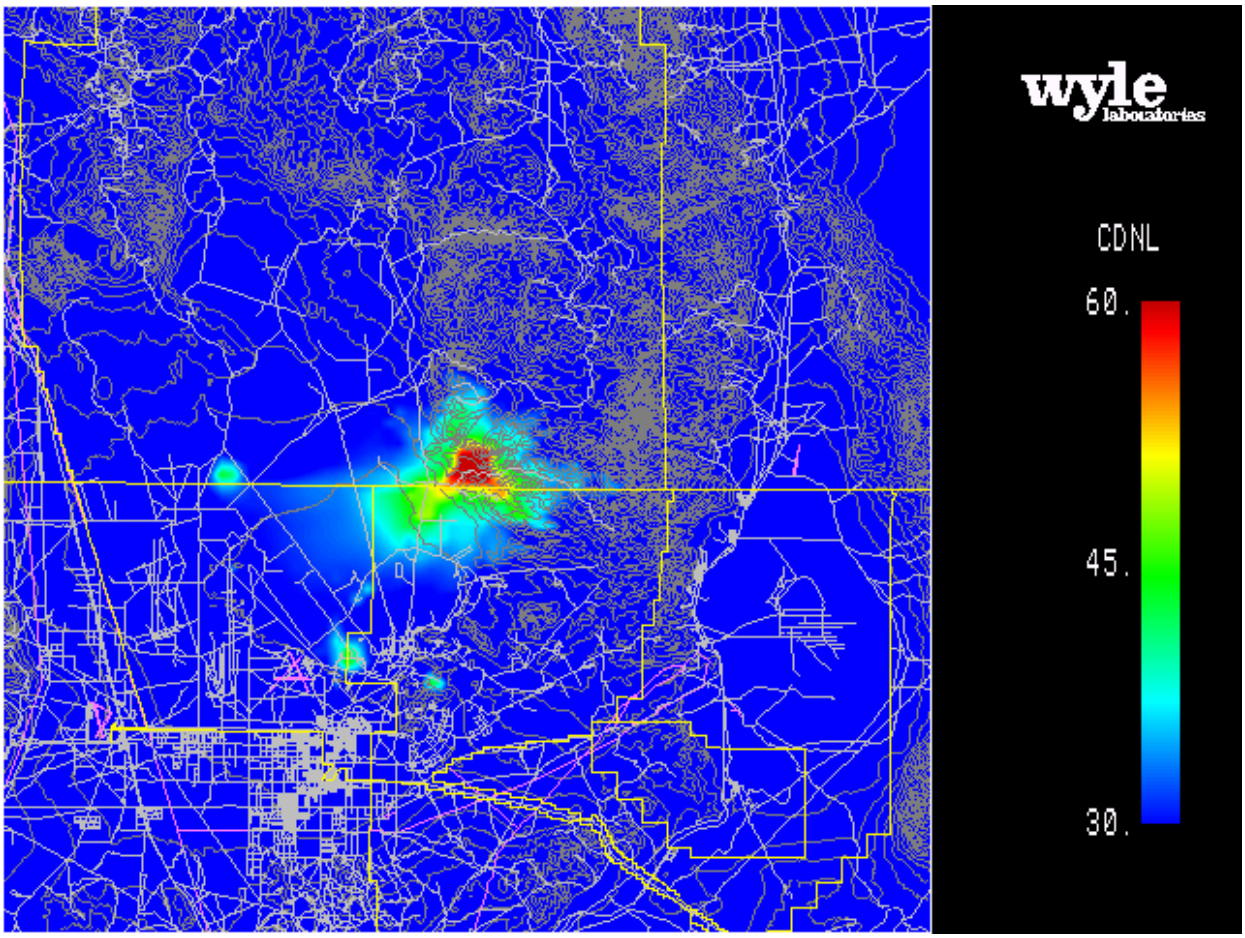


Figure 6. NAWS China Lake George Sub-Range CNEL Contours
For Scenario 6 Ordnance Operations

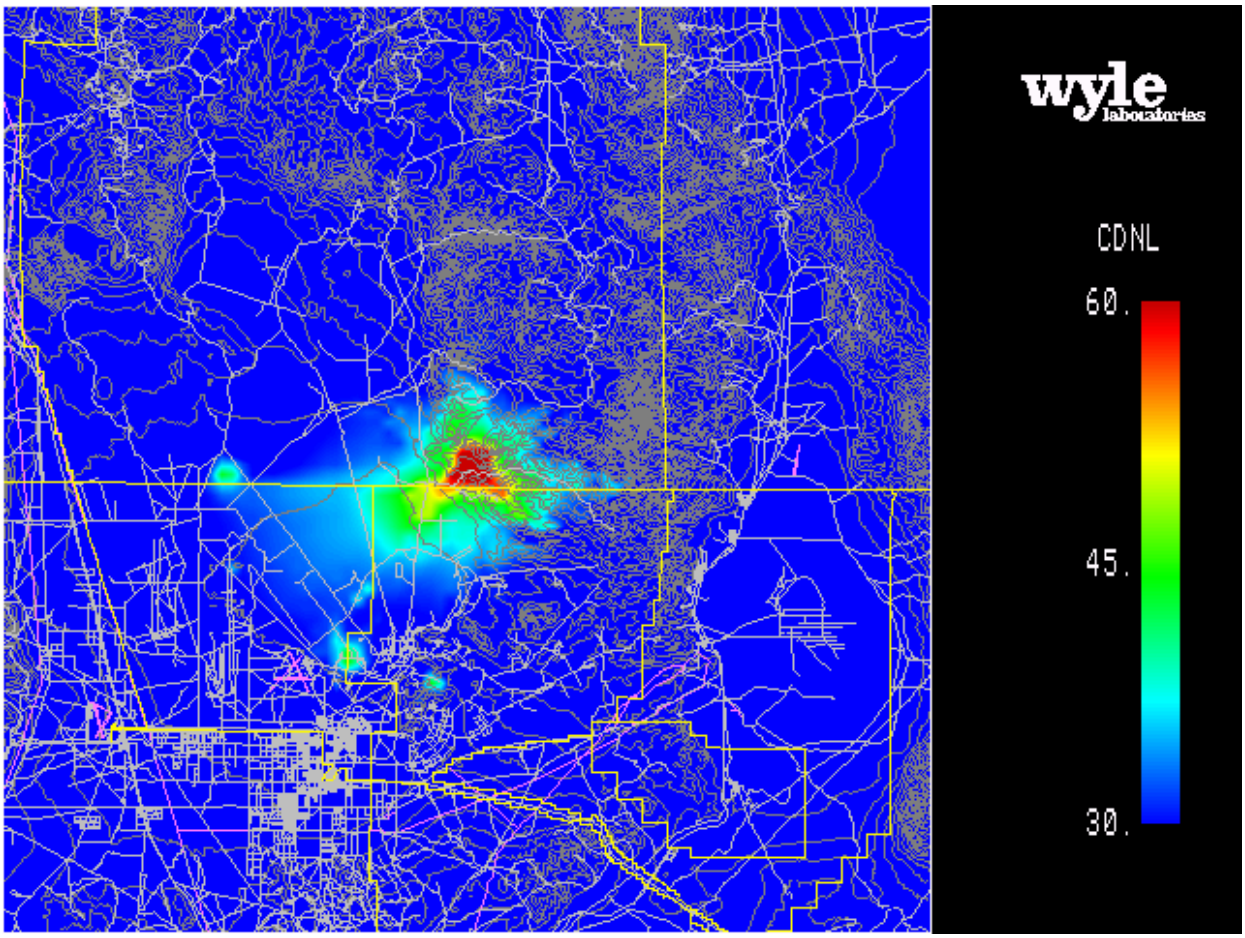


Figure 7. NAWS China Lake George Sub-Range CNEL Contours
For Scenario 7 Ordnance Operations

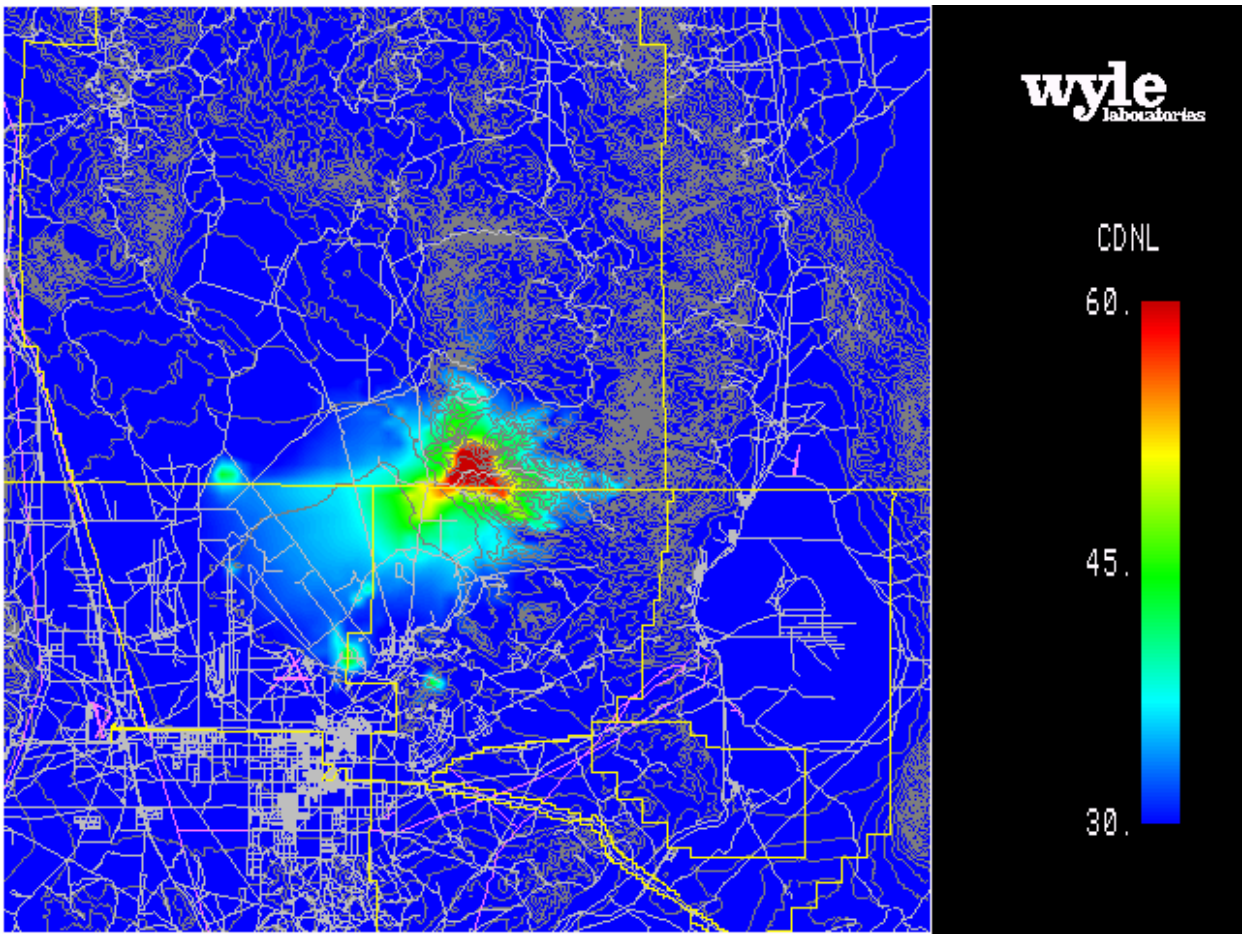


Figure 8. NAWS China Lake George Sub-Range CNEL Contours
For Scenario 8 Ordnance Operations

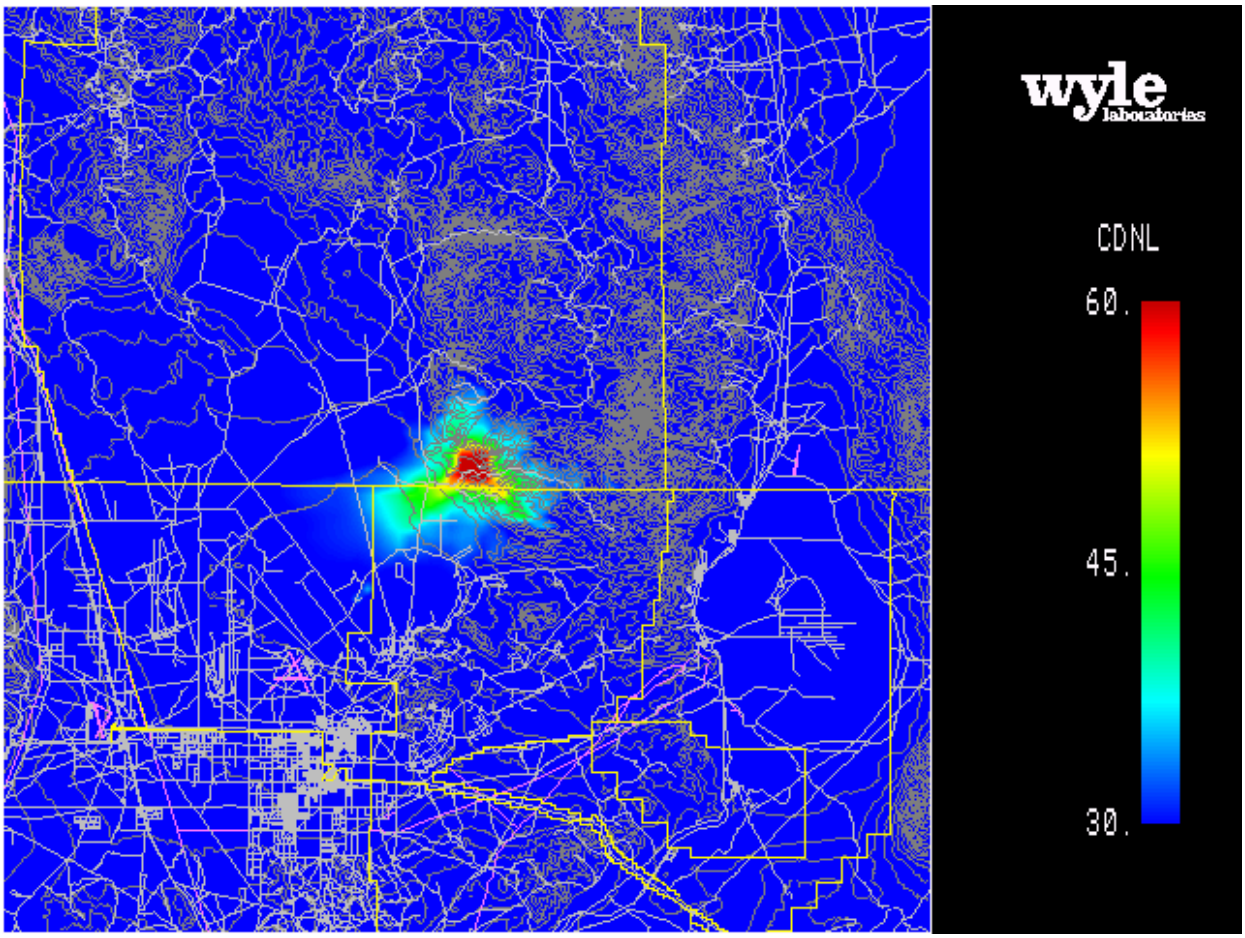


Figure 9. NAWS China Lake Burro Canyon EOD Facility CNEL Contours
For 22,500 pounds NEW (x 26 events per year)

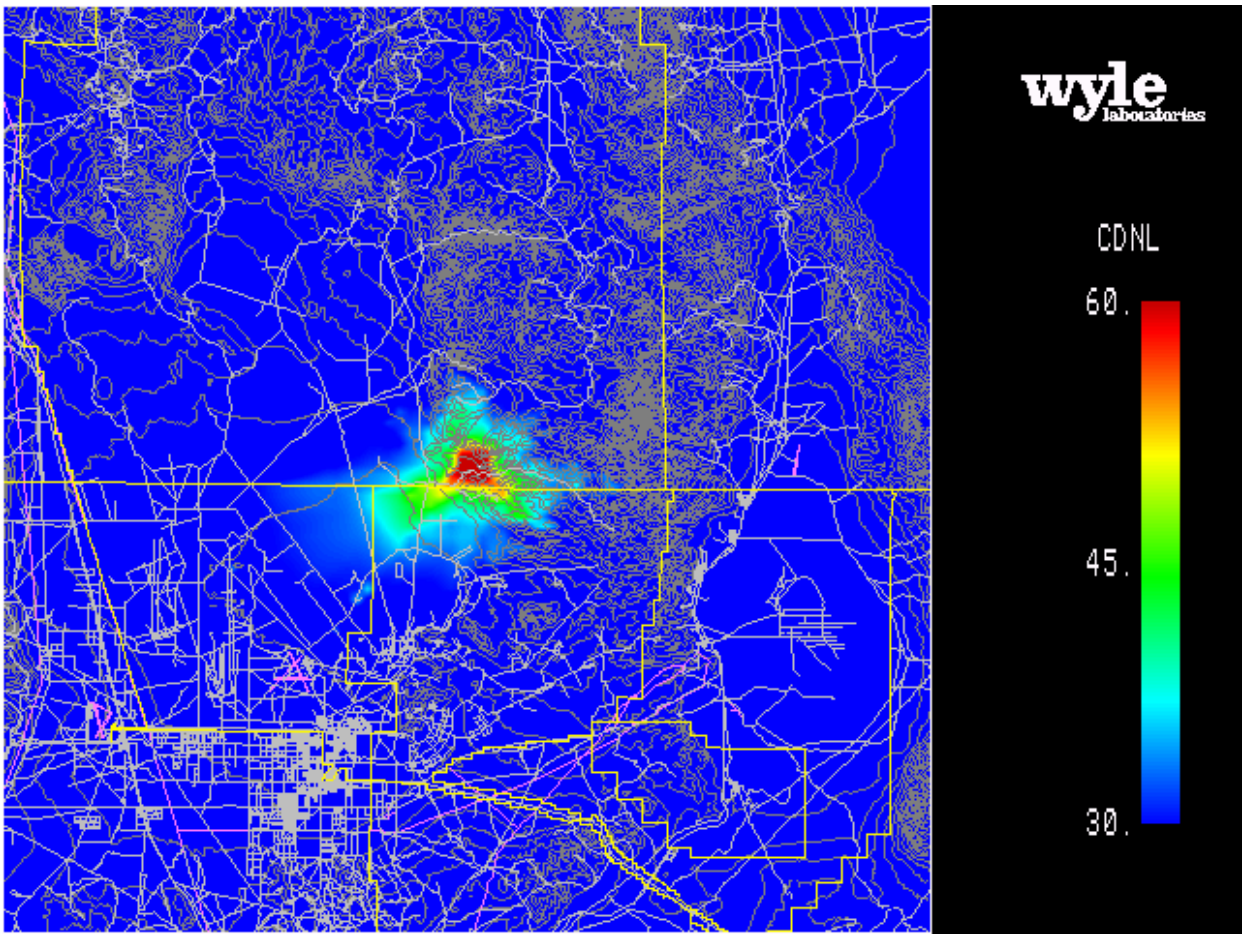


Figure 10. NAWS China Lake Burro Canyon EOD Facility CNEL Contours
For 22,500 pounds NEW (x 36 events per year)

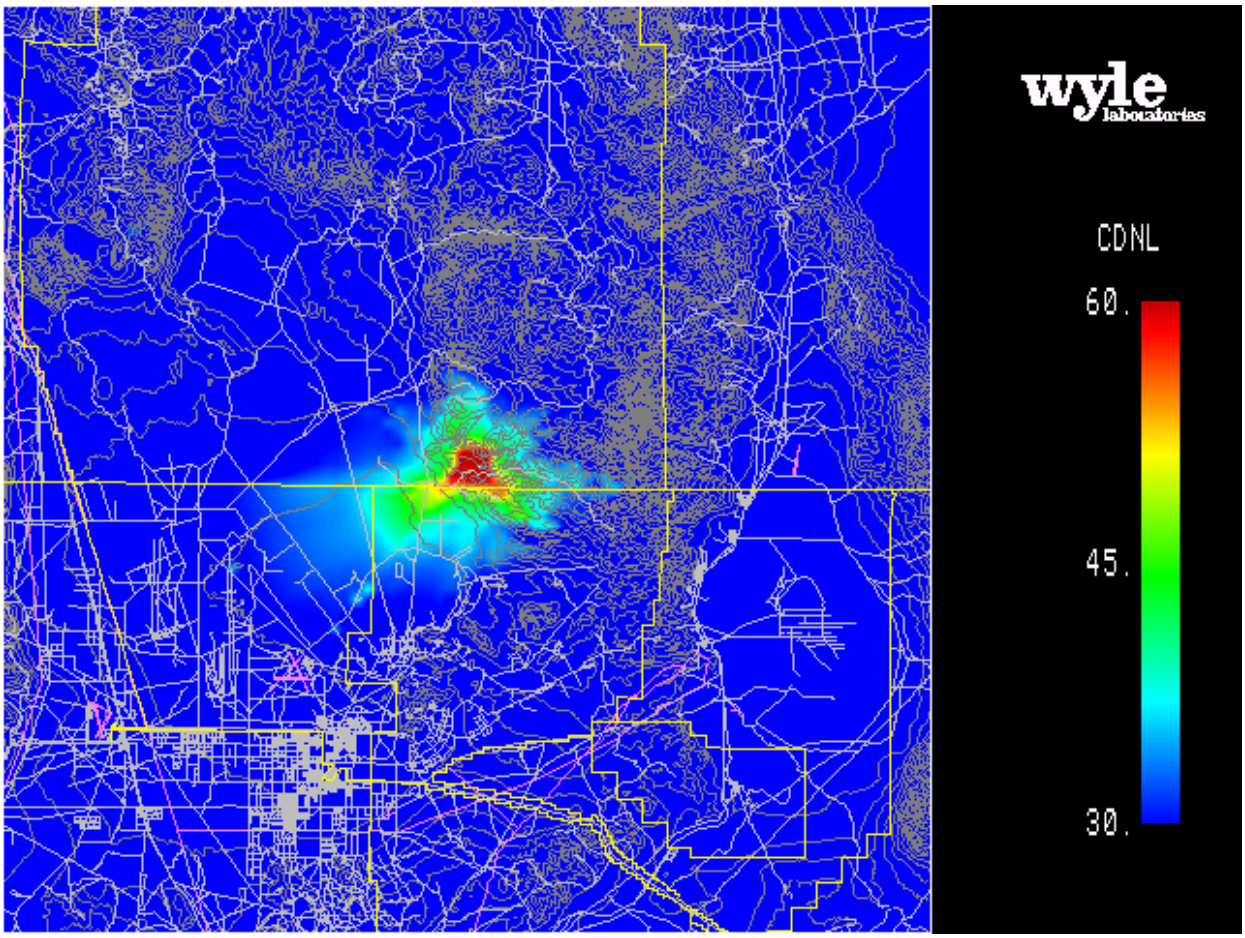


Figure 11. NAWS China Lake Burro Canyon EOD Facility CNEL Contours
For 22,500 pounds NEW (x 52 events per year)

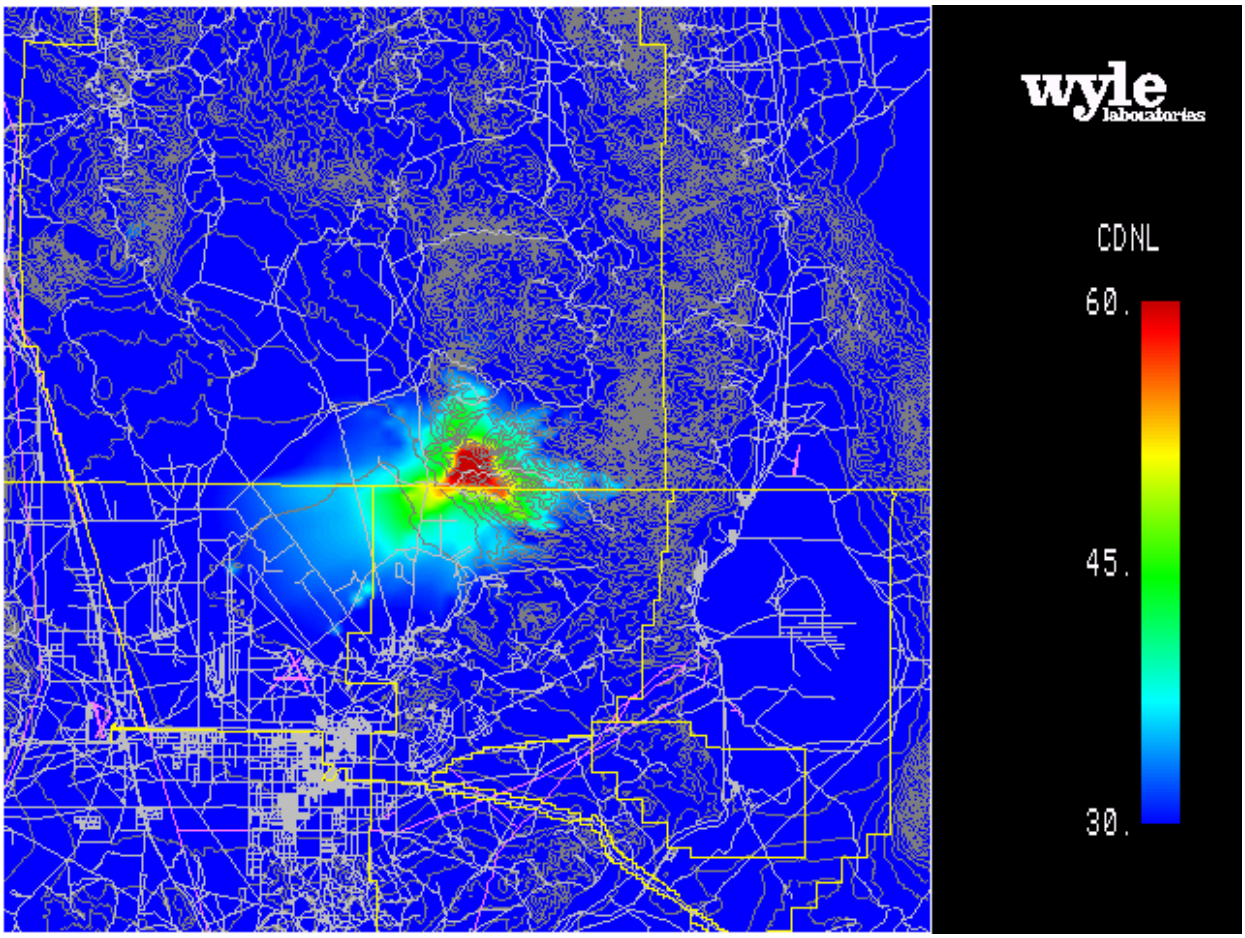


Figure 12. NAWS China Lake Burro Canyon EOD Facility CNEL Contours
For 22,500 pounds NEW (x 64 events per year)

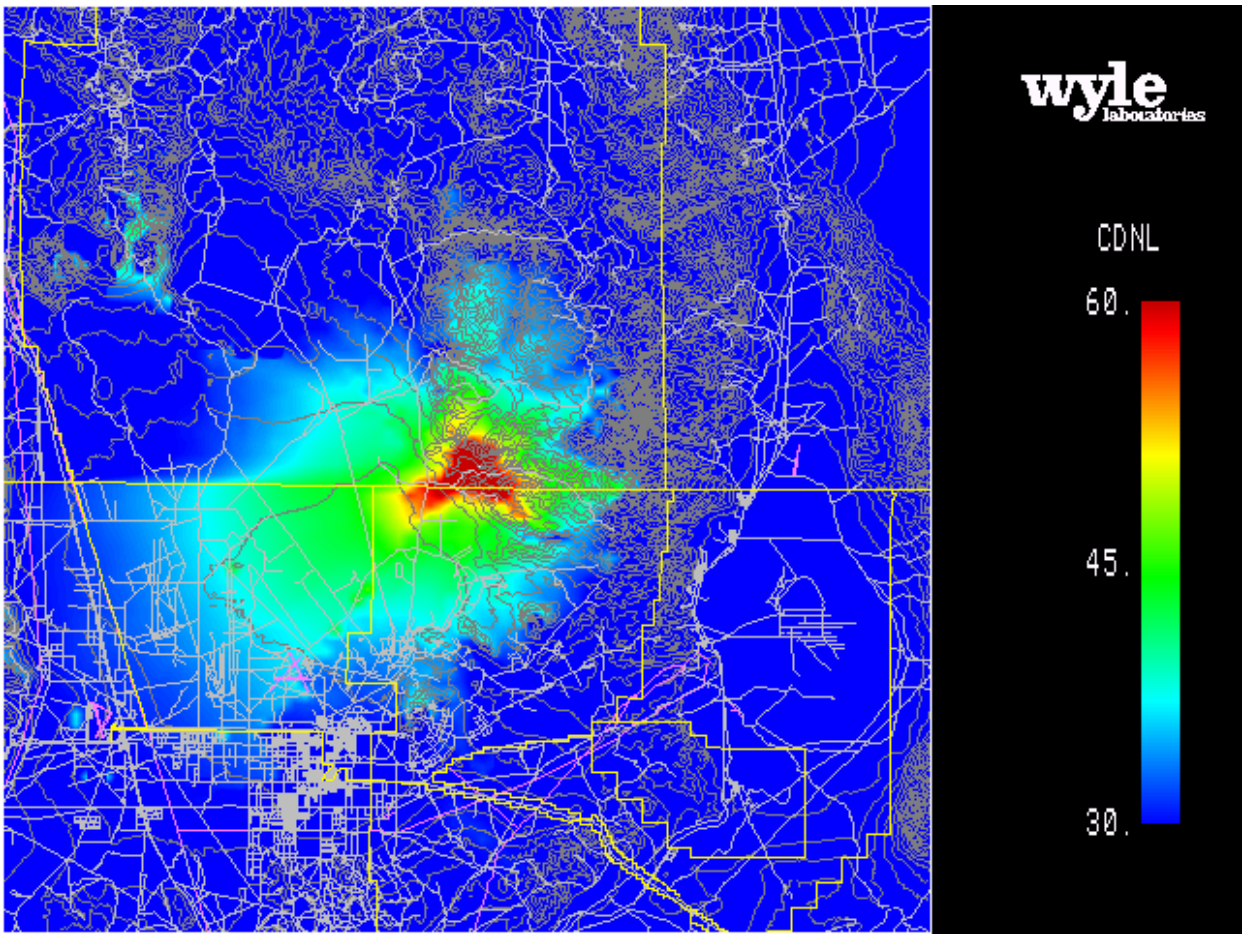


Figure 13. NAWS China Lake Burro Canyon EOD Facility CNEL Contours
For 22,500 pounds NEW (1 single daily event 365 days per year)

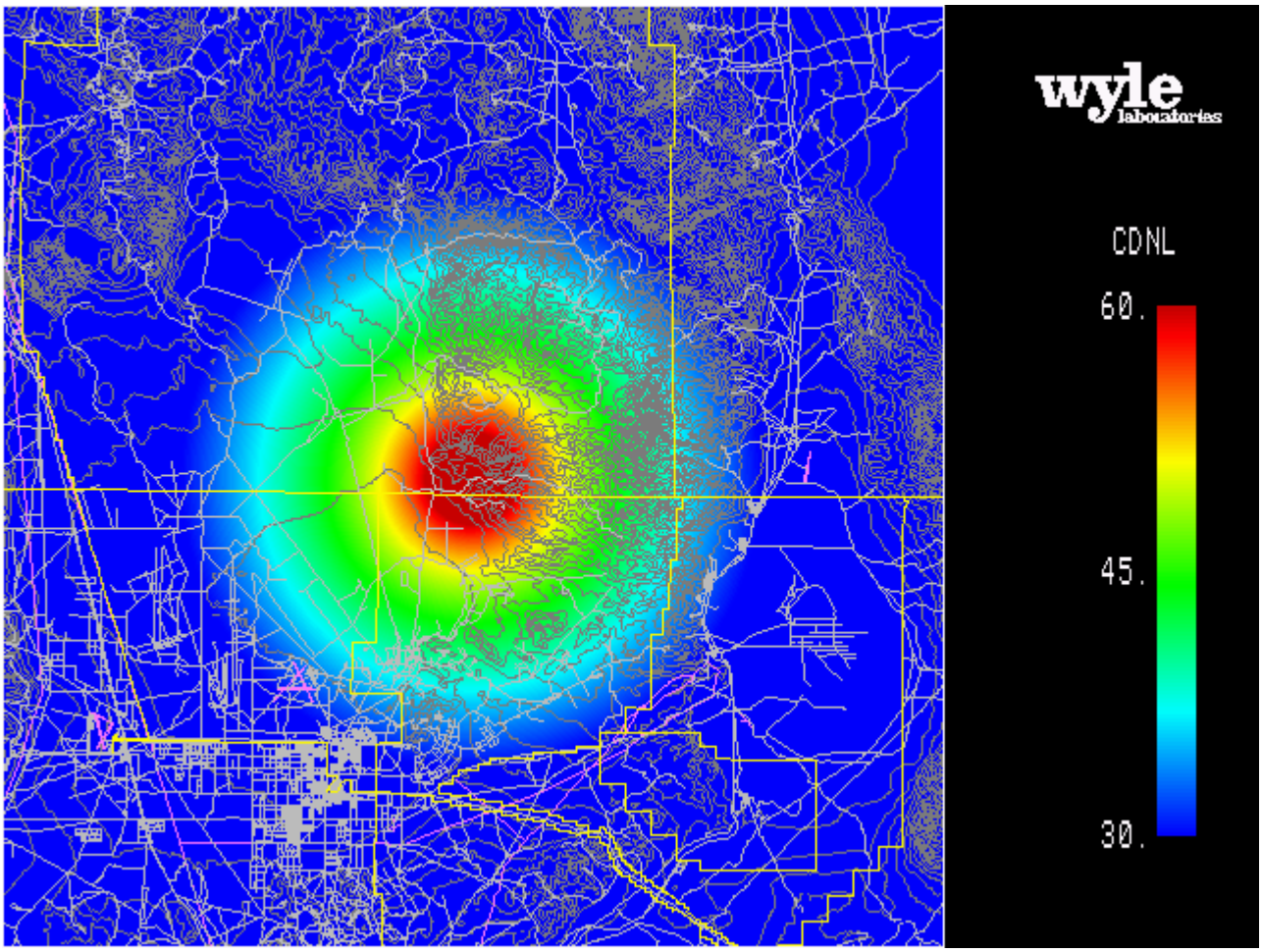


Figure 14. NAWS China Lake Burro Canyon EOD Facility CNEL Contours
For 22,500 pounds NEW (1 single daily event 365 days per year)
[Flat Earth comparison]

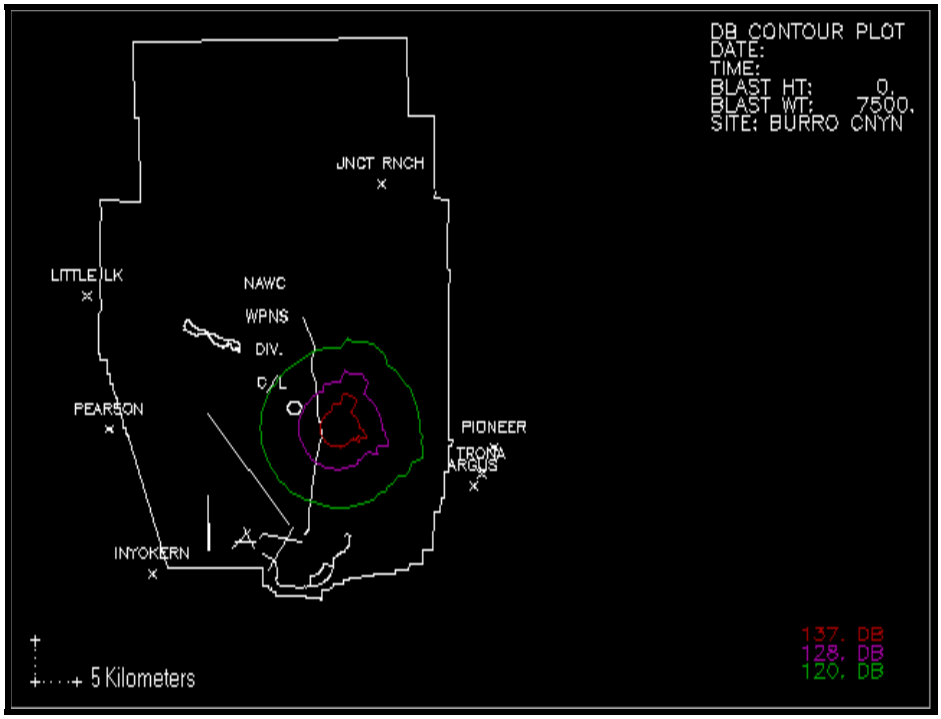


Figure 15. Burro Canyon EOD Facility Peak Sound Level Contours
(7,500 pounds NEW; spring, summer, and fall seasons)

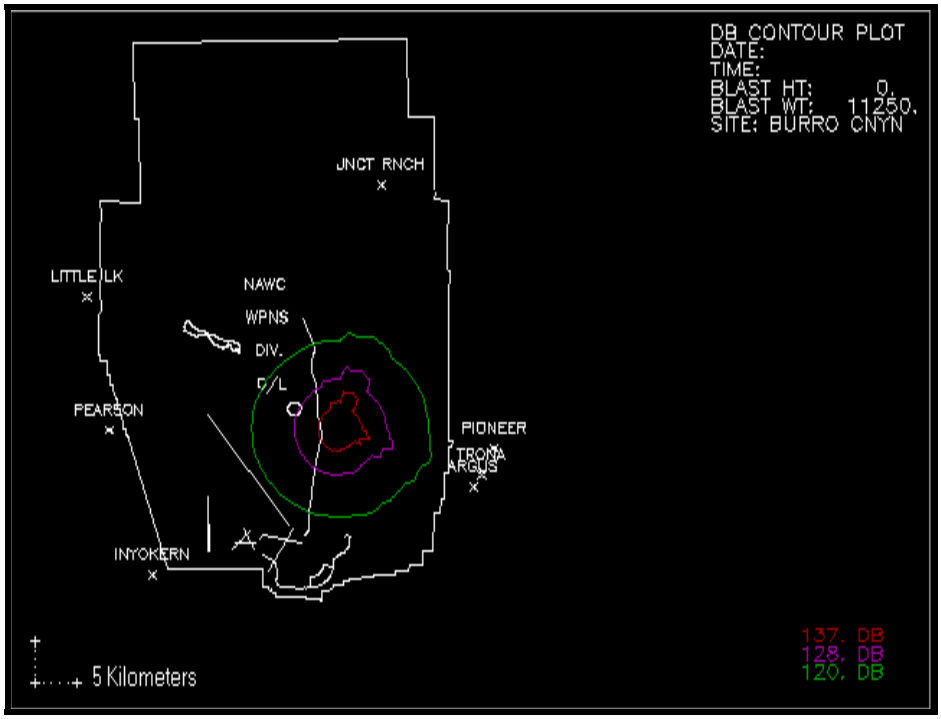


Figure 16. Burro Canyon EOD Facility Peak Sound Level Contours
(11,250 pounds NEW; spring, summer, and fall seasons)

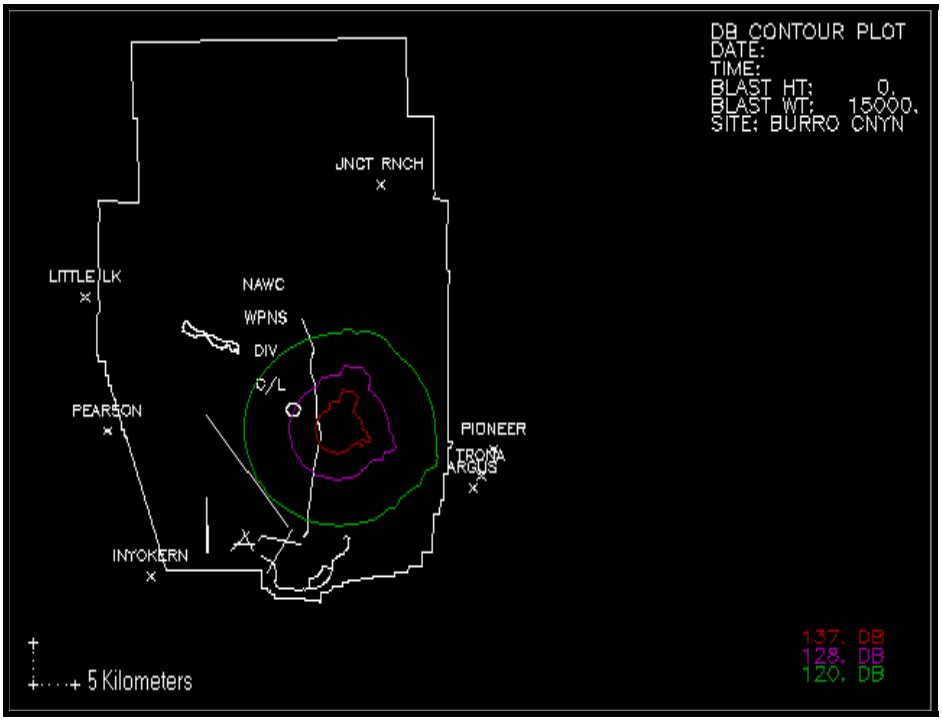


Figure 17. Burro Canyon EOD Facility Peak Sound Level Contours (15,000 pounds NEW; spring, summer, and fall seasons)

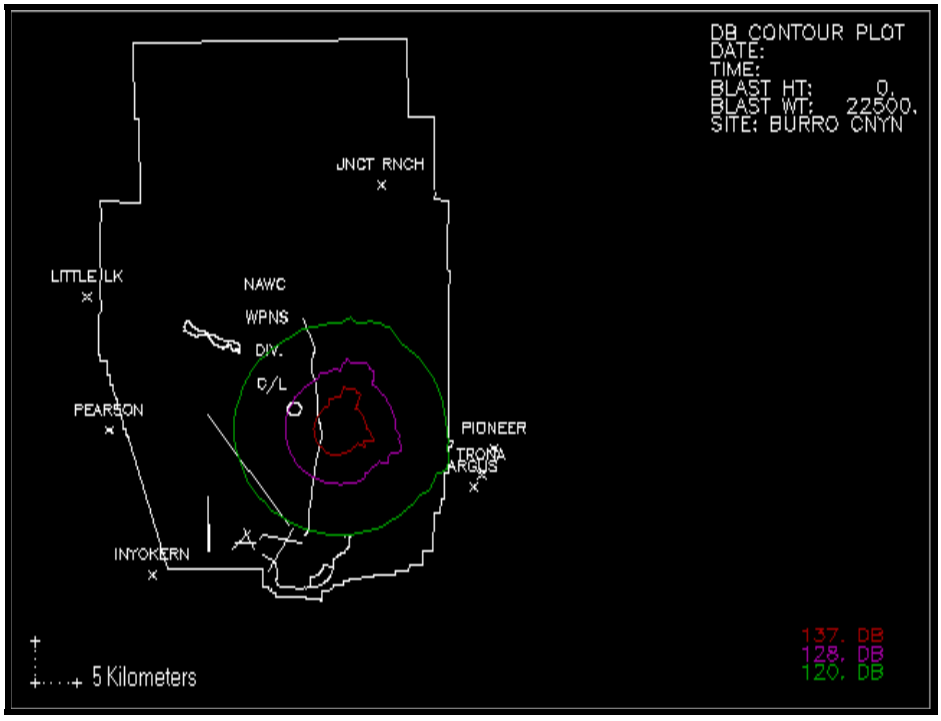


Figure 18. Burro Canyon EOD Facility Peak Sound Level Contours (22,500 pounds NEW; spring, summer, and fall seasons)

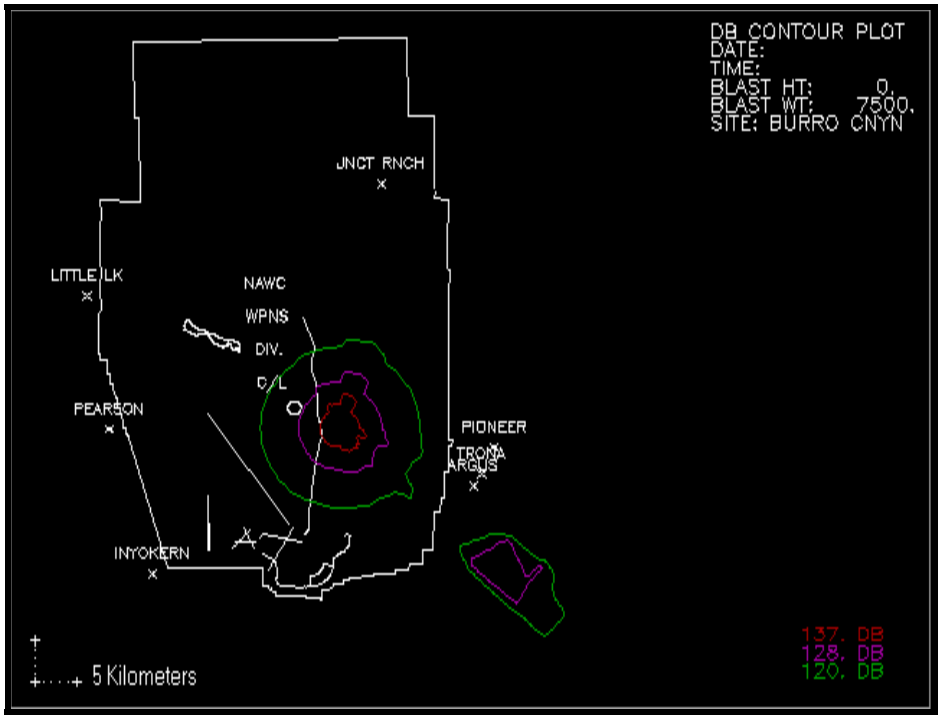


Figure 19. Burro Canyon EOD Facility Peak Sound Level Contours (7,500 pounds NEW; winter season)

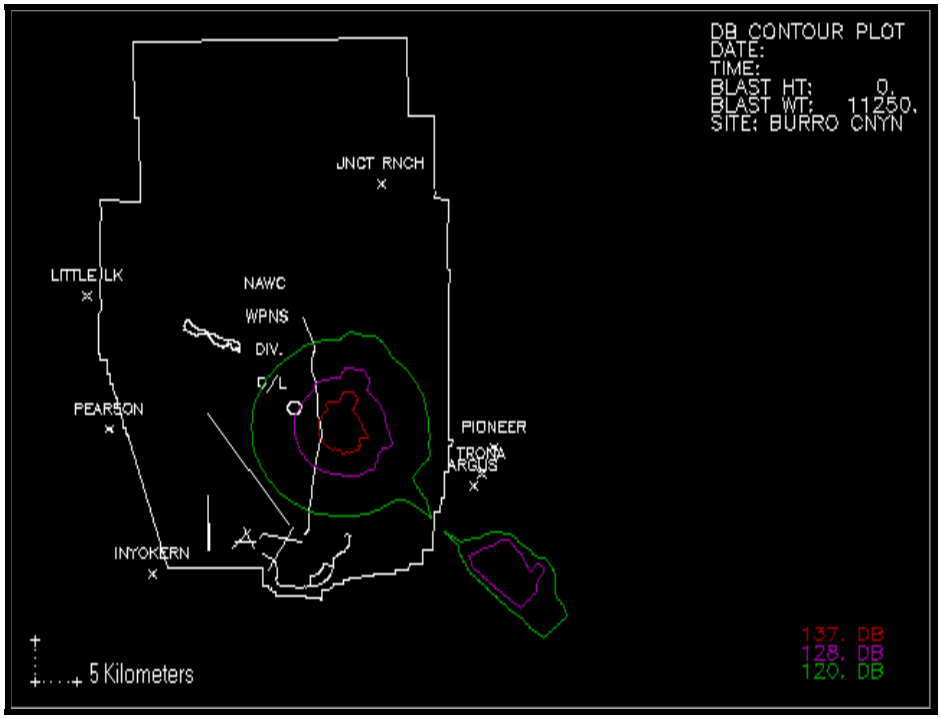


Figure 20. Burro Canyon EOD Facility Peak Sound Level Contours (11,250 pounds NEW; winter season)

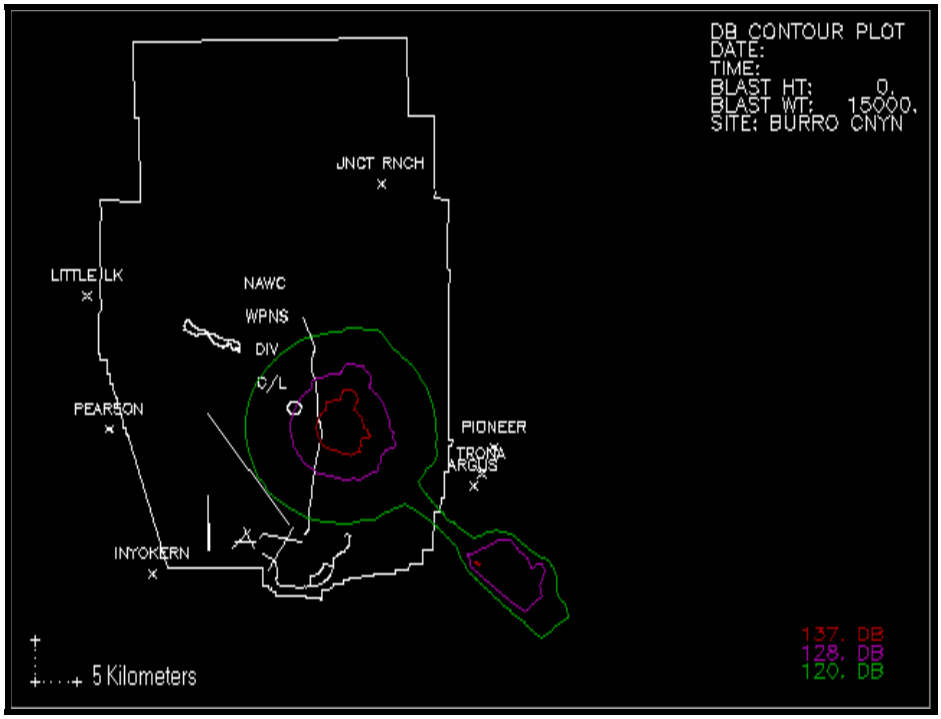


Figure 21. Burro Canyon EOD Facility Peak Sound Level Contours (15,000 pounds NEW; winter season)

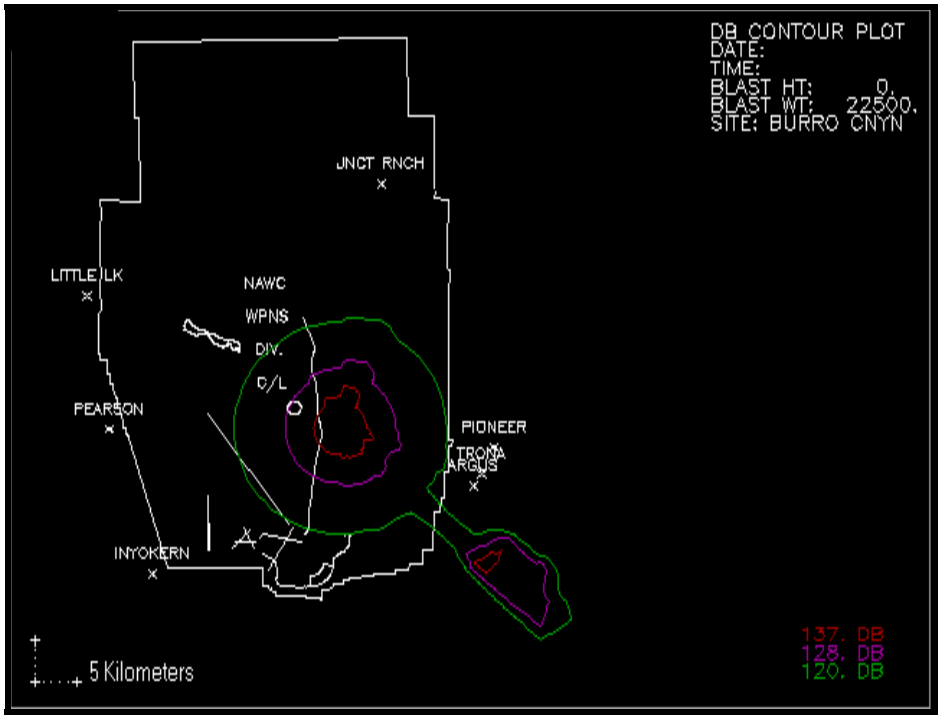


Figure 22. Burro Canyon EOD Facility Peak Sound Level Contours (22,500 pounds NEW; winter season)

References

1. Wyle Laboratories letter report to Laurie Zellmer, 15 January 2002.
2. Wyle Laboratories letter report to Laurie Zellmer, 14 August 2000.
3. Bnoise Version 3.2 M, US Army Construction Engineering Research Laboratories, 17 July 1997
4. Ikelheimer, Bruce, and Plotkin, K., J., “Noise Model Simulation (NMSIM) Beta Test Version”, Wyle Research Report WR 03-XX, Wyle Laboratories, February 2003.
5. Noise Assessment Prediction System (NAPS), University of Dayton Research Institute, September 1995.
6. American National Standard, ANSI S2.20-1983, “Estimating Air Blast Characteristics For Single Point Explosions In Air, With A Guide To Evaluation Of Atmospheric Propagation And Effects, 1 March 1983.
7. Harris, C.M., Handbook of Acoustical Measurements and Noise Control, Third Edition, Chapter 3, 1991.
8. Siskind et al, “Structure Response and Damage Produced by Ground Vibration from Surface Mine Blasting”, Report of Investigations 8507, United States Department of the Interior, 1980.

APPENDIX L

DTSC Approval Letter for Burn Pan Design

STATE OF CALIFORNIA—HEALTH AND WELFARE AGENCY
GEORGE DEUKMEJIAN Governor

DEPARTMENT OF HEALTH SERVICES
TOXIC SUBSTANCES CONTROL PROGRAM
REGION 1
151 CROYDON WAY, SUITE 3
SACRAMENTO, CA 95827-2106
(916) 855-7700

January 8, 1991

Ms. Laurie Zellmer
China Lake Naval Weapons Center
Code 00811
China Lake, CA 93555-6001

Dear Ms. Zellmer:

CHINA LAKE NAVAL WEAPONS CENTER (NWC), USE OF AN OPEN BURN PAN AT BURRO CANYON, KERN COUNTY, EPA ID.# CA2170023152

USE OF A BURN PAN AT BURRO CANYON

The Department of Health Services (DHS) received a letter from China Lake NWC on September 27, 1990, requesting DHS' approval to allow the use of a burn pan at Burro Canyon. The burn pan would be used to open burn hazardous waste. The burn pan would replace the present open burn operation at the T-Range Disposal Area. A revised Part A application was received on December 3, 1990, which reflected the move of the open burn operation from the T-Range Disposal Area to Burro Canyon.

DHS approves of the proposed burn pan design for use at Burro Canyon, with the following conditions:

1) China Lake NWC has 60 days to submit a statement of work for the closure of the T-Range Disposal Area. China Lake NWC has 120 days from the date of this letter to submit a closure plan for the T-Range Disposal Area. This closure plan must address the open burn pit that is in use and the old burn pits.

2) China Lake NWC has 90 days from the date of this letter to submit a design to DHS for the secondary containment around the burn pan.

Failure to meet the above conditions may result in DHS taking an enforcement action. If you have any questions about this letter, please contact Mr. Keith Riley at (916) 855-7739.

Sincerely,

[redacted]

Eric Hong, Chief
Treatment, Storage and
Incinerator Unit
Region 1

cc: Ms. Ave Biggar
Lahontan RWQCB
15428 Civic Drive,
Suite 100
Victorville, CA 92392-2359

Mr. Andy Steckel
U.S. EPA Region IX, H-3-3
75 Hawthorne Street
San Francisco, CA 94105

Great Basin Unified APCD
157 Short Street, Suite 6
Bishop, CA 93514

APPENDIX M

Burn Pan Independent Certification

February 20, 2007

Mr. Richard Michael Quesada
RPM
Department of Navy
Southwest Division
Naval Facilities Engineering Command
1220 Pacific Highway
Code 0PED.RQ
San Diego, California, 92132-5183

Re: *Certification of integrity for Burn Pan located in Burro Canyon of China Lake NAWS*

Dear Mr. Quesada:

As required under Barajas & Associates, Inc.'s Contract Number N68711-03-D-5106 - 0002, NAVFAC Southwest Desert IPT Code ROPDA the Burn Pan located in Burro Canyon of China Lake NAWS has been evaluated for compliance with the requirements in California Code of Regulations (CCR), Title 22, Division 4.5, Chapter 14, Article 10. The results of this evaluation indicate that the Burn Pan (tank) complies with the intent of these regulations, contingent upon repair of the secondary containment pan.

On February 7, 2007, Eugene C. Spilker P.E. visited the site of the burn pan for a physical inspection of the tank system as a basis for performing this written certification of the Burro Canyon Burn Pan in accordance with the CCR Title 22, Division 4.5, Chapter 14, Article 10, "Tank Systems. Based upon the observations, and information gathered relative to the Burn Pan (tank) including the following detailed responses to each section of Article 10 constitute the review for compliance and certification of the subject tank system.

The tank was found to be structurally sound with no evidence of deterioration in strength from use, or oxidation from exposure of the elements. The containment pad has noticeable openings and breach of the side walls of the containment structure, caused by debris from adjacent detonation areas. There are two areas of concern that are identified requiring patches or replacement of one wall of the containment pan. Additional detail regarding the damage is presented in the details of the certification document.

Additionally, the secondary containment does not meet the specific volume requirements for containment, Section 66264.193 Containment and detection of releases. In addition to containing the full volume of the primary tank, the secondary containment pan should also include sufficient volume to hold a 24-hour, 25 year storm event. In order to comply with these stated requirements, an additional 5.6 inches would be needed add to the height of the secondary containment. However, many of the requirements described in Title 22 associated for containment and detection, are addressing unattended

BURNS & MCDONNELL
10625 Scripps Ranch Blvd
San Diego, CA 92131
Tel: 858-547-9869
Fax: 858-547-4768
http://www.burnsmcd.com

continuous operations. Since the only method of filling the tank is by manual operation, removing any water from the containment structure would meet the intent of the regulation. In fact a larger and more probable concern than precipitation is drifting sand which would displace containment area. The precipitation will evaporate, the sand will remain until it is removed.

To meet the intent of the regulation, the standard operating procedure should require removal of both sand and water, if any, from the secondary containment pan prior to use of the burn pan.

Therefore in conclusion, contingent upon the repair of the containment pan:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to be the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Please contact Eugene (Gene) C. Spilker P.E. if you have any questions regarding this certification. Mr. Spilker can be reached at: (858) 547-9869 ext. 243 or espilker@burnsmcd.com.

Respectfully submitted,

Eugene C. Spilker, PE
Sr. Project Manager

Cc:
Lauren Zellmer
Environmental Protection Office
1 Administration Circle
NAWS China Lake
China Lake CA 93555

Article 10. Tank Systems

§66264.190. Applicability.

The requirements of this article apply to owners and operators of facilities that use tank systems for transferring, storing or treating hazardous waste except as otherwise provided in subsections (a), (b) and (c) of this section or in section 66264.1 of this chapter.

(a) Tank systems that are used to transfer, store or treat hazardous waste which contains no free liquids and are situated inside a building with an impermeable floor are exempted from the requirements in section 66264.193.

[Tank is located outdoors and therefore not exempt to the requirements of section 66264.193]

To demonstrate the absence or presence of free liquids in the transferred/stored/treated waste, EPA Method 9095 (Paint Filter Liquids Test) as described in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods" (EPA Publication No. SW-846 Third Edition and Updates, (incorporated by reference in section 66260.11 of this chapter) shall be used.

(b) Tank systems, including sumps, as defined in section 66260.10, that serve as part of a secondary containment system to collect or contain releases of hazardous wastes are exempted from the requirements in section 66264.193(a) of this article.

[Tank does include a secondary containment sump for the burn pan. The burn pan must meet the requirements of section 66264.193. The secondary containment is exempt from the requirements of section 66264.]

(c) Tanks, sumps, and other such collection devices or systems used in conjunction with drip pads, as defined in 66260.10 of this chapter and regulated under Chapter 14, Article 15.7, shall meet the requirements of this article. NOTE: Authority cited: Sections 25150, 25159, 58004 and 58012, Health and Safety Code. Reference: Sections25150, 25159 and 25159.5, Health and Safety Code; 40 CFR Section 264.190.

[Tank does not use a drip pan, and therefore is subject to the requirements of this article.]

§66264.191. Assessment of Existing Tank System's Integrity.

(a) Tanks shall have sufficient shell strength and, for closed tanks, pressure controls (e.g., vents) to assure that they do not collapse or rupture. The Department will review the design of the tanks, including the foundation, structural support, seams and pressure controls and seismic considerations. The Department shall require that a minimum shell thickness be maintained at all times to ensure sufficient shell strength. Factors to be considered in establishing minimum thickness include the width, height and materials of construction of the tank, and the specific gravity of the waste which will be placed in the tank. In reviewing the design of the tank and approving a minimum thickness, the Department shall rely upon appropriate industrial design standards and other available information.

[The tank (burn pan) is open to the atmosphere. It is of an inverted isosceles trapezoidal shape made of 1" thick plate and good condition. There is a slight film layer of oxidation on the surfaces but not sufficient to have any impact on the strength or reduction in plate thickness. See Figure 1 and Figure 2.]

Figure 1

Figure 2

(b) For each existing tank system that does not have secondary containment meeting the requirements of section 66264.193, the owner or operator shall determine that the tank system is not leaking or is unfit for use. Except as provided in subsections (d) and (g) of this section, and in addition to the requirements of subsection (f) of this section, the owner or operator shall obtain and keep on file at the facility a written assessment reviewed and certified by an independent, qualified professional engineer, registered in California, in accordance with section 66270.11(d), that attests to the tank system's integrity.

[The tank (burn pan) has secondary containment consisting of 3/8" thick steel continuously welded.]

(c) This assessment shall determine that the tank system is adequately designed and has sufficient structural strength and compatibility with the waste(s) to be transferred, stored or treated, to ensure that it will not collapse, rupture, or fail. At a minimum, this assessment shall consider the following:

(1) design standard(s), if available, according to which the tank and ancillary equipment were constructed;

[The tank (burn pan) is constructed of 1" thick plate which would exceed requirements of any standards of design including corrosion allowances. The tank is adjacent to an explosive detonation site and debris from the explosions have had little impact on the structural integrity]

(2) hazardous characteristics of the waste(s) that have been and will be handled;

[The waste is highly energetic and will be loaded and ignited manually]

(3) existing corrosion protection measures;

[The tank (burn pan) is made of 1" plate and has not had any reduction in thickness due to corrosion since its installation, which is estimated to be greater than 15 years]

(4) documented age of the tank system, if available (otherwise, an estimate of the age);

[The tank (burn pan) is estimated to be greater than 15 years based on available documents]

(5) results of a leak test, internal inspection, or other tank integrity examination such that:

(A) for non-enterable underground tanks, the assessment shall include a leak test that is capable of taking
into account the effects of temperature variations, tank end deflection, vapor pockets, and high water table effects,and

[The tank (burn pan) is located above ground]

(B) for other than non-enterable underground tanks and for ancillary equipment, this assessment shall

include either a leak test, as described above, or other integrity examination, that is certified by an independent, qualified, professional engineer, registered in California, in accordance with section 66270.11(d), that addresses cracks, leaks, corrosion, and erosion; and

[The tank (burn pan) is constructed of 1" thick plate with continuous weld, which would exceed requirements of any standards of design including corrosion allowances. The tank has no visual indication of any potential leaks. The tank is adjacent to an explosive detonation site and debris from the explosions have had little impact on the structural integrity]

(6) those design requirements and factors listed in subsection (a) of this section.

[The tank (burn pan) is open to the atmosphere. It is of an inverted isosceles trapezoidal shape made of 1" thick plate and good condition. There is a slight film layer of oxidation on the surfaces but not sufficient to have any impact on the strength or reduction in plate thickness. See Figure 1 and Figure 2.]

(d) For tank systems that transfer, store or treat materials that become hazardous wastes this assessment shall be conducted within 12 months after the date that the waste becomes a hazardous waste, except as provided in subsection (g) of this section.

[This is an existing tank with previous certifications]

(e) If, as a result of the assessment conducted in accordance with subsection (b) or (g) of this section, a tank system is found to be leaking or unfit for use, the owner or operator shall comply with the requirements of section 66264.196.

[The tank does not have, nor has ever had any leaks.]

(f) Owners or operators of all existing tank systems shall submit to the Department with Part B of the application for a hazardous waste facility permit, a written statement, signed by an independent, qualified professional engineer, registered in California, in accordance with section 66270.11(d), attesting that the tanks and containment system are suitably designed to achieve the requirements of this article.

[This Document along with the responses to the requirements contained herein are being provided as a part of the tank certification]

(g)(1) Notwithstanding subsections (b) through (d) of this section, for each existing tank system that does not have secondary containment meeting the requirements of section 66264.193 and which meets the criteria specified in subsection (g) (2) of this section, the assessment specified in subsection (i) of this section shall be conducted by January 24, 1998. This assessment shall be reviewed and certified by an independent, qualified, professional engineer, registered in California, in accordance with section 66270.11(d), that attests to the tank system's integrity. The assessment shall be kept on file at the facility until closure of the facility and shall be valid for a period of one year from the date the assessment was certified.

[Tank system has secondary containment and meets the requirements of section 66264.193]

(2) The provisions of subsection (g)(1) of this section apply only to:

(A) on ground or aboveground tank systems containing only non-RCRA hazardous wastes generated onsite, and tank systems authorized under Permit-by-Rule pursuant to Chapter 45 of this division, Conditional Authorization pursuant to HSC 25200.3, and Conditional Exemption pursuant to HSC 25201.5, and

(B) onground or aboveground tank systems containing RCRA hazardous wastes generated onsite, if:

1. the owner or operator is a conditionally exempt small quantity generator as defined in 40 CFR section 261.5, or a small quantity generator of more than 100 kg but less than 1000 kg per month as defined in 40 CFR section 265.201, or

2. the owner or operator is not subject to regulation in 40 CFR part 264 pursuant to an exemption in 40 CFR section 264.1, but the owner or operator is subject to the standards of this article.

(h) A generator or owner or operator authorized pursuant to Permit-by-Rule pursuant to Chapter 45 of this division, Conditional Authorization pursuant to HSC 25200.3, or Conditional Exemption pursuant to HSC 25201.5,operating a non-RCRA underground tank system or an underground tank system otherwise exempt from permitting requirements pursuant to the federal act, shall comply with the applicable standards of Title 23 of the California Code of Regulations relating to underground tank systems.

[Does not apply. Tank is above ground]

(i) The tank system assessment shall include all of the following information:

(1) tank configuration (i.e., horizontal, vertical), and gross capacity (in gallons);

(2) design standard(s), if available, according to which the tank and ancillary equipment were constructed, and all of the following information;

(A) material of construction;

(B) material thickness and the method used to determine the thickness;

(C) description of tank system piping (material, diameter);

(D) description of any internal and external pumps; and

(E) sketch or drawing of tank including dimensions.

(3) documented age of the tank system, if available, otherwise, an estimate of the age based on owner or operator knowledge;

(4) description and evaluation of the adequacy of any leak detection equipment;

(5) description and evaluation of any corrosion protection equipment;

(6) description and evaluation of any spill prevention or overfill equipment;

(7) hazardous characteristics of the waste(s) that have been or will be handled;

(8) description of any structural damage or inadequate construction or installation such as cracks, punctures, or damaged fittings. All discrepancies shall be documented in the assessment and remedied before the tank system is certified for use.

(9) results of a leak test, internal inspection, or other tank system integrity examination including the type of integrity examination performed (i.e., ultrasonic, internal examination, volumetric tank test, pipeline pressure test). Tank system integrity or leak test requirements must be in compliance with all local requirements. Prior to conducting a tank system integrity test or leak test, contact local agency staff for local requirements.

(10) estimated remaining service life of the tank system based on findings of subsections (i)(1) through (i)(9).

§66264.192. Design and Installation of New Tank Systems or Components.

[This is an existing tank and therefore this section is not applicable]

§66264.193. Containment and Detection of Releases.

(a) In order to prevent the release of hazardous waste or hazardous constituents to the environment,

secondary containment that meets the requirements of this section shall be provided (except as provided in subsections (f) and (g) of this section):

(1) for all new tank systems or components, prior to the tank system or component being put into service.

[Burn Pan is an existing tank]

(2) for all existing tank systems.

[Burn Pan is an existing tank with adequate secondary containment]

(3) for tank systems that transfer, store or treat materials that subsequently become hazardous wastes within two years after the materials become hazardous waste unless the owner or operator complies with section 40CFR 265.201 and is one of the following:

(A) the owner or operator is a conditionally exempt small quantity generator or a 100 to 1,000 kg per month generator, or

[Burn pan has a history of being used less than one time per year and therefore treats less than 1,000kg per month]

(B) the owner or operator is not subject to regulation in 40 CFR part 264 pursuant to an exemption in 40 CFR section 264.1, but the owner or operator is subject to the standards of this article.

[See previous response to (A)]

(b) Secondary containment systems shall be:

(1) designed, installed, and operated to prevent any migration of wastes or accumulated liquid out of the system to the soil, groundwater or surface water at any time during the use of the tank system; and

[Containment system is in place to capture any spills]

(2) capable of detecting and collecting releases and accumulated liquids until the collected material is removed.

[Spills are detected by observation and capable of being removed by whatever means necessary, since this is in an open field with no access limitations]

(c) To meet the requirements of subsection (b) of this section, secondary containment systems shall be at a minimum:

(1) constructed of or lined with materials that are compatible with the wastes(s) to be placed in the tank system and shall have sufficient strength and thickness to prevent failure owing to pressure gradients including static head and external hydrological forces), physical contact with the waste to which it is exposed, climatic conditions and the stress of daily operation (including stresses from nearby vehicular traffic);

[Containment is made of identical material as the tank (burn pan) and is open to the atmosphere]

(2) provided with a foundation or base underlying the tanks capable of providing support to the secondary containment system, resistance to pressure gradients above and below the system and capable of preventing failure due to settlement, compression or uplift. This base shall be free of cracks or gaps and sufficiently impervious to contain leaks, spills and accumulated precipitation until the collected material is detected and removed;

[Containment is an integral part of the tank and is supported on the same foundation, see figures 1 and 2]

(3) provided with a leak-detection system that is designed and operated so that it will detect the failure of either the primary or secondary containment structure or the presence of any release of hazardous waste or accumulated liquid in the secondary containment system within 24 hours, or at the earliest

practicable time if the owner or operator can demonstrate to the Department that existing detection technologies or site conditions will not allow detection of a release within 24 hours; and

[Tank system requires manual filling and physical observation, and is unattended during its use, and therefore leak detection is readily identifiable and addressed to prevent any release]

(4) sloped or otherwise designed or operated to drain and remove liquids resulting from leaks, spills or precipitation. Spilled or leaked waste and accumulated precipitation shall be removed from the secondary containment system within as timely a manner as is necessary to prevent overflow of the containment system, but within no more than 24 hours, or in as timely a manner as possible to prevent harm to human health and the environment, if the owner or operator can demonstrate to the Department that removal of the released waste or accumulated precipitation cannot be accomplished within 24 hours and that overflow of the containment system will not occur.

[Spills are detected by observation and capable of being removed by whatever means necessary, since this is in an open field with no access limitations]

(A) If the collected material is a hazardous waste under chapter 11 of this division, it shall be managed as a hazardous waste in accordance with all applicable requirements of chapters 12 through 15 of this division.

B) If the collected material is discharged through a point source to waters of the United States, the owner or operator shall comply with the requirements of sections 301, 304, and 402 of the Federal Clean Water Act, as amended (33 U.S.C. sections 1311, 1314 and 1342, respectively).

C) If the collected material is discharged to a Publicly Owned Treatment Works (POTW), the owner or operator shall comply with the requirements of section 307 of the Federal Clean Water Act, as amended (33 U.S.C.section 1317).

D) If the collected material is released to the environment, the owner or operator shall comply with the applicable reporting requirements of Title 40 CFR Part 302.

(d) Secondary containment for tanks shall include one or more of the following devices:

(1) a liner (external to the tank);

[Tank system contains an integral external steel liner to capture the contents of the primary tank]

(2) a vault;

(3) a double-walled tank; or

(4) an equivalent device as approved by the Department.

(e) In addition to the requirements of subsections (b), (c) and (d) of this section, secondary containment systems shall satisfy the following requirements.

(1) External liner systems shall be:

A) designed or operated to contain precipitation from a 24-hour, 25-year storm event plus the greater of 10 percent of the aggregate volume of all tanks or 100 percent of the capacity of the largest tank within its boundary, whichever is greater;

[The secondary containment has sufficient capacity to contain 100% of the contents contained in the primary tank but not the additional capacity to contain a 24-hour, 25-year storm event. Both the primary tank and the secondary containment are open to the atmosphere and subject to being filled by rain. The secondary containment has a larger surface area and therefore will evaporate water before the water evaporates in the primary tank. Since the tank (burn pan) requires manually loading, the contents of the tank and secondary containment can be physically observed and any water residue in either the tank or the containment can be removed prior to putting the tank into service. Note that the tank is also located in an open field subject to drifting sand. Any accumulated sand will need to be removed from the secondary containment to meet the capacity requirements for

secondary containment. The primary tank (burn pan) has a water level full capacity of 223,772 in^3, and the secondary containment has a water level full capacity of 257,346 in^3.]

(B) designed or operated to prevent run-on and infiltration of precipitation into the secondary containment system unless the collection system has sufficient excess capacity, in addition to that required in subsection (e)(1)(A) of this section, to contain run-on and infiltration from a 25-year, 24-hour rainfall event;

[The secondary containment has sufficient capacity to contain 100% of the contents contained in the primary tank but not the additional capacity to contain a 24-hour, 25-year storm event. The tank is located in an open field subject to drifting sand. The containment structure has an elevated concrete curb with a steel liner. Drifting sand can change the contours in the area, which would allow run on or flash flooding to enter the containment structure. Any accumulated water and/or sand will need to be removed from the secondary containment to meet the capacity requirements for secondary containment. The primary tank (burn pan) has a water level full capacity of 223,772 in^3, and the secondary containment has a water level full capacity of 257,346 in^3.]

© free of cracks or gaps; and

[The containment structure currently has two major breaches in the sidewalls, caused by debris from an explosion at an adjacent detonation site. These breaches will require patches made of similar steel plate continuously seal welded to the inside of the containment structure. See figures 3 and 4.]

Figure 3

Figure 4

D) designed and installed to surround the tank completely and to cover all surrounding earth likely to come into contact with the waste if the waste is released from the tank(s) (i.e., capable of preventing lateral as well as vertical migration of the waste).

[Containment is designed to cover all surrounding earth likely to come in contact with the waste.]

(2) Vault systems shall be:

[See comments under (1) liner system]

(A) designed or operated to contain precipitation from a 24-hour, 25-year storm event plus the greater of 10 percent of the aggregate volume of all tanks or 100 percent of the capacity of the largest tank within its boundary, whichever is greater;

(B) designed or operated to prevent run-on and infiltration of precipitation into the secondary containment system unless the collection system has sufficient excess capacity, in addition to that required in subsection (e)(2)(A)of this section, to contain run-on and infiltration from a 25-year, 24-hour rainfall event;

© constructed with chemical-resistant water stops in place at all joints (if any);

(D) provided with an impermeable interior coating or lining that is compatible with the waste being transferred, stored or treated and that will prevent migration of waste into the concrete;

(E) provided with a means to protect against the formation of and ignition of vapors within the vault, if the waste being transferred, stored or treated:

1. meets the definition of ignitable waste under section 66261.21 of this division; or

2. meets the definition of reactive waste under section 66261.23 of this division, and may form an ignitable or explosive vapor; and

(F) provided with an exterior moisture barrier or be otherwise designed or operated to prevent migration of moisture into the vault if the vault is subject to hydraulic pressure.

(3) Double-walled tanks shall be:

[See comments under (1) liner system]

(A) designed as an integral structure (i.e., an inner tank completely enveloped within an outer shell) so that any release from the inner tank is contained by the outer shell;

(B) protected, if constructed of metal, from both corrosion of the primary tank interior and of the external surface of the outer shell; and

© provided with a built-in continuous leak detection system capable of detecting a release within 24 hours, or at the earliest practicable time, if the owner or operator can demonstrate to the Department, and the Department concludes, that the existing detection technology or site conditions would not allow detection of a release within 24 hours.

(f) Ancillary equipment shall be provided with secondary containment (e.g., trench, jacketing, double-walled piping) that meets the requirements of subsections (b) and (c) of this section except for:

[There is no ancillary equipment associated with the tank system. The tank is an open top "pan" setting in a containment pad in an open field. See figures 1 and 2]

(1) aboveground piping (exclusive of flanges, joints, valves and other connections) that are visually inspected for leaks on a daily basis;

(2) welded flanges, welded joints and welded connections, that are visually inspected for leaks on a daily
basis;

(3) sealless or magnetic coupling pumps and sealless valves, that are visually inspected for leaks on a daily basis; and

(4) pressurized aboveground piping systems with automatic shut-off devices (e.g., excess flow check valves, flow metering shutdown devices, loss of pressure actuated shut-off devices) that are visually inspected for leaks on a daily basis.

(g) The owner or operator may obtain a variance from the requirements of this section for existing aboveground tanks in place, if the Department finds, as a result of a demonstration by the owner or operator that alternative design and operating practices, together with location characteristics, will prevent the migration of any hazardous waste or hazardous constituents into the groundwater or surface water at least as effectively as secondary containment during the active life of the tank system, or that in the event of a release that does migrate to groundwater or surface water, no substantial present or potential hazard will be posed to human health or the environment.

[Existing tank has secondary containment]

(1) In deciding whether to grant a variance based on a demonstration of equivalent protection of groundwater and surface water, the Department will consider:

(A) the nature and quantity of the wastes;

(B) the proposed alternate design and operation;

(C) the hydrogeologic setting of the facility, including the thickness of soils present between the tank system and groundwater, and

(D) all other factors that would influence the quality and mobility of the hazardous constituents and the potential for the constituents to migrate to groundwater or surface water.

(2) In deciding whether to grant a variance based on a demonstration of no substantial present or potential hazard, the Department will consider:

(A) the potential adverse effects on groundwater, surface water and land quality taking into account:

1. the physical and chemical characteristics of the waste in the tank system, including its potential for migration;

2. the hydrogeological characteristics of the facility and surrounding land;

3. the potential for health risks caused by human exposure to waste constituents;

4. the potential for damage to wildlife, crops, vegetation and physical structures caused by exposure to waste constituents; and

5. the persistence and permanence of the potential adverse effects;

(B) the potential adverse effects of a release on groundwater quality, taking into account:

1. the quantity and quality of groundwater and the direction of groundwater flow;

2. the proximity and withdrawal rates of groundwater users;

3. the current and future uses of groundwater in the area; and

4. the existing quality of groundwater, including other sources of contamination and their cumulative impact on the groundwater quality;

(C) the potential adverse effects of a release on surface water quality, taking into account:

1. the quantity and quality of groundwater and the direction of groundwater flow;

2. the patterns of rainfall in the region;

3. the proximity of the tank system to surface waters;

4. the current and future uses of surface waters in the area and any water quality standards established for those surface waters; and

5. the existing quality of surface water, including other sources of contamination and the cumulative impact on surface water quality; and

(D) the potential adverse effects of a release on the land surrounding the tank system, taking into account:

1. the patterns of rainfall in the region; and

2. the current and future uses of the surrounding land.

(3) The owner or operator of a tank system, for which a variance from secondary containment has been granted in accordance with the requirements of subsection (g)(1) of this section, at which a release of

hazardous waste has occurred from the primary tank system but has not migrated beyond the zone of engineering control (as established in the variance), shall:

(A) comply with the requirements of section 66264.196, except subsection (b)(5); and

(B) decontaminate or remove contaminated soil to the extent necessary to:

1. enable the tank system for which the variance was granted to resume operation with the capability for the detection of releases at least equivalent to the capability it had prior to the release; and

2. prevent the migration of hazardous waste or hazardous constituents to groundwater or surface water; and

(C) if contaminated soil cannot be removed or decontaminated in accordance with subsection (g)(3)(B) of this section, comply with the requirements of section 66264.197(b).

(4) The owner or operator of a tank system, for which a variance from secondary containment has been granted in accordance with the requirements of subsection (g)(1) of this section, at which a release of hazardous waste has occurred from the primary tank system and has migrated beyond the zone of engineering control (as established in the variance), shall:

(A) comply with the requirements of section 66264.196(b); and

(B) prevent the migration of hazardous waste or hazardous constituents to groundwater or surface water, if possible, and decontaminate or remove contaminated soil. If contaminated soil cannot be decontaminated or removed or if groundwater has been contaminated, the owner or operator shall comply with the requirements of section 66264.197(b); and

(C) if repairing, replacing or reinstalling the tank system, provide secondary containment in accordance with the requirements of subsections (a) through (f) of this section or reapply for a variance from secondary containment and meet the requirements for new tank systems in section 66264.192 if the tank system is replaced. The owner or operator shall comply with these requirements even if contaminated soil can be decontaminated or removed and groundwater or surface water has not been contaminated.

(h) The following procedures shall be followed in order to request a variance from secondary containment.

[Does not apply, a variance is not being sought]

(1) The Department shall be notified in writing by the owner or operator that the facility intends to conduct and submit a demonstration for a variance from secondary containment as allowed in subsection (g) of this section atleast 24 months prior to the date that secondary containment is required to be provided in accordance with subsection (a) of this section; or, if a variance is sought from the requirements of section 66264.193(i)(1), the demonstration shall be submitted to the Department with Part B of the permit application.

(2) As part of the notification, the owner or operator shall also submit to the Department a description of the steps necessary to conduct the demonstration and a timetable for completing each of the steps. The demonstration shall address each of the factors listed in subsection (g)(1) or subsection (g)(2) of this section.

(3) The demonstration for a variance shall be completed within 180 days after notifying the Department of an intent to conduct the demonstration.

(4) If a variance is granted under this subsection, the Department will require the permittee to construct and operate the tank system in the manner that was demonstrated to meet the requirements for the variance.

(i) All tank systems, until such time as secondary containment that meets the requirements of this section is provided, shall comply with the following:

[Does not apply. Tank has secondary containment]

(1) subsections (c)(2), (c)(4), (e)(1)(A) or (e)(2)(A) (except for tanks that do not contain free liquids), and (e)(1)(B) or (e)(2)(B);

(2) for nonenterable underground tanks, a leak test that meets the requirements of section 66264.191(c)(5) or other tank integrity method, as approved or required by the Department, shall be conducted at least annually;

(3) for other than nonenterable underground tanks, the owner or operator shall either conduct a leak test as in subsection (i)(2) of this section or develop a schedule and procedure for an assessment of the overall condition of the tank system by an independent, qualified professional engineer, registered in California, in accordance with section 66270.11(d). The schedule and procedure shall be adequate to detect obvious cracks, leaks, and corrosion or erosion that may lead to cracks and leaks. The owner or operator shall remove the stored waste from the tank, if necessary, to allow the condition of all internal tank surfaces to be assessed. The frequency of these assessments shall be based on the material of construction of the tank and its ancillary equipment, the age of the system, the type of corrosion or erosion protection used, the rate of corrosion or erosion observed during the previous inspection and the characteristics of the waste being stored or treated;

(4) for ancillary equipment, a leak test or other integrity assessment as approved by the Department shall be conducted at least annually;

(5) the owner or operator shall maintain on file at the facility a record of the results of the assessments conducted in accordance with subsections (i)(2) through (i)(4) of this section;

(6) if a tank system or component is found to be leaking or unfit for use as a result of the leak test or assessment in subsections (i)(2) through (i)(4) of this section, the owner or operator shall comply with the
requirements of section 66264.196.

(j)(1) Notwithstanding subsection (a) through (c) of this section, secondary containment that meets the requirements of subsections (*l*) and (m) shall be provided for tank systems used to manage hazardous wastes generated onsite, and which meet the criteria specified in subsection (j)(2) of this section:

[Does not apply. Tank has secondary containment]

(A) prior to the tank system or component being placed in service for new tank systems or components; or

(B) by January 24, 1998 for existing tank systems.

(2) The provisions of subsection (j)(1) of this section apply only to:

(A) on ground or aboveground tank systems containing only non-RCRA hazardous wastes generated onsite, and tank systems authorized under Permit-by-Rule pursuant to Chapter 45 of this division, Conditional Authorization pursuant to HSC 25200.3, and Conditional Exemption pursuant to HSC 25201.5, and

(B) on ground or aboveground tank systems containing RCRA hazardous wastes generated onsite, if:

1. the owner or operator is a conditionally exempt small quantity generator as defined in 40 CFR section 261.5, or a small quantity generator of more than 100 kg but less than 1000 kg per month as defined in 40 CFR section 265.201, or

2. the owner or operator is not subject to regulation in 40 CFR part 264 pursuant to an exemption in 40 CFR section 264.1, but the owner or operator is subject to the standards of this article.

(k) A generator or owner or operator authorized pursuant to Permit-by-Rule pursuant to Chapter 45 of this division, Conditional Authorization pursuant to HSC 25200.3, or Conditional Exemption pursuant to HSC

25201.5, operating a non-RCRA underground tank system or an underground tank system otherwise exempt from permitting requirements pursuant to the federal act, shall comply with the applicable standards of Title 23 of the California Code of Regulations relating to underground tank systems.

[Does not apply]

(*l*) Secondary containment for on ground or aboveground generator and onsite tier (Permit-by Rule, Conditional Authorization, and Conditional Exemption), non-RCRA tank systems or tank systems otherwise exempt from permitting requirements pursuant to the federal act, shall consist of any of the devices listed in subsection (d) and satisfy the requirements of (e) of this section or any device or combination of devices as approved by the CUPA, or the Department if there is no CUPA or the CUPA requests that the Department makes a determination, which would satisfy the following minimum requirements:
[Does not apply]

(1) designed, installed, and operated to prevent any migration of wastes or accumulated liquid out of the system to the soil, ground water, surface water, or air at any time during the use of the tank system; and

(2) capable of detecting and collecting releases and accumulated liquids until the collected material is removed.

(m) Ancillary equipment shall be provided with secondary containment as specified in subsection (f) of this section or an alternative device or devices as approved in writing by the CUPA, or the Department if there is no CUPA or if the CUPA requests that the Department make a determination, which would prevent and/or detect any release of wastes out of the tank system before such wastes could migrate to the soil, ground water, or surface water at any time during the use of the tank system. The following are examples of tank system and ancillary equipment secondary containment alternatives or options that may be proposed for review and approval by the CUPA:

[Does not apply. Tank system does not have ancillary equipment]

(1) traditional containment of entire system within a bermed containment area with visual and/or electronic leak detection monitoring;

(2) troughs or pipe runs with impermeable liners that incorporate the following:

(A) visual monitoring during hours of operation or;

(B) continuous electronic leak detection monitoring for releases; or

(C) sumps located at low elevations with leak detection monitors.

(3) double-walled piping with continuous interstitial monitoring or monitoring intervals located at low elevation points along pipeline;

(4) Double-walled piping with translucent or transparent sections located at low points or low endpoints so that visual monitoring is possible.

(n) A generator or owner or operator authorized pursuant to Permit-by-Rule pursuant to Chapter 45 of this division, Conditional Authorization pursuant to HSC 25200.3, and Conditional Exemption pursuant to HSC 25201.5, operating an on ground or aboveground, non-RCRA tank system or a tank system otherwise exempt from permitting requirements pursuant to the federal act, that has 18 months or less remaining in service prior to planned closure of the tank system, may propose alternatives to retrofitting the tank system with secondary containment. Local agency requirements must be considered when proposing alternatives to secondary containment. The owner or operator shall provide the following information in writing to the CUPA, or the Department if there is no CUPA or the CUPA requests that the Department make a determination, so that a determination can be made whether the proposed alternative would be acceptable:

[Does not apply]

(1) name, address, and EPA identification number of the facility;

(2) date of planned closure;

(3) description of tank system to be closed and form of current authorization for the tank system;

(4) description of how the proposed alternative would provide adequate environmental protection such that the design, installation, and operation will be capable of detecting a release and preventing any migration of wastes or accumulated liquid out of the system to the soil, ground water, surface water, or air at any time during the remaining life of the tank system.

§66264.194. General Operating Requirements.

(a) Hazardous wastes or other materials (e.g., treatment reagents) shall not be placed in a tank system if they could cause the tank, its ancillary equipment or the containment system to rupture, leak, corrode, or otherwise fail.

[The tank is of sufficient thickness to contain material being burned. Prior use of the tank has resulted in no visible signs of deterioration.]

(b) The owner or operator shall use appropriate controls and practices to prevent spills and overflows from tank or containment systems. These include at a minimum:

[The tank can only be manually loaded and therefore controlled by visual observation.]

(1) spill prevention controls (e.g., check valves, dry disconnect couplings);

(2) overfill prevention controls (e.g., level sensing devices, high level alarms, automatic feed cutoff, or bypass to a standby tank); and

(3) maintenance of sufficient freeboard in uncovered tanks to prevent overtopping by wave or wind action or by precipitation from at least a 24-hour, 25-year storm.

(c) The owner or operator shall comply with the requirements of section 66264.196 if a leak or spill occurs in the tank system.

[The tank can only be manually loaded and therefore controlled by visual observation.]

§66264.195. Inspections.

(a) The owner or operator shall develop and follow a schedule and procedure for inspecting overfill controls and shall inspect the overfill controls at least once each operating day to ensure that they are in good working order.

[The tank can only be manually loaded and therefore controlled by visual observation.]

(b) The owner or operator shall inspect at least once each operating day:

[The tank system is operated less than once a year. The tank can only be manually loaded and therefore controlled by visual observation.]

(1) aboveground portions of the tank system, if any, to detect corrosion or releases of waste;

(2) data gathered from monitoring and leak detection equipment (e.g., pressure or temperature gauges, monitoring wells) to ensure that the tank system is being operated according to its design; and

(3) the construction materials and the area immediately surrounding the externally accessible portion of the tank system, including the secondary containment system (e.g., dikes) to detect corrosion, erosion or signs of releases of hazardous waste (e.g., wet spots, dead vegetation);

(4) for uncovered tanks, the level of waste in the tank, to ensure compliance with section 66264.194(b)(3).

(c) The owner or operator shall inspect cathodic protection systems, if present, according to, at a minimum, the following schedule to ensure that they are functioning properly.

[There is no cathodic protection system]

(1) The proper operation of the cathodic protection system shall be confirmed within six months after initial installation and annually thereafter.

(2) All sources of impressed current shall be inspected and/or tested, as appropriate, at least bimonthly (i.e., every other month).

(d) The owner or operator shall document in the operating record of the facility an inspection of those items in subsections (a) through (c) of this section.

[This is an operations issue and does not apply to certification]

(e) As part of the inspection schedule required in section 66264.15(b), and in addition to the specific requirements of subsection (a) of this section, the owner or operator shall develop a schedule and procedure for assessing the condition of the tank. The schedule and procedure shall be adequate to detect cracks, leaks, corrosion or erosion which may lead to cracks or leaks, or wall thinning to less than the thickness required under section 66264.191(a). Procedures for emptying a tank to allow entry and inspection of the interior shall be established, when necessary, to detect corrosion or erosion of the tank sides and bottom. The frequency of these assessments shall be based on the material of construction of the tank, type of corrosion or erosion observed during previous inspections and the characteristics of the waste being transferred, treated or stored.

[This document along with the responses noted herein are a part of the inspection for certification of the tank system]

§66264.196. Response to Leaks or Spills and Disposition of Leaking or Unfit-for-Use Tank Systems.

[This is an operations issue and does not apply to certification]

§66264.197. Closure and Post-Closure Care.

[Tank is not subject to closure, and does not apply to certification.]

§66264.198. Special Requirements for Ignitable or Reactive Wastes.

(a) Ignitable or reactive waste shall not be placed in tank systems, unless:

(1) the waste is treated, rendered, or mixed before or immediately after placement in the tank system so that:

(A) the resulting waste, mixture, or dissolved material no longer meets the definition of ignitable or reactive waste under sections 66261.21 or 66261.23 of this division, and

(B) section 66264.17(b) is complied with; or

[The tank (burn pan's) intended use is to burn highly energetic liquids and solids, and as such requires operating procedures for safe transport loading, etc. which are a part of the operating procedures and do not apply to tank certification.]

(2) the waste is transferred, stored or treated in such a way that it is protected from any material or conditions that may cause the waste to ignite or react; or

(3) the tank system is used solely for emergencies.

(b) The owner or operator of a facility where ignitable or reactive waste is transferred, stored or treated in a tank shall comply with the requirements for the maintenance of protective distances between the waste management area and any public ways, streets, alleys, or an adjoining property line that can be built upon as required in Tables 2-1 through 2-6 of the National Fire Protection Association's “Flammable and’Combustible Liquids Code,” (1981), (incorporated by reference, see section 66260.11).

[Tank is located in a secured artillery section of the naval base at protective distances from the public.]

§66264.199. Special Requirements for Incompatible Wastes.

[Does not apply to certification]

§66264.200. Air Emission Standards.

[Does not apply to certification]

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APPENDIX N

Title V Federal Operating Permit

Theodore D. Schade
Air Pollution Control Officer

Great Basin Unified Air Pollution Control District
157 Short Street, Bishop, California 93514-3537
Tel: 760-872-8211 Fax: 760-872-6109 gbl@greatbasinapcd.org

TITLE V PERMIT #V-1

ISSUED TO:

United States Navy
1 Administration Circle
Naval Air Weapons Station, China Lake
China Lake, CA 93555-6001

CONSOLIDATION OF TITLE V PERMITS:

Previous Title V Permit	Area Location
#V-1A – Burro Canyon	35.81° N, 117.56° W
#V-1B – Other North Ranges	36.12° N, 117.81° W
#V-1C – Cactus Flats	35.94° N, 117.71° W

FACILITY LOCATION: Inyo County, CA portion of China Lake NAWS North Range just to the North of Ridgecrest, CA, an approximately 720 square-mile area encompassed by the coordinates:

NW Corner: 36.23° N, 117.84° W
NE Corner: 36.23° N, 117.47° W
SW Corner: 35.79° N, 117.85° W
SE Corner: 35.79° N, 117.42° W

ISSUED BY GREAT BASIN UNIFIED AIR POLLUTION CONTROL DISTRICT

[redacted]

Theodore D. Schade, Air Pollution Control Officer

18 Jan 06
Date of Issuance

Nature of Business: Research, development, testing, evaluation and in-service support center for guided missiles, free-fall weapons, targets, support equipment crew systems and electronic warfare systems.

Primary SICs: 9711 – National Security: China Lake NAWS
4953 – Refuse Systems: Burro Canyon OB/OD Facility
8734 – Testing Laboratories: Other North Ranges & Upper Cactus Flats

RESPONSIBLE OFFICIAL:

Name: Captain M.G. Storch
Title: Commanding Officer

FACILITY CONTACT PERSON:

Name: Brenda Abernathy
Title: Air Quality Program Manager
Phone: (760) 939-3230

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LIST OF ACRONYMS USED IN THIS PERMIT

BC	Burro Canyon
CF	Cactus Flats
CFR	Code of Federal Regulations
CARB	California Air Resources Board
CCR	California Code of Regulations
CH&SC	California Health and Safety Code
CO	Carbon monoxide
COCI	Coso Operating Company, Inc.
EF	Emission factor
ES	Emission source
CAA	Federal Clean Air Act
FW	Facility-wide
H_2S	Hydrogen sulfide
I&M	Inspection and Maintenance
KGRA	Known Geothermal Resource Area
NAWS	Naval Air Weapons Station
OB/OD	Open Burn/Open Detonation
O&M	Operation and Maintenance
PEP	Propellants, Explosives, and Pyrotechnics
PM	Particulate matter
RMP	Real-time Monitoring Program
U.S. EPA	United States Environmental Protection Agency
WFEMS	Well Field Emissions Management System

PERMITTED ACTIVITIES

Until such time as this permit expires or is modified or revoked, the permittee is allowed to discharge air contaminants from those processes and activities directly related to or associated with air contaminant source(s) in accordance with the requirements, limitations, and conditions of this permit. All conditions in this permit are federally enforceable, except Conditions 3, 4 and G15 which are enforceable by the District and State only [District Rule 217].

PERMIT CONDITIONS

EMISSIONS SOURCES AND CONTROLS

Emissions Sources

1. The emissions units/areas regulated by this permit are the following: [District Rule 217]

ES ID	EMISSIONS AREA	EMISSIONS SOURCE	EMISSIONS DESCRIPTION
FW-001	Facility-wide (FW): Most in Other North Ranges (Junction Ranch). Small portion in Cactus Flats.	Construction activities, wherever they take place on the range	Fugitive windblown dust
FW-002	Facility-wide: Most in Other North Ranges	Unpaved Roadways	Fugitive windblown dust
FW-003	Facility-wide: Most in Other North Ranges	Space Heating at various locations for space heat. Most at Junction Ranch	Propane combustion emissions
BC-001	Burro Canyon (BC)	Open Burn/Open Detonation (OB/OD)	Emissions from energetics
BC-002	Burro Canyon	OB/OD Fugitive Dust	Fugitive windblown dust
NR-001	Other North Ranges (NR)	BC Test Areas at mouth of Burro Canyon	Fugitive windblown dust
NR-002	Other North Ranges	JR Above-ground Gasoline Storage Tank at Junction Ranch	Gasoline volatile organic compounds (VOC)
NR-003	Other North Ranges	JR So 40 Generators at Junction Ranch main compound	Diesel combustion emissions
		JR 4000' Generators at northern portions of Junction Ranch	
		Pinion Peek Generators on top of Pinion Peak	
		Portable range generators	
CF-001	Cactus Flats (CF)	High Explosives Test Arena	Energetics emissions
CF-002	Cactus Flats	Fugitive Dust	Fugitive windblown dust
CW-001	Coso-KGRA Wellfield	Exploratory & monitoring wells	Hydrogen sulfide venting
CW-002	Coso- KGRA Wellfield drilling	Drilling compressor engines	Nitrogen oxides (NOx)

Emissions Controls

2. Fugitive dust emissions at construction and demolition sites shall be controlled with a water truck and dust suppressant practices. OB/OD emissions shall be controlled by annual treatment limits.

EMISSION LIMITS AND STANDARDS

Facility-wide Emission Limits and Standards

CONDITION №	APPLICABLE REQUIREMENT	POLLUTANT/ PARAMETER	LIMIT/ STANDARD	COMPLIANCE	
				METHOD	CONDITION №
3 & 8	District Rule 400	Visible emissions	20% opacity, 3 minutes in 60 minutes	EPA Method 9	17
4	CH&SC § 41701	Visible emissions	40% opacity, 3 minutes in 60 minutes	EPA Method 9	17
5, 7 & 8	District Rule 401	Fugitive emissions	Reasonable precautions	Investigation & recordkeeping	17
6, 8 & 9	District Rule 402	Fugitive dust/odor	Work practices	Investigation & recordkeeping	17

Note: Rule 400 does not apply to the treatment of waste propellants, explosives and pyrotechnics in open burn/open detonations operations.

3. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than 3 minutes in any one hour which is darker than Ringelmann 1 or greater than 20% opacity [District Rule 400]

4. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than 3 minutes in any one hour which is darker than Ringelmann 2 or greater than 40% opacity [CH&SC § 41701]

5. If wind conditions are such that the permittee cannot control dust, the permittee shall shut down soil disturbing operations (except for equipment used for dust control). Under no circumstance shall man-caused fugitive dust be allowed to blow across a property boundary [District Rule 401].

6. No air contaminant shall be released into the atmosphere which causes a public nuisance [District Rule 402].

7. The permittee is responsible for dust control and for ensuring that subcontractor(s), employees, and all other persons connected with the operation abide by the conditions of this permit [District Rule 401].

8. To prevent violations of District Rule(s) 400, 401 and 402, the permittee shall have at a minimum one (1) watering truck available to apply water to the unpaved roads in construction and demolition areas. The fugitive emissions shall be maintained below a Ringelmann 1 (20% opacity) [District Rules 400, 401 and 402].

9. China Lake NAWS shall post and observe a 25 mph speed limit in construction and demolition areas. During normal daily activity, China Lake NAWS, their contractor(s), and employees shall observe this speed limit. The speed limit shall be strictly enforced by the applicant. [District Rule 402].

Emissions Unit-Specific Limits and Standards

ES ID	CONDI-TION №	APPLICABLE REQUIREMENT	POLLU-TANT	LIMIT/ STANDARD	COMPLIANCE	
					METHOD	CONDI-TION №
BC-001	10	District Rule 432	Toxics	District approved OB/OD health risk assessment & burn plan	I&M Recordkeeping	26
NR-002	11.a	District Rules 210 & 419, CH&SC § 41950	VOC	Gasoline Tank O&M	Recordkeeping	28
	11.b	District Rule 210				
	11.c					
	11.d	District Rules 402 & 419, CH&SC § 41960.1, CCR Title 8 §5592				
CF-001	12	District Rule 216 (3/10/76)	Toxics		Testing with District-approved protocol	19
CW-001 CW-002	13	Rule 216.B.3	H_2S	Various agencies' requirements	Recordkeeping	30
CW-001	14	Rule 424.H	H_2S	18 ppbv at any public access	RMP	21
CW-002	15	Rule 403, 209-A.B and 210	NO_X	250 lbs/day per engine (drilling)	Recordkeeping	19

Note: Rules 400, 404-A and 404-B do not apply to the treatment of waste propellants, explosives and pyrotechnics in open burn/open detonations operations.

10. No open burn/open detonation (OB/OD) operation may be done at Burro Canyon (BC-001) without prior approval from the Air Pollution Control Officer (APCO) through the approval of an OB/OD Burn Plan [District Rule 432].

11. The Junction Ranch aboveground gasoline storage tank (NR-002) shall be installed and operated with the following conditions:

A. The tank shall be equipped with a permanent submerged fill pipe with the discharge opening no greater than six inches above the bottom on the tank (District Rule 419, CH&SC § 41950).
B. In order to prevent misfueling, China Lake NAWS shall properly label the fuel tank, dispenser and comply with nozzle size requirements of CH&SC § 41960.5 as if the dispensing facility were retail [District Rule 210].
C. The gasoline storage tank shall be painted white or a light reflecting color [District Rule 210].

Well Venting H_2S: RMP and WFEMS

20. The applicant shall implement the mitigation measures described in and otherwise comply with all applicable terms of the *Mitigation Monitoring and Reporting Program for the Coso Geothermal Deep Test Well Project, Naval Air Weapons Station China Lake, California, Dated March 22, 2002.*

21. Well venting shall be regulated through the Real-time Monitoring Program (RMP) and Well Field Emissions Management System (WFEMS) managed by Coso Operating Company, Inc. (COCI). The permittee shall report H_2S emissions to Coso Operating Company in order to coordinate well field venting with the Realtime Monitoring Program emission limits established for the current meteorological conditions. [District Rule 424.H].

    A. Each well field consists of injection wells, observation wells, monitoring wells, exploratory wells and production wells. The number of wells varies and their emissions are flexible within the RMP. Well field emissions are limited based on meteorology to prevent modeled ambient impacts from the well fields and all H_2S sources from exceeding 15 parts per billion by volume at the facility boundary. H_2S emissions from all existing and new wells operated or being drilled by the permittee shall be reported and updated to COCI for inclusion in the RMP whenever well field conditions change.
    B. The APCO can, upon 30 days notice to the permittee, withdraw permission for the RMP for any reasonable cause.

TEST METHODS AND PROCEDURES

22. If source testing is conducted in addition to the monitoring specified in this permit, the permittee shall use the following test methods and averaging times to measure the pollutant emissions for the applicable requirements referenced in the table:

CONDITION №	TEST METHOD	AVERAGING TIME	SPECIAL CONDITIONS
3 & 4	EPA Method 9	3 minutes total in one hour	The test duration may be less than 60 minutes if a violation of the standard is documented before the full 60 minute observation period is completed.

23. The permittee shall perform and report to the Air Pollution Control Officer (APCO) the following characterization of hot water, steam, particulate and/or gases emanating from the subject well within sixty (60) days after completion of the initial geothermal drilling and testing in the Coso KGRA.

Required chemical analysis for all developmental and/or exploratory geothermal resources wells:

BRINE:
Ammonium (total)
Arsenic*
Benzene*
Bicarbonate and carbonate
Boron (total)*
Bromides
Cadmium*
Chlorides*
Chromium*
Fluorides (total)
Hydrogen sulfide (total)*
Lead
Mercury (total)*
Nickel
Nitrates
Silica (quartz and glassy silicates)*
Potassium
Selenium
Sodium
Sulfates
Zinc
Asbestos*
Ph*
Total dissolved solids*
Total suspended solids*
Percent non-condensable*
Mass flowrate & temperature*

CONDENSATE / GAS:
Ammonia*
Arsenic*
Benzene*
Carbon dioxide
Carbon Monoxide
Hydrogen Sulfide*
Methane
Nitrogen
Non Methane Hydrocarbons
Mercury Vapor*
Sulfur dioxide
Radon 222 and daughters*
Temperature
Total dissolved solids

STEAM PARTICULATES
(mg/Kg of steam)
>arsenic
>asbestos
>boron
>cadmium
>chromium
>lead
>nickel
>total sulfur

NESHAPS or AB 2588
air pollutants as requested

Tests can be performed on the initial flow test, standby bleed, or during production. Gas phase test (non-condensable or dilute steam, as appropriate, to maintain gas phase and integrity of the sample) are to be performed if the bleed flow duration is expected to exceed 90 days. A test protocol shall also be submitted to the District for approval at least 30 days prior to actual source sampling. If the well is abandoned, the permittee shall submit to the District a chemical analysis and a copy of the Division of Oil and Gas Certificate of Abandonment. If the well is connected to the associated power plant within 90 days or not placed on sustaining bleed flow, the District may delay testing of those items without an (*) asterisk until circumstances dictate. This determination shall be at the Districts option and at the request of the permittee. [District Rules 210, 424.F, 424.H and CH&SC §§44340 – 44346]

24. In the event that source testing of any geothermal well(s) is deemed necessary by the Great Basin Unified Air Pollution Control District, the permittee shall within fifteen (15) days submit to the District for approval the plan for performing the source testing. Such plan shall at a minimum specify the analytical method or technique, and the sampling frequency. The permittee shall be available (within ten days of written notice) to open said well(s) for source testing conducted by the District or its representatives [District Rules 424.F and 424.H].

RECORDKEEPING REQUIREMENTS
[District Rule 217.VI.B.6]

25. As applicable, the permittee shall maintain the following general records of required monitoring information:

A. The date, place as defined in the permit, and time of the sampling or measurements;
B. The date(s) analyses were performed;
C. The company or entity that performed the analysis;
D. The analytical techniques of methods used;
E. The results of such analysis;
F. The operating conditions as existing at the time of sampling of measurement; and
G. The records of quality assurance for continuous monitoring systems (including but not limited to quality control activities, audits, and calibration drift checks) and source testing methods.

26. For the OB/OD events at Burro Canyon, the permittee shall maintain the following specific records of required monitoring information:

A. Type and amount of PEP for each open burn/open detonation operation and shall be submitted to the District sixty (60) days prior to the end of the burn plan approval period [District Rule 432].
B. Estimate of fugitive emissions.

27. For the Cactus Flats emissions sources, the permittee shall maintain the following specific records of required monitoring information:

A. Upper Cactus Flats Explosive Test Range activity log;
B. Result of silt analysis performed after each explosive test at the High Explosives Test Arena;
C. Estimate of fugitive emissions.

28. For the Other North Range emissions sources, the permittee shall maintain the following specific records of required monitoring information:

A. Type and amount of fuel used by each engine/generator set;
B. Type and amount of gasoline dispensed;

C. Activity log for each range:
   i. Air Weapons (Baker) Range;
   ii. Air Tactics (Charlie) Range;
   iii. Airport Lake Mobile Land Target Area;
   iv. Junction Ranch Radar Cross-section Range;
   v. Coso Military Target Range;
D. Estimate of fugitive emissions.

29. For geothermal well emissions sources in the Coso KGRA, the permittee shall maintain the following specific records of required monitoring information:
   A. Continuous H_2S concentration (ppbv);
   B. Flow rate and calculated emission rate (lb/hr) at each well;
   C. Diesel fuel use of each drilling rig (not to exceed 850 gal/day each unless BACT is applied);
   D. All records required under the RMP and WFEMS.

30. The permittee shall retain records of all required monitoring data and support information for a period of at least 5 years from the date of the monitoring, sample collection, measurement, report, or application. Support information includes all calibration and maintenance records and all original strip-chart recording for continuous monitoring instrumentation, and copies of all reports required by the permit. All existing records required by the previous Air Quality Permit shall also be retained for five years from the date of the monitoring, sample collection, measurement, report, or application.

REPORTING REQUIREMENTS
[District Rule 217.VI.B.7]

31. The permittee shall submit two (2) copies of the semi-annual monitoring report, covering the period from January 1 to June 30, using District approved forms by July 30, unless otherwise approved in writing by the District. One copy of the report shall be submitted to the District and one copy to the U.S. EPA Region 9 office. The semi-annual monitoring report shall include the semi-annual compliance certification.

32. The permittee shall submit two (2) copies of the annual monitoring report (Jan. 1 to Dec. 31), using District approved forms by April 1, unless otherwise approved in writing by the District. One copy of the report shall be submitted to the District and one copy to the U.S. EPA Region 9 office.

33. The annual reports shall include the following information:
   A. Annual totals of the type and amount of fuels used in the stationary combustion engines;
   B. Type and amount of PEP for each open burn/open detonation operation at Burro Canyon;

   C. Type and amount of gasoline dispensed at the NR Junction Ranch;

D. Annual estimate of vehicle miles traveled on unpaved roads;
E. Estimate of fugitive emissions;
F. The emission fee report;
G. The excess emissions upset log; and
H. State whether compliance was continuous or intermittent and shall identify any deviation from permit requirements, including that previously reported to the APCO.

34. The semi-annual reports shall include the following information:
A. The excess emissions upset log; and
B. State whether compliance was continuous or intermittent and shall identify any deviation from permit requirements, including that previously reported to the APCO.

35. The compliance certification report shall include the following:
A. The compliance status and method(s) used to determine compliance for the current time period and over the entire reporting period; and
B. Any additional inspection, monitoring, or entry requirement that may be promulgated pursuant to sections 114(a) and 504(b) of the CAA.

36. Other reporting requirements include the following:
A. Source test plans; and
B. Emission factor verification testing summaries.

37. Characterization of hot water, steam, particulate and/or gases emanating from well after initial drilling (Well test) (30 days before test)

38. If well is abandoned, a chemical analysis and Division of Oil and Gas Certificate of Abandonment (Within 30 days after abandoned)

39. Plan for well test if deemed necessary by the District (Within 15 days)

40. All reports and documents submitted to the District pursuant to this permit shall include the following:

A. Any deviation from permit requirements, including that attributable to upset conditions (as defined in District Rule 403 Breakdown), shall be promptly (within 1 hour) reported to the APCO, in the case of deviations due to upset or emergency conditions, no longer than the time frames provided for under the emergency provisions in Rule 217.VI.B.12 (2 days);
B. All reports of a deviation from permit requirements shall include the probable cause of the deviation and any preventative or corrective action taken;
C. A progress report shall be made on a compliance schedule at least semi-annually and shall include: 1) the date when compliance will be achieved, 2) an explanation of why compliance was not, or will not be, achieved by the scheduled date, and 3) a log of any preventative or corrective action taken; and
D. A written statement from the responsible official which certifies the truth, accuracy, and completeness of the report.

The permittee shall promptly, upon discovery, report to the District a material error or omission in their records, reports, or other documents.

41. Addresses of the regulatory agencies are the following (unless otherwise instructed):

Great Basin UAPCD
157 Short St., Suite 6
Bishop, CA 93514

Air Division
U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105

GENERAL CONDITIONS

G1. Compliance Plan
[District Rule 217.VI.B.8 and VI.B.9]

A. The permittee will continue to comply with those permit conditions with which it is in compliance.
B. For applicable requirements that will become effective during the permit term, the source shall meet such requirements on a timely basis unless a more detailed schedule is expressly required by the applicable requirement.

G2. Compliance with Permit Conditions
[District Rule 217.VI.B.11]

A. The Permittee shall comply with all conditions of the federal operating permit. Any permit condition noncompliance which constitutes a violation of the Federal Clean Air Act and/or District rules is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. Any noncompliance with a permit condition specifically designed as enforceable only by the District constitutes a violation of District rules only and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.
B. This permit does not convey property rights or exclusive privilege of any sort.
C. The permittee shall not use the "need to halt or reduce a permitted activity in order to maintain compliance" as a defense for noncompliance with any permit condition.
D. A pending permit action of notification of anticipated noncompliance does not stay any permit condition.
E. Within a reasonable time period, the permittee shall furnish any information requested by the APCO, in writing, for the purpose of determining: 1) compliance with the permit, or 2) whether or not cause exists for a permit or enforcement action.

G3. Compliance Certification
[District Rule 217.VI.B.14]

The responsible official shall submit a compliance certification to the U.S. EPA and the

APCO every 12 months or at more frequent periods if specified in the applicable requirement or by the permitting authority and shall contain:

A. the basis for each permit term or condition (e.g., specify the emissions limitation, standard, or work practice) and a means of monitoring compliance with the term or condition;
B. the compliance status and method(s) used to determine compliance for the current time period and over the entire reporting period; and
C. any additional inspection, monitoring, or entry requirement that may be promulgated pursuant to sections 114(a) and 504(b) of the CAA.

G4. Right of Entry
[District Rule 217.VI.B.10]

Subject to safety, security and operational conditions, the permittee shall allow the Air Pollution Control Officer, the Executive Officer of the California Air Resources Board, Regional Administrator of the United States Environmental Protection Agency, or their authorized representatives, to enter the premises upon presentation of credentials and other documents as may be required by law:

A. To inspect the stationary source, including equipment, work practices, operations, and emissions-related activity; and
B. To have access to and copy, at reasonable times, any records that must be kept under conditions of the Title V Permit to Operate; and
C. To sample substances or monitor emissions from the source or other parameters to assure compliance with the applicable requirements of the Title V Permit to Operate. Monitoring of emissions can include source testing.

G5. Emergency Provisions
[District Rule 217.VI.B.12]

A. The responsible official shall submit to the District a properly signed contemporaneous log or other relevant evidence which demonstrates that:
   i. An emergency occurred;
   ii. The permittee can identify the cause(s) of the emergency;
   iii. The facility was being properly operated at the time of the emergency;
   iv. All steps were taken to minimize the emissions resulting from the emergency; and
   v. Within two working days of the emergency event, the permittee provided the district with a description of the emergency and any mitigating or corrective actions taken;
B. In any enforcement proceeding, the permittee has the burden of proof for establishing that an emergency occurred; and
C. In addition to the emergency provisions above, the permittee shall comply with the emergency or upset provisions contained in all applicable federal requirements and District requirements.

G6. Severability Clause
[District Rule 217.VI.B.13]

Upon any administrative or judicial challenge, all the emission limits, specific and general conditions, monitoring, recordkeeping, and reporting requirements of this permit to operate, except those being challenged, remain valid and must be complied with.

G7. Permit Life
[District Rule 217.VI.B.15]

This Permit to Operate shall become invalid five years after from the date of issuance unless a timely and complete renewal application is submitted to the District. Applications for renewal shall be submitted at least 12 months before the expiration of this permit, unless the District requests an earlier submittal. If more than 12 months is required to process a permit renewal application, the District shall provide no less than six (6) months for the owner or operator to prepare an application. Provided the permittee submits a timely and complete renewal application, this permit to operate shall remain in effect until the APCO issues or denies the renewal application.

G8. Fee Payment
[District Rules 217.VI.B.16 and 300.D]

The permittee shall remit the Title V supplemental annual fee to the District within 30 days from the billing date. If the fee is not paid within 30 days after it becomes due, the fee shall be increased by one half the Title V supplemental annual fee amount and the permittee shall be notified by mail of the increased fee. If the increased fee is not paid within 30 days after the notice, the permit will be cancelled and the permittee will be notified by mail. Operations without a permit to operate subject the source to potential enforcement action by the District and the U.S. EPA pursuant to section 502(a) of the Clean Air Act.

G9. Excess Emissions Reporting
[District Rule 403]

The permittee shall report all excess emissions in accordance with District Rule 217. In summary, the permittee shall immediately (i.e., as soon as reasonably possible, but no later than one (1) hour after its detection, unless the owner or operator can demonstrate that a longer periods necessary) Notify the District by telephone or in person of any excess emissions, other than pre-approved start-up, shutdown, or scheduled maintenance. Notification shall, to the extent reasonably ascertainable at the time of notification, include the source name, nature of the emissions problem, name of the person making the report, name and telephone number of the contact person for further information, date and time of the onset of the upset condition, whether or not the incident was planned, the cause of the excess emission (e.g., startup, shutdown, maintenance, breakdown, or other), equipment involved in the upset, estimated type and quality of excess emissions, estimated time of return to normal operating conditions.

G10. Permit Reopening for Cause
[District Rule 217.V.H]

The APCO shall reopen and revise a permit to operate during the annual review period required by § 42301(c) of the CH&SC, or petition the District hearing board to do so pursuant to § 42307 of the CH&SC, whichever is applicable, prior to its expiration date upon discovery of cause for reopening or upon notification of cause for reopening by the U.S. EPA, or within 18 months of promulgation of a new applicable federal requirement. The APCO shall act only on those parts of the permit for which cause to reopen exists.

G11. Off Permit Modifications
[40 CFR section 70.4(b)(14)]

The APCO will allow changes that are not addressed or prohibited by the permit, as provided by 40 CFR section 70.4(b)(14).

G12. Permit Availability
[District Rule 200.D]

The permittee shall have available at the facility at all times a copy of the Great Basin Unified Air Pollution Control District Title V Operating Permit and shall provide a copy of the permit to the District or an authorized representative upon request.

G13. Significant Permit Modifications
[District Rule 217.IV.B.3]

The responsible official shall submit an application for significant permit modifications.

G14. Construction/Operation Modification
[District Rule 200-A]

No permittee shall construct or make modifications required to be reviewed, without receiving an Authority to Construct.

APPENDIX O

Hazardous Waste Source Reduction & Management Review Act (SB14) Report

DEPARTMENT OF THE NAVY
NAVAL AIR WEAPONS STATION
1 ADMINISTRATION CIRCLE
CHINA LAKE, CALIFORNIA 93555-6100

IN REPLY REFER TO:
5090
Ser N45NCW/367
August 13, 2007

Ms. Beverly Rikala
Department of Toxic Substances Control
8800 Cal Center Drive
Sacramento, CA 95826

Dear Ms. Rikala:

This letter transmits the hazardous waste summary report as enclosure (1). The report meets the requirements of the Hazardous Waste Reduction and Management Review Act (more commonly known as "SB-14") for the 2006 reporting year. It replaces the 2002 report as Appendix O in the permit application for our Hazardous Waste Storage Facility and Appendix H in the permit application for our PCB Storage Building.

As you are aware, the SB-14 regulation provides a threshold amount of HW generated. If an installation exceeds this amount, then the generator must prepare several more detailed reports. As indicated in our summary report, even though China Lake generated over 2.2 million pounds of HW in 2006, almost all of these wastes are exempt from the SB-14 reporting requirements. Therefore, additional reporting will not be necessary.

Please address questions or comments to Ms. Lauren Zellmer at (760) 939-3219.

Sincerely,

[redacted]

JOHN O'GARA
Head, Environmental Planning & Mgmt. Dept.
By direction of
the Commanding Officer

Enclosure: 1. Two Copies of Summary Report

LIST OF HAZARDOUS WASTES GENERATED IN 2006 - Aug 07

GM Form Page #	Waste Description[a]	Source Code ("G")[a]	Definition of Source Code	Federal Waste Code(s)[a]	CA Waste Code(s)[a]	Weight (lbs)[a]	Exempt? (Yes/No)	Reason for Exemption
4	Acid, inorganic solution and/or mixture, w/o metals (sulfuric/hydrofluoric acid)	09	Wastes from Ongoing Production & Service Processes (Waste from general day to day manufacturing, production, or maintenance activities) - Other production or service-related processes from which the waste is a direct outflow or result (Specify)	D002	791	233	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
5	Acid, inorganic solution and/or mixture, w metals (Lead & Selenium)	22	Pollution Control and Waste Management Process Residuals - Laboratory analytical wastes (used chemicals from laboratory operations)	D002, D008, D010	792	272	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
6	Aerosol cleaners, non-flammable, U-listed	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	U075, U227	141	50	Yes	U listed; Off-spec chemical; Not routine
7	Aerosol, corrosion preventative compound w/ Barium	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D005	331	6	Yes	Wastes generated in support of RDT&E activities; Not routine
8	Aerosol lubricants & cleaners, non-flammable, Non-RCRA	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	-	331	167	**No (25%)**	75% - Wastes generated in support of RDT&E activities; Not routine; 25% - Routine vehicle maintenance waste
9	Aerosol lubricating compound w/ Lead	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D001, D008	331	8	Yes	Wastes generated in support of RDT&E activities; Not routine
10	Aerosol paints, adhesives & cleaners, flammable	06	Wastes from Ongoing Production & Service Processes (Waste from general day to day manufacturing, production, or maintenance activities) - Painting and coating (manufacturing, building, or maintenance)	D001, D035, D039, U002	331	2,384	**No (25%)**	75% - Wastes generated in support of RDT&E activities; Not routine; 25% - Routine vehicle maintenance waste
11	Aerosol pesticides, non-flammable, Non-RCRA (aerosols w/ pyrethrins)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	-	323	6	Yes	Wastes generated from intermittent use of pesticides
12	Anti-freeze, aqueous solution	13	Other Intermittent Events or Processes - Cleaning out process equipment (periodic sludge or residual removal fromenclosed processes including internal scrubbing or cleaning)	-	135	4,844	Yes	Specifically exempt per SB14 regulation as motor vehicle fluids
13	Asbestos containing materials, friable	15	Other Intermittent Events or Processes - Process equipment change-out or discontinuation of equipment use (final materials and residuals removal including cleaning)	-	151	14,590	Yes	Specifically exempt per SB14 regulation as asbestos; Not routine
14	Aqueous photo process solution (water w/ Ag)	08	Wastes from Ongoing Production & Service Processes (Waste from general day to day manufacturing, production, or maintenance activities) - Removal of spent process liquids or catalysts (bulk removal of wastes from chemical manufacturing or processing, etc)	D011	541	63,280	Yes	Influent to evaporation treatment unit; Photo lab waste in support of RDT&E activities
15	Batteries, lead acid dry, damaged	16	Other Intermittent Events or Processes - Oil changes and filter or battery replacement (automotive, machinery, etc)	D008	141	3,273	Yes	Specifically exempt per SB14 regulation as lead-acid batteries; Not routine
16	Batteries, lead acid , wet, automotive, damaged	16	Other Intermittent Events or Processes - Oil changes and filter or battery replacement (automotive, machinery, etc)	D002, D008, D010	792	212	Yes	Specifically exempt per SB14 regulation as lead-acid batteries; Not routine

LIST OF HAZARDOUS WASTES GENERATED IN 2006 - Aug 07

GM Form Page #	Waste Description[a]	Source Code ("G")[a]	Definition of Source Code	Federal Waste Code(s)[c]	CA Waste Code(s)[c]	Weight (lbs)[a]	Exempt? (Yes/No)	Reason for Exemption
17	Batteries, lead acid, wet, damaged	16	Other Intermittent Events or Processes - Oil changes and filter or battery replacement (automotive, machinery, etc)	D002, D008, D010	792	6,410	Yes	Specifically exempt per SB14 regulation as lead-acid batteries; Not routine
18	Blast media/debris contaminated w/ Cd, Cr, Pb	06	Wastes from Ongoing Production & Service Processes (Waste from general day to day manufacturing, production, or maintenance activities) - Painting and coating (manufacturing, building, or maintenance)	D006, D007	181	5,450	Yes	Wastes generated in support of RDT&E activities; Not routine
19	Blast media, silica/glass/garnet, Non-RCRA	05	Wastes from Ongoing Production & Service Processes (Waste from general day to day manufacturing, production, or maintenance activities) - Metal forming and treatment (pickling, heat treating, punching, bending, annealing, grinding, hardening, etc)	-	181	103	Yes	Wastes generated in support of RDT&E activities; Not routine
20	MAF-4 (1,1-dimethyhydrazine & diethylenetriamine blend)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D001, D002	331	2,542	Yes	Demil of ordnance; Not routine
21	Red fuming nitric acid	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D001, D002	791	3,171	Yes	Demil of ordnance; Not routine
22	Soil contaminated w/ petroleum products	32	Spills and Accidental Releases - Cleanup of spill residues (infrequent, not routine)	-	611	839,620	Yes	Waste generated from intermittent spills of petroleum products
23	Chlorodifluoromethane (R22) cylinders, medium	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	-	331	1,680	Yes	Equipment retrofit; Not routine maintenance
24	Cleaning compounds, basic surfactants (NaOH & monoethanolamine)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D002	122	775	No	Wastes generated from routine maintenance of vehicles; Parts washing
25	Cleaning compound, Non-RCRA solid (trisodium phosphate, soda powder)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	-	141	341	Yes	Unused/out-of-date solid cleaning compounds; Not routine
26	Cleaning compounds, Non-RCRA surfactants	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	-	331	1,172	Yes	Unused/out-of-date solid cleaning compounds; Not routine
27	Concrete joint sealant from airfield repairs (contracting)	44	Remediation of Past Contamination - State program or voluntary cleanup	-	181	100,000	Yes	Generated by construction contract; Not routine
28	Debris contaminated w/ state-regulated metals (contracting)	44	Remediation of Past Contamination - State program or voluntary cleanup	-	181	5,000	Yes	Generated by construction contract; Not routine
29	Lead contaminated solids, non-wastewater (contracting)	19	Other Intermittent Events or Processes - Other one-time or intermittent processes (specify)	D008	181	3,684	Yes	Generated by construction contract; Not routine
30	Cylinder, flammable, small (n-butane, propane, MAPP gas)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D001	331	310	Yes	Wastes generated from non-routine maintenance on facilities, etc; Also spent calibration gases used in support of RDT&E activities; Not routine

LIST OF HAZARDOUS WASTES GENERATED IN 2006 - Aug 07

GM Form Page #	Waste Description	Source Code ("G")	Definition of Source Code	Federal Waste Code(s)	CA Waste Code(s)	Weight (lbs)	Exempt? (Yes/No)	Reason for Exemption
31	Cylinder, flammable, w/ asbestos, small (acetylene)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D001	331	8	Yes	Wastes generated from non-routine maintenance on facilities, etc; Also gases used at various Machine Shops in support of RDT&E activities; Not routine
32	Cylinder, inert, large (nitrogen)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	-	331	105	Yes	Wastes generated in support of RDT&E activities; Not routine
33	Cylinder, inert, small (calibration gas mixtures, nitorgen, air)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	-	331	54	Yes	Wastes generated in support of RDT&E activities; Not routine
34	Cylinder, refrigerant, medium (R-12, R-22)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	-	331	166	Yes	Equipment retrofit; Not routine maintenance
35	Debris contaminated w/ heavy metals (no mercury) (debris & lead, trace chromic acid)	15	Other Intermittent Events or Processes - Process equipment change-out or discontinuation of equipment use (final materials and residuals removal including cleaning)	D007, D008	181	17,460	Yes	Wastes generated in support of RDT&E activities and miscellaneous facility upgrades; Not routine
36	Debris contaminated w/ mercury	31	Spills and Accidental Releases - Accidental contamination of products, materials, or containers (other than G11)	D009	181	4	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
37	Debris contaminated w/ petroleum products (carbon graphite composite scrap, oils)	19	Other Intermittent Events or Processes - Other one-time or intermittent processes (specify)	-	352	968	Yes	Wastes generated in support of RDT&E activities; Test articles; Not routine
38	Debris contaminated w/ petroleum products (bulk)	19	Other Intermittent Events or Processes - Other one-time or intermittent processes (specify)	-	352	134,006	No (10%)	Non-Routine (90%) - Wastes generated in support of RDT&E activities; Also from intermittent spills; Not routine; Routine (10%) - Rags from vehicle maintenance
39	Debris contaminated w/ petroleum products (epoxy/carbon fiber, resins, polymers w/oil)	19	Other Intermittent Events or Processes - Other one-time or intermittent processes (specify)	-	352	15	Yes	Wastes generated in support of RDT&E activities; Not routine
40	Diesel fuel, contaminated (mixture of diesel fuel, oil, water & unleaded gasoline)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D001	331	1,431	Yes	Specifically exempt per SB14 regulation as motor vehicle fluids; Also wastes generated in support of RDT&E activities (targets & equipment); Not routine
41	Electron tubes w/ lead, non-radioactive	15	Other Intermittent Events or Processes - Process equipment change-out or discontinuation of equipment use (final materials and residuals removal including cleaning)	D008	141	127	Yes	Specifically exempt per SB14 regulation as wastes generated from site cleanup activities; Not routine
42	Empty poly containers, non-listed (previously containing a caustic liquid)	15	Other Intermittent Events or Processes - Process equipment change-out or discontinuation of equipment use (final materials and residuals removal including cleaning)	-	352	1,023	No	Waste generated from routine maintenance of cooling towers and boiler plants

LIST OF HAZARDOUS WASTES GENERATED IN 2006 - Aug 07

GM Form Page #	Waste Description[a]	Source Code ("G")[a]	Definition of Source Code	Federal Waste Code(s)[a]	CA Waste Code(s)[a]	Weight (lbs)[a]	Exempt? (Yes/No)	Reason for Exemption
43	Energetic waste (weapons & propellants)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D001, D003, D007, D008	131, 331	43,272	Yes	Specifically exempt per SB14 regulation as spent munitions and ordnance; Also wastes generated in support of RDT&E activities; Not routine
44	Fluorescent light tubes, broken/crushed)	32	Spills and Accidental Releases - Cleanup of spill residues (infrequent, not routine)	D009	181	59	Yes	Specifically exempt per SB14 regulation as lighting wastes
45	Haz Mat, OS/OD, Non-RCRA solid (grease, aircraft & artillery)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	-	331	1,522	Yes	Wastes that are off-spec & out-of-date; Not routine
46	Haz Mat, OS/OD, acid, liquid, inorganic w/ metals (alodine, chromic acid, chromium phosphate)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D002, D007	792	11	Yes	Wastes that are off-spec & out-of-date; Not routine
47	Haz Mat, OS/OD, acid, liquid w/o metals (aqueous acid solutions)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D002	791	1,061	Yes	Wastes that are off-spec & out-of-date; Not routine
48	Haz Mat, OS/OD, acid, liquid, inorganic, w/o metals (ZnCl, phosphorous pentoxide, phosphoric acid)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D002	791	4	Yes	Wastes that are off-spec & out-of-date; Not routine
49	Haz Mat, OS/OD, acid, liquid, inorganic, w/o metals (epoxy & polyurethane paint remover)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D002	791	35	Yes	Wastes that are off-spec & out-of-date; Not routine
50	Haz Mat, OS/OD, acid, liquid, organic, w/o metals acetic acid)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D002	791	349	Yes	Wastes that are off-spec & out-of-date; Not routine
51	Haz Mat, OS/OD, Al powder, uncoated	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D001, D003, D007	141	48	Yes	Wastes that are off-spec & out-of-date; Not routine
52	Haz Mat, OS/OD, basic, liquid, inorganic, w/o metals (aqueous NaOH solkutions))	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D002	122	4,731	Yes	Wastes that are off-spec & out-of-date; Not routine
53	Haz Mat, OS/OD, basic, liquid, inorganic, w metals (methylene chloride, phenol, Cr)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D002, D007, F002	121	37	Yes	Wastes that are off-spec & out-of-date; Not routine
54	Haz Mat, OS/OD, basic, liquid, inorganic, w metals (methylene chloride, phenol, Cr)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	-	141	811	Yes	Wastes that are off-spec & out-of-date; Not routine
55	Haz Mat, OS/OD, basic, solid, inorganic, (CAOH)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	-	141	214	Yes	Wastes that are off-spec & out-of-date; Not routine

LIST OF HAZARDOUS WASTES GENERATED IN 2006 - Aug 07

GM Form Page #	Waste Description[a]	Source Code ("S")[a]	Definition of Source Code	Federal Waste Code(s)[a]	CA Waste Code(s)[a]	Weight (lbs)[a]	Exempt? (Yes/No)	Reason for Exemption
56	Haz Mat, OS/OD, basic, solid, inorganic, (Na metasulfite, solid)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	-	141	442	Yes	Wastes that are off-spec & out-of-date; Not routine
57	Haz Mat, OS/OD, flammable liquid (adhesive, paints, solvents, distillates)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D001, D005, D007, D008, D035	214, 331	4,024	Yes	Wastes that are off-spec & out-of-date; Not routine
58	Haz Mat, OS/OD, Hg in manufactured articles (Hg relays & thermostats)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D009, U151	141	18	Yes	Wastes that are off-spec & out-of-date; Not routine
59	Haz Mat, OS/OD, Non-RCRA liquid (adhesives, cleaners, latex, paints, sealers, oils)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	-	331	5,361	Yes	Wastes that are off-spec & out-of-date; Not routine
60	Haz Mat, OS/OD, Non-RCRA solid (ammonium phosphate, silica, CaCO3)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	-	141	993	Yes	Wastes that are off-spec & out-of-date; Not routine
61	Haz Mat, OS/OD, Non-RCRA solid (inert simulant (cured) w/ polybutadine, isocyanates, debris)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	-	331	577	Yes	Wastes that are off-spec & out-of-date; Not routine
62	Haz Mat, OS/OD, Non-RCRA solid (dry ink toner cartridges)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	-	331	1,329	Yes	Wastes that are off-spec & out-of-date; Not routine
63	Haz Mat OS/OD, Non-RCRA solid (printer cartridges, toners, sealers)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	-	141	438	Yes	Wastes that are off-spec & out-of-date; Not routine
64	Haz Mat, OS/OD, oxidizer, liquid (mixture of tetrahydrofuran, methylene chloride, acetone)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D001, F002, F003	141	10	Yes	Wastes that are off-spec & out-of-date; Not routine
65	Haz Mat, OS/OD, oxidizer, solid (Na chlorate)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D001	141	30	Yes	Wastes that are off-spec & out-of-date; Not routine
66	Haz Mat, OS/OD, paint, related material, D001 (paints, thinners, stains)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D001, D004, D007, D008, D035	331	1,819	Yes	Wastes that are off-spec & out-of-date; Not routine
67	Haz Mat, OS/OD, photochemicals, basic liquid (photo developer w/ ammonium hydroxide)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D002	541	56	Yes	Wastes that are off-spec & out-of-date; Not routine
68	Haz Mat, OS/OD, reactive liquid (trimehylsilyl cyanide, butyllithium 2.5M solution in hexanes)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D001, D002, D003, P030	331	7	Yes	Wastes that are off-spec & out-of-date; Not routine
69	Haz Mat, OS/OD, reactive solid (LiAl hydride, Li ribbons, activated carbon)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D001, D003	331	7	Yes	Wastes that are off-spec & out-of-date; Not routine

LIST OF HAZARDOUS WASTES GENERATED IN 2006 - Aug 07

GM Form Page #	Waste Description[a]	Source Code ("G")[a]	Definition of Source Code	Federal Waste Code(s)[a]	CA Waste Code(s)[a]	Weight (lbs)[c]	Exempt? (Yes/No)	Reason for Exemption
70	Haz Mat, OS/OD, toxic, non-acute liquids (urethane resin w/4,4diphenylmethane diisocyanate)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	-	141	167	Yes	Wastes that are off-spec & out-of-date; Not routine
71	Haz Mat, OS/OD, toxic, non-acute liquids (1,1,1 trichloroethane, toluene diisocyanates, methylene chloride, nitrobenzene)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D005, D008, D035, D036, U080	141, 331	102	Yes	Wastes that are off-spec & out-of-date; Not routine
72	Haz Mat, OS/OD, toxic, non-acute solids (solders, epoxy adhesive w/ Ag)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D008, D011	141, 311	18	Yes	Wastes that are off-spec & out-of-date; Not routine
73	I/R waste (IDW), water w/POLs and/or diesel fuel	44	Remediation of Past Contamination - State program or voluntary cleanup	-	135	816	Yes	Specifically exempt per SB14 regulation as wastes generated from site cleanup activities; Not routine
74	I/R waste (IDW), water w/trace solvents	31	Spills and Accidental Releases - Accidental contamination of products, materials, or containers (other than G11)	F002	134	1,038	Yes	Specifically exempt per SB14 regulation as wastes generated from site cleanup activities; Not routine
75	I/R waste, (site #70), sample decon/rinsate water	44	Remediation of Past Contamination - State program or voluntary cleanup	-	135	5,022	Yes	Specifically exempt per SB14 regulation as wastes generated from site cleanup activities; Not routine
76	Jet fuel, contaminated (jet fuel contaminated w/ water)	13	Other Intermittent Events or Processes - Cleaning out process equipment (periodic sludge or residual removal fromenclosed processes including internal scrubbing or cleaning)	D001	331	799	Yes	Wastes generated in support of RDT&E activities; Not routine
77	Lab waste, acidic liquid (mixtures of hydrochloric, nitric, sulfuric acid, water)	19	Other Intermittent Events or Processes - Other one-time or intermittent processes (specify)	D001, D002	551	317	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
78	Lab waste, basic (NaOH, tetramethylammonium hydroxide solution)	19	Other Intermittent Events or Processes - Other one-time or intermittent processes (specify)	D002	541, 551	105	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
79	Lab waste, debris contaminated w/ heacy metals	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D004, D006, D007, F002, P012	181	12	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
80	Lab waste, debris contaminated w/ solvents (IBC, all listed solvents possible)	19	Other Intermittent Events or Processes - Other one-time or intermittent processes (specify)	D021, D035, D038, F002, F005	351	377	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
81	Lab waste, debris contaminated w/ solvents (lab trash & debris contaminated w/ mixed solvents)	19	Other Intermittent Events or Processes - Other one-time or intermittent processes (specify)	D021, D035, D038, F002, F005	351	76	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
82	Lab waste, flammable acidic liquid (mixture of solvents, acids, & arsenic trioxide	19	Other Intermittent Events or Processes - Other one-time or intermittent processes (specify)	D001, D002, D004 D022, D028	551	38	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
83	Lab waste, flammable, toxic liquid (solvents)	19	Other Intermittent Events or Processes - Other one-time or intermittent processes (specify)	D001, D028, D035, F003, F005	551	227	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine

LIST OF HAZARDOUS WASTES GENERATED IN 2006 - Aug 07

GM Form Page #	Waste Description[a]	Source Code ("G")[a]	Definition of Source Code	Federal Waste Code(s)[c]	CA Waste Code(s)[c]	Weight (lbs)[e]	Exempt? (Yes/No)	Reason for Exemption
84	Lab waste, mixed solvents (solvents and flaked Al)	19	Other Intermittent Events or Processes - Other one-time or intermittent processes (specify)	D001, F002, F003	551	76	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
85	Lab waste, mixed solvents	19	Other Intermittent Events or Processes - Other one-time or intermittent processes (specify)	D001, D022, F003, F005	none	1,835	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
86	Lab waste, mixed solvents acidic	19	Other Intermittent Events or Processes - Other one-time or intermittent processes (specify)	D001, D002, D018, D022, F002	551	239	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
87	Lab waste, mixed solvents basic (isopropanol, KOH, Se)	19	Other Intermittent Events or Processes - Other one-time or intermittent processes (specify)	D001, D002, D010	551	25	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
88	Lab waste, silica gel/filter media contamianted w/ solvent	19	Other Intermittent Events or Processes - Other one-time or intermittent processes (specify)	F002, F004, F005	181	65	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
89	Lab waste, toxic, Non-RCRA liquid (mixture of water, acetone, hexane, Na bromide)	19	Other Intermittent Events or Processes - Other one-time or intermittent processes (specify)	-	551	132	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
90	Lab waste, toxic, Non-RCRA liquid (aqueous solutions of NaCl, zinc bromide)	19	Other Intermittent Events or Processes - Other one-time or intermittent processes (specify)	-	551	372	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
91	Lab waste, toxic, RCRA liquid (dental mold compound w/ Cr)	19	Other Intermittent Events or Processes - Other one-time or intermittent processes (specify)	D007, D008	551	65	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
92	Lab waste, toxic RCRA liquid (aqueous solution w/ Cd, Cr, Pb, Ag)	19	Other Intermittent Events or Processes - Other one-time or intermittent processes (specify)	D006, D007, D008, D011	551	149	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
93	Lab wastes, toxic RCRA liquid	19	Other Intermittent Events or Processes - Other one-time or intermittent processes (specify)	D006, D007, D022, F002, F005	551	124	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
94	Lab waste, toxic RCRA solids, non-reactive (paper, plastic, gloves contaminated w/ BaCl, Cr)	19	Other Intermittent Events or Processes - Other one-time or intermittent processes (specify)	D005, D007	551	13	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
95	Lab pack (INCIN), Non-RCRA waste	25	Pollution Control and Waste Management Process Residuals - Hazardous waste management - indicate management method (for residuals from regulated HW treatment processes - enter the related H code)	Lab Pack	331, 541	2,215	Yes	Wastes that are off-spec & out-of-date; Not routine
96	Lab pack (INCIN), RCRA non-acute waste	25	Pollution Control and Waste Management Process Residuals - Hazardous waste management - indicate management method (for residuals from regulated HW treatment processes - enter the related H code)	Lab Pack	551	3,124	Yes	Wastes that are off-spec & out-of-date; Not routine
97	Lab pack (NEUTR), RCRA non-acute waste	25	Pollution Control and Waste Management Process Residuals - Hazardous waste management - indicate management method (for residuals from regulated HW treatment processes - enter the related H code)	Lab Pack	122	2,224	Yes	Wastes that are off-spec & out-of-date; Not routine
98	Lead, metal, friable (lead shot, oxidized and friable)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D008	141	143	Yes	Wastes generated in support of RDT&E activities; Not routine

LIST OF HAZARDOUS WASTES NERATED IN 2006 - Aug 07

GM Form Page #	Waste Description[a]	Source Code ("G")[a]	Definition of Source Code	Federal Waste Code(s)[a]	CA Waste Code(s)[a]	Weight (lbs)[a]	Exempt? (Yes/No)	Reason for Exemption
99	Oil/water separator clean out waste (oil, water and sludge)	14	Other Intermittent Events or Processes - Removal of tank sludge, sediments, or slag (periodic sludge or residual removal from storage tanks including internal scrubbing or cleaning)	-	222	201,189	Yes	Wastes generated in support of RDT&E activities from equipment & target washings; Also intermittent vehicle washings; Not routine
100	Oil/water separator organic waste (oil, fuel, water)	13	Other Intermittent Events or Processes - Cleaning out process equipment (periodic sludge or residual removal fromenclosed processes including internal scrubbing or cleaning)	D001	343	174,523	Yes	Wastes generated in support of RDT&E activities; Equipment/target washings & tests; Not routine
101	Oil, hydraulic fluid, diesel and jet fuel mixture	19	Other Intermittent Events or Processes - Other one-time or intermittent processes (specify)	D001	223	117,566	Yes	Specifically exempt per SB14 regulation as motor vehicle fluids; Also wastes generated in support of RDT&E activities; Not routine
102	Oils & lubricants, automotive, used	16	Other Intermittent Events or Processes - Oil changes and filter or battery replacement (automotive, machinery, etc)	-	221	1,005	Yes	Specifically exempt per SB14 regulation as motor vehicle fluids
103	Oils & lubricants, non-automotive, usd	16	Other Intermittent Events or Processes - Oil changes and filter or battery replacement (automotive, machinery, etc)	-	221	29,326	Yes	Wastes generated in support of RDT&E activities; Not routine
104	Oils & lubricants, used (RORGS) (oil, water,cutting fluid, penetraiting oil)	16	Other Intermittent Events or Processes - Oil changes and filter or battery replacement (automotive, machinery, etc)	-	221	6,159	Yes	Wastes generated in support of RDT&E activities; Not routine
105	Paint related material, off-spec/outdated, flammable (paint thinner)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D001, D035, F003, F005	213	1,837	Yes	Wastes that are off-spec & out-of-date; Not routine
106	Paint stripper rags and debris contaminated with methylene chloride, chromic acid, phenol	06	Wastes from Ongoing Production & Service Processes (Waste from general day to day manufacturing, production, or maintenance activities) - Painting and coating (manufacturing, building, or maintenance)	D007, F002	751	31	Yes	Wastes generated in support of RDT&E activities; Not routine
107	Paint waste, filters and debris with heavy metals (filters, paint chips contaminated with Cd, Cr, Pb)	06	Wastes from Ongoing Production & Service Processes (Waste from general day to day manufacturing, production, or maintenance activities) - Painting and coating (manufacturing, building, or maintenance)	D006, D007, D008	181	82	Yes	Wastes generated in support of RDT&E activities; Not routine
108	Paint waste, non-metal bearing flammable liquids (paint, oil, and latex mixture)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D001, D035	331	292	Yes	Wastes generated from non-routine maintenance on facilities, etc
109	PCB capacitors, wet, small >/=500ppm	15	Other Intermittent Events or Processes - Process equipment change-out or discontinuation of equipment use (final materials and residuals removal including cleaning)	-	261	208	Yes	Specifically exempt per SB14 regulation as PCB wastes; Not routine
110	PCB capacitors, dry, small >/=500ppm	15	Other Intermittent Events or Processes - Process equipment change-out or discontinuation of equipment use (final materials and residuals removal including cleaning)	-	261	76	Yes	Specifically exempt per SB14 regulation as PCB wastes; Not routine

LIST OF HAZARDOUS WASTES GENERATED IN 2006 - Aug 07

GM Form Page #	Waste Description[a]	Source Code ("G")[a]	Definition of Source Code	Federal Waste Code(s)[b]	CA Waste Code(s)[b]	Weight (lbs)[c]	Exempt? (Yes/No)	Reason for Exemption
111	PCB debris >/=500ppm	15	Other Intermittent Events or Processes - Process equipment change-out or discontinuation of equipment use (final materials and residuals removal including cleaning)	-	261	886	Yes	Specifically exempt per SB14 regulation as PCB wastes; Not routine
112	PCB items other than capacitors & transformers, dry >/500ppm (ballasts)	15	Other Intermittent Events or Processes - Process equipment change-out or discontinuation of equipment use (final materials and residuals removal including cleaning)	-	261	6,560	Yes	Specifically exempt per SB14 regulation as PCB wastes; Not routine
113	PCB items other than capacitors & transformers, wet >/=500ppm (equipment contaminated w/ PCBs)	15	Other Intermittent Events or Processes - Process equipment change-out or discontinuation of equipment use (final materials and residuals removal including cleaning)	-	261	824	Yes	Specifically exempt per SB14 regulation as PCB wastes; Not routine
114	PCB liquids containing PCBs <500ppm (tranformer oil containing </=18ppm PCB)	15	Other Intermittent Events or Processes - Process equipment change-out or discontinuation of equipment use (final materials and residuals removal including cleaning)	-	261	8,498	Yes	Specifically exempt per SB14 regulation as PCB wastes; Not routine
115	PCB liquids containing PCBs >/=500ppm (small container of liquid containing PCB)	15	Other Intermittent Events or Processes - Process equipment change-out or discontinuation of equipment use (final materials and residuals removal including cleaning)	-	261	1	Yes	Specifically exempt per SB14 regulation as PCB wastes; Not routine
116	PCB transformers, wet >/=500ppm	15	Other Intermittent Events or Processes - Process equipment change-out or discontinuation of equipment use (final materials and residuals removal including cleaning)	-	261	1,942	Yes	Specifically exempt per SB14 regulation as PCB wastes; Not routine
117	Photo waste, M/L silver sludge (photo process waste containing silver)	14	Other Intermittent Events or Processes - Removal of tank sludge, sediments, or slag (periodic sludge or residual removal from storage tanks including internal scrubbing or cleaning)	D011	541	14,827	Yes	Effluent from photochemical treatment (GM Form page #14); Do not double count per SB-14 guidance
118	Photo waste, VNF bleach & replenisher	13	Other Intermittent Events or Processes - Cleaning out process equipment (periodic sludge or residual removal fromenclosed processes including internal scrubbing or cleaning)	-	541	2,132	Yes	Wastes generated in support of RDT&E activities; Not routine
119	Scale and corrosion inhibitor (water chemist C-318L)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D002	122	52	No	Waste generated from routine maintenance of cooling towers and boiler plants
120	Sealant tubes, cans & cartridges, non-pressurized (sealant tubes and cans with chromates)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D001, D007, D0335	331	187	Yes	Wastes generated in support of RDT&E activities; Not routine
121	Small arms cartridges w/ lead, expended and inert (spent shotgun shell casings, inert)	15	Other Intermittent Events or Processes - Process equipment change-out or discontinuation of equipment use (final materials and residuals removal including cleaning)	D008	181	134	No	Waste generated from routine Police Dept training
122	Spill clean-up, absorbent & debris contaminated with lead (lead acid battery spill cleanup)	32	Spills and Accidental Releases - Cleanup of spill residues (infrequent, not routine)	D008	141	39	Yes	Waste generated from intermittent spills of petroleum products
123	Spill cleanup, soil contaminated with photo chemicals	32	Spills and Accidental Releases - Cleanup of spill residues (infrequent, not routine)	D011	181	3,619	Yes	Waste generated from intermittent spills of petroleum products

LIST OF HAZARDOUS WASTES NERATED IN 2006 - Aug 07

GM Form Page #	Waste Description	Source Code ("G")	Definition of Source Code	Federal Waste Code(s)[a]	CA Waste Code(s)[a]	Weight (lbs)[a]	Exempt? (Yes/No)	Reason for Exemption
124	Trisodium phosphate, aqueous, with trace POLs	01	Wastes from Ongoing Production & Service Processes (Waste from general day to day manufacturing, production, or maintenance activities) - Dip, flush, or spray rinsing (using solvents to clean or prepare parts or assemblies for further processing (painting	-	134	170	Yes	Wastes generated in support of RDT&E activities; Not routine
125	Water with cadmium from wheel and tire shop (water with Cd and oil)	01	Wastes from Ongoing Production & Service Processes (Waste from general day to day manufacturing, production, or maintenance activities) - Dip, flush, or spray rinsing (using solvents to clean or prepare parts or assemblies for further processing (painting	D006	722	2,288	Yes	Wastes generated in support of RDT&E activities; Not routine
126	Water with heavy metals, Mich Lab water cutter (water contaminated with surfactants and various metal chips)	05	Wastes from Ongoing Production & Service Processes (Waste from general day to day manufacturing, production, or maintenance activities) - Metal forming and treatment (pickling, heat treating, punching, bending, annealing, grinding, hardening, etc)	D005, D006, D007, D008, D009	181	955	Yes	Wastes generated in support of RDT&E activities; Not routine
127	Water with trace solvents (Salt Wells water treatment waste) (water with trace solvents and Cr)	09	Wastes from Ongoing Production & Service Processes (Waste from general day to day manufacturing, production, or maintenance activities) - Other production or service-related processes from which the waste is a direct outflow or result (Specify)	D007, F002	134	379,450	Yes	Wastes generated in support of RDT&E activities; Not routine
128	Waste toxic liquids, organic, N.O.S. (diphehylmethane diisocyanate, 4-4-diamineophenymethane)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	-	None	15	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
129	Sodium hydroxide, solid	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D002	None	11	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
130	Waste tetrachloroethylene	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D039, F002	None	45	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
131	Non-RCRA hazardous waste liquid (latex paint, silicone oils)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	-	None	611	Yes	Wastes generated from non-routine maintenance on facilities, etc
132	Waste calcium hypochlorite mixtures, dry, with more than 39% available chlorine (LABPACK)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D001	None	7	Yes	Wastes that are off-spec & out-of-date; Not routine
133	Waste organic peroxide type F, solid (dicumyl peroxide, >52-100% SADT=167F TL)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D001, D003	None	11	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
134	Waste carbon disulfide	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D001, F005, P022	None	7	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
135	Waste flammable liquids, toxic, N.O.S., (acetone, dichloromethane) (LABPACK)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D001, D022, F001, F002, F003	None	712	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine

LIST OF HAZARDOUS WASTES NERATED IN 2006 - Aug 07

GM Form Page #	Waste Description*	Source Code (G)*	Definition of Source Code	Federal Waste Code(s)*	CA Waste Code(s)*	Weight (lbs)*	Exempt? (Yes/No)	Reason for Exemption
136	Waste flammable liquid, toxic, corrosive, N.O.S. (chloroform, acetone, sulfuric acid)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D001, D002, D022, F003, F005	None	655	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
137	Waste pyrophoric liquids, organic, N.O.S. (phenylphosphine)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D001, D003	None	4	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
138	Waste oxidizing liquid, toxic, N.O.S. (ammonium nitrate solution, Cd, Cr)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D001, D006, D007	None	36	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
139	Waste organic peroxide type D, solid (benzoyl peroxide, >52-62% as a paste SADT>140F)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D001, D003	None	7	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
140	Waste toxic by inhalation liquid, flammable, N.O.S. (methacryloyl chloride, stabilized)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D001, D002, D003, P030	None	6	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
141	Waste toxic solid, inorganic, N.O.S (lead beryllium)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D008	None	11	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
142	Waste toxic solid, inorganic, N.O.S. (vanadium pentoxide, vanadium trioxide)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	P120	None	8	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
143	Waste nitric acid other than red fuming, with not more than 70% nitric acid, (LABPACK)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D002	None	21	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
144	Environmentally hazardous substances, solid, N.O.S. (methylenebis(phenylisocyanate)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	-	None	15	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
145	???te flammable solid, toxic, inorganic, N.O.S. (Al flake, hydrazine gel)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D001	None	20	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
146	Waste mercury	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D009	725	16	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
147	Hazardous waste solid, N.O.S. (filters with Cd)	19	Other Intermittent Events or Processes - Other one-time or intermittent processes (specify)	D006	181, 352	4	Yes	Specifically exempt per SB14 regulation as lab waste; Not routine
148	Batteries, dry, containing potassium hydroxide solid, electric storage (alkaline battery)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	-	181	193	Yes	Wastes generated in support of RDT&E activities; Not routine
149	Waste aerosols, poison, (each not exceeding 1L capacity), (tetrachloroethylene)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D039	331	4	No	Wastes generated from routine maintenance of vehicles; Parts washing

LIST OF HAZARDOUS WASTES GENERATED IN 2006 - Aug 07

GM Form Page #	Waste Description[a]	Source Code ("G")[a]	Definition of Source Code	Federal Waste Code(s)[a]	CA Waste Code(s)[a]	Weight (lbs)[a]	Exempt? (Yes/No)	Reason for Exemption
150	Waste batteries, dry, containing potassium hydroxide solid, electric storage (Ni-Cd batteries)	19	Other Intermittent Events or Processes - Other one-time or intermittent processes (specify)	D006	181	36	Yes	Wastes generated in support of RDT&E activities; Not routine
151	Waste batteries, dry, containing potassium hydroxide solid, electric storage (Ni metal-hydride batteries)	19	Other Intermittent Events or Processes - Other one-time or intermittent processes (specify)	-	181	6	Yes	Intermittent maintenance of computers; Also wastes generated in support of RDT&E activities; Not routine
152	Waste lithium batteries	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D003	141	48	Yes	Wastes generated in support of RDT&E activities; Not routine
153	Non-RCRA hazardous waste solid (Aluminum oxide, ammonium sulfate)	03	Wastes from Ongoing Production & Service Processes (Waste from general day to day manufacturing, production, or maintenance activities) - Plating and phosphating (electro- or nonelectroplating or phosphating)	-	352	729	Yes	Wastes generated in support of RDT&E activities; Not routine
154	Non-RCRA hazardous waste solid (empty drums)	03	Wastes from Ongoing Production & Service Processes (Waste from general day to day manufacturing, production, or maintenance activities) - Plating and phosphating (electro- or nonelectroplating or phosphating)	-	513	160	Yes	Wastes generated intermittently; Not routine
					TOTAL	**2,260,386**		

OS/OD = Off-specification/Out-dated
RDT&E = Research, Development, Test, & Evaluation
Note: Per 22 CCR 66261.9 those wastes defined as Universal Wastes are not considered HW; Therefore, Universal Wastes are not included in this SB-14 summary

[a] *Information directly from "GM" forms in the annual EPA report*

SUMMARY of NON-EXEMPT WASTES - Aug 07

GM Form Page #	Waste Description	Source Code ("G")	Definition of Source Code	Federal Waste Code(s)	CA Waste Code(s)	Weight (lbs)	Exempt? (Yes/No)	Reason for Exemption
8	Aerosol lubricants & cleaners, non-flammable, Non-RCRA	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	-	331	42	No (25%)	75% - Wastes generated in support of RDT&E activites; Not routine; 25% - Routine vehicle maintenance waste
10	Aerosol paints, adhesives & cleaners, flammable	06	Wastes from Ongoing Production & Service Processes (Waste from general day to day manufacturing, production, or maintenance activities) - Painting and coating (manufacturing, building, or maintenance)	D001, D035, D039, U002	331	596	No (25%)	75% - Wastes generated in support of RDT&E activites; Not routine; 25% - Routine vehicle maintenance waste
24	Cleaning compounds, basic surfactants (NaOH & monoethanolamine)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D002	122	775	No	Wastes generated from routine maintenance of vehicles; Parts washing
38	Debris contaminated w/ petroleum products (bulk)	19	Other Intermittent Events or Processes - Other one-time or intermittent processes (specify)	-	352	13,400	No (10%)	Non-Routine (90%) - Wastes generated in support of RDT&E activities; Also from intermittent spills; Not routine; Routine (10%) - Rags from vehicle maintenance
42	Empty poly containers, non-listed (previously containing a caustic liquid)	15	Other Intermittent Events or Processes - Process equipment change-out or discontinuation of equipment use (final materials and residuals removal including cleaning)	-	352	1,023	No	Waste generated from routine maintenance of cooling towers and boiler plants
119	Scale and corrosion inhibitor (water chemist C-318L)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D002	122	52	No	Waste generated from routine maintenance of cooling towers and boiler plants
121	Small arms cartridges w/ lead, expended and inert (spent shotgun shell casings, inert)	15	Other Intermittent Events or Processes - Process equipment change-out or discontinuation of equipment use (final materials and residuals removal including cleaning)	D008	181	134	No	Waste generated from routine Police Dept training
149	Waste aerosols, poison, (each not exceeding 1L capacity), (tetrachloroethylene)	11	Other Intermittent Events or Processes - Discarding off-spec or out of date chemicals or products (unused chemicals or products - corresponds to "P" and "U" HW codes)	D039	331	4	No	Wastes generated from routine maintenance of vehicles; Parts washing
					TOTAL	**16,026**		

APPENDIX P

References

REFERENCES

Bernbrock, C., and P. Martin, 1991. "The Ground-water Flow System in Indian Wells Valley, Kern, Inyo, and San Bernardino Counties, California." U.S. Geological Survey (USGS) Water Resources Investigations Report 89-4191.

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Tetra Tech EM Inc. (TtEMI), 2002. "Preliminary Basewide Hydrogeologic Characterization Report, NAWS China Lake, California." June.

TtEMI. 2003. "Basewide Hydrogeologic Characterization Summary Report, NAWS China Lake, California." January.

Trona Sheet Renderings, 1962. Geologic Map of California – Trona Sheet, Charles W. Jennings, John L. Burnett, and Bennie W. Troxel, California Division of Mines and Geology, 1962.

USATHAMA, 1987. "Testing to Determine Relationship Between Explosive Contaminated Sludge Components and Reactivity." Balasco, A.A., Kristoff, F.T., Ewing, T.W., Johnson, D.E., USATHAMA Reference AMXTH-TE-CR-86096, January, 1987.

California Environmental Protection Agency
Department of Toxic Substances Control

HAZARDOUS WASTE FACILITY PERMIT

Permit Number: 01 - NC - 06

Facility Name:	Naval Air Weapons Station, China Lake
Owner Name:	U.S. Department of the Navy
Operator Name:	Naval Air Weapons Station, China Lake

Facility EPA ID Number: CA2170023152
Effective Date: AUGUST 8, 2001
Expiration Date: AUGUST 7, 2011
Permit Modification History:

Class 1*	MARCH 1, 2002
Class 1	MARCH 1, 2002
Class 1	MARCH 1, 2002
Class 1*	MAY 9, 2002
Class 1*	NOVEMBER 6, 2002
Class 2	JULY 7, 2003
Class 1	JANUARY 26, 2004
Class 1	DECEMBER 20, 2006
Class 3	AUGUST 4, 2008

Modification No.: MOD3 NC1-2008-010

Pursuant to Section 25270.42 of the California Code of Regulations, the Hazardous Waste Facility Permit issued August 8, 2001, effective August 8, 2001 (Permit), is hereby modified to incorporate the addition of hazardous waste treatment by open burn/open detonation (OB/OD) at the Burro Canyon OB/OD Facility. This modification also incorporates the addition of the Part B Permit Application for the Burro Canyon OB/OD Facility, Naval Air Weapons Station, China Lake (Part B), which, along with the Part B Permit Applications for the Hazardous Waste Storage and Transfer Facility and the PCB Storage Building, sets forth the conditions to which the Permit is subject. Parts II.4. and 5., III.1. through 4., IV.7. and 8., V.9. through 14., VI., and Appendix B of Attachment A and Attachment C of the Permit are revised to add the OB/OD treatment units, update the Permit modification history, and reflect changes to Department of Toxic Substances Control reporting procedures. Revised pages, labeled as "Revised June 2008" are hereby incorporated into the approved Permit, replacing the original pages. The revised Attachment A consists of 34 pages and Appendices A and B. The revised Attachment C consists of 2 pages.

Original signed by
Raymond Leclerc, P.E.

Raymond Leclerc, P.E., Team Leader
Hazardous Waste Permitting
Department of Toxic Substances Control

Date: June 30, 2008

NAVAL AIR WEAPONS STATION, CHINA LAKE, CALIFORNIA 93555-6001
HAZARDOUS WASTE FACILITY PERMIT

ATTACHMENT "A"

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HAZARDOUS WASTE FACILITY PERMIT

NAVAL AIR WEAPONS STATION, CHINA LAKE
1 ADMINISTRATION CIRCLE
CHINA LAKE, CALIFORNIA 93555-6001
USEPA ID NO.: CA2170023152

PART I. DEFINITIONS

All terms used in this Permit shall have the same meaning as those terms have in the California Health and Safety Code, Division 20, Chapter 6.5 and Title 22, California Code of Regulations Division 4.5, unless expressly provided otherwise by this Permit.

1. **"DTSC"** as used in this Permit means the California Department of Toxic Substances Control.

2. **"Permittee"** as used in this Permit means the Owner and Operator.

3. **"HSC"** as used in this Permit means the Health and Safety Code.

4. **"CCR"** or **"Cal. Code Regs."** as used in this Permit means the California Code of Regulations.

5. Unless explicitly stated otherwise, all references to items in this Permit shall refer only to items occurring within the same part.

PART II. DESCRIPTION OF THE FACILITY AND OWNERSHIP

1. OWNER

The facility owner is the United States Department of the Navy, hereafter "Owner".

2. OPERATOR

The facility operator is the Naval Air Weapons Station (NAWS), China Lake, hereafter "Operator".

3. LOCATION

NAWS, China Lake facility, hereinafter referred to as the "Facility", is located in the northern Mojave Desert, adjacent to the City of Ridgecrest (population 33,000). The Facility is 150 miles northeast of Los Angeles and 110 miles east of Bakersfield. The Facility operates within three counties; the northeastern portion of Kern, southern portion of Inyo, and the northwest portion of San Bernardino.

4. DESCRIPTION

NAWS, China Lake is the principal Navy research, development, test, and evaluation center for air warfare systems and missile weapons systems. NAWS, China Lake manages and conducts the complete weapon development process, from concept formulation throughout the entire life cycle of a weapon system, including fleet and production support.

The Facility covers 1.1 million acres in two major areas; a North Range (China Lake Complex) and a South Range (Randsburg Wash/Mojave B Complex). The Facility is predominantly surrounded by undeveloped public lands which are federally owned and managed by the U.S. Bureau of Land Management.

The types of activities related to hazardous wastes generated and managed at the Facility include research and industrial operations in support of its mission. These operations generate waste oil, explosive-contaminated wastes and wastewater, waste jet fuel, contaminated soils, photo processing wastes and a number of other smaller waste streams, such as paints, solvents, and laboratory chemicals.

Hazardous wastes are accumulated temporarily at satellite accumulation areas located at or near the point of generation, 90-day accumulation areas located at various areas throughout the Facility, and at the permitted storage areas: the Container Storage Unit, Liquid Petroleum Waste Tanks, and the Polychlorinated Biphenyl (PCB) Storage Building.

NAWS, China Lake also operates units at Burro Canyon for treatment of reactive wastes by open burn/open detonation (OB/OD). Reactive wastes treated at the OB/OD units include munitions that are no longer needed for their intended purpose of testing and evaluation, and/or items that are considered obsolete or expired. In addition to standard munitions items, the OB/OD units treat laboratory wastes generated at NAWS, China Lake during the development of new explosives and propellants.

5. FACILITY SIZE AND TYPE FOR FEE PURPOSES

For purposes of HSC Section 25205.19 the Facility is categorized as a Large Treatment and Storage Facility, as defined by HSC Section 25205.1.

PART III. GENERAL CONDITIONS

1. PERMIT APPLICATION DOCUMENTS

The following documents are hereby made a part of this Permit by reference:

The Part "A" Application, signed by Permittee on December 10, 2007.
The Part "B" Application - PCB Storage Building (PCBSB Operation Plan), dated April 2000, revised December 2006. Approved by DTSC on December 20, 2006.
The Part "B" Application - Hazardous Waste Storage & Transfer Facility (HWSTF Operation Plan), dated April 2000, revised December 2006. Approved by DTSC on December 20, 2006.
The Part "B" Application - Burro Canyon Open Burn/Open Detonation (OB/OD) Facility (eighth revision) (BCTF Operation Plan), dated December 2007.
Spill Response Plan, revised June 2008 and any subsequent revisions approved by DTSC.
Naval Air Weapons Station, China Lake, Hazardous Waste Facility Permit Mitigation Monitoring and Reporting Plan, dated June 2008.

2. EFFECT OF PERMIT

(a) The Permittee shall comply with the provisions of the California Health and Safety Code, and Division 4.5 of Title 22, California Code of Regulations (Title 22, Cal. Code Regs.). The issuance of this Permit by DTSC does not release the Permittee from any liability or duty imposed by federal or state statutes or regulations or local ordinances, except the obligation to obtain this Permit. The Permittee shall obtain the permits required by other governmental agencies, including but not limited to, the applicable land use planning, zoning, hazardous waste, air quality, water quality, and solid waste management laws for the construction and/or operation of the Facility.

(b) The Permittee is permitted to treat and store hazardous wastes in accordance with the conditions of this Permit. Any treatment or storage of hazardous wastes not specifically authorized in this Permit is strictly prohibited.

(c) Compliance with the terms of this Permit does not constitute a defense to any action brought under any other law governing protection of public health or the environment, including, but not limited to, one brought for any imminent and substantial endangerment to human health or the environment.

(d) DTSC's issuance of this Permit does not prevent DTSC from adopting or amending regulations that impose additional or more stringent requirements than those in existence at the time this Permit is issued and does not prevent the enforcement of these requirements against the Permittee.

(e) Failure to comply with any term or condition set forth in the Permit in the time or manner specified herein will subject the Permittee to possible enforcement action including, but not limited to, penalties pursuant to HSC Section 25187.

(f) In addition, failure to submit any information required in connection with the Permit, or falsification and/or misrepresentation of any submitted information, is grounds for revocation of this Permit (Title 22, Cal. Code Regs., Section 66270.43).

(g) In case of conflicts between the Operation Plans and the Permit, the Permit conditions take precedence.

(h) This Permit includes and incorporates by reference any conditions of waste discharge requirements issued by the State Water Resources Control Board or any of the California Regional Water Quality Control Boards and any conditions imposed pursuant to Section 13227 of the Water Code.

3. COMPLIANCE WITH CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

A Negative Declaration for the storage units has been prepared in accordance with the requirements of Public Resources Code, Section 21000 et seq. and the CEQA Guidelines, Section 15070 et seq. of Title 14, California Code of Regulations. An Environmental Impact Report for the treatment units has been prepared in accordance with the requirements of Public Resources Code, Section 21000 et seq. and the CEQA Guidelines, Section 15070 et seq. of Title 14, California Code of Regulations.

4. WASTE MINIMIZATION CERTIFICATION

Pursuant to HSC Section 25202.9, the Permittee shall certify annually, by March 1 for the previous year ending December 31, that:

(a) The Facility has a program in place to reduce the volume and toxicity of all hazardous wastes identified in Section III of the PCBSB Operation Plan,

Section III of the HWSTF Operation Plan, and Section III of the Burro Canyon OB/OD Facility Operation Plan, which are generated by the Facility operations to the degree, determined by the Permittee, to be economically practicable.

(b) The method of storage or treatment is the only practicable method or combination of methods currently available to the Facility which minimizes the present and future threat to human health and the environment.

The Permittee shall make this certification, in accordance with Title 22, Cal. Code Regs., Section 66270.11. The Permittee shall record and maintain onsite such certification in the Facility's Operating Record.

5. WASTE MINIMIZATION CONDITIONS

The Permittee shall comply with the Hazardous Waste Source Reduction and Management Review Act (SB 14) requirements that are specified in the HSC Sections 25244.19, 25244.20 and 25244.21, and any subsequent applicable statutes or regulations promulgated thereunder.

This would include submittal of SB 14 documents to DTSC upon request.

DTSC may require the Permittee to submit a more detailed status report explaining any deviation from, or changes to, the approved waste minimization plan.

6. PERMIT MODIFICATION HISTORY

Modifications to this Permit or the Operation Plans identified in Part III.1. are allowed as per 22 CCR sections 66270.41 or 66271.42. All modifications made to this Permit and/or Operation Plans are listed and described in Attachment C to this Permit.

PART IV. PERMITTED UNITS AND ACTIVITIES

This Permit authorizes operation only of the Facility units and activities listed below. The Permittee shall not treat or store hazardous waste in any unit other than those specified in this Part IV. Any modifications to a unit or activity authorized by this Permit require the written approval of DTSC in accordance with the permit modification procedures set forth in Title 22, Cal. Code Regs., Division 4.5.

1. **UNIT NAME:**

PCB Storage Building

LOCATION:

The unit is located within the fence line of the Public Works Compound, identified as Building 02682 by NAWS, China Lake. It is located 400 feet northwest of the intersection of Knox Road and Forrestal Street and 1200 feet southwest of the intersection of Knox Road and Inyokern Road. The unit is located within Kern County. The Global Positioning Satellite coordinates of the unit are:
NW corner - 35 38.90 N, 117 39.74 W; NE corner - 35 38.91 N, 117 39.72 W;
SE corner - 35 38.92 N, 117 39.74 W; and SW corner - 35 38.91 N, 117 39.75 W.

ACTIVITY TYPE:

Storage of PCB waste, including fluids in containers, articles, and containerized hazardous waste, for a period of no longer than nine months in the PCB Storage Building.

ACTIVITY DESCRIPTION:

PCB waste received for storage may be loaded/unloaded in the area immediately outside the PCB Storage Building, within the boundary identified for the unit. Only PCB containers and PCB articles generated onsite shall be stored within the unit.

PHYSICAL DESCRIPTION:

The unit consists of a PCB Storage Building, which is a 20 feet wide by 40 feet long secured, enclosed building and an outside staging area. The floor and six-inch berm of the building are made of concrete with an impervious epoxy coating. Outside the building is a 21 feet 4 inches wide by 20 feet long sloped concrete pad

and a 26 feet wide by 12 feet 8 inches long paved area used for loading/unloading of PCB wastes. The dirt area shall be covered with an impervious surface in accordance with Task 1 of Part V of this Permit.

MAXIMUM CAPACITY:

The maximum capacity at any given time is 32 55-gallon containers and/or equivalent articles or a volume of 1,760 gallons of liquid, whichever is less. The maximum annual quantity of hazardous waste is 101 tons.

WASTE TYPES:

PCB articles and containers generated onsite, which include drummed dielectric fluids; drummed solid wastes (spill cleanup material, fluorescent light ballasts, small capacitors); and small undrained or drained transformers.

RCRA HAZARDOUS WASTE CODES:

None

CALIFORNIA HAZARDOUS WASTE CODES:

261, 731

AIR EMISSION STANDARDS SUBPART CC:

The Facility is subject to, and therefore must comply with, Title 40, Code of Federal Regulations, Part 264, Subpart CC, Air Emission Standards.

2. **UNIT NAME:**

Container Storage Unit

LOCATION:

The unit is located within the fence line of the Hazardous Waste Storage and Transfer Facility (HWSTF). The unit is identified as Building 01389 by NAWS, China Lake. It is located on Iwo Jima Road, between Sandquist Road and Lauritsen Road. The unit is located within Kern County. The Global Positioning Satellite coordinates of the unit are:
West corner - 35 39' 47.0" N, 117 39' 42.6" W; North corner - 35 39' 47.6" N, 117 39' 40.4" W; South corner - 35 39' 46.7" N, 117 39'42.5" W; and East corner - 35 39' 47.5" N, 117 39' 40.4" W.

ACTIVITY TYPE:

Storage of hazardous waste generated onsite prior to final transport to an authorized off-site disposal/treatment facility.

ACTIVITY DESCRIPTION:

Hazardous waste received for storage may be loaded/unloaded only inside the unit. Hazardous waste shall be segregated based on incompatibility and shall not be stored more than one year prior to shipment off-site.

PHYSICAL DESCRIPTION:

The unit consists of a Drum Storage Area, which is a 55 feet wide by 176 feet long, secured, open area, covered with a sun shade. The floor and eight-inch berm on the periphery of the unit are made of concrete with an impervious epoxy coating. There are twelve storage bays, with an eight-inch curb and a 10-foot chain link fence separating the bays. The unit also includes an attached Bin Storage Area with transfer dock, which is 45.3 feet by 37.7 feet. The Bin Storage Area is not covered or fenced.

MAXIMUM CAPACITY:

The maximum capacity at any given time is the equivalent of 720 55-gallon containers with liquid waste totaling no more than 19,800 gallons. The maximum annual quantity of hazardous waste is 1000 tons.

WASTE TYPES:

Hazardous waste generated onsite from research and development laboratories, pilot manufacturing facilities, machine shops, vehicle and aircraft maintenance, and aircraft/weapons testing areas. They include: antifreeze, absorbent, oil, paint thinner, paint, solvents, silver sludge, photo bleach, spent aerosol cans, batteries, and other miscellaneous hazardous wastes.

RCRA HAZARDOUS WASTE CODES:

D001 through D043, F001 through F012, F027, "P" wastes, "U" wastes

CALIFORNIA HAZARDOUS WASTE CODES:

121, 122, 123, 131, 132, 133, 134, 135, 141, 151, 171, 172, 181, 211, 212, 213, 214, 221, 222, 223, 231, 241, 271, 272, 281, 291, 331, 341, 342, 343, 351, 352, 451, 461, 511, 512, 513, 521, 541, 551, 561, 611, 612, 711, 721, 722, 723, 724, 725, 726, 727, 728, 741, 751, 791, 792, and 801

AIR EMISSION STANDARDS SUBPART CC:

The Facility is subject to, and therefore must comply with, Title 40, Code of Federal Regulations, Part 264, Subpart CC, Air Emission Standards.

UNIT SPECIFIC SPECIAL CONDITIONS:

The required minimum aisle space is as specified in Table 2.0 of the HWSTF Operation Plan. Containers with free liquid shall not be stacked above another container.

3. **UNIT NAME:**

Liquid Petroleum Waste Tank No. 1

LOCATION:

The unit is located within the fence line of the Hazardous Waste Storage and Transfer Facility. The unit is in the area identified as Building 02663 by NAWS, China Lake, located on Iwo Jima Road, between Sandquist Road and Lauritsen Road. The unit is located within Kern County. The Global Positioning Satellite coordinates of the unit are: West corner - 35 39.76 N, 117 39.74 W; North corner - 35 39.77 N, 117 39.73 W; South corner - 35 39.76 N, 117 39.73 W; and East corner - 35 39.76 N, 117 39.73 W.

ACTIVITY TYPE:

Storage of liquid petroleum hazardous waste generated onsite prior to final transport to an authorized off-site disposal/treatment facility.

ACTIVITY DESCRIPTION:

Hazardous waste received for storage is loaded/unloaded directly adjacent to the unit. Hazardous waste is transferred to the unit via gravity feed directly from vacuum trucks. Hazardous waste shall not be stored more than one year prior to shipment off-site.

PHYSICAL DESCRIPTION:

The unit is one of four 2,000 gallon aboveground storage tanks. The tank is 8 feet wide and 15 feet long. The tank is constructed of steel with a synthetic liner that serves as secondary containment, and is encased in 6-inches of reinforced concrete. All four tanks are located within a single concrete containment area, 26 feet wide by 34 feet long, with a perimeter 10-inch high concrete berm. The loading and unloading area, on the southeast end of the containment berm, is approximately 16.7 feet wide by 60 feet long.

MAXIMUM CAPACITY:

The maximum capacity of the tank at any given time is 2,000 gallons of liquid. The maximum annual quantity of waste is 41.5 tons.

WASTE TYPES:

Hazardous waste generated onsite from vehicle and aircraft maintenance, and aircraft defueling.

RCRA HAZARDOUS WASTE CODES:

D001, D039, and F001

CALIFORNIA HAZARDOUS WASTE CODES:

221, 222, 223, 331, and 343

AIR EMISSION STANDARDS SUBPART CC:

The Facility is subject to, and therefore must comply with, Title 40, Code of Federal Regulations, Part 264, Subpart CC, Air Emission Standards.

4. **UNIT NAME:**

Liquid Petroleum Waste Tank No. 2

LOCATION:

The unit is located within the fence line of the Hazardous Waste Storage and Transfer Facility. The unit is in the area identified as Building 02663 by NAWS, China Lake, located on Iwo Jima Road, between Sandquist Road and Lauritsen Road. The unit is located within Kern County. The Global Positioning Satellite coordinates of the unit are: West corner - 35 39.76 N, 117 39.74 W; North corner - 35 39.77 N, 117 39.73 W; South corner - 35 39.76 N, 117 39.73 W; and East corner - 35 39.76 N, 117 39.73 W.

ACTIVITY TYPE:

Storage of liquid petroleum hazardous waste generated onsite prior to final transport to an authorized off-site disposal/treatment facility.

ACTIVITY DESCRIPTION:

Hazardous waste received for storage is loaded/unloaded directly adjacent to the unit. Hazardous waste is transferred to the unit via gravity feed directly from vacuum trucks. Hazardous waste shall not be stored more than one year prior to shipment off-site.

PHYSICAL DESCRIPTION:

The unit is one of four 2,000 gallon aboveground storage tanks. The tank is 8 feet wide and 15 feet long. The tank is constructed of steel with a synthetic liner that serves as secondary containment, and is encased in 6-inches of reinforced concrete. All four tanks are located within a single concrete containment area, 26 feet wide by 34 feet long, with a perimeter 10-inch high concrete berm. The loading and unloading area, on the southeast end of the containment berm, is approximately 16.7 feet wide by 60 feet long.

MAXIMUM CAPACITY:

The maximum capacity of the tank at any given time is 2,000 gallons of liquid. The maximum annual quantity of waste is 41.5 tons.

WASTE TYPES:

Hazardous waste generated onsite from vehicle and aircraft maintenance, and aircraft defueling.

RCRA HAZARDOUS WASTE CODES:

D001, D039, and F001

CALIFORNIA HAZARDOUS WASTE CODES:

221, 222, 223, 331, and 343

AIR EMISSION STANDARDS SUBPART CC:

The Facility is subject to, and therefore must comply with, Title 40, Code of Federal Regulations, Part 264, Subpart CC, Air Emission Standards.

5. **UNIT NAME:**

Liquid Petroleum Waste Tank No. 3

LOCATION:

The unit is located within the fence line of the Hazardous Waste Storage and Transfer Facility. The unit is in the area identified as Building 02663 by NAWS, China Lake, located on Iwo Jima Road, between Sandquist Road and Lauritsen Road. The unit is located within Kern County. The Global Positioning Satellite coordinates of the unit are: West corner - 35 39.76 N, 117 39.74 W; North corner - 35 39.77 N, 117 39.73 W; South corner - 35 39.76 N, 117 39.73 W; and East corner - 35 39.76 N, 117 39.73 W.

ACTIVITY TYPE:

Storage of liquid petroleum hazardous waste generated onsite prior to final transport to an authorized off-site disposal/treatment facility.

ACTIVITY DESCRIPTION:

Hazardous waste received for storage is loaded/unloaded directly adjacent to the unit. Hazardous waste is transferred to the unit via gravity feed directly from vacuum trucks. Hazardous waste shall not be stored more than one year prior to shipment off-site.

PHYSICAL DESCRIPTION:

The unit is one of four 2,000 gallon aboveground storage tanks. The tank is 8 feet wide and 15 feet long. The tank is constructed of steel with a synthetic liner that serves as secondary containment, and is encased in 6-inches of reinforced concrete. All four tanks are located within a single concrete containment area, 26 feet wide by 34 feet long, with a perimeter 10-inch high concrete berm. The loading and unloading area, on the southeast end of the containment berm, is approximately 16.7 feet wide by 60 feet long.

MAXIMUM CAPACITY:

The maximum capacity of the tank at any given time is 2,000 gallons of liquid. The maximum annual quantity of waste is 73 tons.

WASTE TYPES:

Hazardous waste generated onsite from oil/water separators.

RCRA HAZARDOUS WASTE CODES:

None

CALIFORNIA HAZARDOUS WASTE CODES:

133, 134, 135, 222, and 343

AIR EMISSION STANDARDS SUBPART CC:

The Facility is subject to, and therefore must comply with, Title 40, Code of Federal Regulations, Part 264, Subpart CC, Air Emission Standards.

6. **UNIT NAME:**

Liquid Petroleum Waste Tank No. 4

LOCATION:

The unit is located within the fence line of the Hazardous Waste Storage and Transfer Facility. The unit is in the area identified as Building 02663 by NAWS, China Lake, located on Iwo Jima Road, between Sandquist Road and Lauritsen Road. The unit is located within Kern County. The Global Positioning Satellite coordinates of the unit are: West corner - 35 39.76 N, 117 39.74 W; North corner - 35 39.77 N, 117 39.73 W; South corner - 35 39.76 N, 117 39.73 W; and East corner - 35 39.76 N, 117 39.73 W.

ACTIVITY TYPE:

Storage of liquid petroleum hazardous waste generated onsite prior to final transport to an authorized off-site disposal/treatment facility.

ACTIVITY DESCRIPTION:

Hazardous waste received for storage is loaded/unloaded directly adjacent to the unit. Hazardous waste is transferred to the unit via gravity feed directly from vacuum trucks. Hazardous waste shall not be stored more than one year prior to shipment off-site.

PHYSICAL DESCRIPTION:

The unit is one of four 2,000 gallon aboveground storage tanks. The tank is 8 feet wide and 15 feet long. The tank is constructed of steel with a synthetic liner that serves as secondary containment, and is encased in 6-inches of reinforced concrete. All four tanks are located within a single concrete containment area, 26 feet wide by 34 feet long, with a perimeter 10-inch high concrete berm. The loading and unloading area, on the southeast end of the containment berm, is approximately 16.7 feet wide by 60 feet long.

MAXIMUM CAPACITY:

The maximum capacity of the tank at any given time is 2,000 gallons of liquid. The maximum annual quantity of waste is 73 tons.

WASTE TYPES:

Hazardous waste generated onsite from oil/water separators.

RCRA HAZARDOUS WASTE CODES:

None

CALIFORNIA HAZARDOUS WASTE CODES:

133, 134, 135, 222, and 343

AIR EMISSION STANDARDS SUBPART CC:

The Facility is subject to, and therefore must comply with, Title 40, Code of Federal Regulations, Part 264, Subpart CC, Air Emission Standards.

7. **UNIT NAME:**

Open Detonation (OD) Unit

LOCATION:

The unit is located at the Burro Canyon OB/OD Facility. The unit is located near the southern border of Inyo County on the North Range. It is approximately 12 miles northeast of the China Lake Mainsite and approximately 3 miles directly east of the G-2 Tower Road. The Global Positioning Satellite coordinates, starting at the northernmost point of the unit, are: Northwest corner - 35°48'17.8" N, 117°32'48.1" W; Northeast corner - 35°48'16.2" N, 117°32'44.7" W; Southeast corner - 35°48'15.4" N, 117°32'45.1" W; and Southwest corner - 35°48'15.8" N, 117°32'48.7" W.

ACTIVITY TYPE:

Treatment by open detonation of reactive hazardous waste and standard small arms ammunition (50 caliber or less) generated onsite.

ACTIVITY DESCRIPTION:

Reactive hazardous waste received for treatment is placed on the ground by hand or forklift. Packaging may be removed. The waste is configured in such a way as to ensure that all material is consumed. Explosive charges are then set to initiate the detonation. The detonation is initiated by an igniter which is connected to a time fuze. After each treatment event, the immediate area is inspected for untreated reactive hazardous waste. Hazardous waste that has not been rendered safe is retreated by open detonation. Periodically the unit is graded to level the surface. Metal fragments are collected and processed per the Facility's policies for management of material potentially presenting an explosive hazard.

PHYSICAL DESCRIPTION:

The unit is a 1.03 acre area in the center of a naturally-occurring bowl-shaped valley, surrounded by rugged terrain. The floor of the unit is the sandy alluvial soil of the canyon. No pad or liner is used.

MAXIMUM CAPACITY:

The Permittee must comply with all of the following:

For purposes of determining event and annual treatment quantities, the quantity of the hazardous waste treated is defined as the weight of the energetic (propellant, explosive, or pyrotechnic) in the munition item, also known as the Explosive Weight, with the following exceptions:

The quantity of energetic-contaminated hazardous waste is the total weight of the waste. Examples of energetic-contaminated hazardous waste are packaging and laboratory-generated waste;

The quantity for items containing munition components which cannot be removed includes the weight of the components. Examples of munition components are guidance and control systems;

The maximum treatment quantity per event is 15,000 pounds of energetic, with a special limit of 50,000 pounds for treatment of rocket motors under special circumstances, such as security issue, extreme safety hazard, or national defense emergency, and 15,000 pounds of non-energetic (packaging and laboratory-generated waste). The Facility shall notify DTSC and await approval before the special limit shall be in effect.

Only one OD or OB event shall be completed per day, unless prior approval is obtained from DTSC. Approval shall be requested two weeks in advance of the scheduled event. DTSC may approve more than one OD or OB event per day in circumstances in which the Permittee may be otherwise prevented from complying with storage limits or other special circumstances, such as national emergency;

The maximum annual quantity for OD and OB combined shall not exceed 5,475,000 pounds;

The annual quantity for OD and OB combined shall not cause a carcinogenic risk threshold of 1×10^{-6} (1 in a million) to be exceeded at any offsite location, as calculated in the approved Human Health Risk Assessment and documented in a format approved by DTSC. See Unit Specific Special Condition 1;

The annual quantity for OD and OB combined shall not cause a noncarcinogenic chronic hazard index of 1.0 to be exceeded at any offsite location, as calculated in the approved Human Health Risk Assessment and documented in a format approved by DTSC. See Unit Specific Special Condition 1;

The event quantity for OD shall not cause an acute hazard index of 1.0 to be exceeded at any offsite location, as calculated in the approved Human Health Risk Assessment and documented in a format approved by DTSC. See Unit Specific Special Condition 1;

The annual quantity for OD shall not cause community noise equivalent levels (average noise exposure over a 24-hour period) to exceed 60 dB at any offsite location. Compliance with this provision shall be demonstrated by a DTSC-approved noise prediction study or noise measurements collected by methods approved by DTSC; and

The event quantity for OD shall not cause peak sound levels to exceed 128 dB at any offsite location. Compliance with this provision shall be demonstrated by a DTSC-approved noise analysis or noise measurements collected by methods approved by DTSC.

WASTE TYPES:

Reactive hazardous waste generated onsite from research, development, test, and evaluation activities.

RCRA HAZARDOUS WASTE CODES:

D001 (50 caliber or less ammunition only), and D003

CALIFORNIA HAZARDOUS WASTE CODES:

181, 212, 281, 291, 343, 352, 551, and 611

UNIT SPECIFIC SPECIAL CONDITIONS

1. All hazardous waste treated shall be characterized with respect to energetic family. The definition of energetic family as used in this Permit means the energetic family used in the Human Health Risk Assessment. The quantity of each family treated, the date of the treatment events, and the date of grading events shall be recorded in a DTSC-approved format. The format shall be designed to document that the maximum event and annual treatment quantity limits have not been exceeded.

2. Per Occupational Safety and Health Administration regulations found in 29 CFR 1910.109(e)(1)(v), no open detonations shall be performed before ½ hour after sunrise and no later than ½ hour before sunset.

3. Meteorological data needed for air dispersion modeling and noise levels predictions shall be collected from the Greenpoint Monitoring Station with the exceptions listed below and maintained by the Facility. All meteorological data shall be kept for the duration of the Permit. At a minimum, the following data shall be collected:

a. wind speed;
b. wind direction;
c. temperature;
d. stability class (from Baker Range Monitoring Station); and
e. upper air data (may be obtained from approved offsite upper air stations).

4. The Baker Range and Greenpoint Monitoring Stations shall be operated, maintained, and calibrated according to an approved Meteorological Monitoring Plan. The Permittee shall conduct site performance audits every six months. The audits shall be conducted in accordance with Quality Assurance Handbook for Air Pollution Measurement Systems (EPA, 1995), Quality Assurance Handbook for Air Pollution Measurement Systems, Volume IV: Meteorological Measurements, Version 1.0 (EPA Draft, October 2006), Meteorological Monitoring Guidance for Regulatory Modeling Applications (EPA, 2000), and Ambient Monitoring Guidelines for Prevention of Significant Deterioration (EPA, 1987), or any revisions to these documents.

5. The Permittee shall implement DTSC-approved environmental monitoring programs, including sampling, analysis, statistical and trend analysis for soil, ecological receptors, groundwater, and other media as specified by DTSC. The plan for the monitoring programs shall include actions that will be taken in the event that monitoring results demonstrate an increase of contamination or risk to any media. This condition shall be met in accordance with Part V. Special Condition 10.

6. The Permittee shall implement a DTSC-approved maximum event limit for the winter season to mitigate noise impacts, including the dates during which the limit is in effect. This condition shall be met in accordance with Part V. Special Condition 11.

7. Treatment residues in soil shall not exhibit a hazardous waste characteristic as defined by Title 22, Cal. Code Regs. Division 4.5, Chapter 11.

8. Permittee shall inform DTSC within one month of receipt of a complaint attributable to noise from an OD treatment event.

9. Two years after the effective date of addition of the OD unit to the Permit, and every two years thereafter, the Permittee shall submit a report for DTSC's approval on the efforts on the part of the Permittee to identify, evaluate, and test methods of sampling air emissions from OD events. The report shall include a certification that the information is the best and most current information available to the Permittee. This condition shall be met in accordance with Part V. Special Condition 12.

10. Two years after the effective date of addition of the OD unit to the Permit, and every two years thereafter, the Permittee shall submit a report for DTSC's approval on the status of alternative technologies to OD that are appropriate for use at the Facility. The report shall include a certification that the information is the best and most current information available to the Permittee. This condition shall be met in accordance with Part V. Special Condition 13.

11. Five years after the effective date of addition of the OD unit to the Permit, the Permittee and DTSC shall conduct a review of the Permit and all supporting documentation to assure that the Permit continues to comply with the current state of control and measurement technology as well as changes in applicable regulations. The supporting information to be reviewed shall include emission factors, toxicity criteria, air dispersion modeling, the Human Health Risk Assessment, the Ecological Risk Assessment, results of sampling and analysis of all media, noise prediction modeling, and any other information determined to be necessary by DTSC.

12. The Permittee shall implement the terms of the 1995 Biological Opinion for the desert tortoise issued by the U.S. Fish and Wildlife Service and any future Biological Opinion relevant to Burro Canyon. All personnel working at the Burro Canyon facility shall have completed a desert tortoise awareness briefing following the requirements delineated in the Biological Opinion. Explosive Ordnance Disposal personnel shall conduct a visual survey of the OB/OD facility (cleared area and areas visible from the periphery of the cleared area) prior to each use of the facility. Survey findings shall be documented in the event log. Should desert tortoises be encountered in the area potentially affected by OB/OD operations measures shall be implemented in accordance with the Biological Opinion and delineated in the required annual report. Desert tortoises noted in any area potentially affected by OB/OD operations shall be relocated by approved personnel prior to any event initiation. All such encounters shall be documented in the event log as well as in the annual report.

AIR EMISSION STANDARDS SUBPART CC:

The Facility is subject to, and therefore must comply with, Title 40, Code of Federal Regulations, Part 264, Subpart CC, Air Emission Standards. These standards do not apply to the OD Unit.

8. **UNIT NAME:**

Open Burn (OB) Unit

LOCATION:

The unit is located at the Burro Canyon OB/OD Facility. The unit is located near the southern border of Inyo County on the North Range. It is approximately 12 miles northeast of the China Lake Mainsite and approximately 3 miles directly east of the G-2 Tower Road. The Global Positioning Satellite coordinates, starting at the northernmost point of the unit, are: Northwest corner - 35°48'16.9" N, 117°32'52.0" W; Northeast corner - 35°48'16.9" N, 117°32'51.8" W; Southeast corner - 35°48'16.6" N, 117°32'51.8" W; and Southwest corner - 35°48'16.6" N, 117°32'52.0" W.

ACTIVITY TYPE:

Treatment by open burning of reactive hazardous waste and standard small arms ammunition (50 caliber or less) generated onsite.

ACTIVITY DESCRIPTION:

Hazardous waste received for treatment is loaded into the burn pan by hand. Diesel and/or wood may be added to supplement combustion. The burning is initiated with an igniter connected to a time fuze which is connected to a bag of smokeless powder (or similar material) soaked in diesel fuel. After the burn, residual ash is removed to a container immediately after the burn is safe to approach. After removal of the ash, a dry decontamination of the burn pan is conducted. Personnel wipe the burn pan with rags. The rags are placed in the container along with the ash residue and immediately transported to the Container Storage Unit.

PHYSICAL DESCRIPTION:

The unit is a burn pan approximately 8 feet wide, 20 feet long and 27 inches high. The pan is constructed of one inch steel plates. The pan is raised 1 foot above a 30 foot by 18 foot by 8 inch thick concrete pad. The pad extends 5 feet on all sides of the pan. The concrete pad is lined with a steel liner. The sides of the steel liner are higher than the concrete containment.

MAXIMUM CAPACITY:

The Permittee must comply with all of the following:

For purposes of determining event and annual treatment quantities, the quantity of the hazardous waste treated is defined as the weight of the energetic, also known as the Explosive Weight;

The maximum treatment quantity per event is 1,000 pounds of energetic, with a special limit of 50,000 pounds for treatment of rocket motors under special circumstances, such as security issue, extreme safety hazard, or national defense emergency, plus 1,000 pounds of non-energetic (diesel and/or wood). The Facility shall notify DTSC and await approval before the special limit shall be in effect;

Only one OD or OB event shall be completed per day, unless prior approval is obtained from DTSC. Approval shall be requested two weeks in advance of the scheduled event. DTSC may approve more than one OD or OB event per day in circumstances in which the Permittee may be otherwise prevented from complying with storage limits or other special circumstances, such as national emergency;

The maximum annual quantity for OD and OB combined shall not exceed 5,475,000 pounds;

The annual quantity for OD and OB combined shall not cause a carcinogenic risk threshold of 1×10^{-6} (1 in a million) to be exceeded at any offsite location, as calculated in the approved Human Health Risk Assessment and documented in a format approved by DTSC. See Unit Specific Special Condition 1;

The annual quantity for OD and OB combined shall not cause a noncarcinogenic chronic hazard index of 1.0 to be exceeded at any offsite location, as calculated in the approved Human Health Risk Assessment and documented in a format approved by DTSC. See Unit Specific Special Condition 1; and

The event quantity for OB shall not cause an acute hazard index of 1.0 to be exceeded at any offsite location, as calculated in the approved Human Health Risk Assessment and documented in a format approved by DTSC. See Unit Specific Special Condition 1.

WASTE TYPES:

Reactive hazardous waste generated onsite from research, development, test, and evaluation activities.

RCRA HAZARDOUS WASTE CODES:

D001 (50 caliber or less ammunition only), and D003

CALIFORNIA HAZARDOUS WASTE CODES:

181, 212, 281, 291, 343, 352, 551, and 611

UNIT SPECIFIC SPECIAL CONDITIONS

1. All hazardous waste treated shall be characterized with respect to energetic family. The definition of energetic family as used in this Permit means the energetic family used in the Human Health Risk Assessment. The quantity of each family and the date of the treatment event shall be recorded in a DTSC approved format. The format shall be designed to document that the maximum event and annual treatment quantity limits have not been exceeded.

2. Per Occupational Safety and Health Administration regulations found in 29 CFR 1910.109(e)(1)(v), no open burns shall be performed before ½ hour after sunrise, and no later than ½ hour before sunset.

3. Meteorological data needed for air dispersion modeling shall be collected from the Greenpoint Monitoring Station with the exceptions listed below and maintained by the Facility. All meteorological data shall be kept for the duration of the Permit. At a minimum, the following data shall be collected:

   a. wind speed;
   b. wind direction;
   c. temperature;
   d. stability class (from Baker Range Monitoring Station); and
   e. upper air data (may be obtained from approved offsite upper air stations).

4. The Baker Range and Greenpoint Monitoring Stations shall be operated, maintained, and calibrated according to an approved Meteorological Monitoring Plan. The Permittee shall conduct site performance audits every six months. The audits shall be conducted in accordance with Quality Assurance Handbook

for Air Pollution Measurement Systems (EPA, 1995), Quality Assurance Handbook for Air Pollution Measurement Systems, Volume IV: Meteorological Measurements, Version 1.0 (EPA Draft, October 2006), Meteorological Monitoring Guidance for Regulatory Modeling Applications (EPA, 2000), and Ambient Monitoring Guidelines for Prevention of Significant Deterioration (EPA, 1987), or any revisions to these documents.

5. The Permittee shall implement DTSC-approved environmental monitoring programs, including sampling, analysis, statistical and trend analysis for soil, ecological receptors, groundwater, and other media as specified by DTSC. The plan for the monitoring programs shall include actions that will be taken in the event that monitoring results demonstrate an increase of contamination or risk to any media. This condition shall be met in accordance with Part V. Special Condition 10.

6. Treatment residues in soil shall not exhibit a hazardous waste characteristic as defined by Title 22, Cal. Code Regs. Division 4.5, Chapter 11.

7. Two years after the effective date of addition of the OB unit to the Permit, and every two years thereafter, the Permittee shall submit a report for DTSC's approval on the efforts on the part of the Permittee to identify, evaluate, and test methods of sampling air emissions from OB events. The report shall include a certification that the information is the best and most current information available to the Permittee. This condition shall be met in accordance with Part V. Special Condition 12.

8. Two years after the effective date of addition of the OB unit to the Permit, and every two years thereafter, the Permittee shall submit a report for DTSC's approval on the status of alternative technologies to OB that are appropriate for use at the Facility. The report shall include a certification that the information is the best and most current information available to the Permittee. This condition shall be met in accordance with Part V Special Condition 13.

9. Five years after the effective date of addition of the OB unit to the Permit, the Permittee and DTSC shall conduct a review of the Permit and all supporting documentation to assure that the Permit continues to comply with the current state of control and measurement technology as well as changes in applicable regulations. The supporting information to be reviewed shall include emission factors, toxicity criteria, air dispersion modeling, the Human Health Risk Assessment, the Ecological Risk Assessment, results of sampling and analysis of all media, noise prediction modeling, and any other information determined to be necessary by DTSC.

10. The Permittee shall implement the terms of the 1995 Biological Opinion for the desert tortoise issued by the U.S. Fish and Wildlife Service and any future Biological Opinion relevant to Burro Canyon. All personnel working at the Burro Canyon facility shall have completed a desert tortoise awareness briefing following the requirements delineated in the Biological Opinion. Explosive Ordnance Disposal personnel shall conduct a visual survey of the OB/OD facility (cleared area and areas visible from the periphery of the cleared area) prior to each use of the facility. Survey findings shall be documented in the event log. Should desert tortoises be encountered in the area potentially affected by OB/OD operations measures shall be implemented in accordance with the Biological Opinion and delineated in the required annual report. Desert tortoises noted in any area potentially affected by OB/OD operations shall be relocated by approved personnel prior to any event initiation. All such encounters shall be documented in the event log as well as in the annual report.

AIR EMISSION STANDARDS SUBPART CC:

The Facility is subject to, and therefore must comply with, Title 40, Code of Federal Regulations, Part 264, Subpart CC, Air Emission Standards. These standards do not apply to the OB Unit.

PART V. SPECIAL CONDITIONS

The Permittee shall comply with the following:

	Tasks	Due Date
1.	Install an impervious pad, to provide for containment of the largest container, for the staging area adjacent to the PCB Storage Building.	6 months from effective date of Permit (per Permit effective August 8, 2001)
2.	Submit an evaluation from an independent, qualified professional engineer for the secondary containment system of the PCB Storage Building. The evaluation must include certification by the local building code authority, or the functional equivalent, that the structure is constructed to the appropriate seismic code and is engineered to prevent liquefaction induced building failure and/or waste release.	6 months from effective date of Permit (per Permit effective August 8, 2001)
3.	Submit an evaluation from an independent, qualified professional engineer for the secondary containment system of the Container Storage Unit. The evaluation must include certification by the local building code authority, or the functional equivalent, that the structure is constructed to the appropriate seismic code and is engineered to prevent liquefaction induced building failure and/or waste release.	60 days from effective date of Permit (per Permit effective August 8, 2001)

4.	Submit an evaluation from an independent, qualified professional engineer for the secondary containment system of the Liquid Petroleum Waste Tanks. The evaluation must include certification by the local building code authority, or the functional equivalent, that the containment is constructed to the appropriate seismic code and is engineered to prevent liquefaction induced failure and/or waste release.	6 months from effective date of Permit (per Permit effective August 8, 2001)
5.	Submit an evaluation from an independent, qualified professional engineer for the structural integrity of the Liquid Petroleum Waste Tanks.	6 months from effective date of Permit (per Permit effective August 8, 2001)
6.	Install an impervious pad, with containment of a spill, for the staging area adjacent to the Liquid Petroleum Waste Tanks.	6 months from effective date of Permit (per Permit effective August 8, 2001)
7.	Enter into a Corrective Action Consent Agreement or other enforceable agreement with DTSC, or comply with order issued by DTSC.	18 months from effective date of Permit (per Permit effective August 8, 2001)
8.	Submit a revised Spill Contingency Plan to replace the draft California Consolidated Contingency Plan.	6 months from effective date of Permit (per Permit effective August 8, 2001)
9.	Submit two copies of desert tortoise surveys of the OD unit and areas potentially affected by OB/OD operations conducted for two consecutive years, including both spring and fall seasons, which provide for 100% coverage of the potentially affected areas.	6 weeks from the completion of each survey

10.	Submit workplans for environmental monitoring as specified in Part IV. Sections 7. and 8. of this Permit.	6 months from effective date of addition of OB/OD Units to Permit
11.	Submit a noise analysis report, which shall include: • Predicted CNEL for quantities greater than 1.5 million pounds per year by OD based on Net Explosive Weight; • The modeled meteorological conditions that cause the peak sound level to exceed 128 dB; • The dates during which the meteorological conditions are likely to apply; and • The maximum allowable OD treatment event that will not exceed 128 dB offsite for all meteorological conditions, based on Net Explosive Weight.	9 months from effective date of addition of OB/OD Units to Permit or before treating more than 1.5 million pounds Net Explosive Weight per year by OD, whichever is sooner
12.	Submit a report on methods of sampling air emissions from OB/OD events.	2 years from effective date of addition of OB/OD Units to Permit
13.	Submit a report on the status of alternative technologies to OB/OD.	2 years from effective date of addition of OB/OD Units to Permit
14.	Submit an analysis of the dioxin/furan content of OB ash.	3 months from first OB event after effective date of addition of OB/OD Units to Permit

PART VI. CORRECTIVE ACTION

The Permittee shall conduct corrective action at the Facility pursuant to Health and Safety Code, Sections 25187 and 25200.10. Corrective action shall be carried out under the Federal Facility Site Remediation Agreement executed November 7, 2003.

APPENDIX A

SITE LOCATION MAPS

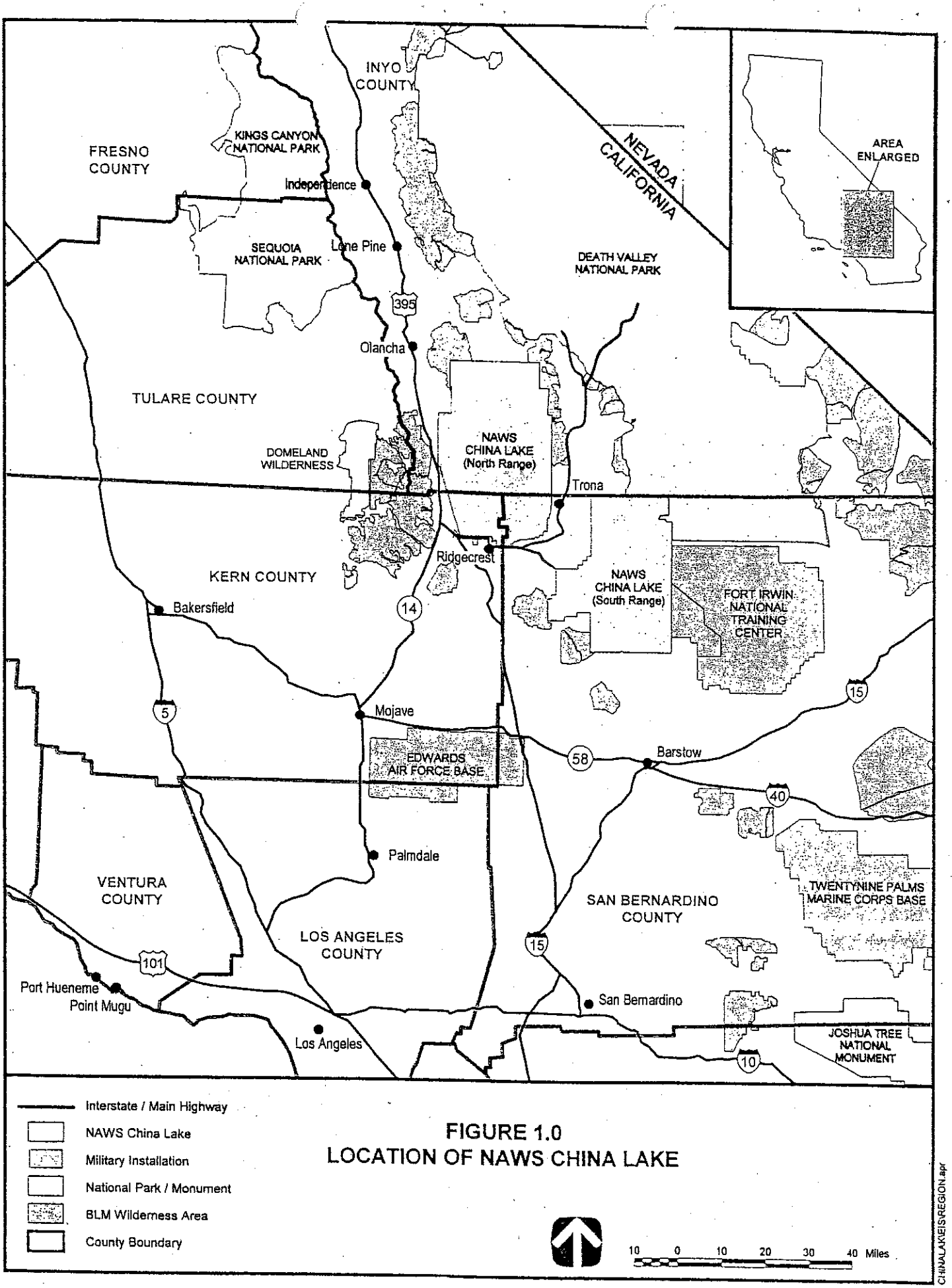
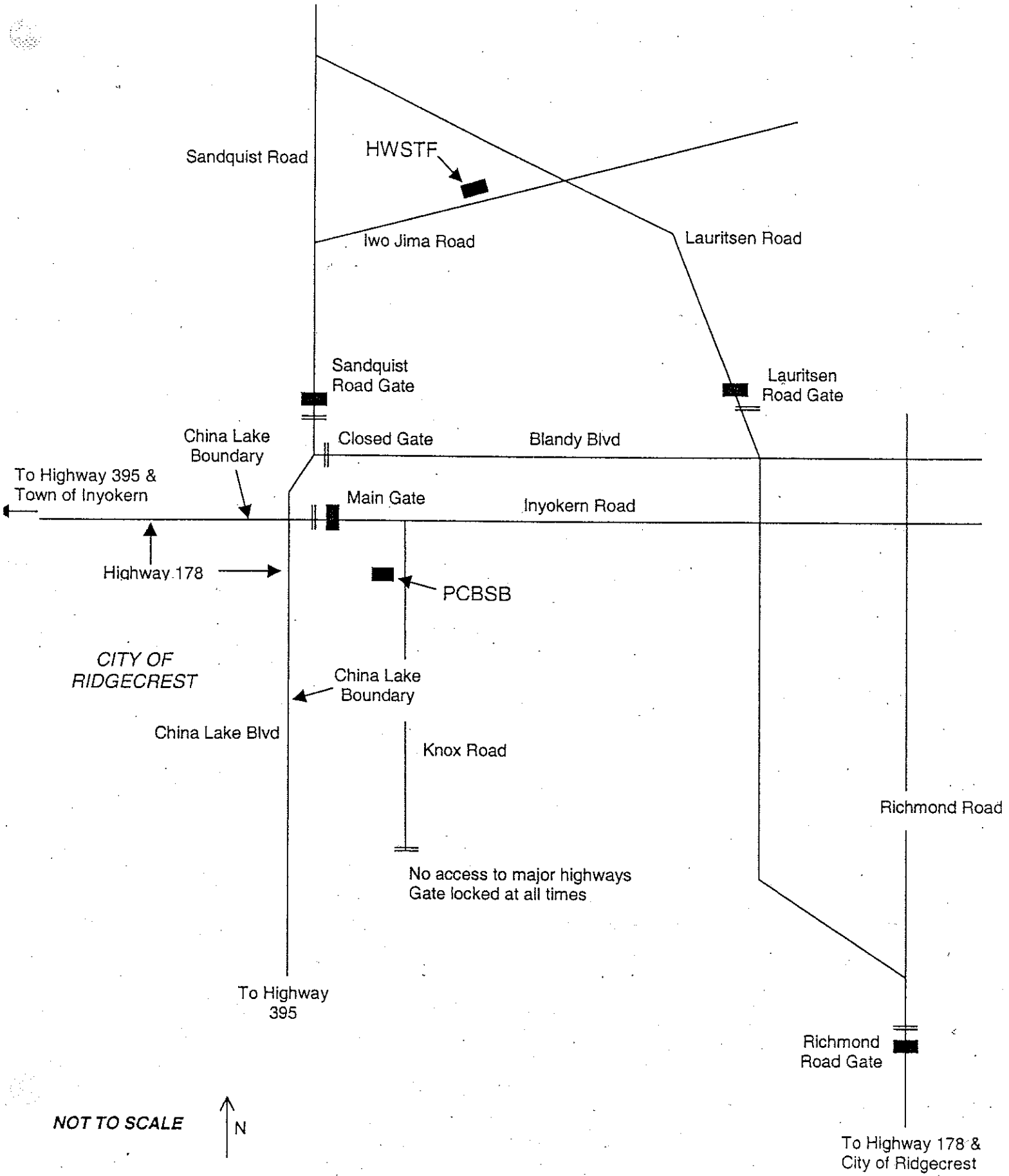


FIGURE 1.0
LOCATION OF NAWS CHINA LAKE

FIGURE 2.0 - HWSTF ACCESS ROADS



APPENDIX B

UNIT LAYOUT FIGURES

FIGURE 3.0 PCBSB LAYOUT

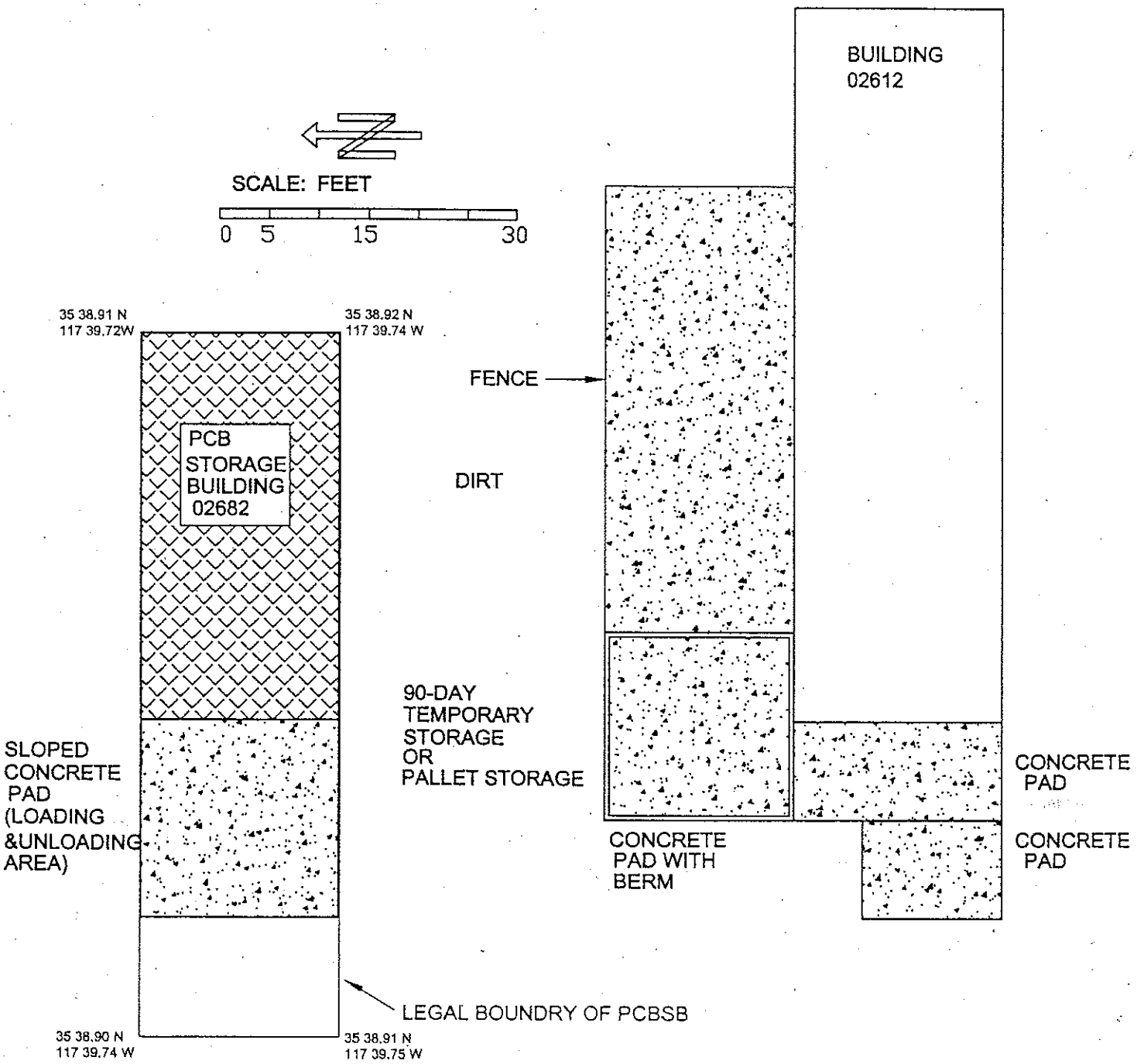


FIGURE 4.0 HWSTF LAYOUT

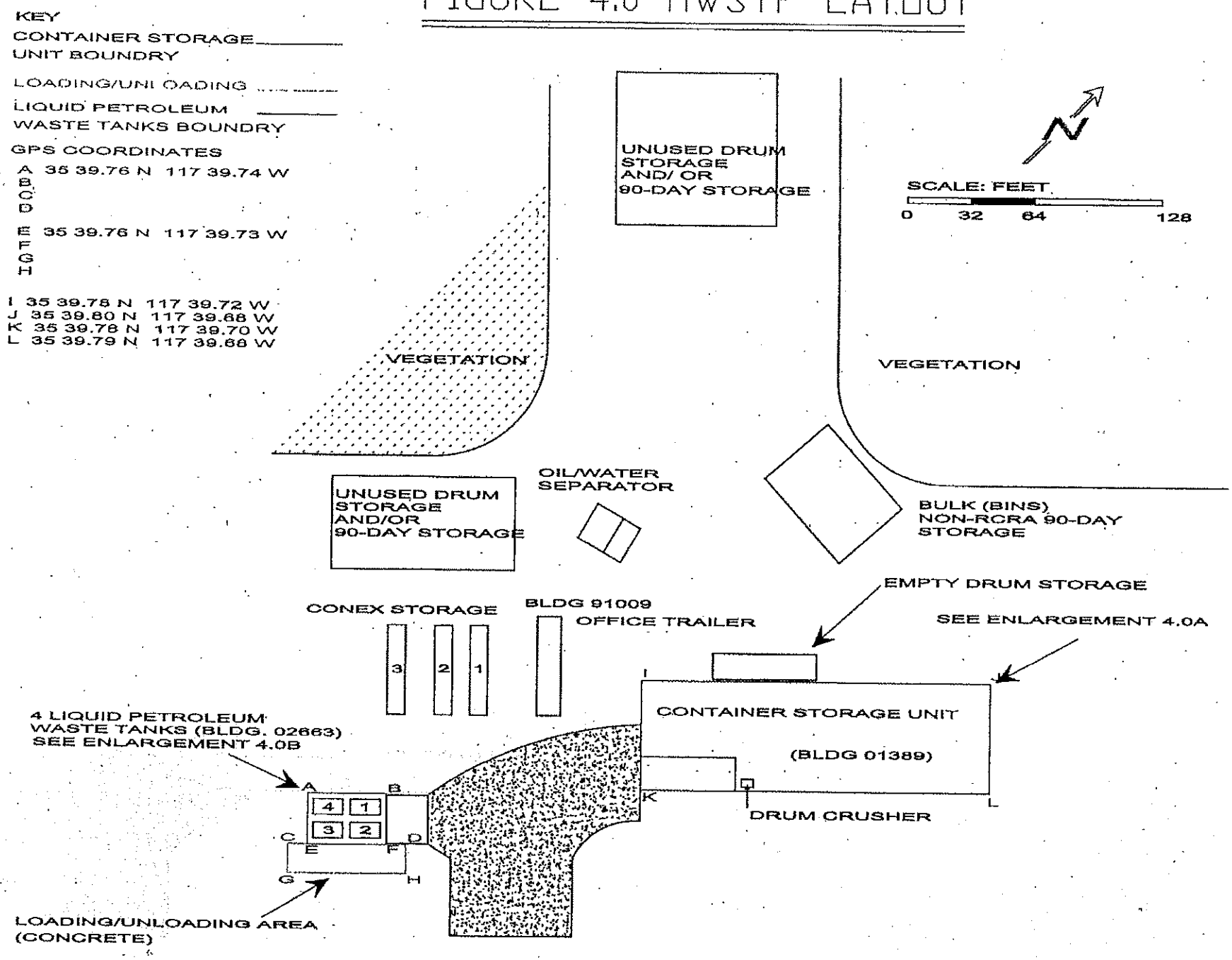
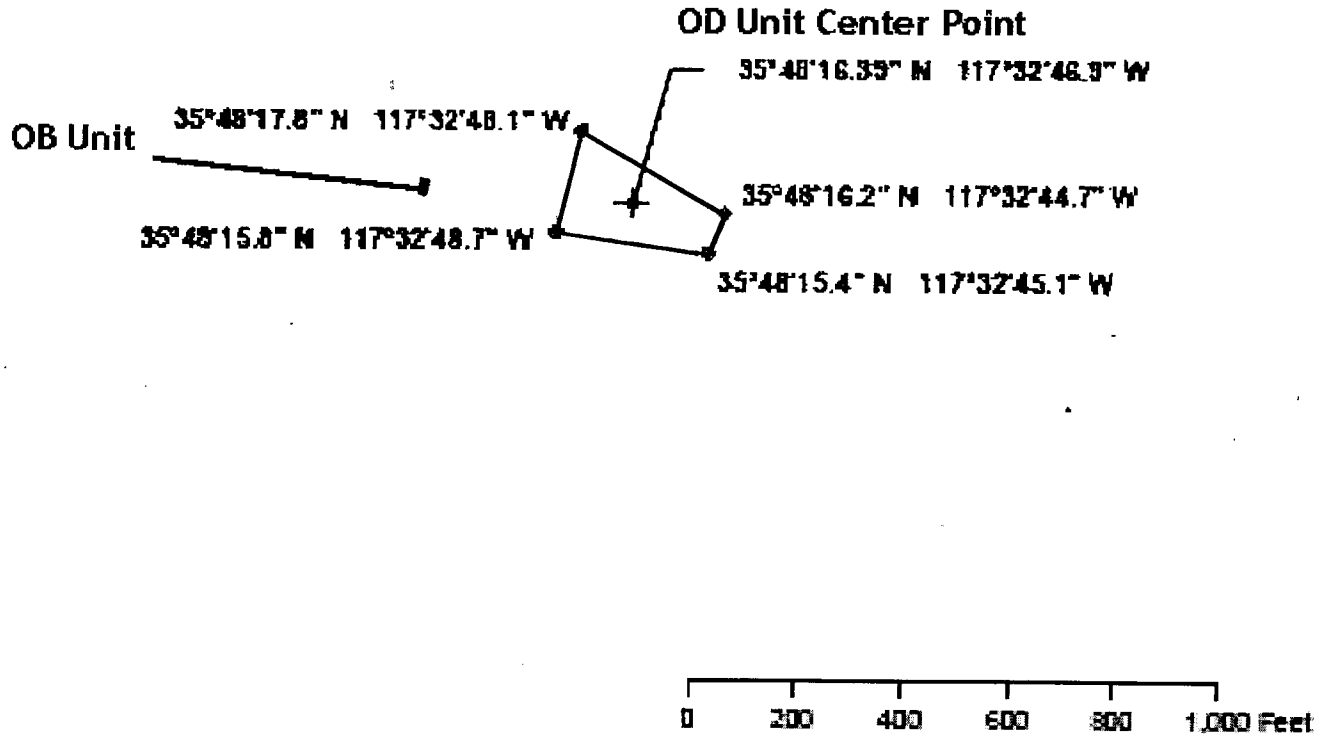


FIGURE 5.0 BCTF LAYOUT



Revised June 2008

ATTACHMENT C

Permit Modification History

Permit Modifications

1. All modifications made to this Permit and/or the Operations Plan (Part B) are listed and described in this Attachment.

2. March 2002. Facility initiated a Class 1* Permit Modification to extend the due date for completion of Special Condition 7 to nine months. Facility initiated two Class 1 Permit Modifications to change the responsibility for completion of hazardous waste labels and to change the mail code for the Environmental Project Office.

   May 2002. Facility initiated a Class 1* Permit Modification to extend the due date for completion of Special Condition 7 to 15 months.

   November 2002. Facility initiated a Class 1* Permit Modification to extend the due date for completion of Special Condition 7 to 18 months.

   June 2003. Facility initiated a Class 2 Permit Modification in April 2002 to add a Bin Storage Area and loading dock to the Hazardous Waste Storage and Transfer Facility and to add two hazardous waste codes to Liquid Petroleum Waste Tanks 1 and 2. The revisions are contained in the Part B dated May 2003.

   December 2003. Facility initiated a Class 1 Permit Modification in December 2003 to change the mailing address of the Environmental Department. The revision is contained in the Part B dated December 2003.

   December 2006. Facility initiated a Class 1 Permit Modification in December 2006 to change the format of the Generator Hazardous Waste label and add a provision for future formatting changes. The revision is contained in the Part B dated December 2006.

   June 2008. Facility initiated a Class 3 Permit Modification to add the Burro Canyon OB/OD units. The revisions are contained in the Permit and in the Part B dated December 2007. The Spill Response Plan and Naval Air Weapons Station, China Lake, Hazardous Waste Facility Permit Mitigation Monitoring and Reporting Plan are made a part of the Permit by reference. The Permit deletes the requirement that the annual Waste Minimization Certification be submitted, retaining the requirement that the certifications be recorded and maintained onsite in the Operating Record.

The Permit specifies that Corrective Action is carried out under the Federal Facility Site Remediation Agreement.