

CALIFORNIA STATE LANDS COMMISSION

SPECIAL STAFF REPORT

**POTENTIAL HAZARDS ON
STATE SCHOOL LANDS**

JANUARY 2008

CALIFORNIA STATE LANDS COMMISSION

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Submitted to:

The California State Legislature

Preface

This report was prepared pursuant to Item 3560-001-0001 (2) of the Supplemental Report of the 2006 Budget Act, which states, "On or before January 10, 2008, the State Lands Commission shall report to the chairs of the appropriate policy committees and the fiscal committees in both houses with a plan for addressing unexploded ordnance and other potential hazards on state school lands."

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EXECUTIVE SUMMARY

The State Lands Commission (SLC) manages 1,190 parcels containing a total of approximately 469,250 acres of School Lands held in fee ownership by the State, and the reserved mineral interests on approximately 790,000 acres of School Lands where the surface estate previously has been sold. Although School Land parcels are scattered throughout the State, the vast majority are located in the desert regions of Southern California and are difficult to develop due to poor access, rugged terrain, and lack of utilities, such as electricity and water.

Potential hazards on School Lands that are of primary concern include:

Unexploded Ordnance - Many School Lands parcels located in the desert regions of Southern California were leased to the Department of Defense or were used by the military during World War II and thereafter for military training exercises and may be contaminated with unexploded ordnance (bombs, artillery shells, and similar ammunition, also known as UXO).

- The U.S. Army Corps of Engineers (COE), through the Formerly Used Defense Sites Program (FUDS), is responsible for the remediation of these sites, but progress on the clearing of these lands has been very slow due to the sheer size of the problem and the lack of adequate funding.
- While as many as 36 fee-owned School Lands parcels containing over 20,700 acres have been identified as possibly containing UXO, the actual extent of the problem on School Lands is quite likely much lower.
- To date, only nine School Lands parcels containing a total of 4,721 acres have been positively identified for remediation by the FUDS program. All of these parcels are located in remote desert regions of southern California that are rarely used by the public. Because of their remote location and lack of convenient access, the potential risk due to unexploded ordnance on these lands is judged to be relatively low.
- Staff's current best estimate of the cleanup costs of these properties ranges from \$6.4M± to \$5.3B±.
- Based on FUDS management decisions and current remediation funding levels, actual work on remediation of FUDS sites in California won't begin until 2011 and may take over 100 years to complete.

Abandoned Mines – Some of the School Lands parcels in Southern California that were acquired from the federal government in the 1800s contain abandoned mines that pose a significant potential threat to the safety of both humans and wildlife. Approximately 142 School Lands parcels were initially identified as containing abandoned mine features. Since 2003, the SLC has been working to inventory and remediate these properties. To date, nearly 40% of these parcels have been inventoried and safeguarded through various remediation projects, or determined not to contain serious

threats. Staff anticipates that the remaining abandoned mine remediation work should be completed over the next ten± years.

Toxic Waste and Other Hazardous Substances – The California Department of Toxic Substances Control (DTSC) is responsible for the identification of toxic sites and the oversight of the remediation of those sites in California. The DTSC currently has over 760 sites identified as “active” on their state-wide cleanup list. To date, no School Land parcels have been identified on the list of known toxic sites. However, inconsistencies in the data and mapping systems used by the two agencies limit the analysis of these potential problems. The agencies are working to resolve these issues. In the meantime, due to the remote location of the majority of these properties and their historic lack of human usage, the potential for toxic hazards on these lands is considered to be relatively low.

Proposed Management Plan

Staff has developed a management plan for dealing with these issues that includes:

- Continued work with the COE FUDS Program to remediate known FUDS sites and identify School Lands properties that may potentially qualify for inclusion on the FUDS remediation list.
- Continued work with FUDS staff to resolve database and mapping format inconsistencies.
- Proposing the implementation of a program of onsite inspections – Staff of the Land Management Division (LMD) will coordinate with staff of the Mineral Resources Management Division (MRMD) to expand planned MRMD field trips to include surface inspections of School Lands parcels for UXO, toxic waste, and other potential hazards, whenever such inspections are both reasonably convenient and financially feasible.
- Proposing the inclusion of new “due diligence” language in all new leases and land sales contracts involving suspected UXO-contaminated School Lands parcels, advising potential lessee/purchasers of the possible problems associated with these conditions.
- Continuation and enhancement of the Abandoned Mine Lands Remediation Program.
- Continued work with the DTSC to identify School Lands that may be contaminated with toxic waste and other potential hazards.
- Continued work with DTSC staff to resolve database and mapping format inconsistencies.

PART ONE - INTRODUCTION AND BACKGROUND

History of School Lands

Shortly after achieving statehood, California received a significant land grant from the federal government to be used for the benefit of the public school system. These lands, called "School Lands", were the sixteenth and thirty-sixth sections of each township in the state, for a total of nearly 5.5 million acres. Most of the more economically valuable School Lands were sold in the late 1800s and early 1900s. Then in 1984, the remaining School Lands were placed into a statutory trust when the State Legislature approved the School Land Bank Act (Act), created the School Land Bank Fund (SLBF), and designated the State Lands Commission (SLC) as trustee of the SLBF. The Act directs that School Lands be proactively managed and enhanced to provide for an economic base in support of the public school system. Public Resources Code (PRC) Section 8702 spells out specific findings and declarations made by the Legislature, emphasizing the development of School Lands into a permanent and productive resource base and requiring that all transactions, including exchanges, sales, and acquisitions, be implemented for revenue generating purposes.

Pursuant to PRC Section 6217.7, all net revenues, monies, and remittances from the sale of School Lands are directed to be deposited into the State Treasury to the credit of the SLBF. PRC Section 6217.5 directs all net revenues derived from the use of School Lands (for example, royalties, rents, and interest generated from promissory notes) be deposited into the State Treasury to the credit of the Teachers' Retirement Fund, which benefits the State Teachers' Retirement System (STRS).

Today, the SLC manages 1,190 parcels containing a total of approximately 469,250 acres of School Lands held in fee ownership by the State and the reserved mineral interests on approximately 790,000 acres of School Lands where the surface estate previously has been sold. Although School Lands are scattered throughout the State, the vast majority are located in the desert regions of Southern California and are difficult to develop for surface uses due to poor access, rugged terrain, and lack of basic infrastructure and utilities, such as paved roads, electricity and water.

PART TWO - UNEXPLODED ORDNANCE

Background Information

The U.S. Department of Defense (DOD) is responsible for remediation of properties that were used in the past by the military for training purposes, including artillery and small arms training, aerial bombing and strafing, and tank warfare. Unexploded ordnance (UXO) refers to bombs, shells, discarded military ammunition and munitions constituents that may remain from these military training exercises. While UXO normally refers to ammunition that failed to explode upon impact, it also may include buried but forgotten caches or disposal sites¹. The lands used for these purposes fall under the Formerly Used Defense Sites (FUDS) program that is managed by the U.S. Army Corps of Engineers (COE). There are currently over 9,300 FUDS sites that have been identified nationwide, with almost 1,100 of those sites located in California. Of these 1,100± sites, the California Department of Toxic Substances Control (DTSC), Formerly Used Defense Site Branch, has identified 300 sites which have been identified to have ordnance related contamination. In addition to ordnance, many of the sites may contain other forms of contamination which resulted from the military's use of the property. While the federal government has the responsibility to decontaminate these lands, it should be noted that in 2006 the COE estimated that it could take between 75 and 100 years to fully evaluate and remediate the known FUDS sites in California.

The FUDS Cleanup Process

The following is the order of events of a typical FUDS site remediation project:

1. Preliminary Assessment (PA) - Consists of an archive records search and a quick site visit.
2. Site Inspection (SI) – Visual inspection/verification of contamination and possible minor (“teaspoon”) soil sampling.
3. Remedial Investigation Feasibility Study (RIFS) – Analyze the extent and depth of the contamination, prepare list of potential remediation activities (removal, institutional controls), preparation of Decision Document.
4. Remedial Design – determines the nature and extent of the Remedial Action.
5. Remedial Action. Agreement among all interested parties (COE, landowners, members of the public, environmental groups, etc.) that site hazards have been reduced to an acceptable level.
6. Re-evaluation of the site every five years thereafter. (Less often if all concerned agree that site does not warrant 5-year intervals.)

¹ Unexploded Ordnance Cleanup Costs, Rand Corporation, 2005.

The Site Inspection (SI) is typically awarded to an independent contractor who establishes the extent and methods for the visual inspection, conducts the inspection, and grades the results of the inspection using a comprehensive grading system. The grading system analyzes not only the extent and risk potential of unexploded ordnance on the property, but also considers potential impacts on endangered species, surface water and groundwater contamination, and other ecological impacts (soil, air, etc.). The potential risk to humans, based on location (proximity to population centers), frequency of use and type of use also are included in the analysis. Based on the results of the SI, the site may be recommended for the next step in the process - the Remedial Investigation Feasibility Study (RIFS). After the completion of the RIFS, the site may or may not be recommended for cleanup.

Estimated Cost of FUDS Cleanup

Staff of the SLC currently is working with the DTSC and the COE to identify which School Lands parcels qualify as FUDS properties and to estimate the potential costs of cleaning up these sites. Costs can vary widely, due to a number of factors. The Rand Corporation has published two reports² that, among other things, discusses these factors and highlights the difficulties involved in the UXO clean-up process.

- There are no established federal standards for UXO cleanup. Therefore the DOD recommends that the COE negotiate a depth clearance on a site-specific basis with state and local officials, environmental regulators, and concerned citizens.
- What protocol will be used and how many times will the sites be surveyed? The federal government prefers to survey with metal detectors, then dig up any anomalies to depths of one, two, or four feet. State governments typically prefer a method that involves excavating all soil in potential residential areas, then sifting to remove all UXO. A third protocol, which is essentially a compromise between the first two methods, involves surveying with metal detectors, then re-surveying after any anomalies have been removed.
- What is the soil type? Sandy soil is easier to excavate, but UXO may penetrate it to deeper depths.
- What is the terrain? Rugged mountainous terrain clearly is more expensive to survey than land with level topography.
- How accessible is the site? Is the property close to paved roads or highways, or accessible only via off-road vehicles?
- What is the anticipated future use? Clearly, future residential sites require much more intensive remediation than remote desert sites that are used less often.

² Ibid; Transferring Army BRAC Lands Containing Unexploded Ordnance, Rand Corporation, 2004.

These are just some of the factors that make it impossible to accurately estimate the cost of cleaning up UXO from any particular site. However, the COE provided the following information on sites in Southern California as indicators of possible costs. The estimated costs to clean up the 32,000-acre Iron Mountains/Kilbeck Hills site are \$200,000 for the Site Inspection, over \$1,000,000 for the Remediation Investigation Feasibility Study, and \$8,000 to \$12,000 per acre for the actual site remediation for those areas found to need such treatment. The estimated total costs for Camp Elliott are \$33,000,000 for 3,000 acres. The Camp Elliott remediation is much more expensive because of its location and because it entails both surface and sub-surface cleanup.

Prioritizing the FUDS Cleanup List

FUDS sites are prioritized on the principle of “worst first”, based primarily on the results of grading system described above. The COE also considers input from state and regional water quality control boards and other governmental agencies, such as California’s Department of Toxic Substances Control Board (DTSC). Land ownership is not considered in the evaluation process, so state-owned land does not take precedence over privately-owned land.

Funding for the FUDS Cleanup Program

Funding for FUDS cleanup projects is allocated every year as part of the national budget, so it is impossible to predict the amount of funding that will be available in the future. Once the funding has been obtained, the FUDS budget is not allocated on a state-by-state basis, but instead is allocated to the various COE Divisions, and each Division distributes the funding among its various Districts. The enormity of the funding problem is evident when the following facts are considered:

- The FUDS budget in California in Fiscal Year 2006 was \$13.7 million, and is expected to reach \$21.4 million in Fiscal Year 2007.
- The total cleanup cost of the 1,100± sites in California is estimated at \$2.7 billion. So at current funding levels, and assuming no changes in costs or inflation, it would take over 125 years to finish all of the known projects in California.
- Since the COE has decided to concentrate most of its efforts and funding on bringing all FUDS sites nationwide up to Site Inspection status by 2010, it is unlikely that much more actual site remediation (cleanup) work will be done in California until 2011 at the earliest.

Preliminary Assessment - Unexploded Ordnance on School Lands

A review of SLC records indicates that as many as 36 fee-owned School Lands parcels, containing a total of 20,706.52 acres, may be contaminated with UXO. Table 1 summarizes the current status of these 36 parcels.³

For the purpose of this report, these 36 parcels have been divided into three groups. Groups A and B, which contain a total of 31 parcels, are considered to have the highest likelihood of UXO contamination. These parcels were leased to the military and/or used by the military during or after World War II specifically for training exercises that included live ammunition.

The potential liabilities presented to the SLBF by some of the 31 properties are lessened somewhat because under the terms of the California Desert Protection Act (CDPA), School Lands located within the national parks, national monuments and federal wilderness areas within the California Desert Conservation Area are to be transferred to the United States under land exchange agreements. Over the past ten years, the SLC has completed a number of land exchanges with the U.S. Bureau of Land Management (BLM), and staff is continuing to work on future land exchanges that will transfer even more desert School Land parcels to the BLM, including some parcels that may be contaminated with UXO. Therefore to help assess the future relative risk of these 31 parcels, they have been divided into Group A, which includes all those lands that are scheduled to be transferred to the BLM under the terms of the CDPA, and Group B, which includes those lands that will not be exchanged with the BLM.

GROUP A

Group A consists of 13 parcels totaling approximately 7,867.53 acres. These 13 parcels are subject to transfer to the BLM under the terms of the CDPA. Of these 13 parcels, five parcels containing 3,148.48 acres are included within a current land exchange between the SLC and BLM that should be concluded in 2008.

GROUP B

Group B consists of 18 parcels totaling approximately 10,161.39 acres. These properties lie outside the boundaries of national parks, national monuments and federal wilderness areas and therefore are not scheduled to be transferred to the BLM under the terms of the CDPA.

GROUP C

Compared to Groups A and B, Group C is considered to present a relatively lower level of potential liability from UXO contamination. Group C consists of five parcels which total approximately 2,677.6 acres. These parcels lie within the exterior boundaries of

³ Note: Many of these lands were declared by the military many years ago to be "cleared for surface uses only". Because of the lack of subsurface clearance and the improvements in modern ordnance detection technology, staff believes that significant questions still surround the condition of these parcels.

Table 1
Fee-Owned School Lands
with
Potential Unexploded Ordnance

GROUP A

Lands Within CDPA Exchange Areas; Former Military Use, Ordnance Use Known or Suspected

County	SLC School Lands Parcel Number	Land Description	Acres	Acres Included in Current BLM/SLC CDPA Land Exchange
SAN BERNARDINO	189-013	T 2N, R 24E, Sec 16	640	
SAN BERNARDINO	190-020	T 3N, R 19E, Sec 16	640	640
SAN BERNARDINO	190-028	T 3N, R 24E, Sec 16	640	640
SAN BERNARDINO	194-013	T 7N, R 13E, Sec 16	640	
SAN BERNARDINO	195-017	T 8N, R 14E, Sec 16	640	
SAN BERNARDINO	195-019	T 8N, R 15E, Sec 16	588.48	588.48
SAN BERNARDINO	197-027	T 10N, R 17E, Sec 36	640	640
SAN BERNARDINO	198-017	T 11N, R 20E, Tract 41	640	640
RIVERSIDE	231-022	T 1S, R 19E, Sec 36	480	
RIVERSIDE	232-016	T 2S, R 18E, Sec 36	642.97	
RIVERSIDE	233-019	T 3S, R 18E, Sec 16	640	
RIVERSIDE	233-021	T 3S, R 18E, Sec 36	392.76	
RIVERSIDE	234-016	T 4S, R 18E, Sec 16	643.32	
			7,867.53	3,148.48

GROUP B

Lands Outside CDPA Exchange Areas; Former Military Use, Ordnance Use Known or Suspected

County	SLC School Lands Parcel Number	Land Description	Acres
SAN BERNARDINO	188-007	T 1N, R 16E, Sec 16	640
SAN BERNARDINO	189-012	T 2N, R 23E, Sec 16	639.52
SAN BERNARDINO	190-026	T 3N, R 23E, Sec 16	640
SAN BERNARDINO	190-027	T 3N, R 23E, Sec 36	640
SAN BERNARDINO	191-051	T 4N, R 23E, Sec 36	640
SAN BERNARDINO	194-006	T 7N, R 7E, Sec 36	640
SAN BERNARDINO	194-023	T 7N, R 18E, Sec 36	640
SAN BERNARDINO	194-028	T 7N, R 21E, Sec 16	40
SAN BERNARDINO	195-029	T 8N, R 21E, Sec 16	640
SAN BERNARDINO	195-030	T 8N, R 21E, Sec 36	640
SAN BERNARDINO	195-031	T 8N, R 22E, Sec 16	640
SAN BERNARDINO	196-022	T 9N, R 20E, Sec 16	320
SAN BERNARDINO	196-025	T 9N, R 21E, Sec 36	640
SAN BERNARDINO	198-016	T 11N, R 19E, Tract 47	640
RIVERSIDE	231-020	T 1S, R 17E, Sec 36	321.87
RIVERSIDE	236-001	T 6S, R 11E, Sec 36	640
IMPERIAL	244-001	T 14S, R 9E, Sec 16	640
IMPERIAL	244-002	T 14S, R 9E, Sec 36	520
			10,161.39

GROUP C

Lands Formerly Used by Military; Ordnance Use Unknown

County	SLC School Lands Parcel Number	Land Description	Acres	Acres Included in Current BLM/SLC CDPA Land Exchange
SAN BERNARDINO	188-006	T 1N, R 13E Sec 16	640	640
SAN BERNARDINO	189-002	T 2N, R 11E, portion Sec 36	280	280
SAN BERNARDINO	189-004	T 2N, R 14E, portion Sec 36	477.6	477.6
SAN BERNARDINO	231-012	T 1S, R 13E, Sec 16	640	
SAN BERNARDINO	231-013	T 1S, R 13E, Sec 36	640	
			2,677.6	1,397.6

TOTAL 20,706.52

This chart does not authoritatively represent the parcel size or boundaries of any State-owned land and may not identify all State parcels that may contain unexploded ordnance. For further information, please contact the State Lands Commission.

areas that were used military purposes from 1942 to 1944, but the status of potential contamination on these five parcels is unclear because it is unknown if training activities using live ammunition were conducted on them. Three of these parcels, containing 1,397.6 acres, are included within the current SLC/BLM land exchange that should be concluded in 2008.

Assuming that all of the parcels in Groups A, B and C need remediation, the total number of parcels with possible UXO is 36, and the total land area potentially requiring decontamination is 20,706± acres.

School Lands on the Current FUDS Cleanup List

Although the 36 fee-owned School Lands parcels discussed in the previous section and shown in Table 1 represent the “worst case” scenario, the actual extent of the UXO problem on School Lands is quite likely much lower. To date, only nine School Lands parcels containing a total of 4,721 acres have been positively identified for remediation by the FUDS program or SLC staff.

The FUDS site known as Iron Mountain/Kilbeck Hills (Project No. J09CA004801) is located on the San Bernardino/Riverside county line approximately 24 miles west of Rice, California and 60 miles southwest of Needles, California. The 32,000-acre project includes one 640-acre School Lands parcel identified as Section 16, Township 1 North, Range 16 East, San Bernardino Base Meridian. A Site Inspection was conducted early in 2007 and the COE is in the process of finalizing the report that summarizes the results of this project. A review of the draft report indicated that munitions debris was found on the site and the site is being recommended for a Remedial Investigation Feasibility Study (RIFS). As noted above, it is unlikely that actual remediation of the site will begin until 2011, at the earliest.

There are three other known FUDS sites among the 36 parcels shown on Table 1. These are Needles Division Camp (Project No. J09CA050500), Camp Iron Mountain (Project No. J09CA028400), and Carrizo Impact Area (Project No. J09CA701800). These three projects involve eight School Lands parcels containing a total of 4,081± acres.

Staff of the SLC also has identified one additional parcel, Section 36, Township 7 North, Range 7 East, SBM, containing 640 acres, which is not a FUDS-identified site but which should qualify for UXO remediation, based on internal correspondence between the SLC and the military contained in SLC files. Staff is actively pursuing the inclusion of this parcel into the FUDS remediation program.

Perhaps the biggest obstacle to the identification of School Lands within the various FUDS sites is caused by inconsistencies in the databases and mapping programs of the agencies involved. FUDS sites are identified primarily by Geographic Information Systems (GIS) coordinates, and many of the FUDS sites still do not have well-defined property boundaries. The SLC School Lands database, however, is based on legal descriptions (section, township and range). While progress has been made between the two agencies on integrating the two databases and creating overlapping property

maps, the sheer size of the problem and the lack of manpower and resources have hindered this project. Until these issues are resolved, the true extent of the problem will not be clearly defined.

Estimated Cleanup Costs of School Lands

Using the cost estimates provided by the COE and described earlier in this report as indicators, it is possible to develop a rough range for the potential costs to remediate the impacted School Lands. With a potential range of costs from \$12,000 to \$1M per acre, the estimated “worst case” cost of cleanup of the 36 School Lands parcels ranges from \$248.5M to \$20.7B. This would assume all 36 parcels are contaminated and would require remediation. It is much more likely that most of the contaminated School Lands parcels have already been identified by the COE, and that the extent of the problem is limited to the parcels discussed above. If so, the magnitude of the problem falls into a much less expensive range of \$6.43M± to \$5.36B±.

Proposed Management Plan

Staff of the SLC has developed the following Management Plan to address the problem of potential unexploded ordnance on School Lands:

- Continued work with the COE FUDS Program to remediate known FUDS sites and identify School Lands properties that may potentially qualify for inclusion on the FUDS remediation list.
- Continued work with FUDS staff to resolve database and mapping format inconsistencies.
- Implementation of a program of onsite inspections – Staff of the Land Management Division (LMD) will coordinate with staff of the Mineral Resources Management Division (MRMD) to expand planned MRMD field trips to include surface UXO inspections of School Lands parcels whenever such inspections are both reasonably convenient and financially feasible.
- Inclusion of new “due diligence” language in all new leases and land sales contracts involving suspected UXO-contaminated School Lands parcels, advising potential lessee/purchasers of the possible problems associated with these conditions.

PART THREE - ABANDONED MINES

Background Information

In 2003, the SLC began to inventory and remediate abandoned mine features on state School Lands. This work now is known as the Abandoned Mine Lands Remediation Program. The intent of this work is to eliminate and/or reduce potential public safety hazards and to inventory and remediate mine hazards located on State school lands that may pose a threat to public safety and wildlife. Consultation for possible impacts of biological and historical resources must be conducted with the California Department of Fish and Game (DFG) and the State Historic Preservation Office (SHPO) on the appropriate remediation measures to ensure work does not adversely impact these resources.

Of the 1,190 fee-owned School Land parcels managed by the SLC, approximately 118 parcels have been identified, with an estimated total of approximately 750 individual mine features. Utilizing funding authorized by the Legislature, partially from the SLBF, the SLC has been performing office and field inventories of many of these parcels. In 2006, mine warning signs were designed by the SLC and these signs are now being posted by field staff in the course of conducting field inventory work.

As of November 2007, the status of the original 142 Abandoned Mine Lands (AML) parcels is as follows:

- 24 parcels have been eliminated after it was determined that they did not contain any mine features on SLC-managed lands.
- 15 parcels have mine features so minor that no work is currently contemplated on them.
- 16 parcels have been closed with backfill of mine waste, installation of a foam plugs, bat-compatible gates or cupolas, or fencing.
- 13 parcels have hazardous mine openings that are in various stages of closure efforts.
- 74 parcels need further office review and field inventory. About half of these parcels are likely to contain dangerous AML features (shafts, adits, etc.) that will need some form of closure to protect the public and wildlife.

The major components of the Abandoned Mine Lands Remediation Program include:

1. Office inventory work which includes ArcMap database and title work to discern what features are located on SLC-managed lands.
2. Field inventory work to locate and assess the number and gravity of mine features and to determine what work may be appropriate.

3. Contract with biologic consultants to determine the nature and extent of wildlife usage of the mine features. Use by bats, owls and tortoise (all protected by law) are common and must be considered in determining the appropriate closure technique.
4. Work with the contractor(s) to compile the field data into comprehensive reports.
5. Consultation with the appropriate DFG office to receive their concurrence on the type of closure proposed, with consideration to physical attributes and wildlife usage to ensure remediation work does not adversely impact wildlife.
6. Consult with SHPO to determine that the proposed work will not adversely impact any historic resources.
7. Obtain authorization from the Commission for closure approval.
8. Provide project management and perform mitigation monitoring to ensure all work is performed in accordance with any SLC, DFG and SHPO restrictions.
9. Prepare comprehensive reports documenting the completion of work and any problems encountered.

Biologic windows in which closure work can be performed are dictated by both the biological contractor and DFG. All hard closures that include backfill with mine waste or foam plugs are temperature dependant, but usually are restricted to September and October of each year. The installation of bat gates and cupolas enjoy a longer window but are generally not allowed from April through August during the bat maternity season when bats are most vulnerable to disturbance and possible death. These time restrictions sometimes delay mine closures to the following year(s).

Much of the recent progress in closure work by the State has been achieved by performing backfilling operations using available mine waste. Typically these operations are performed by contractors using rubber-tired front end loaders, which are used to minimize the impact on the environment. This technique is only feasible if the mine waste is readily available and when the mine does not provide significant wildlife habitat. A small number of the parcels possess such large mine openings that there is no environmentally acceptable method to remedy the hazard other than fencing off the openings and posting of warning signs.

Since the beginning of the Abandoned Mine Lands Remediation Program, the following mine closures have been performed:

2003: Pacific Fluorite Mine, San Bernardino County – one shaft closed with a bat cupola
American Opal Mine, San Bernardino County – one shaft closed with polyurethane foam

2004: 7 Mines – Protected by fencing

- 2005: Crown Uranium Mine, Imperial County – one shaft and one adit closed with one bat-compatible steel cupola and one bat gate
Rosamond Mine, Kern County – one shaft closed by backfilling with waste rock
- 2006: Turtle and Rusty Gold Mines – Protected by fencing
Golden Queen Mine – two shafts backfilled with waste rock
Guadalupe Mine – one shaft closed with foam plug
Los Padres Mine, San Bernardino County – one shaft closed with foam plug
Stone Cabin Mine, San Bernardino County – one shaft and numerous prospect pits backfilled with waste rock
- 2007: Calico Mountain Mine – six shafts closed by backfilling with waste rock
Trade Rat Mine – two shafts and one prospect pit backfilled with waste rock
Standard Hill Mine – one shaft backfilled with waste rock
Fry Mountain Mine – two shafts backfilled with waste rock, one shaft fenced
Arnold Edward Mine – one shaft fenced
Gold Standard Mine – one shaft closed with bat-compatible steel cupola and one shaft fenced

Permits have been received to close four additional adits and one shaft, and efforts are underway to perform this work. By April 1, 2008, staff plans to install bat-compatible gates on the Ship Mountain Mine and the Mohawk Hill Mine.

Costs of Mine Remediation

The costs of mine remediation and closure depend on a number of factors, including the size and location of the mine and type of remediation method that is performed. The majority of the remediation costs are incurred by staff in the performance of office and field inventories, field surveys, consultation with DFG and SHPO, obtaining Commission approvals, management of the remediation work, and proper documentation of the remediation work. The costs associated with the actual closure work represent only a small fraction of the total program costs.

Fencing a mine feature (typically, a mine shaft) is the least expensive method (\$500± per fence), but provides the least long-term protection. Backfilling with existing mine waste or other materials also is relatively inexpensive and costs about \$1,200 per day, but several mine features can be closed in one day, making this method very cost effective. Plugging a mine opening with polyurethane foam also is an option when waste rock is not available or the site is inaccessible to heavy equipment. Foam plugs typically cost \$5,000 to \$10,000 per shaft, depending on size and access, but are subject to vandalism and must be protected from fire and ultraviolet radiation by a soil cover. Bat-compatible steel gates usually start at \$5,000± per adit, depending on the number, size and location. These are used when the biological survey indicates the mine provides significant habitat to bats. Bat compatible gates allow continued use by the bats, desert tortoise and owls while protecting the public and other wildlife. Bat-compatible steel cupolas also may be constructed over mine shafts to provide more long-term protection, and can cost \$10,000 to over \$20,000 each, depending on size, number and location. Inaccessible sites require the use of helicopters at great expense

to bring in the steel, welding equipment, and other supplies necessary for the installation of bat compatible gates and cupolas.

Helicopter-assisted closures are essential for very remote areas and for work performed within federally-designated wilderness areas. No helicopter closures have been conducted to date, as the prioritization process indicates these sites experience less visitation by humans and therefore represent relatively lower risk. Helicopters likely will only be used for closure work in the latter stages of the program.

Proposed Management Plan

During the first five years of the Abandoned Mine Lands Remediation Program, staff has made significant progress, safeguarding mine features on nearly 40% of the 142 identified parcels. The experience gained by staff already has resulted in the improvement and streamlining of the inventory and remediation process. Staff's management plan for dealing with these issues includes continuation and enhancement of the AML Remediation Program.

To bolster the staffing for the Program, the Commission received two permanent positions in the 2006-07 budget. These positions were funded from the School Land Bank Fund. In addition, Public Resources Code Section 8709.5 was added, amending the School Land Bank Act as follows:

8709.5 Expenses attributable to management and remediation efforts on school lands are payable from the fund.

The School Land Bank Fund is continuously appropriated allowing remediation efforts to proceed as appropriate. Costs for Fiscal Year 2006-07 totaled \$187,168.

It is envisioned that the vast majority of abandoned mine features located on State school lands that pose a serious threat to the public and wildlife will be inventoried and remediated by December, 2017. SLC staff is working to determine what inventory work remains on SLC lands. Staff estimates that all 142 parcels will be inventoried by the end of 2008.

Staff continues to aggressively pursue the closure of the most dangerous mine features on SLC lands that pose an imminent threat to the public and wildlife. The substantial progress achieved in calendar year 2007 is evidence that efficiency has increased with experience and recent funding. Staff plans to continue identifying and prioritizing the most hazardous mine features for closure as soon as possible. Efforts are currently underway to plan the 2008 calendar year program.

Acquisition of the funding and staffing has allowed the program to expand and become more efficient. Part of this includes equipment purchasing. For example, prior to conducting physical closures, wildlife exclusions are required to prevent mortality of protected wildlife. Staff has purchased special night vision goggles that are required for wildlife exclusions. In addition, staff has received the appropriate training on how to conduct such surveys. This allows staff to conduct the requisite exclusion work

expeditiously and with substantial cost savings. Recently a high powered Hilti electric drill was purchased for \$1,000 that will permit the installation of fencing around mine shafts in solid rock where previously it could not be done. Other anticipated purchases include electric generator(s), an arc welder, grinders, saws and a Sony Night Vision hard drive camcorder to document exclusion surveys. Each purchase must be carefully researched for the proper purchase as dictated by the harsh field conditions.

While none of the SLC closures have been vandalized to date with the exception of sign removal, other closures on federal land have been vandalized with portable cutting equipment. With the SLC owned equipment, SLC staff will be able to promptly respond and repair any vandalized closures before the public is harmed. Consequently, staff must not only inventory remaining parcels with mine features but also inspect those that have been closed. As more closure work is completed, this becomes a more sizable task.

At the completion of closure work in 2017, it will be necessary to perform inspections and repair of closed mines, especially those with fences, bat gates, cupolas or foam plugs, to ensure their integrity. Those closed with fences may need to be considered for more permanent closures.

PART FOUR - TOXIC WASTE AND OTHER POTENTIAL HAZARDS

Toxic Waste

Acting primarily under the authority of the federal Resource Conservation and Recovery Act and the California Health and Safety Code, the California Department of Toxic Substances Control (DTSC) is responsible for the identification of toxic sites and the oversight of the remediation of those sites in California. The majority of the sites qualify for inclusion in the list due to their contamination from toxic chemical and/or biological materials.

The DTSC currently has over 760 sites identified as “active” on their state-wide cleanup list. The majority of these sites are located in urban areas or along transportation corridors, such as highways and railroad tracks. Major toxic contamination of remote, desert properties (such as the majority of the School Lands parcels) is rarer due to the lack of human usage. Toxic contamination in these regions more commonly consists of occasional minor dumping.

To date, no School Lands parcels have been identified on the DTSC’s list of known toxic sites. However, the DTSC’s database of known sites, like the COE’s database on known FUDS sites, is kept in GIS format. Many of the sites in the database do not have well-defined property boundaries. Because the SLC School Lands database is based on legal descriptions (section, township and range), the two systems do not overlap. While progress has been made between the two agencies on integrating the two databases and creating overlapping property maps, the sheer size of the problem and the lack of manpower and resources have hindered this project. Until these issues are resolved, the true extent of the problem will not be clearly defined.

Other Potential Hazards

Pursuant to terms of the SLC’s leases, all Lessees are required to comply with all federal, state and local laws pertaining to toxic waste and hazardous substances during the term of their lease and must fully restore the lease premises upon the expiration or termination of the lease. However, because the majority of the School Lands properties are not leased and are isolated and remote, there is the potential for other hazardous conditions to exist on the parcels from occasional unauthorized uses and illegal trespasses. Examples of these problems include abandoned automobiles and household appliances, household garbage, and refuse left by squatters. These conditions are considered to be relatively minor and the potential risk from them is considered to be relatively low.

When staff is made aware of these types of situations (usually by local or federal agencies), staff investigates and responds accordingly. Staff also intends to begin conducting site inspections on the unleased School Land parcels that are closest to populated areas and transportation corridors to identify potential problems on these lands.

Proposed Management Plan

Staff has developed a management plan for dealing with other potential hazards that includes:

- Continued work with the DTSC staff to resolve database and mapping format inconsistencies.
- Implementation of a program of onsite inspections – Staff of LMD will coordinate with staff of MRMD to expand planned MRMD field trips to include surface inspections of School Lands for toxic waste and other potential hazards whenever such inspections are both reasonably convenient and financially feasible.

ABBREVIATIONS AND ACRONYMS

AML – Abandoned Mine Lands

BLM – U.S. Bureau of Land Management

CDPA – California Desert Protection Act

COE – U.S. Army Corps of Engineers

DFG – California Department of Fish and Game

DTSC – California Department of Toxic Substances Control

DOD – U.S. Department of Defense

FUDS – Formerly Used Defense Sites

GIS – Geographic Information Systems

LMD – Land Management Division

MRMD – Mineral Resources Management Division

PRC – Public Resources Code

RIFS – Remedial Investigation Feasibility Study

SHPO – State Historic Preservation Office

SI – Site Inspection

SLC – State Lands Commission

UXO – Unexploded ordnance