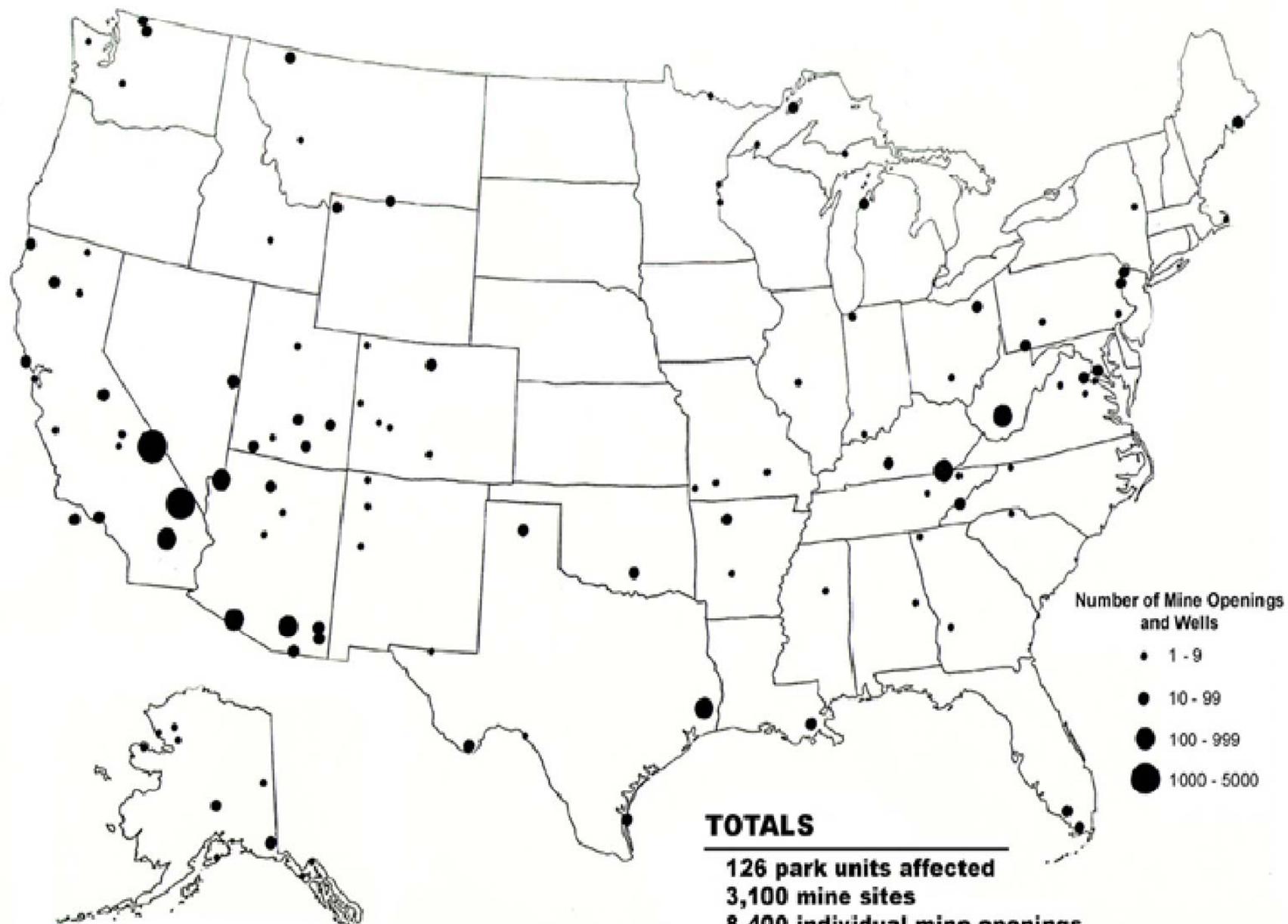


Abandoned Mineral Lands

NATIONAL PARK SYSTEM UNITS WITH ABANDONED MINERAL LANDS



TOTALS

126 park units affected
3,100 mine sites
8,400 individual mine openings
80 oil wells

October 2008

Background

- In the past, abandoned mines and oil and gas wells were documented in an inconsistent manner
- In 2008, the Office of Inspector General released an audit report on DOI AML programs

U.S. Department of the Interior
Office of Inspector General

Audit Report



*Abandoned Mine Lands
in the Department of the Interior*

C-IN-MOA-0004-2007

July 2008

OIG Audit Report

“Because [the NPS] estimate does not reflect the current inventory of abandoned mine hazards, we do not consider it to be a credible estimate of NPS’ needs. NPS stated that it is creating a new, more detailed and accurate database of abandoned mine sites that will better identify specific mine features and proposed mitigation costs.”

- OIG Analysis of NPS Response - p. 36

NPS Director's Respons



United States Department of the Interior
NATIONAL PARK SERVICE
1849 C Street, N.W.
Washington, D.C. 20240

ELECTRONIC TRANSMISSION ONLY – NO HARD COPY TO FOLLOW
October 2, 2008

A54 (2301)

Memorandum

To: Regional Directors, Associate Directors

From: Director /s/ *Mary A. Bomar*

Subject: Mitigating High-Risk Abandoned Mine Land Features

In a memorandum dated July 11, 2008, to the Department of the Interior's Office of the Inspector General (OIG), I accepted findings and recommendations in an OIG report that focuses on human health and safety issues at abandoned mine land (AML) sites on National Park Service (NPS) and Bureau of Land Management lands. In that memorandum, I stated that the NPS considers visitor safety a critically important and serious matter, and that we would take the steps necessary to reduce the exposure of our visitors to the dangers posed at AML sites in parks.

Response

Action #3 - Update the NPS AML Inventory/Database

“.... In October 2008, the [Geologic Resources Division] will make available a new comprehensive AML database that will be ready for park input. Parks will be responsible for verifying the accuracy and completeness of existing information, and for entering additional information concerning AML sites within their boundaries, particularly for high-risk features. The database will include information on closure recommendations, funding needs, and closure status thereby allowing Servicewide AML program needs and accomplishments to be tracked efficiently. By spring 2009, the AML database will be web-based (NPS Intranet only), with the ability to input and edit park AML data in real time.”

Background

- AML wanted to make their database both editable and viewable through a web interface
- In 2009, the NPS abandoned mineral lands program came to RISD to get help spatially-enabling and “enterprising” their legacy Microsoft Access database

Background

- They also wanted to allow users to collect and submit data using GPS-enabled devices
- Ultimately, they wanted a streamlined and simple system that worked for a diverse group of users
- All of this work would be integrated into the NPMap system, which would make all of the work available to other projects

Recent Efforts

- American Recovery and Reinvestment Act (ARRA)
- California State Department of Conservation AML Unit funded at \$2.2 million to complete inventory in all NPS units in California
- In April 2010, the NPS Comptroller approved a plan to complete the inventory in all remaining NPS units Servicewide by close of FY 2012

Current Status

- 127 parks / 2,919 sites / 9,298 features
- Death Valley and Mojave data estimated from topographic map symbols and institutional knowledge – databases for these parks are 10% and 40% complete, respectively
- Two Recovery Act projects target completion of California NPS inventories, in partnership with California Department of Conservation AMLU

Current Status

- The Access database was migrated into a clustered SQL Server instance
- An “advanced web map” was built using the NPMap system
- For mobile data collection, AML worked with CartoPac to build out a set of mobile forms and a check-in/check-out process

Data Dictionary

- 37 site and 84 feature fields
- 24 feature types

National Park Service (NPS) Servicewide Abandoned Mineral Lands (AML) Database

Field Descriptions / Data Dictionary

Database Required Field	Inventory Form / Datacollector Field	Field Name	Field Type	Field Description	Comments
		Essential Data			Note Recovery Act Reporting Fields, pp. 5-6.
		Detail 1			
		Detail 2			
SITE / GENERAL					
x	x	Region	V	Region	AKR, IMR, MWR, NCR, NER, PWR, SER
x	x	Park_Code	V	Park Code	4-character park acronym - e.g., ACAD, DEVA, BISO
x	x	Site_Name	V	Site Name	Enter the official name, or if not known, an identifying name (e.g., "Unknown 1," "Grizzly Gulch 1," etc.)
x	x	Site_Type	V	Site Type	Underground Mine, Surface Mine, Placer Mine, Mill, Well, Road, Other
x	x	State	V	State	2-letter postal code
	x	County	V	County	
	x	Congressional_Dist	V	Congressional District	(often requested in funding proposals)
	x	Watershed	V	Watershed	Watershed name
	x	Site_Acres	F	Site Acreage	Size of surface disturbance for entire site (in tenths of acres)
	x	Ownership	V	Ownership	Legal ownership: Federal, Private (including patented mining claims), Unpatented (unpatented mining claim), State, County, Other
	x	Admin_Use	V	Administrative Use	Yes/No/Unknown - Is the site used administratively by NPS, e.g., sand/gravel quarry for park roads?
		FMSS_Loc_ID	I	Location ID	Facility Management Software System Location ID
		FMSS_API	I	Asset Priority Index	Facility Management Software System Asset Priority Index (1-100)
		FMSS_FCI	F	Facility Condition Index	Facility Management Software System Facility Condition Index (0.000 - X.XXX)
		CERCLA	V	CERCLIS #	If this is a CERCLA site, give CERCLIS #. Alphanumeric code starting with State Acronym followed by 10 digits (e.g., AK1231231231)

SITE GEOLOGIC RESOURCES

x	x	Commod_Gen	V	Commodity (general)	Metals, Coal, Industrial Minerals, Energy Minerals (e.g., Uranium), Stone (building stone and stone products), Sand and Gravel, Oil and Gas, Geothermal, Water, Unknown
	x	Commod_Specif	V	Commodities (specific)	List by chemical symbol (Au, Ag, Cu, Zn, Pb, Fe, U, etc.), mineral name (talc, wollastonite, barite, etc.), rock/stone type (granite, marble, limestone, sandstone, cinders, etc.), or well commodity (oil, gas, geothermal, water, etc.)
	x	Geology_Notes	V	Notes on geology	e.g., Rock Type (igneous/sedimentary/metamorphic, granite/sandstone/schist); Geologic Formation; Orebody Type (vein, disseminated, massive); Ore Type (sulfide, oxide)

SITE NATURAL RESOURCE IMPACTS

x	x	NatRes_Impacts	V	Resource impacts in need of mitigation?	Yes/No/Unknown
	x	Effluent	V	Effluent from site?	Yes/No/Unknown
	x	Water	V	Standing water at site?	Yes/No/Unknown
	x	Water_Tail	V	Water flowing through tailings or mineralized waste rock?	Yes/No/Unknown

SITE - CULTURAL RESOURCES

x	x	CultRes_Signif	V	Significant cultural resource values?	Yes/No/Unknown
	x	Register	V	National Register listing or nomination?	Yes/No/Unknown (National Register of Historic Places, National Natural Landmark, National Historic Landmark)
	x	Landscape	V	Has the park declared this a cultural landscape?	Yes/No/Unknown
	x	Eligible	V	Eligible for National Register listing?	Yes/No/Unknown (Is it possible, or has it been determined under a Determination of Eligibility (DOE), that this site is eligible for listing in NRHP, NNL, or NHL?)
	x	Interpret	V	Is site interpreted?	Yes/No/Unknown (interpretive sign, brochure, etc.)
	x	Cult_Notes	V	Notes on cultural values	

FEATURE IDENTIFICATION / STATUS - GENERAL

x	x	NPS_ID	V	Service-wide Identification Code	NOT AN INPUT FIELD. GENERATED AUTOMATICALLY BY DATABASE FROM INPUT DATA: <Park_ID>-<Site_Name>-<Feature_Type>-<number (assigned sequentially by database)> (e.g., DEVA-Skidoo-OS-01, NERI-Kaymore-AD-03). Unique to each feature.
	x	Park_ID	V	Park Identification Code	Park's verbatim in-house identification code. If park has its own database and nomenclature, we want to be able to link that to the Service-wide Database. Some parks have multiple features listed under one identifier. The Service-wide Database separates these out with a unique NPS_ID for each feature.
x	x	Feature_Type	V	Feature Type	What is this feature? Adit, Shaft, Incline, Tunnel, Open Stope, Glory Hole (includes subsidence), Vent Raise, Prospect, Surface Mine, Highwall, Ore Pile, Waste Rock, Tailings, Topsoil (stockpile), Building, Structure, Equipment, Road (including mine access bench needing reclamation), Well, Water Impoundment, Hazmat Cache, Explosives Cache, Unknown, Other – [SEE DETAILED LIST]
x	x	Action_Required	V	Action Required	Yes/No/Unknown - Is action required for this feature other than monitoring?

NPS Servicewide AML Database – FEATURE TYPES

CODE	FEATURE	DESCRIPTION	Dimensions as Specified in Database		
			Dim X	Dim Y	Depth
AD	Adit	Horizontal (or near-horizontal) entrance to underground mine. No hoisting system was required to transport people and equipment or to extract ore. Easy to walk in and out.	width	height	horizontal distance into mine
SH	Shaft	Vertical (or near-vertical) entrance to underground mine. “Cage” hoisting system (mine elevator) was necessary to transport people and equipment and to extract ore. Climbing is required to get out.	short horizontal dimension	long horizontal dimension	vertical distance down shaft
IN	Incline	Sloped entrance to underground mine, mined from the surface usually along the dip of a vein or stratigraphic horizon. Sometimes called “decline,” or “declined shaft.” Steep enough that rail-mounted skip hoist system was necessary to extract ore. Clambering is required to get out.	width	height	slope distance into mine
TU	Tunnel	Horizontal (or near-horizontal) underground mine passageway with openings to the surface at both ends.	width	height	horizontal distance through mine
OS	Open Stope	Linear opening mined from underground to the surface along the course of a vein or mineralized zone.	short horizontal dimension	long horizontal dimension	Vertical/slope distance into stope
GH	Glory Hole / subsidence feature	Broad opening mined and collapsed from underground – differentiated from “shaft” in that it is usually has irregular dimensions and there is no waste rock pile nearby, since it was not mined from the surface.	short horizontal dimension	long horizontal dimension	vertical distance down glory hole
VR	Ventilation Raise	Vertical (or near-vertical) feature mined from underground to the surface to aid in mine ventilation. Looks identical to a shaft, but there is no waste rock pile nearby since it was not mined from the surface.	short horizontal dimension	long horizontal dimension	vertical/slope distance raise
PR	Prospect	Any feature, horizontal to vertical, less than 6 feet deep.	(use adit or shaft dimensions as appropriate)		
SM	Surface Mine	Hardrock or coal open pit, open cut, or strip mine; rock quarry, sand & gravel pit, cinder pit; trench, etc.	short horizontal dimension	long horizontal dimension	vertical distance
HW	Highwall	Highwall that requires stabilization/mitigation, other than that associated with an open pit mine with steep pit walls on all sides – e.g., at portal of underground mine or along access road / bench, or steep wall on uphill side of surface cut.	width	height	-
OP	Ore Pile	Abandoned pile of high-grade mineralized rock that was set aside to be processed, but never made it to the mill. Includes “protore,” which is mid-grade material that is set aside awaiting better market conditions or processes that would make it economic to process in the future.	short horizontal dimension	long horizontal dimension	height of pile

NPS Servicewide AML Database – FEATURE TYPES

FEATURE	DESCRIPTION	Dimensions as Specified in Database		
		Dim_X	Dim_Y	Dep
Waste Rock	(aka “spoil pile,” or “spoils.” Waste rock pile also called “dump.”) Unmineralized rock mined to expose and access an orebody. Can be “overburden” from pit mine that was stripped to get down to the ore zone, or barren rock mined underground to access a vein or other mineralized zone. Distinguishing characteristics are variable rock size, and waste rock is usually dumped as close to the mine as possible to minimize transportation costs.	short horizontal dimension	long horizontal dimension	height
Tailings	At hardrock mine sites, tailings have been ground to a consistent sand or powder grain size to facilitate metal extraction. The potential for residual metals and processing chemicals, as well as fine grain size, make hardrock tailings highly susceptible to erosion and leaching of contaminants into the environment. At placer AML sites, this term refers to coarse rocks and boulders cast alongside stream channels that were dredged for gold or other commodities, whereas finer tailings were most likely washed downstream. Resulting landform is unnatural and difficult to revegetate.	short horizontal dimension	long horizontal dimension	height
Topsoil Stockpile	Topsoil stripped from the area to be mined or used for other facilities (mill sites and other buildings), which was stockpiled for future use in reclamation phase of the operation.	short horizontal dimension	long horizontal dimension	height
Building	e.g., mill, office, shop, dry (clothing/showering facility), residence, ...	short horizontal dimension	long horizontal dimension	height building
Structure	e.g., headframe, ore storage bin, ore chute, tippel, loadout, pad, foundation for equipment or building, etc.	short horizontal dimension	long horizontal dimension	height structure
Equipment	e.g., ore car, hoist, trommel, generator, compressor, pressure tank, storage tank, front-end loader, mucker, bulldozer, drill rig, etc.	short horizontal dimension	long horizontal dimension	height equipment
Road	Road / mine access bench	width	length	-
Water Impoundment	Water impoundment other than flooded mine working	short horizontal dimension	long horizontal dimension	vertical to bottom
Well	e.g., oil, gas, geothermal, water	diameter	-	length
Hazmat Cache	Onsite hazardous materials cache that is not associated with another feature			
Explosives Cache	Onsite explosives cache that is not associated with another feature (e.g., not a small adit that is used for an explosives magazine).			
Other	Anything that does not fit above – include description in COMMENTS field.			
Unknown	Use where records do not specify and current staff are not familiar with site. Please update next time site is inspected.			

FEATURE GEOGRAPHIC DESCRIPTION

x	Quad	V	Quadrangle Name	USGS Quad Map Name
x	Lat_ddeg_NAD83	F	Latitude North	NAD83 decimal degrees - 6 decimal places (NOTE: All new entries should be entered in NAD83 LAT/LONG DECIMAL DEGREES, preferably to 6 decimal places if we actually have that degree of accuracy (~ 1 meter). UTM and Public Land Survey System (PLSS) Township/Range/Section) data fields are only to retain historic data where we have not yet updated with recent GPS readings. (Essential only for new entries)
x	Long_ddeg_NAD83	F	Longitude West	NAD83 decimal degrees - 6 decimal places. (Essential only for new entries)
x	Elevation	V	Elevation	Feature elevation, given in feet.
x	Location_Accuracy	V	Location Accuracy	Location Information Accuracy - Differential GPS, Uncorrected General Site Coordinates, Topo Symbol, Imagery (aerial photo, satellite, etc.), X on map, ¼ Section, Section. (Essential only for new entries)
x	GPS Year	I	GPS Year	Year of GPS reading
x	Aspect	V	Aspect	Direction of slope where feature is situated. Lookup Table: E, SE, S, SW, W, NW, V (vertical). This can have great significance in predicting potential habitat, particularly in underground mines. For example, a south-facing shallow adit is unlikely to support hibernation.

FEATURE DIMENSIONS

x	Feature_Dim_X	F	Shaft width 1 / Pit width 1 / Adit width / Trench width (feet)	
x	Feature_Dim_Y	F	Shaft width 2 / Pit width 2 / Adit height / Trench length (feet)	
x	Feature_Depth	F	Shaft depth / Pit depth / Adit length / Trench depth (feet)	
x	Distub_Area	F	Area of disturbance around feature (square feet)	Some parks include measurements on the disturbed area immediately surrounding each feature, either by total area (Disturb_Area) or by length x width dimensions (Distub_Length x Disturb_Width). These fields are not to be confused with total site area (Site_Acres), although they may be the same for single-feature sites.
x	Distub_Area_L	F	Disturbed Area Length (feet)	
x	Disturb_Area_W	F	Disturbed Area Width (feet)	

FEATURE BIOLOGICAL RESOURCES

x	BiolRes_Signif	V	Significant biological resource values?	Yes/No/Unknown
x	Species_TE	V	T & E species present?	Yes/No/Unknown
x	Species_Concern	V	Other species of concern present?	Yes/No/Unknown (e.g., former Category 2 Species, State-listed species, or significant habitat for common species)
x	Bats	V	Bats (or evidence of bats) observed?	Yes/No/Unknown (Bats are singled out because they so often determine closure type, making this a good field on which to search)
x	Biology_Notes	V	Notes on biological issues present	

HAZARD HAZARDS

x	Hazards	V	Hazards in need of mitigation?	Yes/No/Unknown
x	Debris	V	Debris at this feature?	Yes/No/Unknown
x	Rockfall	V	Rockfall hazards present, esp. at entry?	Yes/No/Unknown
x	Fall	V	Falling hazards due to vertical drop-offs present?	Yes/No/Unknown
x	Flooded	V	Flooded, or evidence of flooding?	Yes/No/Unknown (Flooded shaft, seasonally flooded shaft, or impoundments inside adit that trap water?)
x	Explosives	V	Explosives present?	Yes/No/Unknown
x	Bad_Air	V	Bad air present or documented previously?	Yes/No/Unknown [Note that this can change from visit to visit.]
x	Subsidence	V	Areas of subsidence or collapse?	Yes/No/Unknown (e.g., slump zones on the surface, underground collapses, or slope failure caused by feature)
x	Fire	V	Evidence of underground fire?	Yes/No/Unknown (Includes coal mine fires, burned timbers, caving, etc. underground)
x	Hazsub	V	Hazardous substances (other than explosives) present?	Yes/No/Unknown
x	Haz Notes	V	Notes on hazards	

TEMPORARY MITIGATION REQUIRED - SPECIFIC

x	Temp_Safe	V	Temporary safing method required	Sign, Fence, Administrative Closure, etc.
x	Mitig_Prop	V	Mitigation Proposed	Proposed long-term mitigation technique - Backfill, PUF, Bulkhead, Gate, Batgate, Grate, Fence, Blasting, Cablenet, Reclamation, Structure Removal, Structure Stabilization, Sign, Other, No Mitigation
	Prop_Cost	F	Estimated cost of proposed mitigation	
	Prop_Cost_Year	I	Year of mitigation cost estimate	
	PMIS	V	PMIS number	Recovery Act Reporting Field - Numeric identifier with alpha components noted
	FMSS_Asset_ID	I	FMSS Asset ID	Facility Management Software System Asset ID - numeric identifier
x	Mitig_Req_Notes	V	Notes on mitigation required	

TEMPORARY MITIGATION COMPLETED - SPECIFIC

x	Nat_Recl	V	Natural Reclamation	Yes, No, Unknown - Is the feature naturally reclaiming such that no work is required?
x	Temp_Safe_Used	V	Temporary safing method used	Recovery Act Reporting Field - Sign, Fence, Fence and Sign, Administrative Closure, Other
x	Temp_Safe_Date	D	Date of temporary closure (MM/DD/YYYY)	Database provides pop-up date-picker calendar.

x	Mitig_Used	V	Mitigation technique used	Recovery Act Reporting Field - Backfill, PUF, Bulkhead, Gabion, Batgate, Grate, Fence, Blasting, Cablenet, Reclamation, Structure Removal, Structure Stabilization, Sign, Other, No Action
x	Mitig_Date	D	Date feature was reclaimed/mitigated (MM/DD/YYYY)	Database provides pop-up date-picker calendar.
	Mitig_Cost	F	Cost of mitigation (\$)	May need to estimate proportion of multi-opening projects
	Mitig_Funds	V	Source of funding	NRPP, Recovery Act, Fee Program, GRD, State, Park Base, Other, OSM, Other
	Mitig_by	V	Who mitigated the feature?	Who performed the mitigation work? NPS (in-house job), Contractor (NPS-hired contractor), State (State-hired contractor), Other
	Partners	V	What partners were used?	Federal, State, Industry, Volunteers, Other (e.g., conservation groups), None
x	Mitig_Compl_Notes	V	Notes on completed mitigation	(list partners, if applicable)

FEATURE SAMPLE AND RANKING DATA (refer to Ranking System Guide, below)

x	Water_Samp	V	Was water sampled?	Yes/No/Unknown
x	pH_Effl	F	pH of effluent (to nearest tenth)	
x	pH_bg	F	Background pH (to nearest tenth)	
	Water_Contam	V	Elevated contaminant levels in the water?	Yes/No/Unknown
x	Soil_Samp	V	Soils / tailings / waste rock sampled?	Yes/No/Unknown
	Soil_Contam	V	Elevated contaminant levels in the soil?	Yes/No/Unknown
x	Contam_Notes	V	Notes on contamination	

x	Hazard_Rating	I	Danger associated with hazards	5/4/3/2/1/0 (See Ranking System Guide, below) (Essential only for new entries)
x	Workings_Extensive	I	Are underground workings extensive (> 500' or multilevel)?	Yes = 1, No = 0 (This adds one point to the total ranking score for more complex features.) (See Ranking System Guide) (Essential for new entries)
x	Access_Rating	I	Difficulty of access	5/4/3/2/1/0 (See Ranking System Guide) (Essential only for new entries)
x	Resource_Rating	I	Importance of resource	4/2/0 (See Ranking System Guide) (Essential only for new entries)
x	Impact_Rating	I	Severity of resource impacts	4/2/0 (See Ranking System Guide) (Essential only for new entries)

FEATURE MONITORING

x	Monit_Date	D	Monitoring Date (MM/DD/YYYY)	Date of Observation. Database provides pop-up date-picker calendar
	Monit_Classification	V	Monitoring Classification	Notes from field data

Points	Description
Hazard Rating (possible score: 0 to 5)	
5	<ul style="list-style-type: none"> • Any coal mine • Vertical shafts, winzes, or underhand collapsed stopes > 6' • Irrespirable air • Instantaneous fatal injury could occur due to mine-related hazard
4	<ul style="list-style-type: none"> • Large unstable structures • Deep pools of water from which it would be difficult to climb out. • Potential fatal injury could occur • Major collapse zones
3	<ul style="list-style-type: none"> • Radiation potential • Large stopes overhead - seemingly stable • Highwalls > 10' drop-off not apparent from above • Serious injury could occur
2	<ul style="list-style-type: none"> • Highwalls > 10' - drop-off apparent from above • Rubble around but rock is generally stable • Moderate injury could occur
1	<ul style="list-style-type: none"> • Minimal injuries could occur like tripping, bumping head, cutting oneself • Highwalls < 10' in area where such drop-offs are common naturally • Minimal injury possible
0	<ul style="list-style-type: none"> • No inherent hazards; no injury potential above normal condition

Workings Extensive

If underground mine feature is extensive (i.e., known to have over 500' of workings or multiple levels), 1 point will be added to the total ranking score since complex mines tend to be more hazardous and better wildlife habitat.

RANKING SYSTEM GUIDE

Access Rating (likelihood of visitation - possible score: 0 to 5)

Good road with mine as the specific destination; car accessible
Good dirt road, but mine is not specific destination
Dirt road or path without specific destination; no car access; easy hiking access < 1 mile
Near a road/path (within 1 mile); Easy hike > 5 miles or moderate hike < 5 miles
> 1 mile from road/path; Moderate hike > 5 miles or hard hike < 5 miles
Hard hike > 5 miles; site not easily seen

Resource Rating (possible score: 0, 2, or 4)

Endangered species present or site is listed on National or Local Historic Register
Species of concern present or site has significant cultural values
No species of concern present and site has minimal cultural value

Impacts Rating (possible score: 0, 2, or 4)

Highly elevated contaminants or greatly altered pH in water/soils; High visual impact
Moderately elevated contaminants or pH alteration in water/soils; Moderate visual impact
Minimal contaminants or pH alteration in water/soils; Minimal visual impact

Overall Ranking Score

Hazard_Rating + Workings Extensive + Access_Rating + Resource_Rating + Impact_Rating (Possible score = 0 to 19)

NATIONAL PARK SERVICE ABANDONED MINED LANDS (AML)
FIELD INVENTORY DATA SHEET

Geologic Resources Division – (303) 969-2099

Site Form – _____

[PARK ACRONYM] - [MineSiteName]

Park unit _____ Region _____ Inspected by (“Source”) _____ Date _____

A. Site - General

Site Name _____

Site Type: Underground Mine _____ Surface Mine _____ Placer Mine _____ Mill _____ Well _____ Road _____ Other _____

State _____ County _____ Congressional District _____ Watershed _____

Site Acres (xx.x) _____ Legal Ownership: Federal _____ Private (incl. patented claim) _____

Unpatented Claim _____ State _____ County _____ Other _____

Administrative Use (e.g., gravel for park roads)? Y N U

FMSS: Location ID _____ API _____ FCI _____

CERCLIS # _____ EDL _____

Site Notes:

B. Site Geologic Resources

General Commodity – Metals _____ Coal _____ Industrial Minerals _____ Energy Minerals _____ Stone _____ |

Sand and Gravel _____ Oil and Gas _____ Geothermal _____ Water _____ Unknown _____

Specific Commodity - _____ (e.g., list chemical symbol(s),

mineral, rock/stone product, or well commodity)

Geology Notes: (e.g., Rock Type, Geologic Formation, Orebody Type, Ore Type)

C. Site Natural Resource Impacts

Does this site have natural resource impacts in need of mitigation? Y N U

NATIONAL PARK SERVICE ABANDONED MINED LANDS (AML)
FIELD INVENTORY DATA SHEET

Geologic Resources Division – (303) 969-2099

Feature Form -

NPS-ID (if known): [PARK ACRONYM]-[MineSiteName]-[FeatureType] ## XXXX-Name-YY-##

Park unit _____ Region _____ Inspected by (Source) _____ Date _____

A. Feature ID and Status

Park ID (if different from NPS_ID) _____ Site Name _____

Feature Type (check one – **Note:** Please use separate Feature Form for each feature at a site.)

Adit (AD)

Vent Raise (VR)

Topsoil Stockpile (TS)

Water Impoundment (WI)

Shaft (SH)

Prospect (PR)

Building (BD)

Hazmat Cache (HC)

Incline (IN)

Surface Mine (SM)

Structure (ST)

Explosives Cache (EC)

Tunnel (TU)

Highwall (HW)

Equipment (EQ)

Other (OT) _____

Open Stope (OS)

Waste Rock Pile (WR)

Road/Access (RD)

Glory Hole (GH)

Tailings Pile (TP)

Well (WE)

Feature Number ____ (**Note:** In assigning Servicewide Identification Code (NPS_ID), the database automatically numbers each feature at a site in the order it was input, e.g., DEVA-Skidoo-OS-01, NERI-Kaymore-AD-03. Make sure handwritten number on this form agrees with database.)

Is action required for this feature other than monitoring? Y N U

Web Interface

- Available on NPS intranet
- Secured with Active Directory authentication
- Parks input, edit, and delete site and feature records
- All features are plotted on a variety of base maps

Web Interface

- Forms ensure integrity of data
- Database relationships exposed
- Advanced query/reporting functionality

Web Interface

- Demo

CartoPac

- Inventory forms developed for mobile devices
- Direct “live” download onto device from database
- Beta version tested in December 2009 at Mojave National Preserve training class
- Final rollout occurred in early 2010







CartoPac Field Server User Home - CartoPac Field Server

Content (1) Attendees (4) Voice & Video Q & A Meeting Recording Currently Sharing

Abandoned CartoPac Field Server

Back to

Load from Device Clean Device

0.13 km

File Edit View Mode

Juno SB

Buffalo

Lake Mead

Saguaro

Joshua Tree

Organ Pipe Cactus

Version: 3.0.0.0

Loading...

12:12 PM

CartoPac Field Server User Home - CartoPac

Content (3) Attendees (5) Voice & Video Q & A Meeting Recording Currently Sharing

Abandoned CartoPac F

Trimble

Back to

Download from Device Clean Device

Download

CartoPac ENTERPRISE MOBILE
powered by spatial data technologies

© Copyright: 2003 - 2010 All rights reserved.
U.S. Patent: 6,873,229

Calendar Contacts

Juno SB

Hills

West of Soda Soda Lake North Lake
Crescent Hill Soda Lake South

Signal Hill Homer Mountain

Version: 3.0.0.0

Loading

11:35 AM





Abandoned
CartoPac F



Load from Device

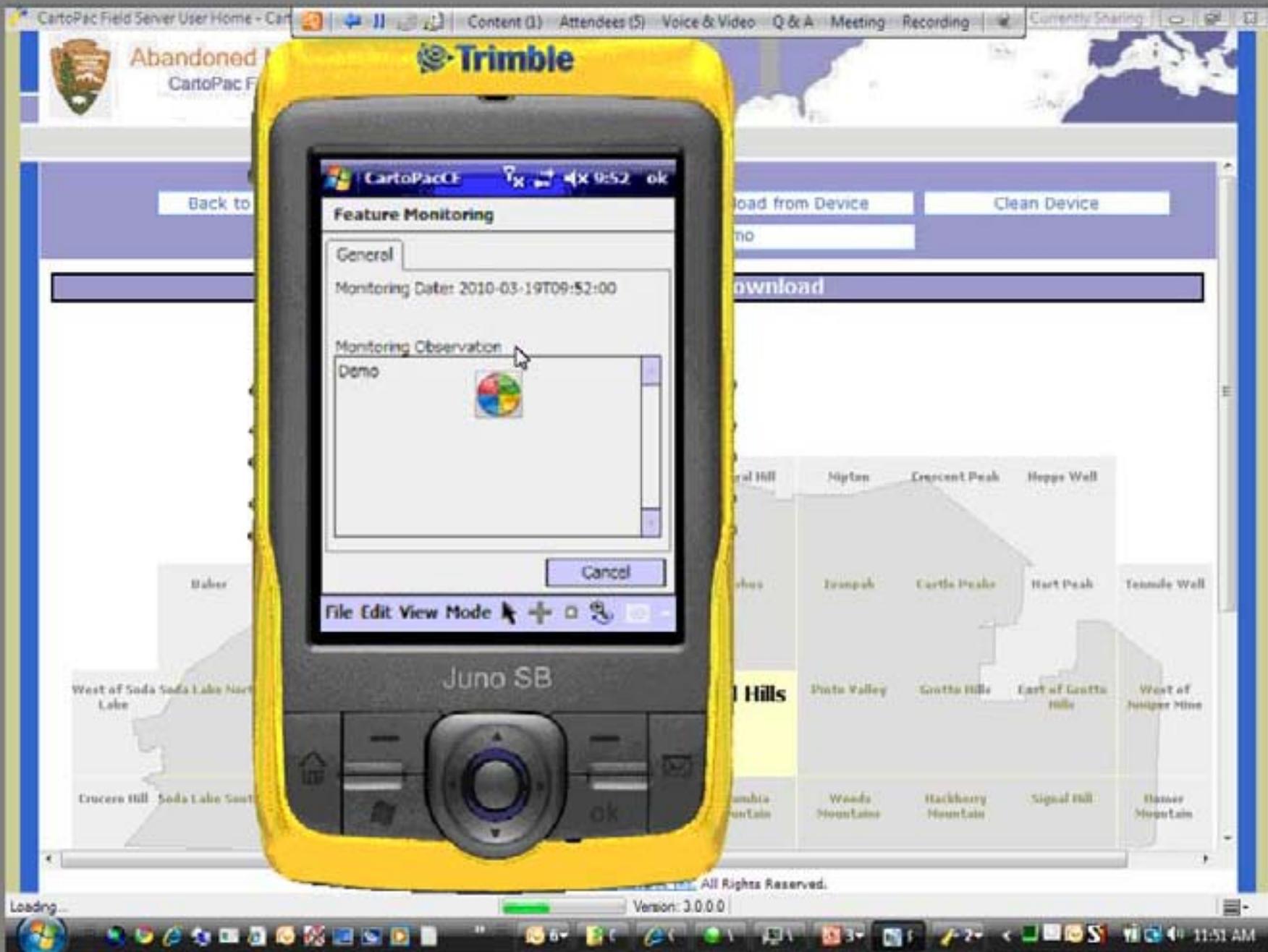
Clean Device

Download



Loading...

Version: 3.0.0.0



CartoPacCE 9:52 ok

Feature Monitoring

General

Monitoring Date: 2010-03-19T09:52:00

Monitoring Observation

Demo



Cancel

File Edit View Mode

Juno SB

Version: 3.0.0.0

11:51 AM

CartoPac Phase 3

- Currently in progress
- Will result in a CartoPac toolbar in web interface
- All data editing and download/upload from mobile devices will occur within a single user interface

Questions?