ASTM INTERNATIONAL

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Standard Practice for
Minimum Geospatial Data for Abandoned Mine Land Problem Areas, Planning Units, Keyword Features, and Project Sites[1]

This standard is issued under the fixed designation D7699/D7699M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice covers the minimum elements for the accurate location and description of geospatial data for defining Abandoned Mine Land (AML) Problem Areas, Planning Units, Keyword Features, and Project Sites as originally defined by the Office of Surface Mining Reclamation and Enforcement (OSMRE), through its Abandoned Mine Land Inventory Manual (Directive AML-1) under the jurisdiction of Surface Mining Control and Reclamation Act of 1977. These standards remain applicable to mining organizations that geospatially locate and identify AML sites, however these standards can be used for entities that are in beginning phases of mapping and identifying AML sites using protocol that is consistent with existing nomenclature.

1.1.1 Abandoned mine lands consist of those lands and waters which were mined for coal or other minerals, or both, and abandoned or left in an inadequate condition of reclamation and for which there is no continuing reclamation responsibility for mitigation of adverse impacts to human health and safety or environmental resources.

1.1.2 As used in this practice, an AML Problem Area (PA) represents a closed polygon boundary for a uniquely defined geographic area contained within an AML Planning Unit (PU). An AML PA is a subdivision of an AML PU that contains one or more AML keyword features together with impacted land or water resources or both. An AML PA should not cross PU boundaries.

1.1.3 As used in this practice, an AML PU represents a closed polygon boundary of a uniquely defined geographic area identified by unique numbers and names. An entire WCU may be delineated as a single PU or subdivided into multiple PUs.

1.1.4 As used in this practice, an AML Keyword Feature is a point, line, or polygon defining the location of a specific on-the-ground feature contained within an AML Problem Area (PA) as described in the AML Inventory Manual.

1.1.5 As used in this practice, an AML Project Site is a closed polygon boundary for a uniquely defined geographic area that includes the area disturbed to achieve the reclamation. An AML Project Site may contain one or more AML keyword features together with impacted land or water resources or both.

1.2 *Units*—The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 This practice offers a set of instructions for performing one or more specific operations. This document cannot replace education or experience and should be used in conjunction with professional judgment. Not all aspects of this practice may be applicable in all circumstances. This ASTM standard is not intended to represent or replace the standard of care by which the adequacy of a given professional service must be judged, nor should this document be applied without consideration of a project's many unique aspects. The word "Standard" in the title of this document means only that the document has been approved through the ASTM consensus process.

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

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2. Referenced Documents

2.1 *ASTM Standards:*[2]

D653 Terminology Relating to Soil, Rock, and Contained Fluids

2.2 *ANSI Standards:*[3]

ANSI INCITS 61-1986 (R2007) Geographic Point Locations for Information Interchange, Representation of (formerly ANSI X3.61-1986 (R1997))

ANSI INCITS 320-1998 (R2013) Information Technology-Spatial Data Transfer

3. Terminology

3.1 *Definitions:*

3.1.1 For definitions of common technical terms used in this standard, refer to Terminology D653.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *Abandoned Mine Land (AML), n*—lands and waters which were mined for coal and other minerals and abandoned or left in an inadequate condition of reclamation and for which there is no continuing reclamation responsibility for mitigation of adverse impacts to human health and safety or environmental resources.

3.2.2 *AML Keyword, n*—a defined category of AML problem types and coded values, such as clogged stream-CS, dangerous highwall-DH, or dangerous slide-DS. AML keywords are also referred to as AML hazards, features, and problems. Refer to Table 1 for AML keywords and coded values.

3.2.3 *AML Keyword Feature, n*—a point, line, or polygon defining the location of a specific on-the-ground feature that meets the definition of one of the AML keywords.

3.2.3.1 *Discussion*—Refer to Table 1 for AML keywords.

3.2.4 *AML Planning Unit (PU), n*—a closed polygon defining the boundary of an area of land identified by unique numbers and names.

3.2.5 *AML Problem Area (PA), n*—a closed polygon subdivision of an AML PU that contains one or more AML Keyword Features together with impacted land or water resources or both, identified by unique numbers and names.

3.2.6 *AML problem area description (PAD), n*—a collection of quantitative and qualitative data relating to sites contained within a PA subdivision of an AML PU that contains one or more Keyword Features together with impacted land or water resources or both.

3.2.7 *AML problem area ID, n*—a unique alpha-numeric identifier assigned to an AML PA.

3.2.8 *AML problem type, n*—a specific on-the-ground feature that meets the definition of one of the AML keywords.

3.2.8.1 *Discussion*—Refer to Table 1 for AML problem types.

3.2.9 *AML project site, n*—a closed polygon defining the boundary of an area of land within which the RA has initiated an AML reclamation project. The AML project site may cross into other AML PAs and may contain within its spatial boundary one or more AML Keyword Feature.

3.2.10 *attribute, n*—a defined characteristic of a feature.

3.2.11 *attribute value, n*—a specific quality or quantity assigned to an attribute.

3.2.12 *domain, n*—a finite list or range of permissible values for a specified attribute. Domain tables may include units of measure, types, styles, status, names, methods, materials, dispositions, sources, dimensions, or data classes.

3.2.13 *feature, n*—a geographical representation of either a discrete real-world phenomenon, such as a building, or an abstract concept, such as a governmental boundary.

3.2.14 *feature class, n*—a logical group of related feature types.

3.2.15 *line, n*—a connected series of x, y coordinates that specifies a geographic location.

3.2.16 *point, n*—a one-dimensional geometric object that specifies a geographic location.

3.2.17 *polygon, n*—a two-dimensional closed geometric shape that specifies a geographic area.

3.2.18 *reclamation, n*—those actions taken to mitigate adverse affects of mining operations.

3.2.19 *regulatory authority, n*—entity(s) with jurisdiction over the regulation of coal or non-coal mining, or both, and reclamation operations or mitigation of AML problems, or both.

3.3 *Acronyms:*

3.3.1 *AMD*—Acid Mine Drainage

3.3.2 *AML*—Abandoned Mine Lands

3.3.3 *DOI*—Department of Interior

3.3.4 *GIO*—Geographic Information Officer

3.3.5 *GIS*—Geographic Information System

3.3.6 *ID*—Identifier

3.3.7 *P*—Priority

3.3.8 *PA*—Problem Area

3.3.9 *PAD*—Problem Area Description

3.3.10 *PU*—Planning Unit

3.3.11 *RA*—Regulatory Authority

3.3.12 *RAMP*—Rural Abandoned Mine Program

3.3.13 *WCU*—Water Cataloging Units

3.3.14 *WGS*—World Geodetic System

4. Significance and Use

4.1 This practice addresses AML PAs, PUs, Keyword Features, and Project Sites. This practice is significant as it provides for uniformity of geospatial data pertaining to the geographic location and description of AML sites located throughout the United States.

TABLE 1 AML Keywords

Priority 1 and 2 Keywords		Units	
Abbreviation	Problem Type	Inch-Pound (English)	SI [Metric]
CS	Clogged Streams	Miles	Kilometers
CSL	Clogged Stream Lands	Acres	Hectares
DH	Dangerous Highwalls	Feet	Meters
DI	Dangerous Impoundments	Count	Count
DPE	Dangerous Piles and Embankments	Acres	Hectares
DS	Dangerous Slides	Acres	Hectares
GHE	Gases: Hazardous/Explosive	Count	Count
UMF	Underground Mine Fires	Acres	Hectares
HEF	Hazardous Equip & Facilities	Count	Count
HWB	Hazardous Water Bodies	Count	Count
IRW	Industrial/Residential Waste	Acres	Hectares
P	Portals	Count	Count
PWAI	Polluted Water: Agricultural & Industrial	Count	Count
PWHC	Polluted Water: Human Consumption	Count	Count
S	Subsidence	Acres	Hectares
SB	Surface Burning	Acres	Hectares
VO	Vertical Openings	Count	Count

Priority 3 and 403(b) Keywords		Units	
Abbreviation	Problem Type	Inch-Pound (English)	SI [Metric]
SA	Spoil Area	Acre	Hectare
BE	Bench	Acre	Hectare
PI	Pits	Acre	Hectare
GO	Gobs	Acre	Hectare
SL	Slurry	Acre	Hectare
HR	Haul Road	Acre	Hectare
MO	Mine Opening	Count	Count
SP	Slump	Acre	Hectare
H	Highwall	Feet	Meter
EF	Equipment/Facility	Count	Count
DP	Industrial/Residential Waste	Acre	Hectare
WA	Water Problems	Gallons	Liter
O	Other	Count	Count
WS	403(b) Water Supplies	Count	Count

Priority 4, 5, "F", and "H" Keyword			Units	
Code	Description		Inch-Pound (English)	SI [Metric]
P4 COAL	CNF	Conservation Facilities	Count	Count
P4 COAL	O	Other	Count	Count
P4 COAL	RCF	Recreational Facilities	Count	Count
P4 COAL	ROD	Roads	Feet	Meters
P4 COAL	SGE	Pre-SMCRA Coal Research	Count	Count
P4 COAL	SMR	Surface Mining Reclamation	Acres	Hectares
P4 COAL	STR	Public Infra-Structure	Count	Count
P4 COAL	UTL	Public Utilities	Count	Count
P4 COAL	WQC	Water Quality Control	Count	Count
P5 COAL	CNF	Conservation Facilities	Count	Count
P5 COAL	HST	Historic Purpose	Count	Count
P5 COAL	OSB	Open Space Benefits	Count	Count
P5 COAL	UTL	Public Utilities	Count	Count
P5 COAL	RCT	Recreation Purpose	Count	Count
P5 COAL	ROD	Roads	Feet	Meters
PF - 411(f)	UTL	Public Utilities	Count	Count
PF - 411(f)	STR	Public (Infra) Structure	Count	Count
PF - 411(f)	ROD	Roads	Feet	Meters
PF - 411(f)	RCF	Recreational Facilities	Count	Count
PF - 411(f)	CNF	Conservation facilities	Count	Count
PF - 411(f)	O	Other	Count	Count
H – 411(h)	H1	411(h) Non-Mining Expenditures	Count	Count
H – 411(h)	H2	411(h) Non-Mining Expenditures	Count	Count

4.2 This geospatial data standard will help ensure uniformity of data contributed by each RA and assist organizations in efforts to create, utilize, and share geospatial data. Use of this standard will result in organized and accessible data to support programmatic decisions and work plan development, increased awareness of AML problems, and better communication between RA, the public, industry, and other interested parties.

4.3 The geospatial data may be served as a layer in a national dataset and map service.