Supplemental A

Cultural Resource Management (CRM)
(Security Classification: Sensitive)

IMPLEMENTATION GUIDELINES

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INTRODUCTION

Purpose of Implementation Guidelines

This document describes the physical design for the national data standard for the geospatial dataset. It is intended as a guideline for implementation. States may extend and expand upon this guideline in order to meet their specific needs, provided data pushed up to the national level meets the minimum requirements as set forth in the Data Standard.

Data Standard Development Overview

This document describes the physical design of the national data standard for the Cultural Resource Management (CRM) geospatial dataset. The CRM standard and implementation is designed to address Bureau of Land Management (BLM) business and reporting needs while providing more accurate and standardized analysis of cultural resources spanning state boundaries. This implementation will standardize cultural data currently residing at the state level, with various structures and identifiers. The first trial run of the CRM data standard was conducted as part of the Colorado Plateau Pilot Project (CPPP) in 2015. A modified version of the CRM data standard was created to incorporate the lessons learned from the CPPP. The National Heritage Solution Pilot (NHSP) project was conducted in 2016-2017 to prove the proposed data standard by migrating cultural resource data from four State Historic Preservation Office's (SHPO) (Arizona, California, Mew Mexico, Utah) and BLM state offices in 11 BLM administrative states (Alaska, Arizona, California, Colorado, Idaho, Montana, New Mexico, Nevada, Oregon, Utah, Wyoming). Subsequent changes were made to the CRM data standard to address issues identified during the NHSP. Some fields in this standard were designed to store data in a temporary state until they can be properly cleaned and transformed by the data owners at the BLM state offices.

Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines, 1983 (48 FR 44716) state that agencies should define the boundaries of surveyed areas and record the precise location of all cultural resources identified. Having accurate boundaries of cultural resources will help track their existence, type and eligibility or status for designation/inclusion for the National Register of Historic Places (NRHP) or as a National Historic Landmark.

This spatial data implementation includes attribute fields for tracking the status of these designations. An attribute field is also included to document the identifiers for the National Environmental Policy Act (NEPA) documents that initiated cultural resource investigations. The structure can help determine where investigations have occurred, where resources have been sought and found in a given area, and attributes of each, such as the investigation title and class or the type and condition of a resource.

High-level Planning

The purpose of the national dataset is to have a set of seamless information for high-level landscape analysis. The CRM dataset will store basic information about resources and investigations to support this need. Any additional information not included in this standard that the states currently maintain will continue to be maintained at the state-level.

Each state may enter as many records for each resource and investigation as they wish. Some state may chose to include historic records that include information pertaining to multiple visits to the same area over time. These records are not required as part of this data standard. All of the original unique ID's from the source polygon data will be retained in the national CRM dataset in order to reference any detail needed from source data. Unlike many of the BLM's national datasets, the CRM dataset will not be replicated to the NOC at this time. The state CRM datasets will be collected at regular intervals as directed by the BLM Cultural Program.

Once the state datasets are collected, each state dataset will be subjected to an extraction, transformation and load (ETL) process which will result in only the most recent record for a resource or investigation being retained and displayed in the National Cultural Resources Information Management System (NCRIMS) application. The ETL process includes the use of crosswalks which have been developed to aggregate the specific detailed information that the states maintain into the national data standard which organizes the CRM data at a higher aggregation level. As a result, some of the detail of the original information will not be included in the national dataset. As a reminder, the detailed information in the source data from each state is not intended to be retained in the national dataset. Users will have access to unaggregated state source information, if required, for business needs or purposes by contacting the appropriate BLM state office.

The attributes included in this implementation have been established for this data standard and cannot be modified except through the data standards maintenance process. If additional attributes or domain values are desired by individual states/offices, they may be included in the state specific database as long as the core national standard attributes and domains contained in this documentated are maintained.

Review Cycle

During the next phase of developing the CRM data standard, each state dataset will be evaluated for migration into the national standard. Extract Transform and Load (ETL) processes will be developed to transform the state data into the national standard on a regular interval. The data representative for each state will review the dataset for completeness and accuracy initially, and then again on a regular interval as identified in the CRM Data Standard Report. Any new schema changes in the source data will need to be tracked in order to maintain the ETL processes.

It is recommended the national CRM data steward will review the data quality following each ETL process. The data steward is responsible for taking action to increase the data quality that includes coaching, mentoring, or training staff. On a semi-annual basis, a review of the data structure should occur against known business requirements to determine if there are changes in the standard.

Quality Control (QC) checks will be developed and run during the ETL process to verify the quality of the data. Post ETL reports will identify data needs to be corrected by each state or SHPO office. As an example, a QC check is needed to verify that the values in the CRM_DOM_RSRCE_PRMRY_CAT domain appropriately match the temporal cultural assignment for each record. For example, if the temporal cultural assignment value is “Prehistoric”, then an invalid domain value would be “Utilities”.

National Dataset Update Cycle

The ETL process will be used to pull the data from each state, transform it, and load it into the BLM national data standard. The current plan is to run the ETL process every six months. At this time some of the states will provide data maintained in this CRM data standard while other states’ data will need to be retrieved from their SHPO.

Records Retention

The entire geodatabase for CRM dataset will be archived prior to each ETL process. In the future, if an ETL process is no longer required because all states have adopted the CRM data standard and data are collected through the regular replication process, the CRM dataset will be archived on an annual basis, by October 15, for the previous fiscal year. Note: Records issues will be handled according to official policy for Records Management.

DATA STRUCTURES IMPLEMENTED

The data stored on the National Operations Center (NOC) EGIS server in Denver shall be stored in geographic coordinates for national layers using the Bureau standard NAD 83 datum.

Data Structures Implemented	
crm_rsrce_poly	Represents the polygon features that show the boundaries for Resource areas.
crm_invstgtn_poly	Represents the polygon features that show the boundaries for Investigation areas.
crm_rsrce_invstgtn_tbl	Associative table that cross-references resources to investigations. It resolves the many to many relationship between investigations and resources.

Domains Implemented

When working with datasets that are part of a national data standard, many of the attributes have domain assignments. These domains should be implemented and maintained to help ensure data integrity, and to aid in the development of national datasets. Domains may be unique to a specific feature class, or common across multiple feature classes either within an enterprise environment, or within a file geodatabase. Several domains and their associated coded values require periodic updates; for example, Administrative Unit Codes are linked to the FPPS which changes regularly.

Global Domains

Global domain names that are common across multiple data standards and feature classes are listed below in *italics*. These global domain values are located in the Access Database located on the NOC Data Management National Data Standards SharePoint site. Please refer to the Domains Management document for instructions on adding these global domains to the geodatabase and linking them to the feature classes. These are the global domains used in this data standard:

- *DOM_ADMIN_ST*
- *DOM_YES_NO*
- *DOM_YES_NO_UNDTRMND*

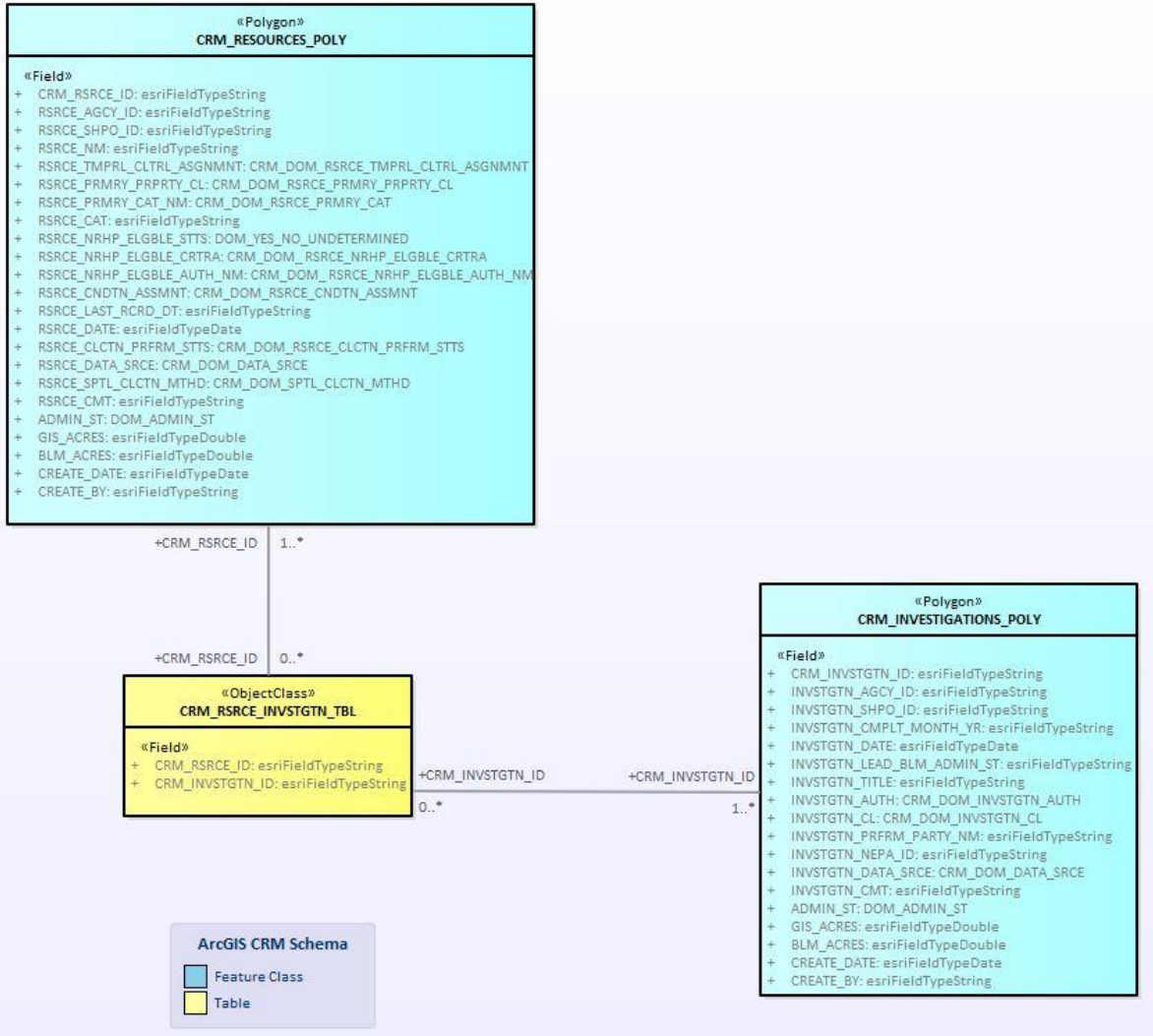
Data Standard-Specific Domains

The following domains are unique to the CRM dataset. Therefore, they are included in the geodatabase and in the XML schema.

- CRM_DOM_DATA_SRCE
- CRM_DOM_INVSTGTN_AUTH
- CRM_DOM_INVSTGTN_CL
- CRM_DOM_RSRCE_CLCTN_PRFRM_STTS
- CRM_DOM_RSRCE_CNDTN_ASSMNT
- CRM_DOM_RSRCE_NRHP_ELGBLE_AUTH_NM
- CRM_DOM_RSRCE_NRHP_ELGBLE_CRTRA
- CRM_DOM_RSRCE_PRMRY_CAT
- CRM_DOM_RSRCE_PRMRY_PRPRTY_CL
- CRM_DOM_RSRCE_TMPRL_CLTRL_ASGNMNT
- CRM_DOM_SPTL_CLCTN_MTHD

The XML file is provided as a downloadable file on the NOC Data Management National Data Standards SharePoint site.

Physical Database Diagram



Topology

The implementation of this data standard does not require topologies.

Design Considerations

Background

The CRM Data Standard builds on previous work conducted by the Cultural Resources Data Sharing Partnership (CRDSP) and the Federal Geographic Data Committee (FGDC).

The implementation of this data standard was designed during the CPPP with the initial intent of importing legacy data from each of the four SHPO's: Arizona, Colorado, New Mexico and Utah. During the NHSP project, a total of 11 states were migrated into the data standard as part of another pilot project.

The implementation of the geodatabase supporting this standard includes two polygon feature classes, Investigations (surveys) and Resources (sites). An intermediate table is set up between the Investigations and Resources for those states that maintain a many to many relationship between those. Not all states maintain this relationship.

The first pilot phase (CPPP) of this implementation involved importing data from four diverse database structures. The second pilot (NHSP) involved migrating eleven diverse database structures and reporting on the results of that process. Schema changes were identified during this process and are included in this data standard. Future design considerations that were uncovered during the pilot migration process are included in Appendix E of the CRM Data Standard Report.

During the NHSP migration project there were some issues identified and some rules established as part of that effort. The following list includes descriptions of those:

a. Each individual investigation has a unique identifier (ID) by the lead agency, usually an alphanumeric.
   A new investigation will have a new ID, for example sometimes a revisit of a previous investigation area will simply add a numerical suffix to the first, such as 18N355 and 18N355.1, or it may be quite different. Each investigation should also have a completion date and report name to help identify it uniquely.
b. Some, but not all state SHPO data will have predefined identifiers which relate Investigations with Resources. Going forward, these relationships should be retained by reestablishing a new relationship using the unique CRM ID (at the national-level) and populating the intermediate table in this data standard.
c. In the Future: It is recommended that for any dates that are stored as free-form text fields, those will need to be converted into a date format during the transformation process and/or manually. This type of edit may need to be negotiated with each state SHPO office.
   - Any text-format dates that are not able to be automatically transformed into a date format will be sent back to the state as an error to correct. Negotiations need to be made to get conformance to the national standard.

- There are two fields for dates in Resources and in Investigations. One field holds the free-form text date field that needs to be cleaned and transformed into the other field which is a standard date field.
- Once all the dates are clean, the text date field can be dropped. The standard date field will remain going forward.

d. Only one Temporal Cultural Assignment is needed for each resource polygon in the national dataset. Several states maintain resources with more than one Temporal Cultural Assignment for one polygon. As part of this data standard, it is intended that each value in the state source data will be crosswalked in combination (as part of the ETL process) to determine one primary value to use in the national dataset. For example, if a resource has both Historic and Prehistoric elements, then the resource in the national dataset will be assigned "Multi-Component" for the Temporal Cultural Assignment.
e. Some states do not maintain all of the data outlined in this data standard. This data will not be required, but negotiations will occur with each state to meet the standard as closely as possible, with the goal of 100% compliance.
f. There is some concern that the states are not maintaining a unique ID for each polygon with unique attributes. Many states that have this problem are going through a database redesign. It is assumed that this problem will not occur moving forward, but that legacy data may still have an issue. In the ETL process that will be developed, the intent is that these cases will be corrected by creating multi-part features for each unique ID. In the next phase of development, those states redesigning their data will need to have their new data structure evaluated for any remaining issues.

Relational Data Structures

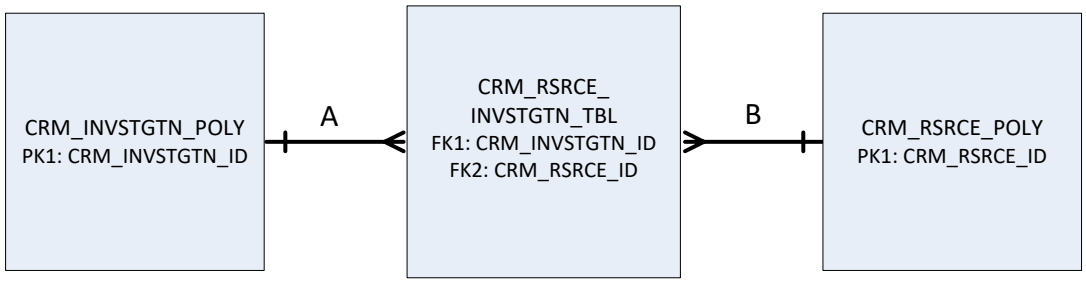
Ideally there will be a zero or one-to-many relationship between each Investigation and its Resource polygons: each unique Investigation record could have zero to many associated Resources. Resources are expected to also have a zero or one-to-many relationship with Investigations since a single resource could be associated with zero or more investigations. This constitutes a many-to-many relationship between Investigation polygons and Resource polygons.

It is the intent of this standard to have a single record for each Investigation, even if it spans multiple polygons over a large area. If there are several polygons with the same ID, those will be dissolved into one multi-part feature.

When a many-to-many relationship exists in a database, the standard database design method is to create a 'junction", or "associative" table with each feature class having a one-to-many relationship with it. This table may hold only the fields necessary to create the relationship, the foreign keys, or it may include additional fields that would help describe either of the two related features. These additional fields may assist with initial editing and merging of data. The Data Standard Report shows this as the 'Resource Investigation' table.

Relationship Classes for this Data Standard

The following describes the relationship classes included in the standard and provides a brief description of each. The business has identified that an Investigation may have many Resources and Resources may have many Investigations. This data standard includes a relationship between Investigation polygons and the Resource polygons using an associative table. This associative table serves to resolve the one–to-many relationship between Investigations and Resources. Each record in the associative table contains the unique ID from each feature class to establish the link.



A. crm_invstgtn_rel: a relationship class linking each Investigation polygon feature to zero, one or many resource polygon features using the associative table crm_rsrce_invstgtn_tbl.

B. crm_rsrce_rel: a relationship class linking each Resource polygon feature to zero, one or more investigation polygon features using the associative table crm_rsrce_invstgtn_tbl.

For more information on relational data structures, please refer to the document entitled "ESRI Related Tables" (BLM National Data Standards SharePoint >Standards Support Information > Document Type: Instruction > Subject: Geospatial).

Common Attributes

The following are attributes (data elements) that are common across feature classes. These include attributes for edit tracking and feature level metadata domains.

GIS Name	Logical Name	Physical Definition & Design Consideration
ADMIN_ST	State Alphabetic Code	**Physical Definition:** An administrative unit that identifies the state or geographic area which has administrative jurisdiction over lands, and cases. The land for a case may not be physically located in the associated administrative state. Only those states that are BLM administrative states are in the domain for this entity. Example: Montana is the administrative state for public lands in the geographic states of Montana, South and North Dakota. Attribute Domain Assignment: DOM_ADMIN_ST **Design Consideration:** Two letter, upper case abbreviation for the administrative state office. In the FPPS Organization Codes, use the second two characters (after the LL, e.g. LL**AK**030900).

GIS Name	Logical Name	Physical Definition & Design Consideration
GIS_ACRES	Polygon Area Measure	**Physical Definition**: The entire acreage of the polygon regardless of land status. **Design Considerations:** The entire acreage of the polygon regardless of land ownership or land management. This is a calculated value of area, in units of acres, based on the area field created by default within the ESRI Polygon data structure. For the purposes of a 'national data layer', the data are to be stored in geographic coordinates which do not correspond to ground values. This requires that there be a standard method for calculating this attribute. The method used for these data are as follows: Project the data into a standard projection such as the ESRI default Albers equal-area projection for the continental United States, "US Albers NAD 1983." (Make sure the area measure of your data is square meters, as opposed to square feet.) Then use the field calculator in ArcMap with the expression: [GIS_ACRES] = [SHAPE_Area] * 0.0002471044. Please note that the figure used in this calculation is the factor for converting the US Survey Foot value from the length of a meter, as opposed to the International Standard for converting meters and feet. **Default:** 0.0
BLM_ACRES	Not Applicable	**Physical Definition:** The acres within the polygon that are under BLM jurisdiction. **Design Consideration:** The intent for the CRM Dataset is to have this populated at the state level by overlaying the Surface Management Agency (SMA) layer. **Default:** 0.0

GIS Name	Logical Name	Physical Definition & Design Consideration
CREATE_DATE	Not applicable	**Physical Definition:** The date on which the record was created. **Design Consideration:** The date of the data migration. The date will be in the format of MM/DD/YYYY. **Default: 9/9/9999**
CREATE_BY	Not applicable	**Physical Definition:** The UserID (BLM login ID) of the person who migrated the data. **Design Consideration:** This attribute will be deleted before providing the data to the public. **Default: UNK**
GlobalID	Not Applicable	**Physical Definition:** A 32-character alpha-numeric code that serves as the universal and unique identifier for each feature within the feature class of a geodatabase. **Design Consideration:** Software generated value. A field of type UUID (Universal Unique Identifier) in which values are automatically assigned by the geodatabase when a row is created. This field is not editable and is automatically populated when it is added for existing data.

DATA STANDARD IMPLEMENTATION DETAILS

A. Resource Polygons (crm_rsrce_poly)

The features for Resource polygons are defined below. Domain values are used when appropriate.

A resource polygon shows the historic property constituting the smallest unit of management considered by the NRHP; it may be an individual building, structure, object or site.

Common Attributes are documented in Bold. Design considerations for common attributes can be found above in the Common Attributes section.

CRM Resource Polygon Feature Class Attributes						
GIS NAME	ALIAS	DATA FORMAT	ALLOW NULLS?	DEFAULT VALUE	DOMAIN NAME	DERIVED?
CRM_RSRCE_ID	CRM Resource Unique Identifier	Char(50)	YES			YES
RSRCE_AGCY_ID	Agency Resource Identifier	Char(50)	YES			NO
RSRCE_SHPO_ ID	SHPO Database Resource Identifier	Char(50)	YES			NO
RSRCE_NM	Resource Name	Char(255)	YES			NO
RSRCE_TMPRL_CLTRL_ASGNMNT	Resource Temporal Cultural Assignment	Char(50)	NO	Unknown	*CRM_DOM_RSRCE_TMPRL_CLTRL_ASGNMNT*	NO
RSRCE_PRMRY_PRPRTY_CL	Resource Primary Property Class	Char(30)	NO	Site	*CRM_DOM_RSRCE_PRMRY_PRPRTY_CL*	NO
RSRCE_PRMRY_CTGRY_NM	Resource Primary Category Name	Char(30)	NO	Unknown	*CRM_DOM_RSRCE_PRMRY_CAT*	NO
RSRCE_CAT	Resource Category	Char(2000)	YES			NO
RSRCE_NRHP_ELGBLE_STTS	Resource NRHP Eligibility Status	Char(12)	NO	Undeter-mined	*DOM_YES_NO_UNDTRMND*	NO
RSRCE_NRHP_ELGBLE_CRTRA	NRHP Eligibility Criteria	Char(35)	NO	Not Specified	*CRM_DOM_ RSRCE_NRHP_ELGBLE_CRTRA*	NO

CRM Resource Polygon Feature Class Attributes						
GIS NAME	ALIAS	DATA FORMAT	ALLOW NULLS?	DEFAULT VALUE	DOMAIN NAME	DERIVED?
RSRCE_NRHP_ELGBLE_AUTH_NM	Resource NRHP Eligibility Authority Name	Char(35)	YES	NA	*CRM_DOM_ RSRCE_NRHP_ELGBLE_AUTH_NM*	NO
RSRCE_CNDTN_ASSMNT	Resource Condition Assessment	Char(50)	NO	Unknown	*CRM_DOM_RSRCE_CNDTN_ASSMNT*	NO
RSRCE_LAST_RCRD_DT	Resource Last Recorded Date	Char (20)	YES			NO
RSRCE_DATE	Resource Last Recorded Date	Date	YES			NO
RSRCE_CLCTN_PRFRM_STTS	Resource Collection Performed Status	Char(20)	NO	Unknown	*CRM_DOM_RSRCE_CLCTN_PRFRM_STTS*	NO
RSRCE_DATA_SRCE	Resource Data Source	Char(25)	NO	Unknown	*CRM_DOM_DATA_SRCE*	NO
RSRCE_SPTL_CLCTN_MTHD	Resource Spatial Collection Method	Char(30)	NO	Unknown	*CRM_DOM_SPTL_CLCTN_MTHD*	NO
RSRCE_CMT	Resource Comments	Char (2000)	YES			NO
ADMIN_ST	Administrative State Code	Char(2)	NO		*DOM_ADMIN_ST*	NO
GIS_ACRES	GIS Acres	Double	NO	0.0		YES
BLM_ACRES	BLM Acres	Double	NO	0.0		NO
CREATE_DATE	Created Date	Date	NO	9/9/9999		NO
CREATE_BY	Created By Name	Char(30)	NO	UNK		NO
GlobalID	GlobalID	UUID	NO			NO
Common Attributes are documented in Bold. Physical definitions and design considerations for common attributes can be found in the Common Attributes section.						

GIS Name	Alias	Physical Definition & Design Considerations
CRM_RSRCE_ID	CRM Resource Identifier	**Physical Definition:** The BLM-assigned primary key for resource polygons. This value is calculated using the ADMIN_ST value concatentated with the data standard abbreviation "CRM" and then which feature class it is, in this case it is "RSRCE" for resource. Next is an incrementing number that includes a range specific to each state in alphabetical order. The incrementing number starts at 1,000,000 and ends at 999,999 for each state. **Design Considerations**: AK – CRMRSC1,000,000 to CRMRSC1,999,999 AZ – CRMRSC2,000,000 to CRMRSC2,999,999 CA – CRMRSC3,000,000 to CRMRSC3,999,999 CO – CRMRSC4,000,000 to CRMRSC4,999,999 ES – CRMRSC5,000,000 to CRMRSC5,999,999 ID – CRMRSC6,000,000 to CRMRSC6,999,999 MT – CRMRSC7,000,000 to CRMRSC7,999,999 NM – CRMRSC8,000,000 to CRMRSC8,999,999 NV – CRMRSC9,000,000 to CRMRSC9,999,999 OR – CRMRSC10,000,000 to CRMRSC10,999,999 UT – CRMRSC12,000,000 to CRMRSC12,999,999 WY – CRMRSC13,000,000 to CRMRSC13,999,999

GIS Name	Alias	Physical Definition & Design Considerations
RSRCE_AGCY _ID	Agency Resource Identifier	**Physical Definition:** The alpha-numeric identifier for the resource assigned by the managing agency (usually assigned by a BLM field office). If assigned by consultants: a working/temporary identifier. **Design Considerations:** Free-form text field. *Examples:* Arizona: 2007–732.ASM, A75–180.MNA BLM–010–01–1988–003 Colorado: 5RB.2657, 5RB.3404.2 New Mexico: 87534, 87532, NM-21-44168 Utah: 42SP397, 42SP125 Some New Mexico offices do not issue BLM numbers, but others do. 87534 and 87532 are examples of SHPO assigned numbers which uses the LA system. NM-21-44168 is an example of a BLM office assigned resource identifier. Associated with Business Rule #11 and #13.
RSRCE_ SHPO_ID	SHPO Database Resource Identifier	**Physical Definition:** The unique identifier originating from the SHPO database for the resource polygon. **Design Considerations:** Free-form text field. This unique identifier will be migrated into the CRM geodatabase “as is”. Associated with Business Rule #11 and #13.
RSRCE_NM	Resource Name	**Physical Definition:** The name given to the cultural resource. **Design Considerations:** Free-form text field.

GIS Name	Alias	Physical Definition & Design Considerations
RSRCE_TMPRL_CLTRL_ASGNMNT	Resource Temporal Cultural Assignment	**Physical Definition:** The general age category and cultural affiliation of the resource. The domain values vary by state and region with historic post EuroAmerican contact. Ethnohistoric refers to resources that are post EuroAmerican influence or contact but are part of traditional Native American life ways. Attribute Domain Assignment: CRM_DOM_RSRCE_TMPRL_CLTRL_ASGNMNT ***Default: Unknown*** Associated with Business Rule #2.
RSRCE_PRMRY_PRPRTY_CL	Resource Primary Property Class	**Physical Definition:** The primary classification type of the resource property which conveys management implications. Attribute Domain Assignment: CRM_DOM_RSRCE_PRMRY_PRPRTY_CL ***Default: Site*** Associated with Business Rule #4.
RSRCE_PRMRY_CTGRY_NM	Resource Primary Category	**Physical Definition:** The primary, most prevalent general purpose or pattern of use that created the resource. May also be known as "site type". Domain Assignment: CRM_DOM_RSRCE_PRMRY_CAT ***Default: Unknown*** Associated with Business Rule #5 and #8.

GIS Name	Alias	Physical Definition & Design Considerations
RSRCE_CAT	Resource Category	**Physical Definition:** This is a field that holds the concatenated category values that include site consituents, artifacts, and features. These values should be used to determine the value for the "Resource Primary Category" field. Associated with Business Rule #5.
RSRCE_NRHP_ELGBLE_STTS	Resource NRHP Eligibility Status	**Physical Definition:** Indicates if, during the most recent evaluation, the resource was determined to be eligible for listing on the National Register of Historic Places (NRHP). A determination of eligibility is a decision by the Department of the Interior that a district, site, building, structure or object meets the National Register criteria for evaluation although the property is not formally listed in the National Register. **Design Considerations:** Attribute Domain Assignment: DOM_YES_NO_UNDTRMMD ***Default: Undetermined*** Associated with Business Rule #6 and #8.
RSRCE_NRHP_ELGBLE_CRTRA	Resource NRHP Eligibility Criteria	**Physical Definition:** The criteria under which the determination of NRHP eligibility was made. Elevates management decision – mitigation impacts **Design Considerations:** Attribute Domain Assignment: CRM_DOM_RSRCE_NRHP_ELGBLE_CRTRA ***Default: Not Specified*** Associated with Business Rule #6 and #8.

GIS Name	Alias	Physical Definition & Design Considerations
RSRCE_NRHP_ELGBLE_AUTH_NM	Resource NRHP Eligibility Authority Name	**Physical Definition:** The authority or process under which the NHRP eligibility was made. Provides information about the level of trust that can be placed in the NRHP eligibility determination. **Design Considerations:** Attribute Domain Assignment: CRM_DOM_ RSRCE_NRHP_ELGBLE_AUTH_NM ***Default: NA*** Associated with Business Rule #6 and #8.
RSRCE_CNDTN_ASSMNT	Resource Condition Assessment	**Physical Definition:** The resource condition in terms of its natural or unnatural degradation. **Design Considerations:** Attribute Domain Assignment: CRM_DOM_ RSRCE_CNDTN_ASSMNT ***Default: Unknown*** Associated with Business Rule #7.
RSRCE_LAST_RCRD_DT	Resource Last Recorded Date	**Physical Definition:** The calendar year in which the resource was last recorded or updated. **Design Considerations:** Date format is YYYY. **NOTE:** Due to the many different formats of date and general bad data encountered during the ETL it became necessary to hold the date on which the resource was last encountered/recorded (aka Resource Date) in a character field so it could be cleaned up later. RSRCE_LAST_RCRD_DT holds a non-standard set of date values that need to be cleaned and moved into the RSRCE_DATE field.

GIS Name	Alias	Physical Definition & Design Considerations
RSRCE_DATE	Resource Last Recorded Date	**Physical Definition:** A full date in which the resource was last recorded or updated. This will be the field to use going forward in order to retain the temporal aspect of this data. **Design Considerations:** This stores as an ESRI date field (MM/DD/YYYY) as opposed to just the year as in the RSRCE_LAST_RCRD_DT field.
RSRCE_CLCTN_PRFRM_STTS	Resource Collection Performed Status	**Physical Definition:** Indicates if a documented collection has ever been performed on this resource. Documentation sources may include the site record or collection catalog. **Design Considerations:** Attribute Domain Assignment: CRM_DOM_RSRCE_CLCTN_PRFRM_STTS ***Default: Unknown*** Associated with Business Rule #9.
RSRCE_DATA_SRCE	Resource Data Source	**Physical Definition:** The source of the digital data from which the information about this resource was taken. **Design Considerations:** Attribute Domain Assignment: CRM_DOM_DATA_SRCE ***Default: Unknown***
RSRCE_SPTL_CLCTN_MTHD	Resource Spatial Collection Method	**Physical Definition:** The method or manner in which the spatial data regarding the location of the resource was collected. Attribute Domain Assignment: CRM_DOM_SPTL_CLCTN_MTHD ***Default: Unknown***

GIS Name	Alias	Physical Definition & Design Considerations
RSRCE_CMT	Resource Comment	**Physical Definition:** A comment field that allows the user to provide more information about the site, artifacts or features. **Design Considerations:** Free-form text field.

B. Investigation Polygons (crm_invstgtn_poly)

The features for Investigation polygons are defined below. Domain values are used when appropriate.

An investigation polygon portrays an event or activity resulting in the identification, documentation, restoration, rehabilitation or preservation of historic properties. Investigations may, or may not (in the case of "negative" identification efforts), relate to one or more historic properties. Common examples of investigations include inventory, excavation, documentation and restoration activities.

Common Attributes are documented in Bold. Design Considerations for common attributes can be found in the Common Attributes section.

CRM Investigation Polygon Feature Class Attributes						
GIS NAME	ALIAS	DATA FORMAT	ALLOW NULLS?	DEFAULT VALUE	DOMAIN NAME	DERIVED?
CRM_INVSTGTN_ID	CRM Investigation Unique Identifier	Char(50)	YES			YES
INVSTGTN_AGCY_ID	Agency Investigation Unique Identifier	Char(50)	YES			NO
INVSTGTN_ SHPO_ID	SHPO Database Investigation Identifier	Char(50)	YES			NO
INVSTGTN_CMPLT_MONTH_YR	Investigation Completed Month/Year	Char(20)	YES			NO
INVSTGTN_DATE	Investigation Completed Date	Date	YES			NO
INVSTGTN_LEAD_BLM_ADMIN_ST	Investigation Lead BLM Administrative State	Char(2)	NO		*DOM_ADMIN_ST*	NO
INVSTGTN_TITLE	Investigation Title	Char(255)	YES			NO
INVSTGTN_AUTH	Investigation Authority	Char(50)	NO	Unknown	*CRM_DOM_INVSTGTN_AUTH*	NO
INVSTGTN_CL	Investigation Class	Char(30)	NO	Unknown	*CRM_DOM_INVSTGTN _CL*	NO

CRM Investigation Polygon Feature Class Attributes						
GIS NAME	ALIAS	DATA FORMAT	ALLOW NULLS?	DEFAULT VALUE	DOMAIN NAME	DERIVED?
INVSTGTN_PRFRM_PARTY_NM	Investigation Performed By Party Name	Char(100)	YES			NO
INVSTGTN_NEPA_ID	Investigation NEPA Identifier	Char (50)	YES			NO
INVSTGTN_DATA_SRCE	Investigation Data Source	Char(25)	NO	Unknown	*CRM_DOM_DATA_SRCE*	NO
INVSTGTN_CMT	Investigation Comments	Char(2000)	YES			NO
ADMIN_ST	Administrative State Code	Char(2)	NO		*DOM_ADMIN_ST*	NO
GIS_ACRES	GIS Acres	Double	NO	0.0		YES
BLM_ACRES	BLM Acres	Double	NO	0.0		NO
CREATE_DATE	Created Date	Date	NO	9/9/9999		NO
CREATE_BY	Created By Name	Char(30)	NO	UNK		NO
GlobalID	GlobalID	UUID	NO			NO
Common Attributes are documented in Bold. Physical definitions and design considerations for common attributes can be found in the Common Attributes section.						

GIS Name	Alias	Physical Definition & Design Considerations
CRM_INVSTGTN_ID	CRM Investigation Identifier	**Physical Definition:** The BLM-assigned primary key for investigation polygons. This value is calculated using the ADMIN_ST value concatentated with the data standard abbreviation "CRM" and then which feature class it is. In this case it is "INVSTGTN" for investigation. Next is an incrementing number that includes a range specific to each state in alphabetical order. The number starts at 1,000,000 and increments 999,999 for each state. **Design Considerations**: Block Number assignments. AK – CRMINV1,000,000 to CRMINV1,999,999 AZ – CRMINV2,000,000 to CRMINV2,999,999 CA – CRMINV3,000,000 to CRMINV3,999,999 CO – CRMINV4,000,000 to CRMINV4,999,999 ES – CRMINV5,000,000 to CRMINV5,999,999 ID – CRMINV6,000,000 to CRMINV6,999,999 MT – CRMINV7,000,000 to CRMINV7,999,999 NM – CRMINV8,000,000 to CRMINV8,999,999 NV – CRMINV9,000,000 to CRMINV9,999,999 OR – CRMINV10,000,000 to CRMINV10,999,999 UT – CRMINV11,000,000 to CRMINV11,999,999 WA – CRMINV12,000,000 to CRMINV12,999,999 WY – CRMINV13,000,000 to CRMINV13,999,999

GIS Name	Alias	Physical Definition & Design Considerations
INVSTGTN_AGCY_ID	Agency Investigation Identifier	**Physical Definition:** The alph-anumeric identifier for the investigation assigned by the managing agency (usually assigned by a BLM field office). If assigned by consultants: a working/temporary identifier. **Design Considerations:** Free-form text field. *Examples:* Arizona: 3.257.SHPO Colorado: GF.LM.R514 New Mexico: NM-010-2014(III)B, NM-220-2011(IV)055 Utah: U00A10570, U00A10616 Nevada example: 3 is the field / district office, followed by a sequential; CRR stands for Cultural Resource Report). UT doesn't assign an investigation agency ID. The state investigation ID is the unique identifier for an investigation. New Mexico does NOT use state investigation ID as its investigation number. All BLM offices assign a BLM investigation ID. If a resource has multiple managers, there may be more than one agency number. Associated with Business Rule #11 and #13.

GIS Name	Alias	Physical Definition & Design Considerations
INVSTGTN_ SHPO_ID	SHPO Database Investigation Identifier	**Physical Definition:** The unique identifier originating from the SHPO database for the investigation polygon. **Design Considerations:** Free-form text field. This unique identifier will be migrated into the CRM geodatabase "as is". Associated with Business Rule #11 and #13.
INVSTGTN_CMPLT_MONTH_YR	Investigation Completed Month/Year	**Physical Definition:** The month and year in which the inventory was completed. **Design Consideration:** Date format is MM-YYYY. **NOTE:** Due to the many different formats of date and general bad data encountered during the ETL it became necessary to hold the Investigation Date in a character field so it could be cleaned up later. INVSTGTN_CMPLTE_MONTH_YR currently is being used to hold a non-standard set of date values that need to be cleaned and moved into the INVSTGTN_DATE field.
INVSTGTN_DATE	Investigation Completed Date	**Physical Definition:** The full date on which the investigation was last recorded or updated. This will be the field to use going forward in order to retain the temporal aspect of this data. **Design Considerations:** This is in a date field format to hold temporal data instead of a text field that holds just the year.

GIS Name	Alias	Physical Definition & Design Considerations
INVSTGTN_LEAD_BLM_ADMIN_ST	Investigation Lead BLM Administrative State	**Physical Definition:** Lead BLM administrative state having primary responsibility for the investigation. If an investigation crosses state lines, both SHPOs in both states will have an investigation report. One state will take the lead in a multi-state investigation and this field will be populated with the lead state's identifier. New Mexico has examples of investigations crossing state lines. **Design Consideration:** Attribute Domain Assignment: DOM_ADMIN_ST
INVSTGTN_TITLE	Investigation Title Name	**Physical Definition:** The name by which the investigation is known. **Design Consideration:** Free-form text field. There is no formal convention for investigation title name. *Examples:* "A Class III Inventory of 17.3 Acres of BLM Land Near Lake Woebegone, Prairie County, Minnesota" Title could be assigned at the state level as the title of the report or may be the title assigned by the SHPO.

GIS Name	Alias	Physical Definition & Design Considerations
INVSTGTN_AUTH	Investigation Authority	**Physical Definition:** The authority or framework under with the investigation occurred. **Design Consideration:** Attribute Domain Assignment: CRM_DOM_INVSTGTN_AUTH ***Default: Unknown*** Associated with Business Rule #15.
INVSTGTN_CL	Investigation Class	**Physical Definition:** The type of investigation completed. Indicates the level of detail and complexity of the investigation. **Design Consideration:** Attribute Domain Assignment: CRM_DOM_INVSTGTN _CL ***Default: Unknown*** Associated with Business Rule #10 and #14.
INVSTGTN_PRFRM_PARTY_NM	Investigation Performed By Party Name	**Physical Definition:** The name of the contractor, company, agency or office that performed the investigation. **Design Consideration:** Free-form text field. Associated with Business Rule #16.

GIS Name	Alias	Physical Definition & Design Considerations
INVSTGTN_NEPA_ID	Investigation NEPA Identifier	**Physical Definition:** The identifier of the NEPA document which triggered the investigation or the Cultural Resources Management Plan that generated the investigation. **Design Consideration:** Free-form text field.
INVSTGTN_DATA_SRCE	Investigation Data Source	**Physical Definition:** The source of the digital data from which the information about this inventory was taken. Intended to show if the data came from the legacy SHPO database, an external source or from within the BLM once the new system is put into place. **Design Considerations:** Attribute DomainAssignment:CRM_DOM_DATA_SRCE ***Default: Unknown***
INVSTGTN_CMT	Investigation Comment	**Physical Definition:** A comment field that provides more information about the investigation. **Design Considerations:** Free-form text field.

C. Resource Investigation Table (crm_rsrce_invstgtn_tbl)

The Resource investigation table represents transactional data for Resource polygons (*crm_rsrce_poly*).

GIS NAME	ALIAS	DATA FORMAT	ALLOW NULLS?	DEFAULT VALUE	DOMAIN NAME	DERIVED?
CRM_RSRCE_ID	CRM Resource Unique Identifier	Char(50)	NO			NO
CRM_INVSTGTN_ID	CRM Investigation Identifier	Char(50)	NO			NO

GIS Name	Alias	Physical Definition & Design Considerations
CRM_RSRCE_ID	CRM Unique Resource Identifier	**Physical Definition:** The foreign key used to relate to records in the resource polygon layer. **Design Considerations**: See the Design Considerations statement for this attribute field in the attribute descriptions table for the Resource polygons feature class (crm_rsrce_poly). Associated with Business Rule #12.
CRM_INVSTGTN_ID	CRM Investigation Identifier	**Physical Definition:** The foreign key used to relate to records in the investigation polygon layer. **Design Considerations**: See the Design Considerations statement for this attribute field in the attribute descriptions table for the Investigation polygon feature class (crm_invstgtn_poly). Associated with Business Rule #12.

APPENDIX A: DOMAIN VALUES

Documentation about the nature and management of domain values is available on the BLM National Data Standards SharePoint site. Instructions are provided below for navigating to each document on this SharePoint page.

For further details about domains specific to this standard, please refer to the document entitled "CRM_Domains":

- Established Data Standards and Datasets > Development Type: Data Standard > Project (standard): CRM – Cultural Resource Management

For further details about Feature Level Metadata Domains, please refer to the document entitled "Feature Level Metadata Domains Definitions":

- Standards Support Information > Document Type: Reference > Subject: Domains

For further details about Global Domains, please refer to the document entitled "Global Domains Definitions":

- Standards Support Information > Document Type: Reference > Subject: Domains

For instructions on implementing and maintaining domains in a geodatabase, please refer to the document entitled "Domains Management for Geodatabases":

- Standards Support Information > Document Type: Instruction > Subject: Domains

Domain values are maintained separately from the data standard. This is due to values being more likely to have an addition or change that would not affect the data standard. Domain values cannot be added to attributes specific to the standard (except thru the data standardization maintenance step). A state can extend the data standard with a new attribute which can have a state specific domain list. However, all attributes that are required as part of the standard must have a value from the data standard domain list. Any additional attributes and their associated domain values must be documented with metadata by that office.

APPENDIX B: ATTRIBUTE METADATA TERMINOLOGY

The following matrix describes the metadata for the Data Standards Implementation Details.		
Attribute Metadata Field	**Metadata Definition**	**Example**
GIS Name	The abbreviated name of the field as it appears in the database.	RCVR_TYPE
Alias	An alternative name that is more descriptive and user-friendly than the Logical or GIS Field Name.	GPS RECEIVER TYPE
Data Format	Specific type of data allowed/# of characters or numbers/Precision & Scale.	Char(15)
Allow Nulls?	If an attribute is or is not allowed to have a “Null” value. If “NO”, the attribute is required, if “YES”, the attribute is optional.	NO
Default Value	Value that will apply if no other value is specified; included in domain value list.	N/A
Domain Name	Name of the table for that attribute, containing the Code, Description, and Definition for each value in the table.	DOM_RCVR_TYPE
Derived?	If the attribute value is derived from the value of one or more other attribute values (YES) otherwise, (NO) the value is not derived. The description of how the attribute is derived will be included in the Definition/Design Consideration.	NO
Logical Attribute Name	The business name of the attribute which includes the entity name, and representation term. Definitions for Logical Attributes can be found in the Data Standard Report.	Global Positioning System Receiver Type Name

REVISION HISTORY

VERSION NO.	VERSION TYPE	DATE	PURPOSE
1.0	Original Pilot		
1.1	Revision	09/16/2015	Update implementation guide to reflect changes made as a result of data migration. Document will be presented to SMEs.
1.2	Second Pilot	5/19/2017	Modified proposed data standard from CPPP project as a result of migrating 11 states data into the standard (NHSP project).
1.3	Final	02/14/2018	Finalized the first revision of the data standard.
1.3.1	Final	05/21/2019	Reworked relationship class information to reflect it is now optional, removed domain values from Implementation Guide and returned them to a stand alone Domains Document, updated