

FEDERAL GEOGRAPHIC DATA COMMITTEE

National Geospatial Data Assets (NGDA) Metadata Guidelines

Metadata Content That Makes Data Discoverable and Usable as an NGDA Dataset

Version 3.0

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National Geospatial Data Asset (NGDA) Documentation

National Geospatial Data Assets (NGDA) Datasets are national resources as designated by [OMB Circular A– 16 Supplemental Guidance \(November 2010\)](#). For those managing NGDA Datasets, the following NGDA metadata guidance is provided to promote the discovery and use of NGDA data resources. [Executive Order 12906](#) and [OMB Circular A-16 Revised \(2002\)](#) require that geospatial data resources are documented in compliance with FGDC endorsed metadata standards such as the International Standards Organization (ISO) 19100 series or the FGDC Content Standard for Digital Geospatial Metadata (CSDGM). This guidance should be used in conjunction with the general GeoPlatform metadata publication guidance provided at: [Metadata Recommendations Supporting Data Discovery and Use in Data.gov and GeoPlatform.gov](#) as well as the [How to Get Your Open Data on Data.gov](#) resource.

Note that Project Open Data (POD) is the name of the implementation guidance for the [Federal Open Data Policy, OMB M 13-13](#). The [POD JSON V1.1 Schema](#) (POD/JSON) guidance and examples provided in this document are intended to facilitate NGDA dataset registration for agencies that are in the process of creating geospatial metadata using ISO or CSDGM standards.

For more information, contact the appropriate [A–16 NGDA Theme Lead](#) or the NGDA Team at ngdateam@fgdc.gov.

ISO and CSDGM Metadata

Theme Keywords and Theme Keyword Thesaurus

When documenting your NGDA dataset using an FGDC endorsed geospatial metadata standard (ISO or CSDGM), include the following Theme Keyword content and Theme Keyword Thesaurus reference to support the discovery of NGDA designated datasets.

Theme Keywords	Rationale and Comments
<p>Your NGDA-specified theme</p>	<p>Include the NGDA specified theme to which your dataset is assigned (http://www.fgdc.gov/ngda-reports/Theme_Descriptions.html)</p> <p>Use the list of NGDA Theme Keywords provided below <i>exactly as written</i>. The Biota Theme became the Biodiversity and Ecosystems Theme in June 2016. The addition of the term ‘Theme’ and the removal of all punctuations and spacing ensure that the Keywords will be properly displayed in Data.gov and GeoPlatform.gov:</p> <p>Biodiversity and Ecosystems Theme Cadastre Theme Climate and Weather Theme Cultural Resources Theme Elevation Theme Geodetic Control Theme Geology Theme Governmental Units and Administrative and Statistical Boundaries Theme Imagery Theme Land Use Land Cover Theme Real Property Theme Soils Theme Transportation Theme Utilities Theme Water Inland Theme Water Oceans and Coasts Theme</p>

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Theme Keywords (cont'd)	Rationale and Comments (cont'd)
'NGDA'	Inclusion of the acronym 'NGDA' in your Theme Keywords facilitates discovery within the Data.gov/GeoPlatform.gov system.
'National Geospatial Data Asset'	Inclusion of the full phrase 'National Geospatial Data Asset' explains the NGDA acronym for those not familiar with the program.
Theme Keyword Thesaurus	Rationale and Comments
'NGDA Portfolio Themes'	Inclusion of the 'NGDA Portfolio Themes' as the Theme Keyword Thesaurus associated with the above Theme Keywords, supports recognition of the dataset as an NGDA resource.

Example stylesheet presentations of Theme Keywords and Theme Keyword Thesaurus:

ISO Theme Keywords

Keyword:

Theme:

Theme Keyword: NGDA

Theme Keyword: National Geospatial Data Asset

Theme Keyword: Biodiversity and Ecosystems Theme

Theme Keyword Thesaurus: NGDA Portfolio Themes

Note: Data.gov aggregates all ISO keywords (theme, place, etc.) into a single keyword collection:

Keyword Collection:

Keyword: NGDA

Keyword: National Geospatial Data Asset

Keyword: Biodiversity and Ecosystems Theme

Associated Thesaurus: NGDA Portfolio Themes

CSDGM Theme Keywords

Keyword:

Theme:

Theme Keyword Thesaurus: NGDA Portfolio Themes

Theme Keyword: NGDA

Theme Keyword: National Geospatial Data Asset

Theme Keyword: Biodiversity and Ecosystems Theme

XML format encoding for the Theme Keywords and associated Theme Keyword Thesaurus are provided in the XML Encoding section of this document: [Theme Keyword and Theme Keyword Thesaurus XML Encoding](#).

National Geospatial Data Assets (NGDA) Metadata Guidelines

Dataset Title

The objective is to use the same title in the metadata record and the [NGDA Dataset List](#). *If the dataset title differs from the title assigned in the official NGDA Dataset List you are encouraged to **coordinate with your A-16 NGDA Theme Lead** to harmonize the titles by either:*

- changing the NGDA Dataset List title to match your dataset title or
- changing your dataset title to match the NGDA Dataset List title

However, *if you are unable to harmonize your titles*, follow the ISO and CSDGM recommendations below to document *both* titles in the metadata record:

ISO	Rationale and Comments
Title	Provide your existing dataset title as the title of the dataset Citation: <i>MD_Metadata.identificationinfo>MD/I_DataIdentification.citation> CI_Citation.title</i>
Alternate Title	Provide the NGDA Dataset Title as an alternate title within the dataset Citation: <i>MD_Metadata.identificationinfo>MD/I_DataIdentification.citation> CI_Citation.alternateTitle</i>
CSDGM	Rationale and Comments
Title	Append the NGDA Title to your existing dataset title using the format: 'existing dataset title' - National Geospatial Data Asset (NGDA) 'master title': <i>metadata>idinfo>citation>citeinfo>title</i>

Example stylesheet presentations of dataset title and NGDA Dataset List title:

ISO Title and Alternate Title

Citation

Title: *TIGER/Line Shapefile, 2015, Series Information File for the Current Census Tract State-based Shapefile*

Alternate Title: *National Geospatial Data Asset (NGDA) Census Tract*

CSDGM Title (appended with NGDA Dataset List Title)

Citation

Title: *TIGER/Line Shapefile, 2015, Series Information File for the Current Census Tract State-based - National Geospatial Data Asset (NGDA) Census Tract*

XML format encoding for Dataset Title are provided in the XML Encoding section of this document: [NGDA Dataset Title and Alternate Title XML Encoding](#).

Geospatial Web Services

The GeoPlatform.gov utilizes metadata to identify and promote available NGDA geospatial web services. NGDA Dataset Managers should establish one or more geospatial web services to serve up each NGDA Dataset. The GeoPlatform support team can assist the NGDA Dataset Managers in standing up these services and hosting them free of charge on the GeoPlatform.gov. If interested in using this support please send an email to servicedesk@geoplatform.gov and a member of the team will schedule a time to discuss your needs. The FGDC and GeoPlatform teams are committed to making services for each NGDA discoverable and available.

Once the geospatial web service(s) is established, or, if already established, the metadata record for the NGDA should include:

1. An *actionable* (i.e., online and consumable) service endpoint URL that is used to access the geospatial web service of the specified resource type. The initial emphasis is to enable uniform and reliable access to an NGDA Dataset as maps and layers via online services that are compliant with the OGC WMS and/or Esri REST API specifications. Note: As individual services come online, the NGDA metadata record should be updated to the actionable service endpoint. If there are multiple services for an individual NGDA Dataset, then please list all the endpoint URLs for map services that host the NGDA Dataset.
2. Include the URI that uniquely identifies the appropriate service application profile specification¹ associated with the geospatial web service:
 - **OGC Web Map Service (WMS)**
 - Specification Identifier: <http://opengis.net/spec/wms> – a service compliant with an approved OGC Web Map Service implementation specification, or specific version (e.g., OGC Web Map Service version 1.1:
<http://www.opengis.net/spec/wms/1.1>)
 - **OGC Web Feature Service (WFS)**
 - Specification Identifier: <http://opengis.net/spec/wfs> – a service compliant with an approved OGC Web Feature Service implementation specification, or specific version (e.g., OGC Web Feature Service version 1.0:
<http://www.opengis.net/spec/wfs/1.0>)
 - **OGC Web Coverage Service (WCS)**
 - Specification Identifier: <http://opengis.net/spec/wcs> – a service compliant with an approved OGC Web Coverage Service implementation specification, or specific version (e.g., OGC Web Coverage Service version 1.0:
<http://www.opengis.net/spec/wcs/1.0>)

¹ The Open Geospatial Consortium has specified policies and guidance, based on W3C and IETF standards, for naming authority best-practices here: <http://www.opengeospatial.org/standards/na>. Note specifically, the policy document titled “OGC-NA Name type specification - specification elements”(10-103). The generic scheme for identifying persistent names for online resources (e.g., service type identifiers) follows this pattern: <http://{namingAuthority}/spec/{specName}/{version}>

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- **OGC Web Map Tile Service (WMTS)**
 - Specification Identifier: <http://opengis.net/spec/wmts> – a service compliant with an OGC Web Map Tile Service implementation specification, or specific version (e.g., OGC Web Map Tile Service 1.0.0: <http://www.opengis.net/spec/wmts/1.0.0>)
- **OGC Catalog Service (CSW)**
 - Specification Identifier: <http://opengis.net/spec/csw> – a service compliant with an OGC Catalog Service for the Web implementation specification, or specific version (e.g., OGC Catalogue Service Specification 2.0.2: <http://www.opengis.net/spec/csw/2.0.2>)
- **OGC Keyhole Markup Language (KML)**
 - Specification Identifier: <http://opengis.net/spec/kml> – a service that produces a document that is compliant with the OGC Keyhole Markup Language specification, or specific version (e.g., OGC Keyhole Markup Language version 2.2: <http://www.opengis.net/spec/kml/2.2>)
- **Esri REST Map Service**
 - Specification Identifier: <http://www.geoplatform.gov/spec/esri-map-rest> – a service compliant with the Esri ArcGIS Map Server REST API.
- **Esri REST Image Service**
 - Specification Identifier: <http://www.geoplatform.gov/spec/esri-image-rest> – a service compliant with the Esri ArcGIS Image Server REST API.
- **Esri REST Feature Service**
 - Specification Identifier: <http://www.geoplatform.gov/spec/esri-feature-rest> – a service compliant with the Esri ArcGIS Feature Server REST API.

For more information about Esri REST API Specification, see <https://www.geoplatform.gov/spec>.

Additional identifiers can be added to the domain as relevant

(Please verify additional identifiers with NGDA Team (nqdateam@fgdc.gov) before including).

3. The designated title for the service.
4. A description of the service including the service specification author, e.g. OGC, Esri, and relevant information about the content, function, intended audience, etc.

ISO metadata developers are encouraged to document their geospatial web service(s) using a stand-alone Service Identification record. By doing so, the metadata for datasets hosted by the service, current and future, can be linked to the same Service Identification Record and information about the service is maintained and updated in a central location. However, it may be more expedient in the near term to add the service information to existing NGDA dataset metadata records **within the CI_OnlineResource component** of any of the following:

- Service Identification (within the dataset record)
- Data Identification
- Distribution Transfer Option
- Distribution Distributor

National Geospatial Data Assets (NGDA) Metadata Guidelines

The following table provides specific guidance on the ISO metadata elements and content.

ISO - Rationale and Comments	
<p>Use the CI_OnlineResource metadata elements and content below within the Service Identification, Data Identification, Distributor, or Distribution component of the NGDA metadata record using <i>any</i> of the below:</p> <p><i>MD_Metadata.identificationInfo/SV_ServiceIdentification.citation/CI_Citation.citedResponsibleParty/CI_ResponsibleParty.contactInfo/CI_Contact.onlineResource/CI_OnlineResource</i></p> <p><i>MD_Metadata.identificationInfo/SV_ServiceIdentification.containsOperation/SV_OperationMetadata.connectPoint//CI_Contact.onlineResource/CI_OnlineResource</i></p> <p><i>MD_Metadata.identificationInfo/MD_DataIdentification.citation/CI_Citation.citedResponsibleParty/CI_ResponsibleParty.contactInfo/CI_Contact.onlineResource/CI_OnlineResource</i></p> <p><i>MD_Metadata.distributionInfo/MD_Distribution.transferOptions/MD_DigitalTransferOptions.onLine/CI_OnlineResource</i></p> <p><i>MD_Metadata.distributionInfo/MD_Distributor.distributorContact/CI_ResponsibleParty.contactInfo/CI_Contact.onlineResource/CI_OnlineResource</i></p>	
Citation Online Resource Linkage	<p>Provide the URL for your geospatial web service(s)</p> <p><i>.../CI_OnlineResource.linkage</i></p>
Citation Online Resource Application Profile	<p>Include a link to the appropriate service type specification (can include version as noted above):</p> <p style="padding-left: 40px;"> http://opengis.net/spec/wms http://opengis.net/spec/wfs http://opengis.net/spec/wcs http://opengis.net/spec/wmts http://opengis.net/spec/csw http://opengis.net/spec/kml http://www.geoplatform.gov/spec/esri-map-rest http://www.geoplatform.gov/spec/esri-image-rest http://www.geoplatform.gov/spec/esri-feature-rest </p> <p><i>.../CI_OnlineResource.appProfile</i></p>
Citation Online Resource Name	<p>Provide a Title for the geospatial web service</p> <p><i>.../CI_OnlineResource.name</i></p>
Citation Online Resource Description	<p>Provide additional information such as OGC, Esri, etc. to clarify the service type. Include other relevant information about the content, function, intended audience, etc.</p> <p><i>.../CI_OnlineResource.description</i></p>

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CSDGM metadata developers must document their web map-related service(s) using the Distribution section of the standard. The Citation Online Link element cannot be used because it has no supporting elements and therefore no way of including the service acronym domain presented above and required by Geospatial Platform to trigger identification and promotion of the service.

The following table provides specific guidance on the CSDGM metadata elements and content.

CSDGM - Rationale and Comments	
Use the Digital Transfer metadata elements and content below within the Distribution Section of the NGDA metadata record	
<i>Distributor</i>	Provide Contact Information (Section 10) for the resource <i>/metadata/distinfo/distrib</i>
<i>Distribution Liability</i>	Provide a statement as to the liability assumed by the distributor <i>/metadata/distinfo/distrib</i>
<i>Distribution Digital Transfer Format Name</i>	Provide a Title For the web map-related service <i>/metadata/distinfo/storder/digform/diginfo/formname</i>
<i>Distribution Digital Transfer Format Version Number or Date</i>	Indicate the version of the geospatial web service <i>/metadata/distinfo/storder/digform/diginfo/formvern</i> or <i>/metadata/distinfo/storder/digform/diginfo/formverd</i>
<i>Distribution Digital Transfer Format Specification</i>	Include a link to the appropriate service type specification: http://opengis.net/spec/wms http://opengis.net/spec/wfs http://opengis.net/spec/wcs http://opengis.net/spec/wmts http://opengis.net/spec/csw http://opengis.net/spec/kml http://www.geoplatform.gov/spec/esri-map-rest http://www.geoplatform.gov/spec/esri-image-rest http://www.geoplatform.gov/spec/esri-feature-rest <i>/metadata/distinfo/storder/digform/diginfo/formspec</i>
<i>Distribution Digital Transfer Format Information Content</i>	Provide a description of the service including, as relevant, the content, function, intended audience, etc: <i>/metadata/distinfo/storder/digform/diginfo/formcont</i>
<i>Digital Transfer Online Network Resource Name</i>	Provide the URL for your web map-related service <i>metadata/distinfo/storder/digform/digtoption/onlinopt/networka/networkr</i>
<i>Digital Transfer Fees</i>	Indicate if fees are required to access the web map-related service. This is most commonly a value of 'none'. <i>metadata/distinfo/storder/fees</i>

XML format encodings for geospatial web services are provided in the XML Encoding section of this document: [Geospatial Web Services XML Encoding](#).

Geospatial Data Download

If your NGDA data is available via direct download, provide the download URL(s) and add the information indicated in the table below. As above, this should be an actionable download URL and not a link to an information or catalog page.

ISO - Rationale and Comments	
Associate an 'Online Function Code' with the download URL and specify 'download'	
Citation Online Resource Linkage	Provide the URL that host the data download <i>.../CI_OnlineResource.linkage</i>
Citation Online Resource Function	Enter 'download' <i>.../CI_OnlineResource.function </gmd:CI_OnLineFunctionCode></i>

CSDGM - Rationale and Comments	
Use the Digital Transfer metadata elements and content below within the Distribution Section of the NGDA metadata record	
Distributor	Provide Contact Information (Section 10) for the resource <i>/metadata/distinfo/distrib</i>
Distribution Liability	Provide a statement as to the liability assumed by the distributor <i>/metadata/distinfo/distrib</i>
Distribution Digital Transfer Format Name	Enter: 'download' <i>/metadata/distinfo/storder/digform/digtinfo/formspec</i>
Digital Transfer Online Network Resource Name	Provide the URL for the data download <i>metadata/distinfo/storder/digform/digtoption/onlinopt/networka/networkr</i>
Digital Transfer Fees	Indicate if fees are required to download the data. This is most commonly a value of 'none'. <i>metadata/distinfo/storder/fees</i>

XML format encoding for Downloadable Data are provided in the XML Encoding section of this document: [Geospatial Data Download XML Encoding](#).

Project Open Data (POD/JSON V1.1) Metadata

Agencies that have yet to create geospatial metadata in compliance with ISO or CSDGM standards will need to create a standalone POD/JSON V1.1 metadata record. To preserve the identification of your dataset as an NGDA asset, the POD metadata record must include:

- **Theme Keywords**
 - the NGDA theme associated with the dataset as described in section “ISO and CSDGM Metadata, Theme Keywords and Theme Keyword Thesaurus” above
 - ‘NGDA’
 - ‘National Geospatial Data Asset’

POD does not include a ‘Thesaurus’ field so ‘NGDA Portfolio Themes’ is not required

- **NGDA Dataset title** that follows the Dataset Title guidelines in section “ISO and CSDGM Metadata Dataset Title” above
- **The term ‘geospatial’ entered as a POD ‘Theme’**

The POD/JSON v1.1 metadata schema includes a mandatory ‘Theme’ metadata element *in addition to* the ‘Keyword/Tags’ metadata element. To facilitate the discovery of your NGDA asset as *geospatial* data, POD expects to find the term ‘geospatial’ listed as a ‘Theme’.
- **Geospatial web services** should be referenced using the ***accessURL*** field with the ***format*** field specified as “API”. The ***downloadURL*** and ***mediaType*** fields should be left empty for a distribution that describes a web service.
 - The ***conformsTo*** field should be one of the following references to the appropriate service type specification (can include version as noted above):
 - <http://opengis.net/spec/wms>
 - <http://opengis.net/spec/wfs>
 - <http://opengis.net/spec/wcs>
 - <http://opengis.net/spec/wmts>
 - <http://opengis.net/spec/csw>
 - <http://opengis.net/spec/kml>
 - <http://www.geoplatform.gov/spec/esri-map-rest>
 - <http://www.geoplatform.gov/spec/esri-image-rest>
 - <http://www.geoplatform.gov/spec/esri-feature-rest>
 - Note: Refer to section “ISO and CSDGM Metadata

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- Geospatial Web Services above for further description of these well-known service specifications. Additional service identifiers can be added to the domain as relevant (please verify additional services with FGDC before including).
- **Geospatial data download** should be documented using the **downloadURL** field and include the specific link and **mediaType** field, which is the machine-readable file format of the data download field.

For more information about Project Open Data/JSON v1.1, [see https://project-open-data.cio.gov/v1.1/schema/](https://project-open-data.cio.gov/v1.1/schema/) and for web services, see <https://project-open-data.cio.gov/v1.1/api/>

Example POD/JSON v1.1 metadata

(note: this is a subset record and does not include all mandatory fields)

Distribution Fields for Geospatial Web Services

```
{
  "@type": "dcat:Distribution",
  "description": "This is the link to the Web Map Service.",
  "conformsTo": "http://www.opengeospatial.org/standards/wms",
  "accessURL": "http://www.agency.gov/rest/services/dataset/WebMapService",
  "format": "API",
  "title": "Web Map Service for the dataset"
},
{
  "@type": "dcat:Distribution",
  "description": "This is the link to the Web Feature Service.",
  "conformsTo": "http://www.opengeospatial.org/standards/wfs",
  "accessURL": "http://www.agency.gov/rest/services/dataset/WebFeatureService",
  "format": "API",
  "title": "Web Feature Service for the dataset"
},
{
  "@type": "dcat:Distribution",
  "description": "This is the link to the Google Earth Layer service.",
  "conformsTo": "http://www.opengeospatial.org/standards/kml",
  "accessURL": "http://www.agency.gov/kmz/dataset_KMZ.kmz",
  "format": "API",
  "title": "Google Earth Service for the dataset"
},
}
```

Distribution Fields for Geospatial Data Download:

```
{
  "@type": "dcat:Distribution",
  "description": "This is the link to the direct geospatial data download in Shapefile format.",
  "downloadURL": "http://www.agency.gov/shp/dataset_Shapefile.zip",
  "format": "Zipped SHP",
  "mediaType": "application/zip",
  "title": "Shapefile"
},
{
  "@type": "dcat:Distribution",
  "description": "Link to the direct geospatial data download in GeoDatabase format.",
  "downloadURL": "http://www.agency.gov/shp/dataset_GeoDatabase.zip",
  "format": "Zipped GDB",
  "mediaType": "application/zip",
  "title": "GeoDatabase"
},
}
```

Keyword field:

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```
"keyword": [  
  "NGDA",  
  "National Geospatial Data Asset",  
  "Cadastre Theme",  
],
```

Theme field:

```
"theme": [  
  "geospatial"  
],
```

Title field:

```
"title": "Assisted Housing - National Geospatial Data Asset (NGDA) Public Housing Buildings"
```

For those interested in developing applications to transform or otherwise map their geospatial metadata from the POD/JSON V1.1 metadata schema, crosswalks are provided at:

<https://project-open-data.cio.gov/v1.1/metadata-resources>.

XML Encoding:

Theme Keyword and Theme Keyword Thesaurus:

ISO 19115:

```
<gmd:descriptiveKeywords>
  <gmd:MD_Keywords>
    <gmd:keyword>
      <gco:CharacterString>Governmental Units and Administrative and Statistical Boundaries Theme
    </gco:CharacterString>
    </gmd:keyword>
    <gmd:keyword>
      <gco:CharacterString>National Geospatial Data Asset</gco:CharacterString>
    </gmd:keyword>
    <gmd:keyword>
      <gco:CharacterString>NGDA</gco:CharacterString>
    </gmd:keyword>
    <gmd:type>
      <gmd:MD_KeywordTypeCode
codeList=="http://www.isotc211.org/2005/resources/Codelist/gmxCodetlists.xml#MD_KeywordTypeCode"
codeListValue="theme" codeSpace="005"> theme </gmd:MD_KeywordTypeCode>
    </gmd:type>
    <gmd:thesaurusName>
      <gmd:CI_Citation>
        <gmd:title>
          <gco:CharacterString>NGDA Portfolio Themes</gco:CharacterString>
        </gmd:title>
        <gmd:date>
          <gmd:CI_Date>
            <gmd:date>
              <gco:Date>2010-02-01</gco:Date>
            </gmd:date>
            <gmd:dateType>
              <gmd:CI_DateTypeCode
codeList="http://www.isotc211.org/2005/resources/Codelist/gmxCodetlists.xml#CI_DateTypeCode"
codeListValue="revision" codeSpace="003"> revision
            </gmd:CI_DateTypeCode>
          </gmd:dateType>
        </gmd:CI_Date>
      </gmd:date>
      <gmd:otherCitationDetails>
        <gco:CharacterString>http://www.fgdc.gov/policyandplanning/a-16/index_html
      </gco:CharacterString>
    </gmd:otherCitationDetails>
  </gmd:CI_Citation>
</gmd:thesaurusName>
</gmd:MD_Keywords>
</gmd:descriptiveKeywords>
```

CSDGM:

```
<keywords>
  <theme>
    <themekt>NGDA Portfolio Themes</themekt>
    <themekey>NGDA</themekey>
    <themekey>National Geospatial Data Asset</themekey>
    <themekey>Transportation Theme</themekey>
  </theme>
</keywords>
```

Dataset Title and Alternate Title:

(For use only when dataset title and NGDA Dataset List in the metadata record do not match)

ISO 19115:

```
<gmd:MD_DataIdentification>
  <gmd:citation>
    <gmd:CI_Citation>
      <gmd:title>
        <gco:CharacterString>TIGER/Line Shapefile, 2015, Series Information File for the Current Census
        Tract State-based Shapefile</gco:CharacterString>
      </gmd:title>
      <gmd:alternateTitle>
        <gco:CharacterString>National Geospatial Data Asset (NGDA) Census Tract
        </gco:CharacterString>
      </gmd:alternateTitle>
    </gmd:CI_Citation>
  </gmd:citation>
```

CSDGM:

```
<idinfo>
  <citation>
    <citeinfo>
      [origin and pubdate tags excerpted]
      <title>
        TIGER/Line Shapefile, 2015, Series Information File for the Current Census Tract
        State-based Shapefile - National Geospatial Data Asset (NGDA) Census Tract</title>
```

Geospatial Web Services:

ISO 19115:

```
<gmd:CI_OnlineResource>
  <gmd:linkage>
    <gmd:URL>http://maps.ngdc.noaa.gov/arcgis/services/web_mercator/trackline_combined_dynamic/MapServer/WMSserver?request=GetCapabilities&service=WMS</gmd:URL>
  </gmd:linkage>
  <gmd:protocol>
    <gco:CharacterString>http</gco:CharacterString> (optional)
  </gmd:protocol>
  <gmd:applicationProfile>
    <gco:CharacterString>http://opengis.net/spec/wms</gco:CharacterString>
  </gmd:applicationProfile>
  <gmd:name>
    <gco:CharacterString>Geophysical Trackline Data Web Map Service (WMS)</gco:CharacterString>
  </gmd:name>
  <gmd:description>
    <gco:CharacterString>Capabilities document for Open Geospatial Consortium Web Map Service for
    Geophysical Trackline Data</gco:CharacterString>
  </gmd:description>
  <gmd:function>
    <gmd:CI_OnLineFunctionCode
      codeList="http://www.ngdc.noaa.gov/metadata/published/xsd/schema/resources/Codelist/gmxCodeLists.
      xml#CI_OnLineFunctionCode" codeListValue="search">search</gmd:CI_OnLineFunctionCode>
  </gmd:function>
</gmd:CI_OnlineResource>
```

ISO 19115 with multiple services:

```

<gmd:transferOptions>
  <gmd:MD_DigitalTransferOptions>
    <gmd:onLine>
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CSDGM:

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      <city>Moscow</city>
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      <postal>83843</postal>
      <country>USA</country>
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    <cntvoice>555-555-5555</cntvoice>
    <cntemail>JaneDoe@email.com</cntemail>
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management and conservation lands nationally, including voluntarily provided privately protected
areas</formcont>
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CSDGM with multiple services:

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    </cntperp>
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      <city>Moscow</city>
      <state>Idaho</state>
      <postal>83843</postal>
      <country>USA</country>
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    <cntvoice>555-555-5555</cntvoice>
    <cntemail>JaneDoe@email.com</cntemail>
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management and conservation lands nationally, including voluntarily provided privately protected
areas</formcont>
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Geospatial Data Download:

ISO 19115:

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      Carolina</gco:CharacterString>
  </gmd:name>
  <gmd:description>
    <gco:CharacterString> 911 Public Safety Answering Point (PSAP) service area boundaries in North Carolina
      According to the National Emergency Number Association (NENA), a Public Safety Answering Point (PSAP)
      is a facility equipped and staffed to receive 9-1-1 calls. The service area is the geographic area within which a
      911 call placed using a landline is answered at the associated PSAP. This dataset only includes primary
      PSAPs. Secondary PSAPs, backup PSAPs, and wireless PSAPs have been excluded from this
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</gmd:CI_OnlineResource>

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CSDGM:

```

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    <cntinfo>
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      <cntaddr>
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        <postal>83843</postal>
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      <cntvoice>555-555-5555</cntvoice>
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  <distliab>No official distribution liability. Distributor assumes no liability for misuse of data.</distliab>
  <stdorder>
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        <formspec>download</formspec>
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          to the National Emergency Number Association (NENA), a Public Safety Answering Point (PSAP) is a facility
          equipped and staffed to receive 9-1-1 calls. The service area is the geographic area within which a 911 call

```

National Geospatial Data Assets (NGDA) Metadata Guidelines

placed using a landline is answered at the associated PSAP. This dataset only includes primary PSAPs. Secondary PSAPs, backup PSAPs, and wireless PSAPs have been excluded from this dataset </formcont>

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