DRAFT Encoding Standard for Geospatial Metadata

Federal Geographic Data Committee

Clearinghouse Working Group

October 1, 1996 (Revised February 17. 2000)

1.0 Background

The body of the Content Standards for Digital Geospatial Metadata developed by the Federal Geographic Data Committee (FGDC) defines the content of a set of metadata elements, their definitions, data types, and inherent dependencies. The logical model of the metadata provided neither specifies the form of implementation nor the form of presentation of such metadata. A primary goal in the management of spatial metadata is the ability to access the metadata and the related spatial data. This requires software implementations using common encoding methods to achieve operational use of the spatial metadata in metadata development and sharing through Clearinghouse.

1.1 Problem statement

Implementation methods are required to provide for the exchange of metadata between data management systems, the presentation of the metadata element tags in a variety of forms and languages, and to assure means to assess the compliance of metadata produced and made available.

1.2 Scope and Objectives

This standard defines methods for the encoding of FGDC metadata element structure and content for the purposes of search and retrieval and metadata exchange by declaring an unambiguous computer-readable and parseable format for use within the geospatial data community. The intent of the standard is to permit flexibility in the local capture and management of the metadata and to facilitate consistent access to and exchange of spatial metadata via the National Geospatial Data Clearinghouse and other sharing and publishing mechanisms only where rigorous encoding standards are appropriate.

This proposed standard is to be applied as a preferred exchange format to transfer metadata entries in an ASCII-based form without loss of information or context for the purposes of import and export by Clearinghouse software. It is intended for use among users of FGDC metadata, between metadata producers, editors, and Clearinghouse service providers where the exchange of full content of metadata is required. It is not intended for use as a presentation format. When used with style sheets, the encoding standard may optionally be used to systematize the exchange and presentation of FGDC metadata in compatible software and word processing packages. It is not designed to define the internal format of the metadata within a metadata management system or the default presentation format of the metadata, but is intended to assist in the loading (import) and reporting from (exporting) metadata from such systems.

2.0 Metadata Structure and Encoding

Regardless of implementation, the metadata elements, as described in the Content Standards for Digital Geospatial Metadata, must be managed in such a way to preserve the FGDC elements and the hierarchical or dependent relationships among elements to maintain the context of the information. Such metadata structure is required to correctly formulate

complex queries against elements within repeating groups of metadata and to generate properly formatted metadata reports for exchange. Metadata may be managed using any relevant data structure that supports these formal data element relationships, but shall use the following encoding method for the purpose of loading, exporting, and indexing FGDC metadata using metadata and server software during the phases of metadata collection, exchange, and service to support the NSDI Clearinghouse activity.

For the purpose of data transfer, metadata software shall support the input and output of metadata entries using Extensible Markup Language (XML), as defined by the World Wide Web Consortium (W3C:REC-xml-19980210). Each metadata entry shall be encoded as single XML document entity for exchange, referencing a common set of elements defined in a Document Type Declaration (DTD). A DTD encodes the authoritative structure of a document, in this case an FGDC metadata entry, and is used by parsing software to validate and assist in the processing of a metadata entry. The authoritative DTD Version 2.0 (to be referred to as the "Base DTD") for a spatial metadata entry is included as Normative Annex A and reflects the current state of the FGDC metadata standard. The default encoding requirements for metadata management and Clearinghouse service software shall include support for this DTD on load and export.

2.1 Metadata Element Tagging

The long metadata element names listed in the Content Standards for Digital Geospatial Metadata are not necessary for the computer-based encoding and decoding of the metadata using XML. 8-character tags were developed and approved by the Clearinghouse Working Group for use in XML. Through use of shorter mnemonic tags, metadata content is decoupled from its potential display, and can be rendered in any number of ways including tags in English and other languages, community preferred aliases, or even numeric tags. The full crosswalk of the XML tags and the FGDC verbose element names is available at the following location: Tag8names

2.2 Extensibility

User communities interested in encoding extensions to the metadata standard must support the Base DTD as a default for encoding geospatial metadata but may also provide XML-encoded metadata by developing a modified DTD for use by the community. Interoperability is assured through use of the Base DTD, whereas extended content and services are supported by community DTDs which should be published by the community on Internet-accessible websites and referenced from within the XML document explicitly.

2.3 Reflecting New Standards

The Content Standards for Digital Geospatial Metadata were initially issued in June 1994 and revised in 1998. Extensive adoption and interpretation of the standard has taken place in the federal, local, and international communities, yielding requirements for changes to the standard. The International Standards Organization is undertaking geospatial metadata as an element of its comprehensive geomatics standards effort under Technical Committee 211. Version 3 of the FGDC Content Standard will be harmonized with the ISO TC 211 work culminating in the ISO Standard 19115. The ISO standard will also likely specify an XML representation of its content. Work will begin in 2000 to develop a U.S. National Profile of ISO 19115 and its representation in XML which will be reflected by this document.

Software written to operate on geospatial metadata will need to support the new DTD soon after the standard is revised.

2.4 Available Software Tools

The metadata parser (mp) written by the U.S. Geological Survey permits the validation of FGDC metadata by enforcing the production rules of the FGDC metadata standard. In addition, it facilitates the creation of HyperText Markup Language (HTML), Extensible Markup Language (XML), and text from either text or XML inputs. The mp software

can be used to validate and create XML-encoded metadata, although the adoption of XML for encoding permits the use of other freely-available and commercial XML validation, processing, and presentation software packages that will eventually replace the functionality of the mp software and enable new functionality.

The metadata parser software is available at:
http://geochange.er.usgs.gov/pub/tools/metadata/tools/doc/mp.html

Reference to available XML support software is available at:
http://www.xml.org.

Clearinghouse tutorial materials are available at:
http://www.fgdc.gov/clearinghouse/tutorials/howto.html

3.0 Normative Annex A: FGDC "Base DTD" Version 2.0 (Document Type Declaration)

The authoritative "Base DTD 2.0" for Version 2 of the Content Standard for Digital Geospatial Metadata may be referenced on-line at the following location:

http://www.fgdc.gov/metadata/fgdc-std-001-1998.dtd and is displayed below for reference.

```
<!-- FGDC Metadata DTD (local version 3.0.1 19990611)                    -->

<!-- This is the Document Type Declaration for formal metadata, metadata  -->
<!-- conforming to the Content Standards for Digital Geospatial Metadata  -->
<!-- of the Federal Geographic Data Committee.  This DTD corresponds to   -->
<!-- the June, 1998 version of the standard, FGDC-STD-001-1998.          -->
<!-- This file is the XML DTD.                                            -->

<!-- Tags:                                                                -->
<!--     Tags are a maximum of 8-characters long, to coincide with the    -->
<!--     Reference Concrete Syntax.  In some systems, this will obviate   -->
<!--     the need for an explicit SGML declaration.                       -->

<!-- Entity sets:                                                         -->
<!--     Scalar values (meaning the values of elements that are not       -->
<!--     compound) are here declared #PCDATA to allow parsers to          -->
<!--     recognize and support entities representing special characters   -->
<!--     such as the degree symbol, less, and greater.                    -->

<!-- Element ordering:                                                    -->
<!--     Generally the order of elements is now significant.  XML makes   -->
<!--     it difficult to write a DTD that allows elements to be in any    -->
<!--     order.                                                           -->

<!-- Authors:                                                             -->
<!--     Peter N. Schweitzer (U.S. Geological Survey, Reston, VA 20192)   -->
<!--     with assistance from Doug Nebert (USGS), Eric Miller (OCLC),     -->
<!--     Quinn Hart (CERES), Jim Frew (UCSB), and Archie Warnock (AWWW).  -->
<!--                                                                      -->

<!-- Revisions:                                                           -->
```

```
<!--    19990611 (PNS) Removed extinfo from content model of metadata.   -->
<!--                Removed SGML entity declarations, replaced with   -->
<!--                 Latin-1 entity declarations from HTML. (3.0.1)    -->

<!--
==========================================================================-->

<!ENTITY % HTMLlat1 PUBLIC
      "-//W3C//ENTITIES Full Latin 1//EN//HTML"
      "http://www.fgdc.gov/metadata/HTMLlat1"
      >

%HTMLlat1;

<!--
==========================================================================-->

<!ELEMENT metadata (idinfo, dataqual?, spdoinfo?, spref?, eainfo?, distinfo*, metainfo)>
<!ELEMENT idinfo   (citation, descript, timeperd, status, spdom, keywords, accconst, useconst,
ptcontac?, browse*, datacred?, secinfo?, native?, crossref*)>
<!ELEMENT citation (citeinfo)>
<!ELEMENT descript (abstract, purpose, supplinf?)>
<!ELEMENT timeperd (timeinfo, current)>
<!ELEMENT status   (progress, update)>
<!ELEMENT spdom    (bounding, dsgpoly*)>
<!ELEMENT bounding (westbc, eastbc, northbc, southbc)>
<!ELEMENT dsgpoly  (dsgpolyo, dsgpolyx*)>
<!ELEMENT dsgpolyo ((grngpoin,grngpoin,grngpoin,grngpoin+) | gring)>
<!ELEMENT dsgpolyx ((grngpoin,grngpoin,grngpoin,grngpoin+) | gring)>
<!ELEMENT grngpoin (gringlat,gringlon)>
<!ELEMENT keywords (theme+, place*, stratum*, temporal*)>
<!ELEMENT theme    (themekt, themekey+)>
<!ELEMENT place    (placekt, placekey+)>
<!ELEMENT stratum  (stratkt, stratkey+)>
<!ELEMENT temporal (tempkt, tempkey+)>
<!ELEMENT ptcontac (cntinfo)>
<!ELEMENT browse   (browsen, browsed, browset)>
<!ELEMENT secinfo  (secsys, secclass, sechandl)>
<!ELEMENT crossref (citeinfo)>
<!ELEMENT dataqual (attracc?, logic, complete, posacc?, lineage, cloud?)>
<!ELEMENT attracc  (attraccr, qattracc*)>
<!ELEMENT qattracc (attraccv, attracce)>
<!ELEMENT posacc   (horizpa?, vertacc?)>
<!ELEMENT horizpa  (horizpar, qhorizpa*)>
<!ELEMENT qhorizpa (horizpav, horizpae)>
<!ELEMENT vertacc  (vertaccr, qvertpa*)>
<!ELEMENT qvertpa  (vertaccv, vertacce)>
<!ELEMENT lineage  (srcinfo*, procstep+)>
<!ELEMENT srcinfo  (srccite, srcscale?, typesrc, srctime, srccitea, srccontr)>
<!ELEMENT srccite  (citeinfo)>
<!ELEMENT srctime  (timeinfo, srccurr)>
<!ELEMENT procstep (procdesc, srcused*, procdate, proctime?, srcprod*, proccont?)>
<!ELEMENT proccont (cntinfo)>
<!ELEMENT spdoinfo (indspref?, (direct, ((ptvctinf | rastinfo))?)?)>
<!ELEMENT ptvctinf ((sdtsterm+ | vpfterm))>
<!ELEMENT sdtsterm (sdtstype, ptvctcnt?)>
```

```
<!ELEMENT vpfterm  (vpflevel, vpfinfo+)>
<!ELEMENT vpfinfo  (vpftype, ptvctcnt?)>
<!ELEMENT rastinfo (rasttype, (rowcount, colcount, vrtcount?)?)>
<!ELEMENT spref    (horizsys?, vertdef?)>
<!ELEMENT horizsys ((geograph | planar+ | local), geodetic?)>
<!ELEMENT geograph (latres, longres, geogunit)>
<!ELEMENT planar   ((mapproj | gridsys | localp), planci)>
<!ELEMENT mapproj  (mapprojn, (albers | azimequi | equicon | equirect | gvnsp | gnomonic |
lamberta | lambertc | mercator | modsak | miller | obqmerc | orthogr | polarst | polycon | robinson | sinusoid |
spaceobq | stereo | transmer | vdgrin | otherprj | mapprojp))>
<!ELEMENT albers   (stdparll+, longcm, latprjo, feast, fnorth)>
<!ELEMENT azimequi (longcm, latprjo, feast, fnorth)>
<!ELEMENT equicon  (stdparll+, longcm, latprjo, feast, fnorth)>
<!ELEMENT equirect (stdparll, longcm, feast, fnorth)>
<!ELEMENT gvnsp    (heightpt, longpc, latprjc, feast, fnorth)>
<!ELEMENT gnomonic (longpc, latprjc, feast, fnorth)>
<!ELEMENT lamberta (longpc, latprjc, feast, fnorth)>
<!ELEMENT lambertc (stdparll+, longcm, latprjo, feast, fnorth)>
<!ELEMENT mercator ((stdparll | sfequat), longcm, feast, fnorth)>
<!ELEMENT modsak   (feast, fnorth)>
<!ELEMENT miller   (longcm, feast, fnorth)>
<!ELEMENT obqmerc  (sfctrlin, (obqlazim | obqlpt), latprjo, feast, fnorth)>
<!ELEMENT obqlazim (azimangl, azimptl)>
<!ELEMENT obqlpt   ((obqllat, obqllong),(obqllat, obqllong))>
<!ELEMENT orthogr  (longpc, latprjc, feast, fnorth)>
<!ELEMENT polarst  (svlong, (stdparll | sfprjorg), feast, fnorth)>
<!ELEMENT polycon  (longcm, latprjo, feast, fnorth)>
<!ELEMENT robinson (longpc, feast, fnorth)>
<!ELEMENT sinusoid (longcm, feast, fnorth)>
<!ELEMENT spaceobq (landsat, pathnum, feast, fnorth)>
<!ELEMENT stereo   (longpc, latprjc, feast, fnorth)>
<!ELEMENT transmer (sfctrmer, longcm, latprjo, feast, fnorth)>
<!ELEMENT vdgrin   (longcm, feast, fnorth)>
<!ELEMENT mapprojp (azimptl?, azimangl?, feast?, fnorth?, heightpt?, landsat?, latprjc?,
latprjo?, longcm?, longpc?, obqllat*, obqllong*, pathnum?, sfctrlin?, sfctrmer?, sfequat?, sfprjorg?,
stdparll*, svlong?)>
<!ELEMENT gridsys  (gridsysn, (utm | ups | spcs | arcsys | othergrd))>
<!ELEMENT utm      (utmzone, transmer)>
<!ELEMENT ups      (upszone, polarst)>
<!ELEMENT spcs     (spcszone, (lambertc | transmer | obqmerc | polycon))>
<!ELEMENT arcsys   (arczone, (equirect | azimequi))>
<!ELEMENT localp   (localpd, localpgi)>
<!ELEMENT planci   (plance, (coordrep | distbrep), plandu)>
<!ELEMENT coordrep (absres, ordres)>
<!ELEMENT distbrep (distres, bearres, bearunit, bearrefd, bearrefm)>
<!ELEMENT local    (localdes, localgeo)>
<!ELEMENT geodetic (horizdn?, ellips, semiaxis, denflat)>
<!ELEMENT vertdef  (altsys?, depthsys?)>
<!ELEMENT altsys   (altdatum, altres+, altunits, altenc)>
<!ELEMENT depthsys (depthdn, depthres+, depthdu, depthem)>
<!ELEMENT eainfo   (detailed*, overview*)>
<!ELEMENT detailed (enttyp, attr*)>
<!ELEMENT enttyp   (enttypl, enttypd, enttypds)>
<!ELEMENT attr     (attrlabl, attrdef, attrdefs, attrdomv+, (begdatea, enddatea?)*, attrvai?,
attrmfrq?)>
<!ELEMENT attrdomv ((edom+ | rdom | codesetd | udom))>
```

```
<!ELEMENT edom     (edomv, edomvd, edomvds, attr*)>
<!ELEMENT rdom     (rdommin, rdommax, attrunit?, attrmres?, attr*)>
<!ELEMENT codesetd (codesetn, codesets)>
<!ELEMENT attrvai  (attrva, attrvae)>
<!ELEMENT overview (eaover, eadetcit+)>
<!ELEMENT distinfo (distrib, (resdesc?, distliab, stdorder*, custom?, techpreq?, availabl?))>
<!ELEMENT distrib  (cntinfo)>
<!ELEMENT stdorder ((nondig | digform+), fees, ordering?, turnarnd?)>
<!ELEMENT digform  (digtinfo, digtopt)>
<!ELEMENT digtinfo (formname, ((formvern | formverd), formspec?)?, formcont?, filedec?,
transize?)>
<!ELEMENT digtopt  (((onlinopt | offoptn))+)>
<!ELEMENT onlinopt (computer+, accinstr?, oncomp?)>
<!ELEMENT computer ((networka | dialinst))>
<!ELEMENT networka (networkr+)>
<!ELEMENT dialinst (lowbps, highbps?, numdata, numstop, parity, compress?, dialtel+,
dialfile+)>
<!ELEMENT offoptn  (offmedia, reccap?, recfmt+, compat?)>
<!ELEMENT reccap   (recden+, recdenu)>
<!ELEMENT availabl (timeinfo)>
<!ELEMENT metainfo (metd, (metrd, metfrd?)?, metc, metstdn, metstdv, mettc?, metac?, metuc?,
metsi?, metextns*)>
<!ELEMENT metc     (cntinfo)>
<!ELEMENT metsi    (metscs, metsc, metshd)>
<!ELEMENT metextns (onlink*, metprof?)>
<!ELEMENT citeinfo (origin+, pubdate, pubtime?, title, edition?, geoform?, serinfo?, pubinfo?,
othercit?, onlink*, lworkcit?)>
<!ELEMENT serinfo  (sername, issue)>
<!ELEMENT pubinfo  (pubplace, publish)>
<!ELEMENT lworkcit (citeinfo)>
<!ELEMENT timeinfo ((sngdate | mdattim | rngdates))>
<!ELEMENT sngdate  (caldate, time?)>
<!ELEMENT mdattim  (sngdate+)>
<!ELEMENT rngdates (begdate, begtime?, enddate, endtime?)>
<!ELEMENT cntinfo  ((cntperp | cntorgp), cntpos?, cntaddr+, cntvoice+, cnttdd*, cntfax*,
cntemail*, hours?, cntinst?)>
<!ELEMENT cntperp  (cntper, cntorg?)>
<!ELEMENT cntorgp  (cntorg, cntper?)>
<!ELEMENT cntaddr  (addrtype, address*, city, state, postal, country?)>
<!ELEMENT arczone  (#PCDATA)>
<!ELEMENT absres   (#PCDATA)>
<!ELEMENT abstract (#PCDATA)>
<!ELEMENT accconst (#PCDATA)>
<!ELEMENT accinstr (#PCDATA)>
<!ELEMENT address  (#PCDATA)>
<!ELEMENT addrtype (#PCDATA)>
<!ELEMENT altdatum (#PCDATA)>
<!ELEMENT altunits (#PCDATA)>
<!ELEMENT altenc   (#PCDATA)>
<!ELEMENT altres   (#PCDATA)>
<!ELEMENT attracce (#PCDATA)>
<!ELEMENT attraccr (#PCDATA)>
<!ELEMENT attraccv (#PCDATA)>
<!ELEMENT attrdef  (#PCDATA)>
<!ELEMENT attrdefs (#PCDATA)>
<!ELEMENT attrlabl (#PCDATA)>
```

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<!ELEMENT attrmfrq (#PCDATA)>
<!ELEMENT attrmres (#PCDATA)>
<!ELEMENT attrunit (#PCDATA)>
<!ELEMENT attrva   (#PCDATA)>
<!ELEMENT attrvae  (#PCDATA)>
<!ELEMENT azimptl  (#PCDATA)>
<!ELEMENT azimangl (#PCDATA)>
<!ELEMENT bearrefd (#PCDATA)>
<!ELEMENT bearrefm (#PCDATA)>
<!ELEMENT bearres  (#PCDATA)>
<!ELEMENT bearunit (#PCDATA)>
<!ELEMENT begdate  (#PCDATA)>
<!ELEMENT begdatea (#PCDATA)>
<!ELEMENT begtime  (#PCDATA)>
<!ELEMENT browsed  (#PCDATA)>
<!ELEMENT browsen  (#PCDATA)>
<!ELEMENT browset  (#PCDATA)>
<!ELEMENT caldate  (#PCDATA)>
<!ELEMENT city     (#PCDATA)>
<!ELEMENT cloud    (#PCDATA)>
<!ELEMENT codesetn (#PCDATA)>
<!ELEMENT codesets (#PCDATA)>
<!ELEMENT colcount (#PCDATA)>
<!ELEMENT compat   (#PCDATA)>
<!ELEMENT complete (#PCDATA)>
<!ELEMENT compress (#PCDATA)>
<!ELEMENT cntemail (#PCDATA)>
<!ELEMENT cntfax   (#PCDATA)>
<!ELEMENT cntinst  (#PCDATA)>
<!ELEMENT cntorg   (#PCDATA)>
<!ELEMENT cntper   (#PCDATA)>
<!ELEMENT cntpos   (#PCDATA)>
<!ELEMENT cnttdd   (#PCDATA)>
<!ELEMENT cntvoice (#PCDATA)>
<!ELEMENT country  (#PCDATA)>
<!ELEMENT current  (#PCDATA)>
<!ELEMENT custom   (#PCDATA)>
<!ELEMENT datacred (#PCDATA)>
<!ELEMENT denflat  (#PCDATA)>
<!ELEMENT depthdn  (#PCDATA)>
<!ELEMENT depthdu  (#PCDATA)>
<!ELEMENT depthem  (#PCDATA)>
<!ELEMENT depthres (#PCDATA)>
<!ELEMENT dialfile (#PCDATA)>
<!ELEMENT dialtel  (#PCDATA)>
<!ELEMENT direct   (#PCDATA)>
<!ELEMENT distres  (#PCDATA)>
<!ELEMENT distliab (#PCDATA)>
<!ELEMENT eastbc   (#PCDATA)>
<!ELEMENT edition  (#PCDATA)>
<!ELEMENT ellips   (#PCDATA)>
<!ELEMENT enddate  (#PCDATA)>
<!ELEMENT enddatea (#PCDATA)>
<!ELEMENT endtime  (#PCDATA)>
<!ELEMENT enttypd  (#PCDATA)>
<!ELEMENT enttypds (#PCDATA)>
```

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<!ELEMENT enttypl  (#PCDATA)>
<!ELEMENT eadetcit (#PCDATA)>
<!ELEMENT eaover   (#PCDATA)>
<!ELEMENT edomv    (#PCDATA)>
<!ELEMENT edomvd   (#PCDATA)>
<!ELEMENT edomvds  (#PCDATA)>
<!ELEMENT feast    (#PCDATA)>
<!ELEMENT fnorth   (#PCDATA)>
<!ELEMENT fees     (#PCDATA)>
<!ELEMENT filedec  (#PCDATA)>
<!ELEMENT formcont (#PCDATA)>
<!ELEMENT formname (#PCDATA)>
<!ELEMENT formspec (#PCDATA)>
<!ELEMENT formverd (#PCDATA)>
<!ELEMENT formvern (#PCDATA)>
<!ELEMENT gringlat (#PCDATA)>
<!ELEMENT gringlon (#PCDATA)>
<!ELEMENT geogunit (#PCDATA)>
<!ELEMENT geoform  (#PCDATA)>
<!ELEMENT gridsysn (#PCDATA)>
<!ELEMENT heightpt (#PCDATA)>
<!ELEMENT highbps  (#PCDATA)>
<!ELEMENT horizdn  (#PCDATA)>
<!ELEMENT horizpae (#PCDATA)>
<!ELEMENT horizpar (#PCDATA)>
<!ELEMENT horizpav (#PCDATA)>
<!ELEMENT hours    (#PCDATA)>
<!ELEMENT indspref (#PCDATA)>
<!ELEMENT issue    (#PCDATA)>
<!ELEMENT landsat  (#PCDATA)>
<!ELEMENT latres   (#PCDATA)>
<!ELEMENT latprjc  (#PCDATA)>
<!ELEMENT latprjo  (#PCDATA)>
<!ELEMENT localdes (#PCDATA)>
<!ELEMENT localgeo (#PCDATA)>
<!ELEMENT localpd  (#PCDATA)>
<!ELEMENT localpgi (#PCDATA)>
<!ELEMENT logic    (#PCDATA)>
<!ELEMENT longres  (#PCDATA)>
<!ELEMENT longcm   (#PCDATA)>
<!ELEMENT longpc   (#PCDATA)>
<!ELEMENT lowbps   (#PCDATA)>
<!ELEMENT update   (#PCDATA)>
<!ELEMENT mapprojn (#PCDATA)>
<!ELEMENT metac    (#PCDATA)>
<!ELEMENT metd     (#PCDATA)>
<!ELEMENT metfrd   (#PCDATA)>
<!ELEMENT metrd    (#PCDATA)>
<!ELEMENT metsc    (#PCDATA)>
<!ELEMENT metscs   (#PCDATA)>
<!ELEMENT metshd   (#PCDATA)>
<!ELEMENT metstdn  (#PCDATA)>
<!ELEMENT metstdv  (#PCDATA)>
<!ELEMENT mettc    (#PCDATA)>
<!ELEMENT metuc    (#PCDATA)>
<!ELEMENT native   (#PCDATA)>
```

```
<!ELEMENT networkr (#PCDATA)>
<!ELEMENT nondig   (#PCDATA)>
<!ELEMENT northbc  (#PCDATA)>
<!ELEMENT numdata  (#PCDATA)>
<!ELEMENT numstop  (#PCDATA)>
<!ELEMENT obqllat  (#PCDATA)>
<!ELEMENT obqllong (#PCDATA)>
<!ELEMENT offmedia (#PCDATA)>
<!ELEMENT oncomp   (#PCDATA)>
<!ELEMENT onlink   (#PCDATA)>
<!ELEMENT ordering (#PCDATA)>
<!ELEMENT ordres   (#PCDATA)>
<!ELEMENT origin   (#PCDATA)>
<!ELEMENT othercit (#PCDATA)>
<!ELEMENT othergrd (#PCDATA)>
<!ELEMENT otherprj (#PCDATA)>
<!ELEMENT parity   (#PCDATA)>
<!ELEMENT pathnum  (#PCDATA)>
<!ELEMENT placekey (#PCDATA)>
<!ELEMENT placekt  (#PCDATA)>
<!ELEMENT plance   (#PCDATA)>
<!ELEMENT plandu   (#PCDATA)>
<!ELEMENT ptvctcnt (#PCDATA)>
<!ELEMENT postal   (#PCDATA)>
<!ELEMENT procdate (#PCDATA)>
<!ELEMENT procdesc (#PCDATA)>
<!ELEMENT proctime (#PCDATA)>
<!ELEMENT progress (#PCDATA)>
<!ELEMENT pubdate  (#PCDATA)>
<!ELEMENT pubplace (#PCDATA)>
<!ELEMENT pubtime  (#PCDATA)>
<!ELEMENT publish  (#PCDATA)>
<!ELEMENT purpose  (#PCDATA)>
<!ELEMENT rdommax  (#PCDATA)>
<!ELEMENT rdommin  (#PCDATA)>
<!ELEMENT rasttype (#PCDATA)>
<!ELEMENT recden   (#PCDATA)>
<!ELEMENT recdenu  (#PCDATA)>
<!ELEMENT recfmt   (#PCDATA)>
<!ELEMENT resdesc  (#PCDATA)>
<!ELEMENT rowcount (#PCDATA)>
<!ELEMENT sdtstype (#PCDATA)>
<!ELEMENT spcszone (#PCDATA)>
<!ELEMENT sfctrlin (#PCDATA)>
<!ELEMENT sfctrmer (#PCDATA)>
<!ELEMENT sfequat  (#PCDATA)>
<!ELEMENT sfprjorg (#PCDATA)>
<!ELEMENT secclass (#PCDATA)>
<!ELEMENT secsys   (#PCDATA)>
<!ELEMENT sechandl (#PCDATA)>
<!ELEMENT semiaxis (#PCDATA)>
<!ELEMENT sername  (#PCDATA)>
<!ELEMENT srccitea (#PCDATA)>
<!ELEMENT srccontr (#PCDATA)>
<!ELEMENT srccurr  (#PCDATA)>
<!ELEMENT srcprod  (#PCDATA)>
```

```
<!ELEMENT srcscale (#PCDATA)>
<!ELEMENT srcused  (#PCDATA)>
<!ELEMENT southbc  (#PCDATA)>
<!ELEMENT stdparll (#PCDATA)>
<!ELEMENT state    (#PCDATA)>
<!ELEMENT svlong   (#PCDATA)>
<!ELEMENT stratkey (#PCDATA)>
<!ELEMENT stratkt  (#PCDATA)>
<!ELEMENT supplinf (#PCDATA)>
<!ELEMENT techpreq (#PCDATA)>
<!ELEMENT tempkey  (#PCDATA)>
<!ELEMENT tempkt   (#PCDATA)>
<!ELEMENT themekey (#PCDATA)>
<!ELEMENT themekt  (#PCDATA)>
<!ELEMENT time     (#PCDATA)>
<!ELEMENT title    (#PCDATA)>
<!ELEMENT transize (#PCDATA)>
<!ELEMENT turnarnd (#PCDATA)>
<!ELEMENT typesrc  (#PCDATA)>
<!ELEMENT upszone  (#PCDATA)>
<!ELEMENT utmzone  (#PCDATA)>
<!ELEMENT udom     (#PCDATA)>
<!ELEMENT useconst (#PCDATA)>
<!ELEMENT vpftype  (#PCDATA)>
<!ELEMENT vpflevel (#PCDATA)>
<!ELEMENT vrtcount (#PCDATA)>
<!ELEMENT vertacce (#PCDATA)>
<!ELEMENT vertaccr (#PCDATA)>
<!ELEMENT vertaccv (#PCDATA)>
<!ELEMENT westbc   (#PCDATA)>
<!ELEMENT gring    (#PCDATA)>
<!ELEMENT metprof  (#PCDATA)>

<!-- End of FGDC Metadata DTD -->
```