

2008 National Emissions Inventory

Emissions Inventory System Implementation Plan

Section 5 Submitting XML Data to the EIS

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Section 5

Submitting XML Data to the EIS

This section provides instructions on using the Consolidated Emissions Reporting Schema (CERS) to submit data to the EIS. It is intended for information technology and inventory development staff responsible for implementing the CERS and preparing an EIS submission, and includes:

- An overview of the EIS domain;
- A brief overview of XML principles as they apply to the CERS;
- An overview of the Node 2.0 header structure including how the CERS payload should be implemented;
- The CERS, constituent complex types, data elements, and processing rules; and
- Best practices for preparing and formatting data for the EIS.

This section contains a description for all complex types and all data elements included in the CERS version 1.0, with an emphasis on those complex types and data elements that make up the EIS submission. Instructions of which complex types and/or data elements that should not be reported to the EIS are clearly specified. For category-specific reporting instructions about reporting the data, see Sections 6 through 12. For information on the resources available from EPA to convert your data into an XML document, see Section 2, "Transitioning to the 2008 NEI."

5.1 EIS Domain Model

This section introduces the EIS domain model by using a set of domain view diagrams, one for each data category. These diagrams show the relationships among the EIS entities and how they map to the schema's hierarchical structure. The diagrams should not be interpreted as a guide for database development. They are intended to assist you in mapping your current data to the EIS domain for the purposes of creating XML documents.

5.1.1 How to Read the EIS Domain Model Diagrams

Figures 5-2 through 5-6 are diagrams of the EIS domain model, each presenting a view of one data category. Each view shows, for that data category, the EIS entities in boxes and their relationships to one another using

directional lines. An entity may or may not be directly represented by a table in the EIS entity-relationship-diagram (ERD) model. Entities are objects or data abstractions that have identity and contain value data. The number of occurrences possible for each relationship, or *multiplicity*, is also shown. The table in Figure 5-1 explains how to read the diagrams. Phrases

Important Note

This section of the NEIP contains information **ONLY** on the EIS domain, and not the entire CERS domain. There are numerous entities in the CERS domain that are not used for reporting data to the EIS. For complete information on the CERS domain, see Appendix 2, "CERS and Examples."

describing the relationship between these entities should be read in the direction of the arrow. For example, in Figure 5-2, the relationship between the Emissions Unit and Emissions Process entities is read as: "An Emissions Unit has at least one Emissions Process."

Figure 5-1
Domain Model Multiplicity

Indicator	Meaning	Explanation
0..1	Zero or one	The relationship may exist once.
1	One only	The relationship must exist, and can only exist once.
0..*	Zero or more	The relationship does not have to exist, but may exist more than once.
1..*	One or more	The relationship must exist, and can exist more than once.

5.1.2 Facility Inventory Domain View

Figure 5-2 is a diagram showing the facility inventory view of the EIS domain model. The facility inventory data category consists of the facility site, emissions units, emissions processes, release points, and the control approaches used to reduce emissions. In addition, regulatory programs are reported here that are applicable to either an emissions unit or an emissions process.

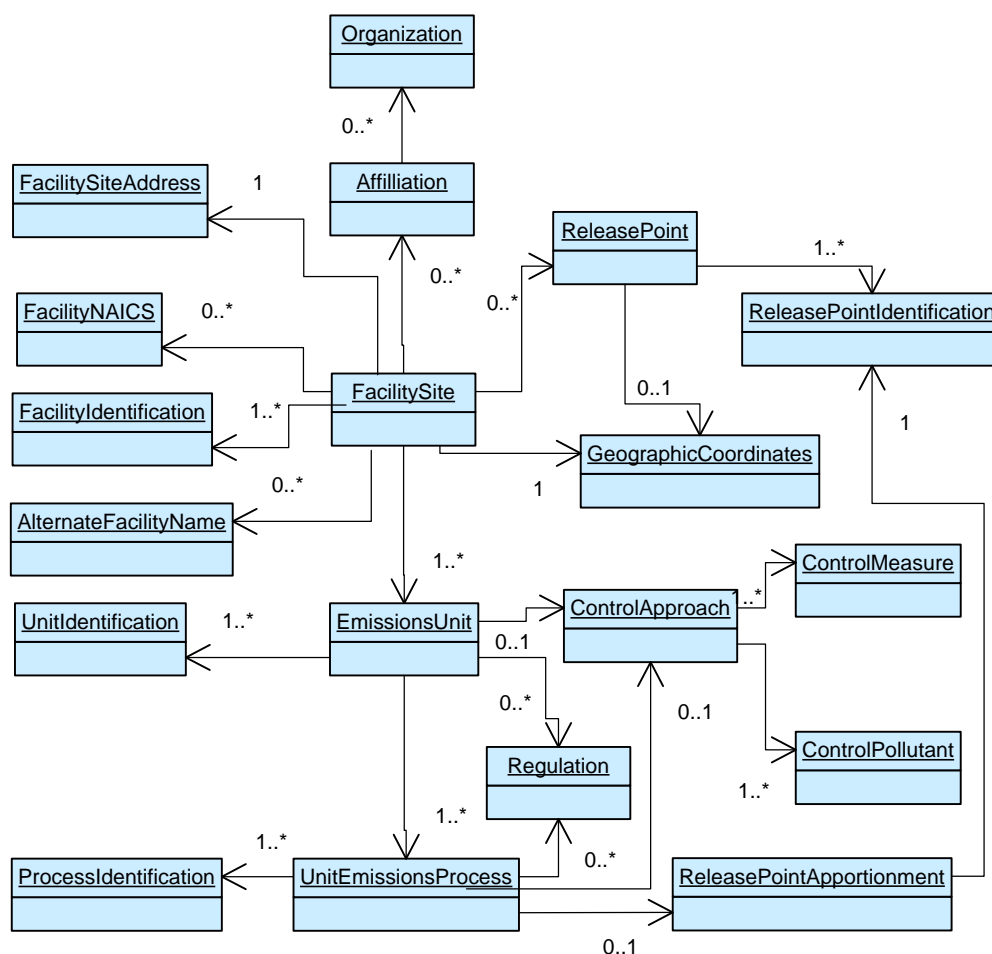
A **FacilitySite** describes the stationary source where emissions activities occur. A **FacilitySite** is known by its EIS Identifier and/or by the S/L/T agency assigned identifier and are referenced accordingly by **FacilityIdentification**. Other **FacilityIdentification** may come for other data sources which the S/L/T will not provide. These include identifiers from the CAMD Business System (CBS), and the Federal Registry System (FRS). The locality of the site is identified by one **FacilitySiteAddress** and one **GeographicalCoordinates** record which provide the latitude and longitude measures of the site. The facility site may also be known by other **AlternativeFacilityNames** which an S/L/T may report. This information is provided from the local S/L/T information system. The **Affiliation** between a **FacilitySite** and an **Organization** may be reported.

A **FacilitySite** must always indicate at least one **EmissionsUnit** to report emissions. An **EmissionsUnit** may be known by its EIS identifier and/or by other **UnitIdentification** which an S/L/T may report. As with **FacilityIdentification**, other **UnitIdentification** not submitted by S/L/Ts will be included in the EIS. These identifiers are provided from other agency data systems, such as the CBS. The **EmissionsUnit** is associated with one or more **UnitEmissionsProcess** which are known by EIS or SLT **ProcessIdentification**. **EmissionsUnits** and **UnitEmissionsProcesses** may be controlled by various emissions reduction techniques. This is known as a **ControlApproach**. An **EmissionsUnit** or a **UnitEmissionsProcess** can have no more than one active **ControlApproach**. Each **ControlApproach** identifies one or more pollutants that are being controlled and one or more control measures that are being applied to the emissions unit or emissions process. This relationship is shown with the **ControlPollutant** and **ControlMeasure** entities respectively. A

ControlApproach cannot be reported for both the same single emissions unit and any of its associated emissions processes.

A **UnitEmissionsProcess** is uniquely identified as a process specific to an **EmissionsUnit**, and therefore cannot be shared by multiple **EmissionsUnits**. The percentage of emissions from an emissions process can be apportioned to one or more release points. This is shown with the **ReleasePointApportionment** entity. **ReleasePoints** at a facility site are described by their type (stack or fugitive) and geographic coordinates. **ReleasePoints** may be known by its EIS identifier and/or by other **ReleasePointIdentification**. If a facility site is subject to any federal or non-federal regulatory program or **Regulation**, these can be reported for an **EmissionsUnit** or a **UnitEmissionsProcess** at the facility site. For more information reporting facility inventory see Section 6, "Reporting Instructions for Facility Inventory."

Figure 5-2
Facility Inventory Domain View



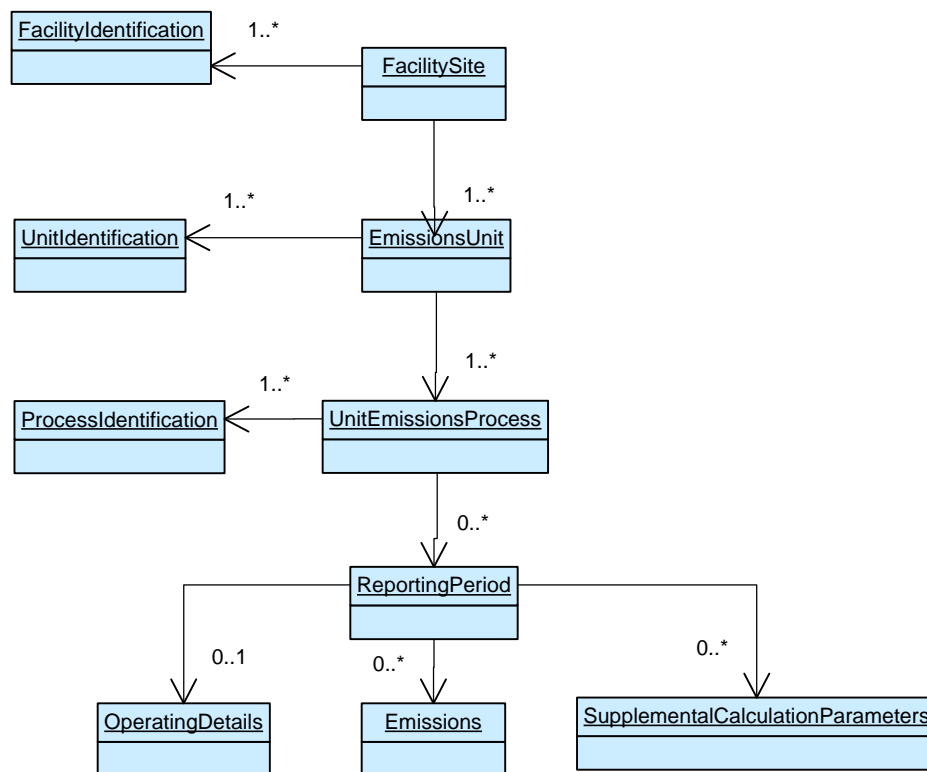
5.1.3 Point Emissions

The point emissions domain view (Figure 5-3) shows the entities that are used for reporting emissions for those stationary sources defined in the facility inventory domain.

To report point emissions, the **FacilitySite** must be present in the EIS. These facility sites are identified by their **FacilityIdentification**. To report emissions, you must always report the **EmissionsUnit** (through the use of its **UnitIdentification**) and its associated **UnitEmissionsProcesses**.

Each **UnitEmissionsProcess** is identified by its **ProcessIdentification** and may be associated with several **ReportingPeriods** for which emissions occur. For more information on the specific reporting time period types see Section 7, "Reporting Instructions for Point Emissions." For each **ReportingPeriod** a single set of **OperatingDetails** may be reported. These data should support the calculation methodologies and supporting parameters used to estimate emissions. **SupplementalCalculationParameter** data may also be reported for combustion sources. **Emissions** are reported for each pollutant for each reporting period.

Figure 5-3
Point Emissions Domain View



5.1.4 Nonpoint Emissions

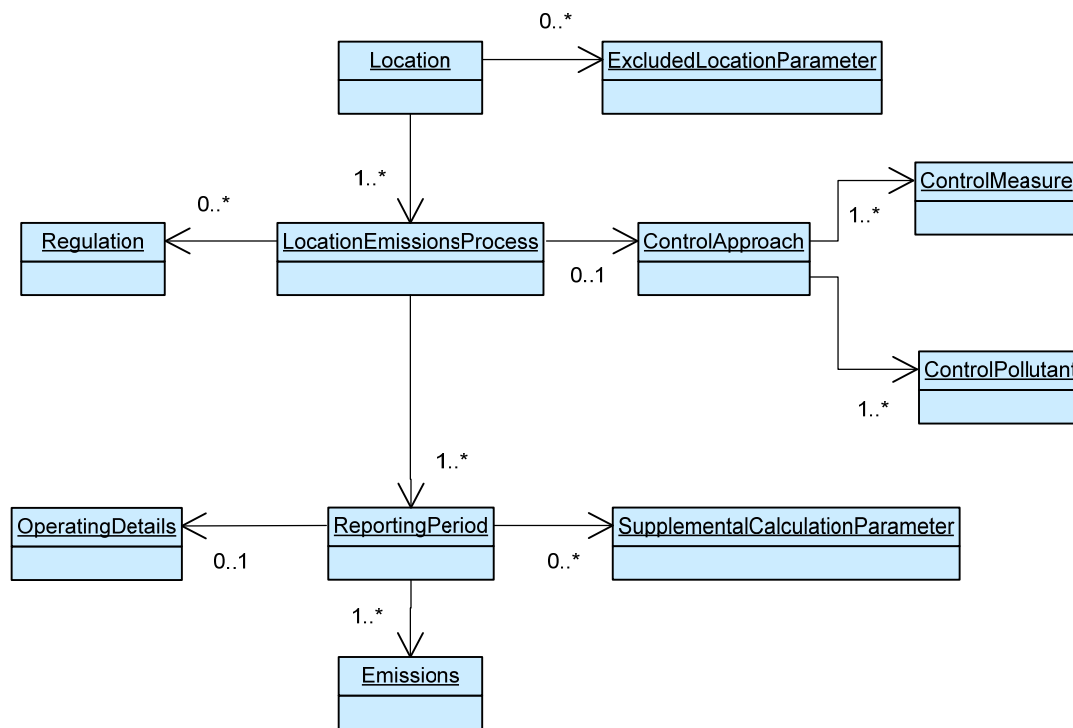
The nonpoint emissions domain view (Figure 5-4) contains the entities needed to report nonpoint emissions.

Nonpoint sources are defined by their geographic area identifiers which are specified in the **Location** complex type. The geographic boundaries are usually State and County FIPS code or Tribal code, but additional capabilities do exist (see Section 8, "Reporting Instructions for Nonpoint Emissions.") A **Location** for nonpoint emissions may have an **ExcludedLocationParameter** which identify one or more other locations for which another Agency is expected to submit emissions to the EIS and for which you are not reporting emissions.

An S/L/T must report a nonpoint **Location** with at least one **LocationEmissionsProcess**. In some cases a **Location** may also have associated **ExcludedLocationParameter** data. A **LocationEmissionsProcess** may have **Emissions** associated with different **ReportingPeriods**. For each **ReportingPeriod** a single set of **OperatingDetails** may be reported. These data should support the calculation methodologies and supporting parameters used to estimate emissions. **SupplementalCalculationParameter** data may also be reported for combustion sources. **Emissions** are reported for each pollutant for each reporting period.

In addition to reporting emissions, nonpoint submissions may include information pertaining to controls that are applicable to nonpoint emissions processes. This is known as a **ControlApproach**. A **LocationEmissionsProcess** can have no more than one active **ControlApproach**. Each **ControlApproach** identifies one or more **ControlPollutants** that are being controlled and one or more **ControlMeasures** that are being applied to the **LocationEmissionsProcess**. **Regulations** may also be reported for a **LocationEmissionsProcess**.

Figure 5-4
Nonpoint Emissions Domain View

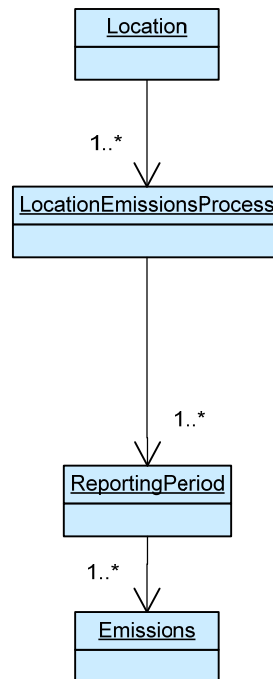


5.1.5 Onroad and Nonroad Emissions

The onroad/nonroad emissions domain view (Figure 5-5) contains the entities needed to report information from models that generate Onroad/Nonroad emissions. Onroad emissions are emissions from vehicles that operate on public roadways. Nonroad emissions are emissions from vehicles and equipment that operate off of public roadways. The **Location** for which both activity and emissions data are submitted is most commonly defined by a State and County FIPS code or Tribal code, but exceptions do exist. See Section 10, "Reporting Instructions for Onroad and Nonroad Emissions."

Both Onroad and Nonroad emissions must report at least one **LocationEmissionsProcess**. A **LocationEmissionsProcess** can be reported for at least one but no more than two different ReportingPeriods. For more information on the specific **ReportingPeriod** types see Section 10, "Reporting Instructions for Onroad and Nonroad Emissions." **Emissions** are reported for each pollutant for each **ReportingPeriod**.

Figure 5-5
Onroad, Nonroad Emissions Domain View

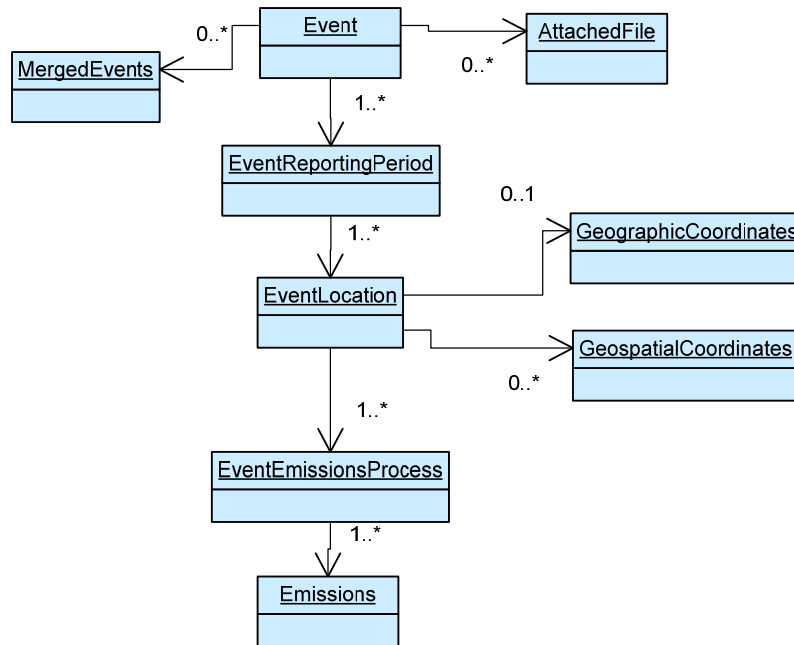


5.1.6 Events

The event domain view (Figure 5-6) contains the entities needed to report emissions resulting from short-term events such as wildfires, prescribed fires, and other non-fire events. These events are reported by their **Event** Identifier which is unique for each event and generally assigned by the land manager who is responsible for the event.

MergedEvents represent two or more events, previously reported as separate events, then reported as one single event complex. For fires these are descriptors that designate whether the fire is being reported as a single total aggregate set of emissions or reported in daily increments. This is reported in **EventReportingPeriod**. An event occurs at an **EventLocation** and may occur over many days. An event can be defined by either its **GeographicCoordinates** (which identify the latitude and longitude and area in which the event occurred) or by referencing **GeospatialCoordinates**. Only one these methods of reporting an Event may be used. Referencing **Geospatial Coordinates** may involve many polygon shapes that describe the size and shape of the location of the event. There can only be two shapes identified for a given day; the shape of the area that is flaming and the shape of the previous day's area that is smoldering. These points or polygon shapes are reported in an **EventAttachedFile** which contains the shapefile associated with the event. Information about the fuels, fuel conditions, combustion characteristics, and activity that produced emissions is known as **EventEmissionsProcesses**. At least one **EventEmissionsProcess** is needed to report **Emissions**.

Figure 5-6
Events Domain View



5.2 Overview of the CERS

This section provides a basic overview of XML and the CERS and includes references to complex types and data elements that should not be reported to the EIS. The CERS is used to report data to many other data flows and therefore includes additional reporting capabilities. A more technical explanation for of the CERS follows in Section 5.4.

5.2.1 Terminology

The following terminology is used throughout this document.

Figure 5-7
Key XML Terms

Key XML Terms

Namespace: A namespace uniquely identifies a set of names such that there is no ambiguity when objects having different origins but the same names are mixed together.

Markup Language: A way to combine text and extra information to show the structure and layout of a document. This information is expressed using markup, which is typically intermingled with the primary text. A commonly known markup language is HTML.

Tuple: An ordered list of objects, each of a specific type. The CERS uses valued pairs consisting of a parameter name and a parameter value to report optional data elements to the EIS.

XML: A markup language for documents containing structured information. The XML specification defines a standard way to add markup to documents. Its primary purpose is to facilitate the sharing of structured data across different information systems, particularly via the internet.

XML Schema: An XML schema describes the structure of an XML document. An XML schema defines the set of rules to which the XML document must conform in order to be considered "valid" according to its schema. An instance of an XML schema is an XML schema document and is a file with the extension .xsd.

XML Document: An XML document is a file containing data organized into a structured document using XML markup. An XML document is considered to be "well-formed" if it conforms to all XML syntax rules. An XML document is considered to be "valid" if it conforms to all the semantic rules defined by an associated XML schema. An XML document cannot be processed if it is not well-formed or valid. XML documents have the file extension .xml.

XML Element: An XML element is a unit of the XML document that is expressed as tags in the form "<tagname>." XML elements must have either a start and end tag as in <FacilitySite> </FacilitySite> or a single empty tag name as in <FacilitySite/>. XML elements may be nested within one another in a structured hierarchy and sequence specified in an XML schema.

XML Attribute: An XML attribute contains additional information about an XML element placed at the start tag of the XML element. XML attributes have the form attributeName = "attributeValue," as in <StateCode="CA">. EIS will use XML attributes to report identifying information or to help the EIS process the data being reported within the EIS elements.

XML Simple Type: An XML element which has no attributes or nested elements.

XML Complex Type: An XML element which has attributes or nested elements. All EIS components described in other section of this document are XML complex types comprised of XML simple types and other complex types.

Figure 5-8 Key Terms Relating to EIS Data Submission

Key Terms Relating to EIS Data Submissions

CDX: *The Central Data Exchange (CDX) serves as the EPA node on the Exchange Network and is the gateway for receiving environmental information through the Web.*

Component: *A component is a group of XML elements. This term is used in other sections of this document to be synonymous with "complex type."*

Content Type: *Denotes the particular form of content. For the purposes of this document, the content types referenced in the EIS schema are elements, attributes, complex types, and attachments.*

Data Block: *A logical grouping of data elements and other data blocks defined for the purposes of reporting data.*

Data Category: *The category of emissions inventory data to be reported. For the EIS, these are:*

- *Facility inventory;*
- *Point emissions;*
- *Nonpoint emissions;*
- *Onroad/nonroad activity;*
- *Onroad/nonroad emissions; and*
- *Event emissions.*

Data Element: *The smallest discrete unit of information that can be reported and still have meaning between systems. Examples of data elements are Agency identifiers, State codes and stack height measure. The EIS will process data elements as part of XML complex types corresponding to complex types defined as part of the reporting instructions.*

Data Type: *The data format defined for a given data element. Common data types include string, integer, and date. EIS requires that all data elements reported in the XML document have a data type of string. These data will be converted by the EIS to the data types defined for each data element in the reporting instructions. For example, the data element EndDate must be reported in XML as a string, but will be converted by the EIS to a date as defined in the various sections of the reporting instructions.*

Exchange Network: *A secure Internet- and standards-based approach for exchanging data.*

Major Data Group: *A logical grouping of related Data Blocks that fully describe business area, functions, and entities.*

Node: *A web server that facilitates the interface between database systems and the Exchange Network. It is a partners "point of presence" on the Exchange Network.*

Node Client: *A type of node that can submit, request, and receive data on the Network, but cannot respond to data queries from other Nodes.*

Submittal Data Block: *The set of data blocks that can be submitted together for a category of data. These submittal data blocks are defined for each data category and contain the minimal complex types necessary to report data such that the EIS can successfully process and integrate the data into the inventory.*

5.2.2 Purpose of the XML Schema

An XML schema is the definition that constrains the structure and content of an XML document written in XML Schema language as defined by the World Wide Web Consortium (W3C). An XML schema defines:

- The elements and attributes that are expected;
- The allowable data types for each element;
- The hierarchy and order in which elements must appear;
- Which elements are optional and which are required; and
- The maximum number of occurrences allowed for each element.

Like the architectural blueprint that describes the structural design of a house, an XML schema describes the structural design of an XML file.

Files submitted to the EIS are accepted or rejected based on their conformity to the EIS XML schema.

5.2.3 Mapping the Domain Models to XML Structures

The domain model views show the associations between entities and therefore may resemble a relational model, similar to how a database may be represented. In comparison, the CERS structure is hierarchical, though it is possible to see a partial representation of the relational aspects of the EIS domain model in the schema complex types. The complex types themselves loosely correspond to tables; each complex type has elements that describe identity and contains data values.

Within the CERS, the hierarchical structure is a partial representation of the relational aspects of the complex types. This can be seen in the way that each complex type nests within another complex type. The nesting of that complex type in the schema demonstrates that the data in that complex type is likely to be stored in a table joined to another table in a relational database.

XML elements are individual pieces of data that correspond to columns in a table in a database. Complex types have only XML elements. These complex types contain data that is related to the owning entity by virtue of the nesting hierarchy in the XML schema.

5.2.4 General Principles Used in Developing the CERS

XML schemas can be created in many different ways, however there are principles that govern the definition and use of the CERS for reporting to the EIS. The following approach to developing and managing the XML schema has been adopted:

- Components have been logically decomposed in order to maximize their reusability among the data categories.
- XML element tag names adhere as closely as possible to EPA's XML data standards.
- XML element tag names specific to a data category reflect this where possible in order to minimize ambiguity, e.g., "FacilitySiteComment" rather than "Comment."

- No two different elements share the same tag name. XML elements are defined unambiguously. No XML element may have more than one semantic meaning for describing data within the XML schema.
- Tag names are understandable to both inventory developers and information technology staff.
- The CERS was not designed to minimize submitted file size. See Section 5.13 for best practices on the maximum size limit for file submission through a network node.
- The CERS may not be the same as the structure of the underlying EIS database.
- Given that several programs use the CERS, very few data types are enforced by the CERS. Most data elements are reported as strings but must conform to the required reporting formats defined in this document. These data types will be checked by the EIS to ensure they can be converted into the required format after the data are submitted.
- The CERS contains few restrictions on the content of the submission, and is limited primarily to indicating whether the submission is a valid and well-formed XML file. The schema contains no business rules. Business rules are applied to the content of the XML file after the data have been submitted to the EIS. This allows more flexible management of quality assurance checks and more informative feedback on check results. The submitter will receive feedback on all business checks and technical checks, including invalid reporting codes, through a feedback report sent by the EIS during the quality assurance process. For more information on the EIS QA approach see Section 1, "Introduction to the NEI and EIS," especially 1.11.11, "QA Checks."

5.2.5 The Exchange Network EIS Submission File

To submit the XML document through the Exchange Network, S/L/Ts will use node-to-node transfers. The EIS will support the transfer of files using only the 2.0 version. Further information will be provided on how to use the Header on the Exchange Network and the services support in the EIS Flow Configuration Document. The submission file must include the Header Document, and only one XML file and one or more supporting documents.

The Exchange Network Header provides additional information that identifies the contents of the payload and automates the routing of the XML document. The Header describes the payload contents, and who submitted the document and is independent of the contents of the payload. The Header Document serves as a wrapper around the four different types of payloads that the EIS accepts (Facility Inventory, Emissions, Location and Events) and contains information, or metadata, about the submission. For detailed information on the EIS submission file structure and required data elements, see section 5.15

If the XML document references shapefiles for the reporting of event emissions or NMIM activity data, these files are attached to the message and together the header, XML file and shapefiles are zipped. See Appendix 9, "Preparing NMIM County Database and GIS Data for Export" for information on preparing and attaching these files. See Section 5.13.19, "Identifying an Attached File through Reference in an XML Document" for technical instructions on how to attach these files to the message.

5.2.6 The CERS Conceptual Components

For the 2008 inventory, the CERS accommodates the reporting of the facility inventory and emissions from point, nonpoint, onroad/nonroad, and events sources. The following section contains information on the major groupings of data in the schema, the data blocks and the data elements. In addition to providing a high-level model, this section describes the basic XML blocks that are used for reporting the various categories of data in the EIS as well as those blocks or elements that *should not* be reported as they are used for other data flows.

Supporting implementation documents can be found on the [Exchange Network XML Registry](#). In addition to the CERS, the flow configuration document (FCD), data exchange template (DET) and sample XML documents are available for download.

5.3 Overview of Major Data Groups and Data Blocks

The CERS supports many different data flows and therefore is comprised of a series of Data Blocks which may be used for one program and not for others. There are four Major Data Groups defined for reporting inventory and emissions to the EIS. Three of these groups are facility-based reporting, location-based reporting, and event-based reporting. The fourth Major Data Group is the common set of Data Blocks that comprise the reporting of Emissions for any of the first three Major Data Groups.

- **Facility Inventory** - Facility reporting assumes that emissions of any type (criteria air pollutants, hazardous air pollutants, and GHGs) would be associated with and reported for units and activities at a discrete site. Most data flows include facility reporting, as this is the most frequently used reporting method.

For the reporting of facility information, the CERS supports facility information and identifiers, corporate ownership, responsible persons, geographic information, and information about units, release points, air pollution controls, and applicable regulations. Facilities have either processes or activities that produce air pollution. These are linked directly to the emissions values and supporting information for a specified time period.

- **Location** - Location reporting allows a reporter to aggregate and report emissions for a specific type of activity or process for a given geographic area.

The CERS supports geographic boundary identification (including country, State, Tribal, county, census block, and tract or geospatial area), as well as areas that are excluded from that location. Emissions occur during a specific time period from activities that occur at that location. Control reduction approaches may be reported for these processes and operating details indicate the seasonal variations. Supplemental parameters allow the reporting of additional input data used to calculate emissions.

Location reporting is the primary method by which State, Local, and Tribal agencies will report "nonpoint" and mobile emissions for the NEI.

- **Event** - An event may occur over multiple days and may spread to adjoining geographic locations. Event reporting allows the reporting of emissions that are caused by sporadic or unplanned activities, such as a forest fire or agricultural and prescribed burns. An event is defined by its geographic or spatial characteristics and the timeframe in which it occurs.

The CERS provides for the reporting of either geographic coordinates or geospatial information. An event may be comprised of several smaller events which may merge into one larger complex event. This often is the case when multiple discrete fires become a larger fire.

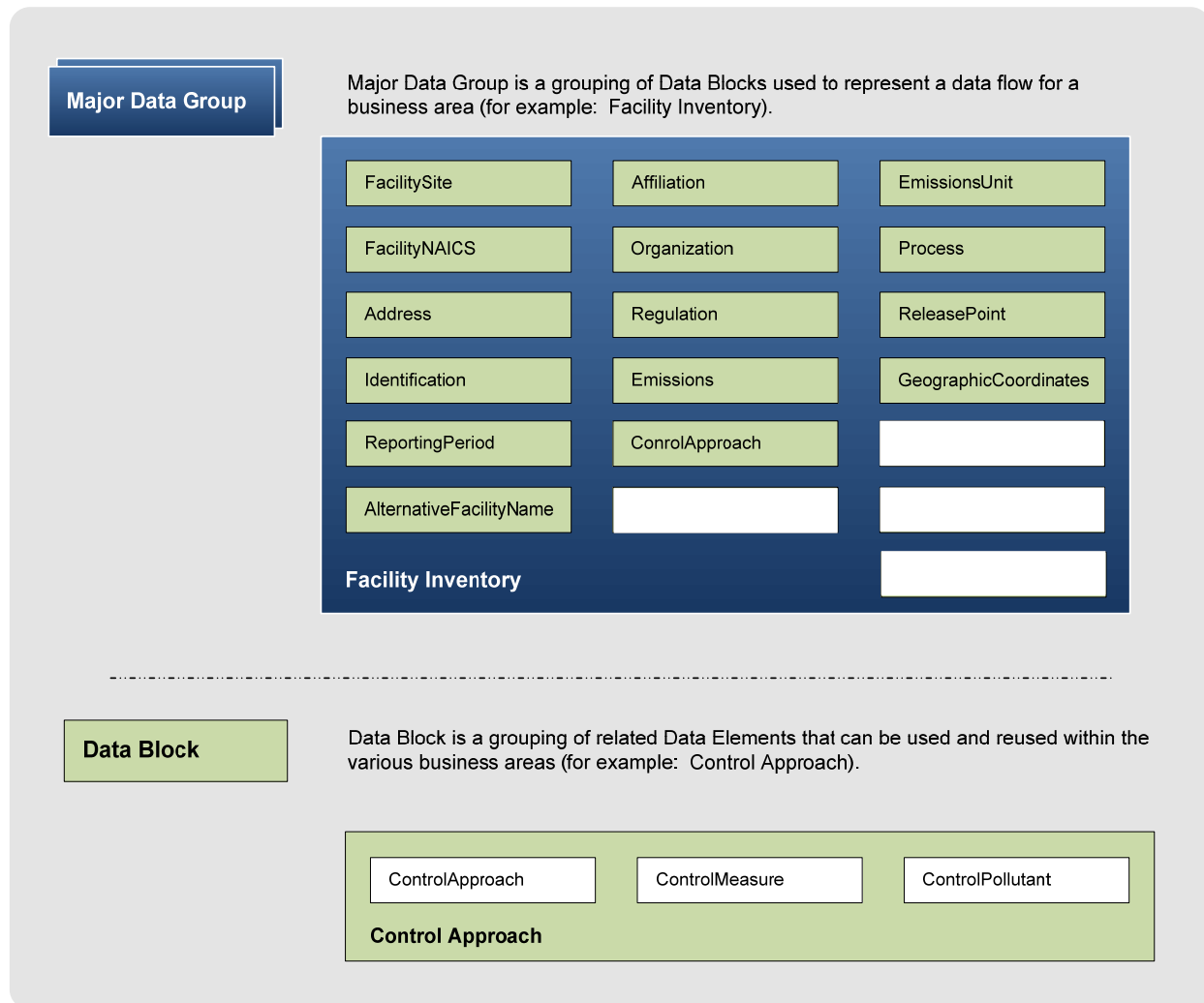
Event reporting will be used by State, Local, and Tribal agencies to report events to the NEI.

- **Emissions** - For facility-based, location-based or event-based sources, emissions may be reported for a variety of reporting time periods. The reporting of estimation or calculation methodology is supported along with the ability to identify additional supplemental data used to do the calculation and CO₂ equivalents.

5.3.1 Background and Definitions

Using EPA's Core Reference Model (CRM) version 2.0 as guidance, the CERS incorporates the four Major Data Groups for reporting data. The CRM is a high-level depiction of major groupings of environmental data and their relationships. It was created to provide federal, state, and tribal environmental agencies with guidance for consistently building and sharing environmental data on the Exchange Network. The CERS logical groupings consist of a series of Data Blocks and describe a business area or reporting functionality. These Major Data Groups include smaller Data Blocks which themselves may consist of other Data Blocks and simple data elements. Figure 5-9 demonstrates how Major Data Groups consist of several Data Blocks and these Data block consists of groups of related data elements.

**Figure 5-9
Legend to Block Diagrams**



5.3.2 CERS Data Blocks

Data Blocks are small, discrete sets of data elements that are grouped together in the schema. These Data Blocks represent XML complex types and are often shared in Major Data Groups. Data Blocks are frequently reused at various hierarchical levels within the schema.

Figure 5-10 lists all Data Blocks within the CERS and which Major Data Group uses the block. Data Blocks that are in the CERS but ***should not*** be reported to the EIS are identified in this figure as well.

Figure 5-10
CERS Data Blocks

Data Block Name	Description	Major Data Groupings				Not Used by EIS
		Facility Inventory	Location	Event	Emissions	
Address	The location where a facility site or organization is located or an individual may be reached.	X				
Affiliation	Identifies the relationship between the facility site, a quality finding, or an individual and an organization.	X				
AlternativeFacilityName	Identifies any alternative names by which the facility site is known or has been known.	X				
AttachedFile	References a file attached to the schema.		X	X		
CO ₂ Equivalent	Each pollutant can have a CO ₂ equivalent.					X
Communication	The means by which an individual or organization can be sent messages.					X
ControlApproach	Identifies the overall control system or approach, including capture effectiveness, where applied at an emissions unit activity or process to reduce the amount of pollutants released into the environment.	X	X			
ControlMeasure	Identifies the specific control devices or practices that are applied to an emission stream after capture and routing.	X	X			
ControlPollutant	Identifies the pollutants reduced by the control measures and their reduction amounts.	X	X			
EmissionsUnit	Identifies an activity, stationary article, process equipment, machine, or other device from which air pollutants emanate or are emitted either directly or indirectly into the environment at the facility site.	X				
Emissions	Identifies all pollutants being reported for the process and reporting period.		X	X	X	
Event	Identifies the event, reporting land manager, management methods, and data sources.			X		
EventEmissionsProcess	Describes the fuels, fuel conditions, combustion characteristics, and activity that produce emissions.			X		

(cont.)

Figure 5-10
CERS Data Blocks (cont.)

Data Block Name	Description	Major Data Groupings				Not Used by EIS
		Facility Inventory	Location	Event	Emissions	
EventLocation	Identifies the location where the event occurred.			X		
EventReportingPeriod	The time period for which emissions are reported.			X		
ExcludedLocationParameter	Identifies the excluded locations from the primary reporting location by identifying one or more tribal codes, census block identifiers, census tract identifiers, or shape identifiers as parameters.		X			
FacilityIdentification	Identifies any identifiers by which the facility site is known.	X				
FacilityNAICS	North American Industry Classification System code assigned to facility site based on economic profile.	X				
FacilitySite	Information on the facility site, including the facility category code, company name, NAICS code, and operating status.	X				
GeographicCoordinates	Identifies the geographic location of the facility site, emission release point, or event.	X		X		
GeospatialParameters	Describes geospatial location of event using shapefile information.			X		
Identification	A designator used to uniquely identify a business establishment.	X				
Individual	Information representing the person who is associated with an organization or a facility site.					X
Location	Information on the location of an emissions source.		X			
MergedEvents	Identifies discrete fires that merged into the current complex fire event.			X		
OperatingDetails	Identifies the typical operating schedule for the process during the reporting period.		X		X	
Organization	The organization which directs, is responsible for, or has authority over the activities and operations of the facility site.	X				

(cont.)

Figure 5-10
CERS Data Blocks (cont.)

Data Block Name	Description	Major Data Groupings				Not Used by EIS
		Facility Inventory	Location	Event	Emissions	
Process	Identifies the specific operational activities that produce emissions either directly or indirectly.	X	X			
QualityFinding	The quality findings applicable to a facility site, emissions unit activity, or a reporting period for which emissions have been reported.					X
Regulation	Identifies regulatory programs that are applicable to an emissions unit activity or process.	X	X			
ReleasePoint	Identifies the point at which emissions are released into the environment, via a stack or fugitive release.	X				
ReleasePoint Apportionment	The percent of emissions for an emissions process that are vented through the emission release point.	X				
ReleasePointTest	Results of tests performed at the release point.					X
ReportingPeriod	Identifies the reporting period for which emissions and related activity data are submitted.		X		X	
Root	Identification information regarding the submission file.	X	X	X	X	
Supplemental CalculationParameter	Identifies additional emissions calculation input parameters beyond the general parameters that are used for calculating emissions.		X		X	

5.3.3 CERS Complex Types

Data Blocks are directly associated with XML complex types that are defined in the CERS.xsd. EPA standards specify that all complex types must be named uniquely in an XML schema. When a complex type is unique, it inherits the same name as the Data Block. However, when a complex type is reused, these complex types are named using the parent Data Block as the prefix, concatenated with the name of the reused Data Block. For example, the reused Data Block "Address" when used in the "Organization" Data Block requires the complex type to be named "OrganizationAddress."

Figure 5-11 shows the names of the complex type in the CERS that share common Data Blocks.

Figure 5-11
Reused Data Blocks and CERS Complex Types

Data Block	CERS Complex Type	Not Used by EIS
Address	FacilitySiteAddress	
	IndividualAddress	X
	OrganizationAddress	X
Affiliation	FacilitySiteAffiliation	
AttachedFile	EventAttachedFile	
	FacilitySiteAttachedFile	X
	OrganizationAttachedFile	X
	QualityFindingAttachedFile	X
Communication	IndividualCommunication	X
	OrganizationCommunication	X
ControlApproach	ProcessControlApproach	
	UnitControlApproach	
Emissions	EventEmissionsProcessEmissions	
	ReportingPeriodEmissions	
Identification	IndividualIdentification	X
	OrganizationIdentification	X
	ProcessIdentification	
	ReportingPeriodQualityIdentification	X
	ReleasePointIdentification	
	ReleasePointApportionmentIdentification	
	UnitIdentification	
Individual	AffiliationIndividual	X
	OrganizationIndividual	X
Organization	AffiliationOrganization	
	QualityFindingOrganization	X
Process	LocationEmissionsProcess	
	UnitEmissionsProcess	

(cont.)

Figure 5-11
Reused Data Blocks and CERS Complex Types (cont.)

Data Block	CERS Complex Type	Not Used by EIS
QualityIdentification	FacilitySiteQualityIdentification	X
	UnitQualityIdentification	X
Regulation	ProcessRegulation	
	UnitRegulation	
GeographicCoordinates	EventGeographicCoordinates	
	FacilitySiteGeographicCoordinates	
	ReleasePointGeographicCoordinates	

5.3.4 Rules for Using Schema Complex Types

- Optional complex types.** The CERS does not contain business rules or have the capability to handle conditional logic on the content of the data. It is capable of supporting the reporting and transport of data for all data categories and multiple data flows. Under the schema rules, all complex types are considered optional; however, EIS business rules specify which complex types are required for each data category, and an omission may result in all or part of the data in the file being rejected during file checking. Further detail on what complex types and data elements are required can be found in the reporting instructions in Sections 6 through 12.
- Accuracy of tag names.** The CERS must recognize each tag name in a submitted file. An unrecognized tag will cause the file to fail an XML validation against the CERS. The EIS will not accept an XML document that is not well-formed. Validate your XML file against the CERS.xsd to ensure that all tag names are recognized prior to submission. You may do this by using one of the schema validation tools found at EPA's Exchange Document Validation Services site on the [Exchange Network](#).
- Required XML element tags vs. required data.** If a complex type contains a required tag, that tag must be reported. If the value submitted for a required tag is a null or empty value, the contents will fail the quality assurance check and may be rejected.
- Optional XML elements.** If an XML element is identified as optional, it is not necessary for that element to be present for the XML to be valid. Optional XML elements which are present with an empty tag or a null value will not cause any quality assurance failures during processing.

5.4 Data Blocks used to Report to EIS

The following section provides a closer look at the Data Blocks that comprise each of the Major Data Groupings. The EIS adopts the concept of the Data Block from the [Exchange Network Core Reference Model Version 2.0](#).

The following diagram demonstrates the top-down, or "coarse-to-fine" view of a Major Data Grouping. At the top of the diagram, the coarsest view is the Facility Inventory Major Data Grouping. It contains numerous Data Blocks, however, no representation of the nesting structure or dependency is represented. At the finest level, at the bottom of the diagram, is the data element. This section of the documentation focuses on the coarser views. Detailed information on each data element can be found in NEIP section 1.12, "What are the Processes for Specific Categories?" as well as sections 6 through 12.

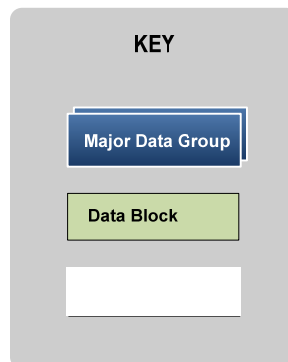
5.4.1 Facility Inventory

The Facility Inventory Major Data Grouping contains Data Blocks and Data Elements that uniquely identify a facility site. The Facility Site complex type is the parent complex type within which all dependent nested facility inventory complex types are reported.

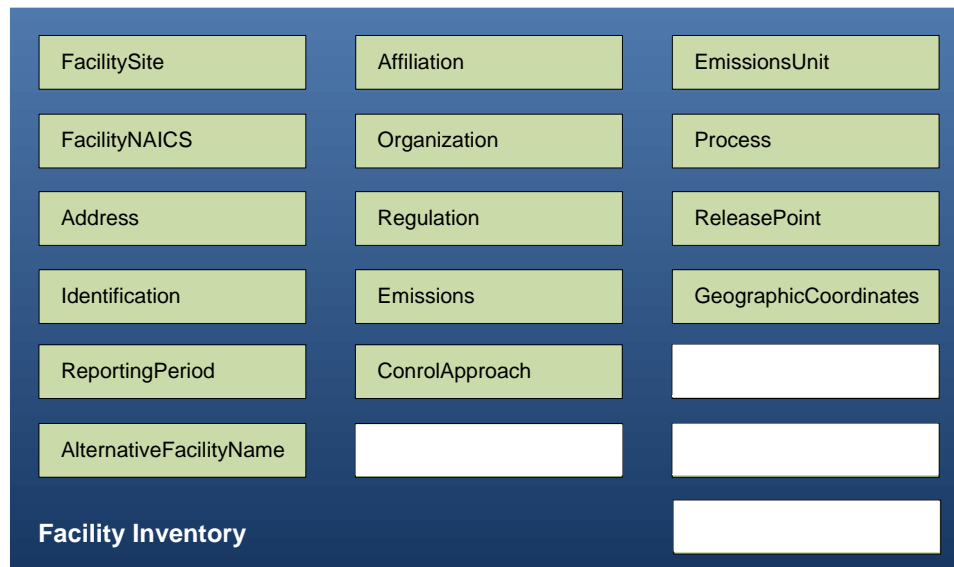
When you submit emissions for a facility site, you must identify the site by unique identifiers and include all the necessary dependent complex types for that data category.

Figure 5-13 shows the Data Blocks used for reporting Facility Inventory. Figure 5-12 provides a key for figures 5-13 through 5-16.

Figure 5-12
CERS Diagram Key



**Figure 5-13
Facility Inventory Major Data Grouping**



5.4.2 Location Major Data Grouping

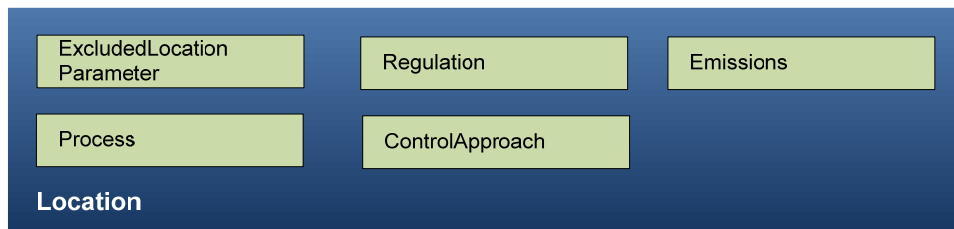
The Location complex type is the set of Data Blocks and data elements that must be reported to uniquely identify a geographic area. The Location complex type is the parent structure within which all dependent nested complex types are reported.

Each location complex type can contain only one geographic location.

When you submit emissions for a geographic area, you must define the location by identifying the appropriate data elements within the Location complex type, and include all the necessary dependent complex types for that data category. You may submit multiple location complex types in any order. You must use the XML elements appropriate to the data category (nonpoint, onroad/nonroad, and event).

Figure 5-14 shows the Data Blocks within the Location Major Data Grouping for reporting nonpoint, onroad and nonroad emissions.

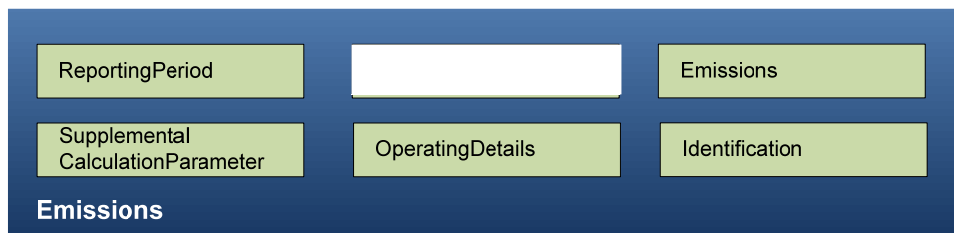
Figure 5-14
Location Major Data Grouping



5.4.3 Emissions Major Data Grouping

Figure 5-15 shows the primary complex types to report emissions data. This data grouping cannot be reported independent of one of the three Major Data Groupings, however, only the complex types that contain identification information are required. Not all Data Blocks are required to be reported and is dependent on the requirements for each category of data. For example, to report onroad/nonroad emissions, only two of the six Data Blocks (Reporting Period and Emissions) are accepted.

Figure 5-15
Emissions Major Data Grouping

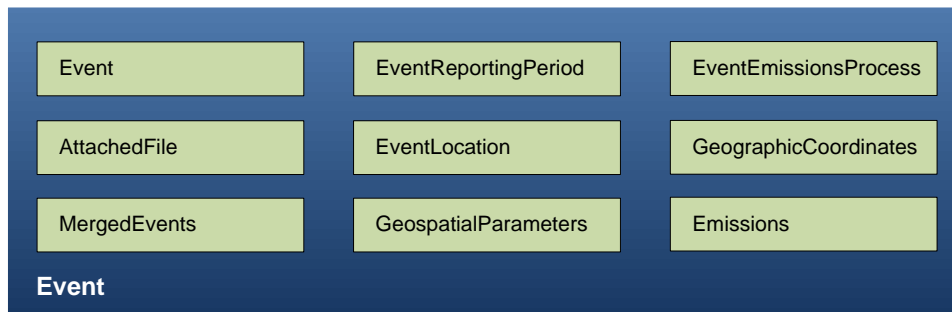


5.4.4 Event Major Data Grouping

Emissions reported for events are based on periodic episodes in which emissions occur and can shift or spread across many geographic areas over time. The Event Major Data Grouping allows the reporting of emissions that occur for a specific time duration for an event and the total area affected during that time.

Figure 5-16 shows the Data Blocks that are used in the Events Major Data Grouping.

Figure 5-16
Event Major Data Grouping



5.4.5 Submittal Data Blocks (SDBs)

A submittal data block (SDB) is a grouping of related Data Blocks that must be submitted and integrated into the inventory together, to ensure the information contained in these blocks can be processed comprehensively and consistently within the inventory. If one or more of the required information for these SDBs are missing, the data cannot be processed correctly and will be rejected by the EIS. The EIS defines a series of SDBs which are comprised of these data blocks and contain the minimal data necessary to report data for each category to the EIS.

The following table defines the SDBs that must always be reported together or the data will be rejected. To identify a SDB for a data category, first determine your intent for reporting data. A submitter will have three reporting intents; maintaining facility inventory, reporting emissions, or reporting events.

Those complex types marked with an "R" indicate complex types that are required to be reported in your XML document. Complex types that must be reported based on certain business rules are marked with a "BR". An example, the unit control approach complex type must be reported if the emissions unit is controlled. See the reporting section for each data category to learn more about these business rules. Complex types marked with an "O" indicates reporting the complex type is always optional.

Figure 5-17
Submittal Data Blocks and the Constituent Complex Types

Purpose	Major Data Grouping	Description	Complex Types	Facility Inventory	Point	Nonpoint	Onroad/Nonroad	Event
Manage Facility Inventory	Facility Inventory	Complex types needed to report a new or modify an existing facility site.	FacilitySite	R				
			FacilityNAICS	R				
			FacilityIdentification	R				
			AlternativeFacility Name	O				
			FacilitySiteAffiliation	O				
			Organization	O				
			FacilitySite Geographic Coordinates	R				
			EmissionsUnit	R				
			UnitIdentification	R				
			UnitRegulation	O				
			UnitControlApproach	O				
			UnitControlMeasure	O				
			UnitControlPollutant	O				
			UnitEmissionsProcess	R				
			ProcessIdentification	R				
			ReleasePoint	R				
			ReleasePoint Identification	R				
			ReleasePoint Geographic Coordinates	R				
			ReleasePoint Apportionment	R				
			ProcessControl Approach	O				
			ProcessControl Measure	BR				

(cont.)

Figure 5-17
Submittal Data Blocks and the Constituent Complex Types (cont.)

Purpose	Major Data Grouping	Description	Complex Types	Facility Inventory	Point	Nonpoint	Onroad/Nonroad	Event
Manage Facility Inventory (cont.)	Facility Inventory	Complex types needed to report a new or modify an existing facility site.	ProcessControl Pollutant	BR				
Report Emissions (Point Source)	Facility Inventory	Uniquely identifies the location of an existing facility site. Supports the identification of emissions processes and the reporting of emissions.	Facility Site		R			
			FacilityIdentification		R			
			EmissionsUnit		R			
			UnitIdentification		R			
			UnitEmissionsProcess		R			
			ProcessIdentification		R			
	Emissions		ReportingPeriod		R			
			OperatingDetails		O			
			Supplemental CalculationParameter		O			
			ReportingPeriod Emissions		R			
Report Emissions (Location Based)	Location	Uniquely identifies the location of an area source. Supports the identification of emissions processes and the reporting of emissions.	Location			R	R	
			ExcludedLocation Parameter			O	O	
			LocationEmissions Process			R	R	
			ProcessControl Approach			BR		
			ProcessRegulation			O		
	Emissions		ReportingPeriod			R	R	
			OperatingDetails			O		
			Supplemental CalculationParameter			O		
			ReportingPeriod Emissions			R	R	

(cont.)

Figure 5-17
Submittal Data Blocks and the Constituent Complex Types (cont.)

Purpose	Major Data Grouping	Description	Complex Types	Facility Inventory	Point	Nonpoint	Onroad/Nonroad	Event
Report Events	Event	Identify and report emissions for events that occur during time intervals at various locations.	Event					R
			MergedEvent					O
			EventReportingPeriod					R
			EventLocation					R
			GeospatialParameters					BR
			Geographic Coordinates					BR
			EventEmissions Process					R
			Emissions					R

* R=Required; BR=Conditionally Required based on Business Rules; O= Optional

** Submitters only need to report the identifiers for an existing facility site in order to report new emissions units, emissions processes, control approaches, or release points.

5.5 Overview of the Complex Types and Root Data Elements

The following section describes each complex type, and all its data elements. For every complex type, a brief description is provided, indicating how it is used for reporting data. Special tips or instructions for reporting certain data elements are provided. The notes contain information that is useful for the developer in understanding how the data are processed by the EIS. This section does not contain information on the critical quality assurance checks that will be performed on each data element, some of which will result in rejecting data. For these rules, see Section1, "Introduction to the NEI and EIS," especially section 1.11.11.

To review the entire content of the CERS you may download the CERS xsd from [Exchange Network XML Registry](#). Documentation on the CERS can be found in the Appendix 2, "CERS and Examples."

5.5.1 Identifying Complex Types and Data Elements for Submitting Data to the EIS

In the following section each complex type is described in a figure. These figures show all of the complex types and data elements in the CERS. Some complex types are not reported to the EIS (but are used for other data flows). In this case, the complex type is noted, but the elements that should not be reported to the EIS are depicted with different font and background. For each complex type, a figure is shown with three columns. The first column in the figure identifies the data type. The second column contains the name of the XML tag. The third

column provides processing or development notes that assist the schema developer in constructing their XML document. Figure 5-18 provides a key for how EIS and non-EIS data elements and complex types are shown in all the figures.

Figure 5-18
Example of Elements and Complex Types that Should Not Be Reported to EIS

Data Type	Name	Notes
xsd:string	Data Element	This data element should be reported to the EIS.
complex	Data Element or Complex Type	This data element or complex type should not be reported to the EIS.

5.5.2 CERS Root Elements

The elements under the CERS root must be included in every submission. These XML elements identify the person who prepared the data and the emissions year. If each data category has a different contact person, consider submitting separate submission files for each contact person responsible for the preparation of the data.

How these data elements are processed: Submissions that are missing UserIdentifier and ProgramSystemCode or have a UserIdentifier or a ProgramSystemCode that is not recognized or is invalid will be rejected. EmissionsYear must be reported. Emissions years that are not valid for the open submission window will be rejected. Model, ModelVersion are only used when reporting Event and onroad/nonroad data.

Data that have been converted by EPA's XML File Generator tool that is using an invalid model version, or onroad/nonroad data that have been prepared with a model no longer supported by EPA, will cause the submission file to be rejected by the EIS.

Important Note

You may only report emissions for the year of the current inventory cycle. Emissions for a year in which has passed or for future years will be rejected. For example, emissions for 2005 may not be reported during the 2008 inventory cycle.

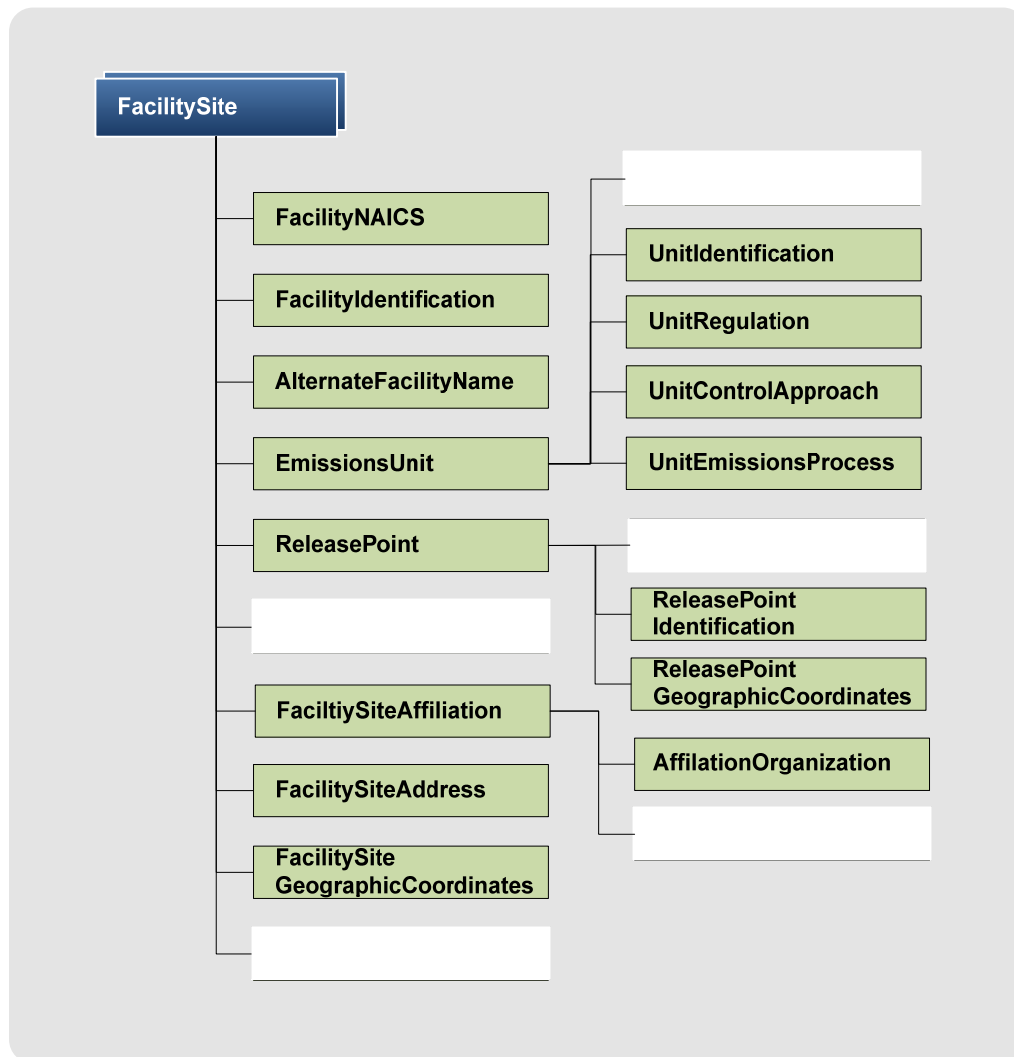
Figure 5-19
CERS Root Elements

Data Type	Name	Notes
xsd:string	UserIdentifier	Unique identifier of a user record. This identifier is assigned by the receiving system and is unique for each user. Permissions for updating data are granted based on the user identification.
xsd:string	ProgramSystemCode	The code that represents the information management system which has responsibility for the data in a linked or interrelated information management system.
xsd:gYear	EmissionsYear	The year of the submitted emissions.
xsd:string	Model	The name of the model or the conversion tool used for generating the emissions data.
xsd:string	ModelVersion	The version of the model or conversion tool.
xsd:date	EmissionsCreationDate	Date that the data being submitted were created, or the date when the model generating the data was run.
xsd:string	SubmittalComment	Any comments regarding the file submission.
complex	FacilitySite	Information on the facility site.
complex	Location	Information on the location of an emissions source.
complex	Event	Information about the event identification, fire name, reporting land manager, the classification of the fire, and the duration of the overall event.
complex	QualityFinding	The quality or verification findings for a facility site, emissions unit activity, or a reporting period for which emissions have been reported.

5.6 Reporting Facility Inventory

Section 5.6 identifies all the complex types and data elements used to report facility inventory data. Figure 5-20 shows all the data blocks that are utilized in the Facility Inventory Major Data Grouping. Many of the data blocks used in the Facility Inventory Major Data Grouping are reused by other Major Data Groups but may be named with a different prefix. The CERS requires that all complex types are named uniquely.

Figure 5-20
Facility Inventory Major Data Grouping with Hierarchy



5.6.1 FacilitySite Complex Type

The FacilitySite complex type identifies a facility site category, company name, NAICS code, and operating status. This complex type should only be used to report stationary sources such as facility sites, airports, and off-shore oil platforms.

Facility Site Complex Type

The Facility Site complex type consists of the required complex types and data elements necessary to uniquely define a stationary emissions source.

How these data elements are processed: If you are reporting an update to your facility site, report only those data elements that you wish to replace in the EIS. Any data present in these elements will be selectively updated in the EIS with the values provided in this complex type. When adding a new facility site to the inventory, the EIS checks for candidate duplicate sites already in the inventory. If no matching facility identifiers are found, the NAICS code, in

conjunction with other location data, is used to help identify potential duplicate sites. For more information on duplicate checks see Section 6, "Reporting Instructions for Facility Inventory."

Figure 5-21
FacilitySite Complex Type

Data Type	Name	Notes
xsd:string	FacilityCategoryCode	Code that identifies the Clean Air Act Stationary Source designation. Examples include major, minor, and synthetic minor.
xsd:string	FacilitySiteName	The name assigned to the facility site by the reporter.
xsd:string	FacilitySiteDescription	Supplemental text that describes the facility site.
xsd:string	FacilitySiteStatusCode	Code that identifies the operating status of the facility site.
xsd:gYear	FacilitySiteStatusCodeYear	The year in which the operating status became applicable.
xsd:string	SectorTypeCode	The associated primary sector for a facility site. Examples include: General Stationary Combustion, Energy Production, Cement Production, Waste Water Treatment, etc.
xsd:string	AgencyName	The name of the regulatory state or region where the facility is located in.
xsd:string	FacilitySiteComment	Any comments regarding the facility site.
complex	FacilityNAICS	North American Industry Classification System code assigned to facility site based on economic profile.
complex	FacilityIdentification	Identifiers by which the facility site is known or has been known, and the system associated with the identifier.
complex	AlternativeFacilityName	Identifies any alternative names by which the facility site is known or has been known.
complex	EmissionsUnit	Identifies an activity, stationary article, process equipment, machine, or other device from which air pollutants emanate or are emitted either directly or indirectly into the environment at the facility site.
complex	ReleasePoint	Identifies the point at which emissions are released into the environment, via a stack or fugitive release.
Quality Identification	FacilitySiteQualityIdentification	Identifies the quality or verification findings for a facility site.

(cont.)

Figure 5-21
FacilitySite Complex Type (cont.)

Data Type	Name	Notes
Affiliation	FacilitySiteAffiliation	Identifies the relationship between the facility site and an individual and organization.
Address	FacilitySiteAddress	The place or name of the location where a facility site.
Geographic Coordinates	FacilitySiteGeographicCoordinates	Identifies the geographic location of the facility site.
AttachedFile	FacilitySiteAttachedFile	References a file attached to the schema.

5.6.2 Facility NAICS Complex Type

The FacilityNAICS complex type is used to report the North American Industry Classification System code assigned to a facility site.

How these data elements are processed: Only one NAICS code should be reported. Any data present in this complex type will totally replace data in the EIS with the values provided in this complex type.

Figure 5-22
Facility NAICS Complex Type

Data Type	Name	Notes
xsd:string	NAICSCode	The code that represents a subdivision of an industry that accommodates user needs in the United States.
xsd:string	NAICSPrimaryIndicator	The name that indicates whether the associated NAICS code represents the primary activity occurring at the facility site.

5.6.3 FacilityIdentification Complex Type

This complex type identifies any identifiers by which the facility site is known. These can be identifiers from State, Local or Tribal agency systems, the 2002 NEI or other EPA information systems. State, Local or Tribal submitters can only report their Agency identifiers to the EIS. However, the EIS may publish federal and other EPA Agency data system identifiers in reports and include this information in data downloads.

How these data elements are processed: At a minimum, the FacilitySiteIdentifier and the ProgramSystemCode must be reported. If you report a value for a ProgramSystemCode that is not recognized by the EIS as a known agency system, this data will be rejected. If you are reporting the identifier for a facility site stored in your local information system, to eliminate potential ambiguous identification, you must also report the StateAndCountyFIPSCode, or the TribalCode or the StateAndCountryFIPSCode. Do not report all three of these values, only the location code that best describes where the site is located.

Any data present in these elements will be selectively updated in the EIS with the values provided in this complex type. Null values should be reported for EndDate where the alternate identification is still actively being used. These identifiers will be added to the inventory for any identifiers that do not already exist in the EIS for the facility site. If the identifier already exists, all elements will be updated.

Figure 5-23
FacilityIdentification Complex Type

Data Type	Name	Notes
xsd:string	FacilitySiteIdentifier	<p>An identifier by which the facility site is referred to by a system.</p> <p>If an Identifier is reported, the EIS assumes that the submitter is either (1) identifying a site for the purposes of submitting emissions or updating the facility inventory, or (2) identifying a change in the facility site identification number due to a site ownership or system change in which case the EndDate should be reported for the inactive identifier, or (3) reporting an alternative identifier from another Agency system such as a HAP data store or legacy system.</p> <p>If reporting emissions, the identifier is checked against the EIS inventory to either verify or update the facility site. For EIS facility identification search procedures, the EIS will use both the currently active agency facility identifier as well as other sites identifiers to look for matches or potential duplicate sites.</p>
xsd:string	ProgramSystemCode	<p>The code that represents the information management system which has responsibility for the data in a linked or interrelated information management system.</p> <p>You are required to identify the acronym or abbreviated name of the Agency data system that contained information about the emissions inventory. The ProgramSystemCode must be a recognized code value from the list of codes maintained by the EIS.</p>
xsd:string	StateAndCountyFIPSCode	The list is from FIPS Counties codes used for the identification of the Counties and County equivalents of the United States.
xsd:string	TribalCode	The code that represents the American Indian Tribe or Alaskan Native entity.

(cont.)

Figure 5-23
FacilityIdentification Complex Type (cont.)

Data Type	Name	Notes
xsd:string	StateAndCountry FIPSCode	The code that represents a State and Country for States in Mexico and Provinces in Canada.
xsd:date	EffectiveDate	The date on which the identifier became effective.
xsd:date	EndDate	The date on which the identifier is no longer applicable.

5.6.4 AlternativeFacilityName Complex Type

This complex type is used to report alternative names by which the facility site is known. It is used only for reporting facility inventory data.

How these data elements are processed: If data are provided in this complex type, it must be complete for all data elements. Any data present in these elements will completely replace data in the EIS with the values provided in this complex type. Alternate names will be added to the inventory for any that does not already exist in the EIS for the facility site and ProgramSystemCode.

Figure 5-24
AlternativeFacilityName Complex Type

Content Type	Name	Notes
xsd:string	AlternativeName	If an AlternativeFacilityName is reported, this data element is checked against the EIS inventory to either verify or update historical facility names. During facility site name searches the EIS uses both the current inventory name and alternative names to look for facility sites.
xsd:string	ProgramSystemCode	The code that represents the information management system which has responsibility for the data in a linked or interrelated information management system. You are required to identify the acronym or abbreviated name of the Agency data system that contained information about the emissions inventory.
xsd:string	AlternativeNameTypeText	The type of alternative, historical, or program-specific name for the facility site (e.g., primary, legal, historical, local).
xsd:date	EffectiveDate	The date on which the corresponding alternative name was first known or used in the context of the data or system.

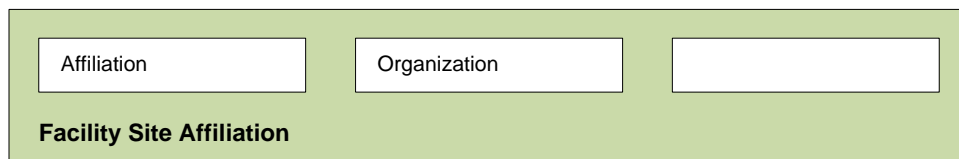
5.6.5 FacilitySiteQualityIdentification

The FacilitySiteQualityIdentification complex type identifies the quality or verification findings for a facility site. **Do not include this complex type in your XML document and do not report these data to the EIS.**

5.6.6 FacilitySiteAffiliation

The FacilitySiteAffiliation complex type is used to identify relationships between the facility site and an individual and organization. Do not identify relationships that exist between individuals and a facility site (such as a primary contact). Use this complex type to report the legal entity or company that currently owns or operates the facility site.

**Figure 5-25
Affiliation Data Block**



How these data elements are processed: If you report a FacilityAffiliation, you may only report one data block which at a minimum include an AffiliationTypeCode with a value of "Owner", "Operator" or "Parent Corporation" and one Organization data block which contains the Organizations legal name. If more than one AffiliationTypeCode is reported, only the data that includes a valid AffiliationTypeCode will be stored. If the AffiliationTypeCode does not match one of the three codes, these data will be rejected.

Any data present in these elements will totally replace data in the EIS with the values provided in this complex type.

**Figure 5-26
FacilitySiteAffiliation Complex Type**

Data Type	Name	Notes
xsd:string	AffiliationTypeCode	Identifies the relationship between an individual or organization and the facility site.
xsd:date	AffiliationStartDate	The date on which the affiliation between the organization or individual and the facility, project, or action began.
xsd:date	AffiliationEndDate	The date on which the affiliation between the organization or individual and the facility, project, or action ended.

(cont.)

Figure 5-26
FacilitySiteAffiliation Complex Type (cont.)

Data Type	Name	Notes
Organization	AffiliationOrganization	The organization which directs, is responsible for, or has authority over the activities and operations of the facility site.
Individual	AffiliationIndividual	Information representing the person who can be contacted concerning the data submitted or the facility site.

Figure 5-27
AffiliationOrganization Complex Type

Data Type	Name	Notes
xsd:string	OrganizationFormalName	Name of the organization.
cer:percent	PercentOwnership	Contains information on the percentage of ownership an organization has for a facility site.
xsd:string	ConsolidationMethodology	Consolidation methodology for an organization, including: operation control, financial control, operation control and equity share, financial control and equity share, equity share.
Identification	OrganizationIdentification	A designator used to uniquely identify a business establishment.
Address	OrganizationAddress	The location where the organization is located.
Communication	OrganizationCommunication	The means by which an individual or organization can be sent messages.
Individual	OrganizationIndividual	Information representing the person who is associated with the organization.
AttachedFile	OrganizationAttachedFile	References a file attached to the schema.
xsd:string	OrganizationFormalName	Name of the organization.

5.6.7 AffiliationIndividual

The AffiliationIndividual complex type identifies the contacts or other people of interest associated with a facility site. **Do not include this complex type in your XML document and do not report these data to the EIS.**

5.6.8 FacilitySiteAddress Complex Type

The FacilitySiteAddress complex type is only used for reporting Facility and Airport data. It provides information on the physical location of the facility.

How these data elements are processed: Do not report the mailing address for the facility site, only the physical location address. Mailing address data will not be processed by the EIS. Location data present in these elements will be selectively updated in the EIS with the values provided in this complex type. Data elements in this complex type (State and Postal Code) are used to identify potential duplicate sites in the inventory when new sites are submitted to the inventory.

Figure 5-28
FacilitySiteAddress Complex Type

Data Type	Name	Notes
xsd:string	MailingAddressText	The exact address where mail is intended to be delivered, including street address, rural route, and P.O. Box.
xsd:string	SupplementalAddressText	The text that provides additional information to facilitate the delivery of mail.
xsd:string	MailingAddressCityName	The name of the city or town.
xsd:string	MailingAddressCountyText	The name of the county.
xsd:string	MailingAddressStateCode	The alphabetic codes that represent the name of the principal administrative subdivision of the United States, Canada, or Mexico.
xsd:string	MailingAddressPostalCode	The code that represents a U.S. ZIP code or International postal code.
xsd:string	MailingAddressCountryCode	A code designator used to identify a primary geopolitical unit of the world.
xsd:string	LocationAddressText	The physical location of a facility site or organization.
xsd:string	SupplementalLocationText	The text that provides additional information about a place, including a building name with its secondary unit and number, an industrial park name, an installation name, or descriptive text where no formal address is available.
xsd:string	LocalityName	The name of the city, town, village, or other locality. This tag is required for new facility sites. A soundex check is applied to the name to identify potential duplicate facilities within a near radius of the AddressPostalCode and geographic coordinates.
xsd:string	LocationAddressStateCode	The alphabetic codes that represent the name of the principal administrative subdivision of the United States, Canada, or Mexico. Must match a value in code table. The LocationAddressStateCode element is used to identify potential duplicate facility sites.
(cont.)		

Figure 5-28
FacilitySiteAddress Complex Type

Data Type	Name	Notes
xsd:string	LocationAddressPostalCode	The code that represents a U.S. ZIP code or International postal code. Must match a value in code table. The AddressPostalCode element is used to identify potential duplicate facility sites.
xsd:string	LocationAddressCountryCode	A code designator used to identify a primary geopolitical unit of the world.
xsd:string	AddressComment	Any comments regarding the address information.

5.6.9 FacilitySiteGeographicCoordinates Complex Type

The GeographicCoordinates complex type is based on EPA's shared schema complex type library. This complex type is required to be reported for all facility sites and emission release points. It is also used to report events geographically, rather than geospatially. If you are providing latitude/longitude measurements, report the accompanying Method Accuracy Description (MAD) codes which specify collection method and precision of the geographic coordinates.

How these data elements are processed: If data are provided in this complex type, it should be as complete as possible for all data elements that support the method in which the latitude/longitude measure was collected. These will be added to the inventory for any new facility site or release points.

For existing sites or points, any data present in these elements will totally replace data in the EIS with the values provided in this complex type. Exceptions to this rule are coordinate data specifically identified as read-only with a protected-data flag. However, the user may request that a data element that has been identified as read-only with a protected flag be updated by using the Support Request process through the EIS Gateway. For more information, see the section of the EIS Users Manual entitled "How Do I Submit a Support Request?"

Figure 5-29
GeographicCoordinates Complex Type

Data Type	Name	Notes
xsd:string	LatitudeMeasure	The measure of the angular distance on a meridian north or south of the equator.
xsd:string	LongitudeMeasure	The measure of the angular distance on a meridian east or west of the prime meridian.
xsd:string	SourceMapScaleNumber	The number that represents the proportional distance on the ground for one unit of measure on the map or photo.
xsd:string	HorizontalAccuracyMeasure	The horizontal measure, in meters, of the relative accuracy of the latitude and longitude coordinates.
xsd:string	HorizontalAccuracyUnitof Measure	The horizontal accuracy unit of measure.
xsd:string	HorizontalCollectionMethodCode	The code that identifies the method used to determine the latitude and longitude coordinates for a point on the earth. Must match a value in code table.
xsd:string	HorizontalReferenceDatumCode	The code that represents the reference datum used in determining latitude and longitude coordinates. Must match a value in code table.
xsd:string	GeographicReferencePointCode	The code that represents the place for which geographic coordinates were established. Must match a value in code table.
xsd:date	DataCollectionDate	The calendar date when data were collected.
xsd:string	GeographicComment	The text that provides additional information about the geographic coordinates.
xsd:string	VerticalMeasure	The measure of elevation (i.e., the altitude), above or below a reference datum.
xsd:string	VerticalUnitofMeasureCode	The vertical unit of measure. Must match a value in code table.
xsd:string	VerticalCollectionMethodCode	The code that identifies the method used to collect the vertical measure (i.e., the altitude) of a reference point. Must match a value in code table.
xsd:string	VerticalReferenceDatumCode	The code that represents the reference datum used to determine the vertical measure (i.e., the altitude). Must match a value in code table.

(cont.)

Figure 5-29
GeographicCoordinates Complex Type (cont.)

Data Type	Name	Notes
xsd:string	CoordinateDataSourceCode	The code that represents the party responsible for providing the latitude and longitude coordinates. Must match a value in code table.
xsd:string	GeometricTypeCode	The code that represents the geometric entity represented by one point or a sequence of latitude and longitude points. Must match a value in code table.
xsd:string	AreaWithinPerimeter	Total area that is contained within the event perimeter for the reporting period. This data element is reported for events only.
xsd:string	AreaWithinPerimeterUnitofMeasureCode	Code that identifies the unit of measure for the area within the event perimeter. This data element is reported for events only. Must match a value in code table.
cer:percent	PercentofAreaProducingEmissions	The percent of the area within the shape or perimeter that was affected by the event (e.g., area actually blackened by a fire). This data element is reported for events only.

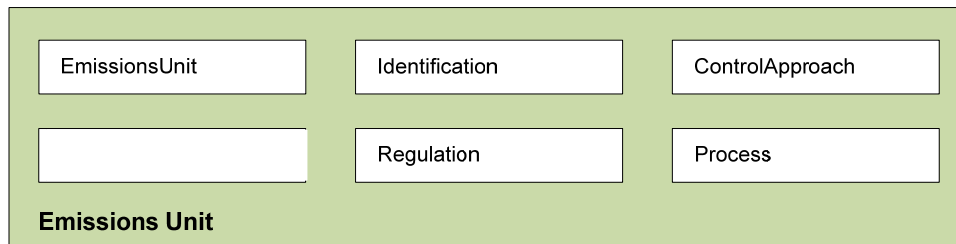
5.6.10 FacilitySiteAttachedFile

The FacilitySiteAttachedFile complex type references an attached file that may be submitted for a facility site, generally for a quality finding. **Do not** report this data to the EIS. Do not include this complex type in your XML document.

5.7 Emissions Unit Data Block

The EmissionsUnit Data block identifies any activity, stationary article, process equipment, machine, or other device from which pollutants emanate or are emitted either directly or indirectly into the environment at the facility site. Figure 5-28 shows the data blocks within the EmissionsUnit Data Block. Section 5.8 describes the complex types and data elements for reporting emissions unit activities.

Figure 5-30
Emissions Unit Data Block



5.7.1 EmissionsUnit Complex Type

The EmissionsUnit complex type identifies the emissions unit for reporting point emissions data.

How these data elements are processed. Any data present in these elements will be selectively updated in the EIS with the values provided in this complex type.

DesignCapacity and DesignCapacityUnitMeasure data elements may be identified by the EIS as read-only with a protected-data flag, in which case submitted data will not be processed. However, the user may request that a data element that has been identified as read-only with a protected flag be updated by using the Support Request process through the EIS Gateway. For more information, see the section of the EIS Users Manual entitled "How Do I Submit a Support Request?"

Figure 5-31
EmissionsUnit Complex Type

Data Type	Name	Notes
xsd:string	Scope	The code that identifies the scope of emissions data that are reported
xsd:string	UnitDescription	Text description of the emissions unit.
xsd:string	UnitTypeCode	Code that identifies the type of emissions unit activity.
xsd:string	UnitSourceLocation	The location or building number of the emissions source.
xsd:string	InsignificantSourceIndicator	Indicates if the emissions source is insignificant.
xsd:string	UnitDesignCapacity	The measure of the size of the unit based on the maximum continuous throughput capacity of the unit.
xsd:string	UnitDesignCapacityUnitof MeasureCode	Unit of measure for the design capacity of the emissions unit.
xsd:string	UnitStatusCode	Code that identifies the operating status of the emissions unit.

(cont.)

Figure 5-31
EmissionsUnit Complex Type (cont.)

Data Type	Name	Notes
xsd:gYear	UnitStatusCodeYear	The year in which the unit status became applicable.
xsd:date	UnitOperationDate	The date on which unit activity became operational.
xsd:date	UnitCommercialOperationDate	The date in which the unit commenced operational activities
xsd:string	UnitComment	Any comments regarding the emissions unit activity.
Quality Identification	UnitQualityIdentification	Identifies the quality or verification findings for an emissions unit.
Identification	UnitIdentification	Identifiers by which the emissions unit is known or has been known.
Regulation	UnitRegulation	Identifies regulatory programs that are applicable to an emissions unit.
Control Approach	UnitControlApproach	Identifies the overall control system or approach, including capture effectiveness, where applied at an emissions unit to reduce the amount of pollutants released into the environment.
Process	UnitEmissionsProcess	Identifies the specific operational activities that produce emissions either directly or indirectly.

5.7.2 UnitQualityIdentification Complex Type

The UnitQualityIdentification complex type identifies the quality or verification findings for an emissions Unit. **Do not include this complex type in your XML document and do not report these data to the EIS.**

5.7.3 Identification Data Block

The Identification Data Block is used by many other data blocks. It is used to report identifiers by which the unit, process or release point are known. These can be identifiers from State, Local or Tribal agency systems, the 2002 NEI or other EPA information systems. S/L/T's submitters can only report their Agency identifiers to the EIS. However, if federal identifiers exist, the EIS may publish these and other EPA Agency data system identifiers in reports or make these available in data downloads.

5.7.3.1 UnitIdentification Complex Type

The Unit Identification complex type is used to report emissions unit identifiers.

How these data elements are processed: If data are provided in this complex type, at a minimum, the Identifier and the ProgramSystemCode must be reported. If you report a value for a ProgramSystemCode that is not recognized by the EIS as a known agency system, this data will be rejected. Null values should be reported for EndDate where the unit identification is still

actively being used. Provide an EndDate for identifiers that are no longer active. These identifiers will be added to the inventory for any identifiers that do not already exist in the EIS for the emissions unit. If the identifier already exists, all other elements will be updated.

Figure 5-32
Identification Complex Type

Data Type	Name	Notes
xsd:string	Identifier	<p>An identifier used to uniquely identify a unit, or business establishment.</p> <p>If an Identifier is reported, the EIS assumes that the submitter is either (1) identifying an equipment, device or person for the purposes of submitting emissions or updating the inventory, or (2) identifying a change in the identification number due to ownership or system changes in which case the EndDate should be reported for the inactive identifier, or (3) reporting an identifier for the purposes of reporting emissions activities.</p> <p>If reporting emissions, the identifier is checked against the EIS inventory to verify that the inventory exists.</p>
xsd:string	ProgramSystemCode	<p>The code that represents the information management system which has responsibility for the data in a linked or interrelated information management system.</p> <p>You are required to identify the acronym or abbreviated name of the Agency data system that contained information about the emissions inventory. The ProgramSystemCode must be a recognized code value from the list of codes maintained by the EIS.</p>
xsd:date	EffectiveDate	The date on which the identifier became effective.
xsd:date	EndDate	The date on which the identifier is no longer applicable.

5.7.4 Regulation Data Block

The Regulation Data Block is used by several data blocks. It is used to report regulatory programs that are applicable to an emissions unit or a process.

5.7.4.1 UnitRegulation Complex Type

The UnitRegulation complex type identifies any regulatory programs that are applicable to an emissions unit. S/L/Ts may report non-federal regulatory programs applicable to the emissions unit.

How these data are processed: If new regulatory codes that are non-federal are reported, they will be added. All other regulatory codes will not be processed by the EIS. Any data present in these elements will totally replace data in the EIS with the values provided in this complex type.

**Figure 5-33
Regulation Complex Type**

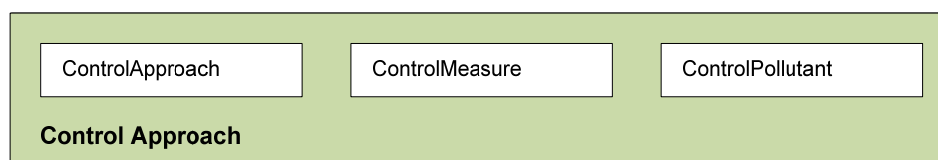
Data Type	Name	Notes
xsd:string	RegulatoryCode	The code that describes the regulation applicable to the emissions unit activity or process. Must match a value in code table.
xsd:string	AgencyCodeText	Text describing the non-federal regulation applicable to the emissions unit or process. This data element is filled in only if the Regulatory code is S/L/T
xsd:gYear	RegulatoryStartYear	The year in which the emissions unit or process became subject to the regulation.
xsd:gYear	RegulatoryEndYear	The year in which the emissions unit or process was no longer affected by the regulation.
xsd:string	RegulationComment	Comments regarding the regulation.

5.7.5 Control Approach Data Block

A Control Approach identifies the overall control system or approach, including capture effectiveness, where applied at an emissions unit, activity or process to reduce the amount of pollutants released into the environment. This data block is used to report both emission unit and emissions process controls for a facility site as well as nonpoint control approaches.

Figure 5-32 shows the data blocks within the Control Approach Data Block.

**Figure 5-34
Control Approach Data Block**



5.7.5.1 UnitControlApproach Complex Type

The UnitControlApproach complex type allows the reporting of control devices and practices that apply to either an emissions unit or process that reduces the amount of pollutants released into the environment.

How these data are processed: The ControlApproach, ControlPollutant, and ControlMeasure complex types must be reported together as a submittal data block. For each ControlApproach submitted, the EIS will match the set of ControlMeasureCode being controlled for an existing emissions unit. If a matching control approach set of data is found, these data will totally replace data in the EIS with the values provided in these complex types; otherwise, a new record of the control approach and its child records will be added to the EIS.

Figure 5-35
ControlApproach Complex Type

Data Type	Name	Notes
xsd:string	ControlApproachDescription	Description of the overall control system or approach applied to an emissions unit or process.
cer:percent	PercentControlApproachCaptureEfficiency	An estimate of that portion of an affected emission stream that is collected and routed to the control measures when the capture or collection system is operating as designed, reported as a percent.
cer:percent	PercentControlApproachEffectiveness	An estimate of the portion of the reporting period's activity for which the overall control system or approach (including both capture and control measures) were operating as designed (regardless of whether the control measure is due to rule or voluntary).
cer:percent	PercentControlApproachPenetration	An estimate of the percent value of the nonpoint activity throughput that is affected by a rule or voluntary approach for the given location. Reported for nonpoint only.
xsd:gYear	FirstInventoryYear	The inventory year for which the controls were implemented. Reported for point only.
xsd:gYear	LastInventoryYear	The last inventory year for which the controls were active. (Point only.) Reported for point only.
xsd:string	ControlApproachComment	Comments regarding the control approach.
complex	ControlMeasure	Identifies the specific control devices or practices that are applied to an emission stream after capture and routing.
complex	ControlPollutant	Identifies the pollutants reduced by the control measures and their reduction amounts.

5.7.5.2 ControlMeasure Complex Type

This complex type supports the reporting of the control measures and practices associated with the control approach. Report the specific control devices or practices that are applied to an emission stream after capture and routing.

Figure 5-36
ControlMeasure Complex Type

Data Type	Name	Notes
xsd:string	ControlMeasureCode	Code that identifies the piece of equipment or practice that is used to reduce one or more pollutants. Must match a value in code table.
xsd:string	ControlMeasureSequence	The sequence in which the pollutant stream passes through the various devices in the control group.

5.7.5.3 ControlPollutant Complex Type

This complex type supports the reporting of the pollutants controlled by the control measures and practices.

Figure 5-37
ControlPollutant Complex Type

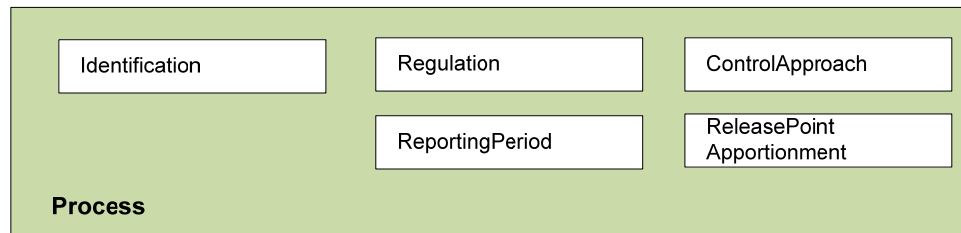
Data Type	Name	Notes
xsd:string	PollutantCode	The code for the pollutant which is controlled by the control measure. Must match a value in code table.
cer:percent	PercentControlMeasure ReductionEfficiency	The percent reduction achieved for the pollutant when all control measures are operating as designed.

5.8 Process Data Block

The Process Data Block is used to identify the specific operational activities that produce emissions either directly or indirectly. This data block is used to report emission process controls for a facility site as well as nonpoint control approaches.

Figure 5-36 shows the data blocks within the Process Data Block.

Figure 5-38
Process Data Block



5.8.1 UnitEmissionsProcess Complex Type

This complex type contains the data elements that specify operational activities that produce emissions either directly or indirectly. Report the SourceClassificationCode to characterize the process at the EmissionsUnit. This complex type is reported for facility inventory, point nonpoint, and onroad/nonroad emissions.

How these data are processed: This complex type is used by both the Facility Inventory Major Data Grouping Location and Emissions Major Data Groupings. The rules for processing these data are different, dependent on which Major Data Grouping is in the submission file.

If reporting Facility Inventory, any data present in this complex type will totally replace data in the EIS with the values provided for that facility site.

If reporting Emissions for a point source, the ProcessIdentification is used to identify an existing process in the inventory for a facility site and emissions unit.

If reporting Emissions for nonpoint, onroad/nonroad sources, the data present in this complex type will totally replace data in the EIS with the values provided for the location specified.

Figure 5-39
Process Complex Type

Data Type	Name	Notes
xsd:string	SourceClassificationCode	EPA Source Classification Code that characterizes an emissions process. Must match a value in code table for data category.
xsd:string	EmissionsTypeCode	Defines the type of emissions produced by Onroad and Nonroad sources. Must match a value in code table. Used only for onroad/nonroad emissions reporting.
xsd:string	AircraftEngineTypeCode	Identifies the combination of aircraft and engine type for airport emissions.
xsd:string	ProcessTypeCode	Defines the type of emissions produced by GHG processes. Examples included for a Scope 1 Stationary Combustion might be oil, gas, coal.
xsd:string	ProcessDescription	A text description of the emissions process.
xsd:gYear	LastEmissionsYear	The last year in which emissions occurred for this process.
xsd:string	ProcessComment	Any comments regarding the emissions process.
Identification	ProcessIdentification	A designator used to uniquely identify an emissions process.
Regulation	ProcessRegulation	Identifies regulatory programs that are applicable to an emissions unit or process.
Control Approach	ProcessControlApproach	Identifies the overall control system or approach, including capture effectiveness, and penetration parameters, where applied at an emissions unit or process to reduce the amount of pollutants released into the environment.
complex	ReportingPeriod	Identifies the reporting period for which emissions and related activity data are submitted.
complex	ReleasePointApportionment	The percent of emissions for an emissions process that are vented through the emission release point.

5.8.2 ProcessIdentification Complex Type

The ProcessIdentification complex type is used to uniquely identify an emissions process. The data elements in this complex type consist of the Identification Data Block. See Section 5.7.3 and Figure 5-30 for specifications on the Identification complex type and information on how these data are processed.

5.8.3 ProcessControlApproach Complex Type

The ProcessControlApproach complex type is used to identify the overall control system or approach that applies to a process. See Section 5.7.5 and Figure 5-32 for specifications on the Control Approach Data Block.

5.8.4 ProcessRegulation Complex Type

The ProcessRegulation complex type is used to identify regulatory programs that are applicable to an emissions process. The data elements in this complex type consist of the Control Approach Data Block. See Section 5.7.4 and Figure 5-32 for specifications on the Regulation complex type and information on how these data are processed.

5.8.5 ReleasePointApportionment Complex Type

The ReleasePointApportionment complex type supports the reporting of the portion of emissions from a process that is released through a particular emission release point. This complex type is only reported for facility inventory.

How these data are processed: Any data present in these elements will totally replace data in the EIS with the values provided in this complex type. If the apportionment is new data submitted for an emissions unit process, these data will be added. Where apportionment data for an emissions unit process exists in the EIS, these data will be replaced.

Figure 5-40
ReleasePointApportionment Complex Type

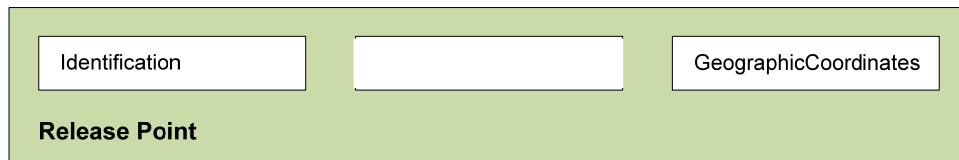
Data Type	Name	Notes
cer:percent	AveragePercentEmissions	The average annual percent of an emissions process that is vented through a release point.
xsd:string	ReleasePointApportionmentComment	Comment regarding the average apportionment of emissions vented through a release point.
Identification	ReleasePointApportionmentIdentification	Identifiers by which the release point is known or has been known.

5.9 Release Point Data Block

The Release Point Data Block is used to identify the point at which emissions are released into the environment, via a stack or fugitive release. This data block is used to report point data.

Figure 5-39 shows the data blocks within the Release Point Data Block. Section 5.9.1 describes the complex types and data elements for reporting points.

Figure 5-41
Release Point Data Block



5.9.1 EmissionReleasePoint Complex Type

The EmissionReleasePoint complex type contains data for describing the point at which emissions are released into the environment via a stack or non-stack (fugitive) vent. This complex type is only reported for facility inventory.

How these data are processed: Report these data when identifying a release point associated with a facility site. The initial reporting of the point should include the data elements described in Figure 5-40 and include both the ReleasePointIdentification and ReleasePointGeographicCoordinates complex types. Thereafter, once the release point has been added to the EIS, only the release point identifier should be reported to link vented emissions. The EIS will either match incoming release point data with existing inventory and update these data or add the new release point. All reported data elements will replace those in the inventory unless the release point has been set with a read-only quality-protection flag. However, the user may request that a data element that has been identified as read-only with a protected flag be updated by using the Support Request process through the EIS Gateway. For more information, see the section of the EIS Users Manual entitled "How Do I Submit a Support Request?"

Figure 5-42
ReleasePoint Complex Type Data Elements

Data Type	Name	Notes
xsd:string	ReleasePointTypeCode	Code that identifies the type of release point.
xsd:string	ReleasePointDescription	Text description of release point.
xsd:string	ReleasePointStackHeightMeasure	The height of the stack from the ground.
xsd:string	ReleasePointStackHeightUnitofMeasure Code	The stack height unit of measure.
xsd:string	ReleasePointStackDiameterMeasure	The internal diameter of the stack (measured in feet) at the release height.
xsd:string	ReleasePointStackDiameterUnitof MeasureCode	The stack diameter unit of measure.
xsd:string	ReleasePointExitGasVelocityMeasure	The velocity of an exit gas stream.

(cont.)

Figure 5-42
ReleasePoint Complex Type Data Elements (cont.)

Data Type	Name	Notes
xsd:string	ReleasePointExitGasFlowRateMeasure	The value of the stack gas flow rate.
xsd:string	ReleasePointExitGasFlowRateUnitofMeasureCode	The unit of measure for the stack gas flow rate value.
xsd:string	ReleasePointExitGasTemperatureMeasure	The temperature of an exit gas stream (measured in degrees Fahrenheit).
xsd:string	ReleasePointFenceLineDistanceMeasure	The measure of the horizontal distance to the nearest fence line of a property within which the release point is located.
xsd:string	ReleasePointFenceLineDistanceUnitofMeasureCode	The fence line distance unit of measure.
xsd:string	ReleasePointFugitiveHeightMeasure	The fugitive release height above terrain of fugitive emissions.
xsd:string	ReleasePointFugitiveHeightUnitofMeasureCode	The fugitive release height unit of measure.
xsd:string	ReleasePointFugitiveWidthMeasure	The width of the fugitive release in the North-South direction as if the angle is zero degrees.
xsd:string	ReleasePointFugitiveWidthUnitofMeasureCode	The fugitive width unit of measure code.
xsd:string	ReleasePointFugitiveLengthMeasure	The length (measured in feet) of the fugitive release in the East-West direction as if the angle is zero degrees.
xsd:string	ReleasePointFugitiveLengthUnitofMeasureCode	The fugitive length unit of measure code.
xsd:string	ReleasePointFugitiveAngleMeasure	The orientation angle of the y-dimension (North-South) measured positive in the clockwise direction.
xsd:string	ReleasePointComment	Any comments regarding the release point.
xsd:string	ReleasePointStatusCode	Code that identifies the operating status of the release point.
xsd:gYear	ReleasePointStatusCodeYear	The year in which the release point status became applicable.
Identification	ReleasePointIdentification	Identifiers by which the emissions release point is known or has been known.
complex	ReleasePointTest	Results of tests performed at the release point.
Geographic Coordinates	ReleasePointGeographicCoordinates	Identifies geographic coordinate data for the release point.

5.9.2 ReleasePointIdentification Complex Type

The ReleasePointIdentification complex type is used to uniquely identify an emissions release point. The data elements in this complex type consist of the Identification Data Block. See section 5.7.3 and Figure 5-30 for specifications on the Identification complex type and information on how these data are processed.

5.9.3 ReleasePointTest Complex Type

The ReleasePointTest complex type identifies the results of tests performed at the release point. **Do not include this complex type in your XML document and do not report these data to the EIS.**

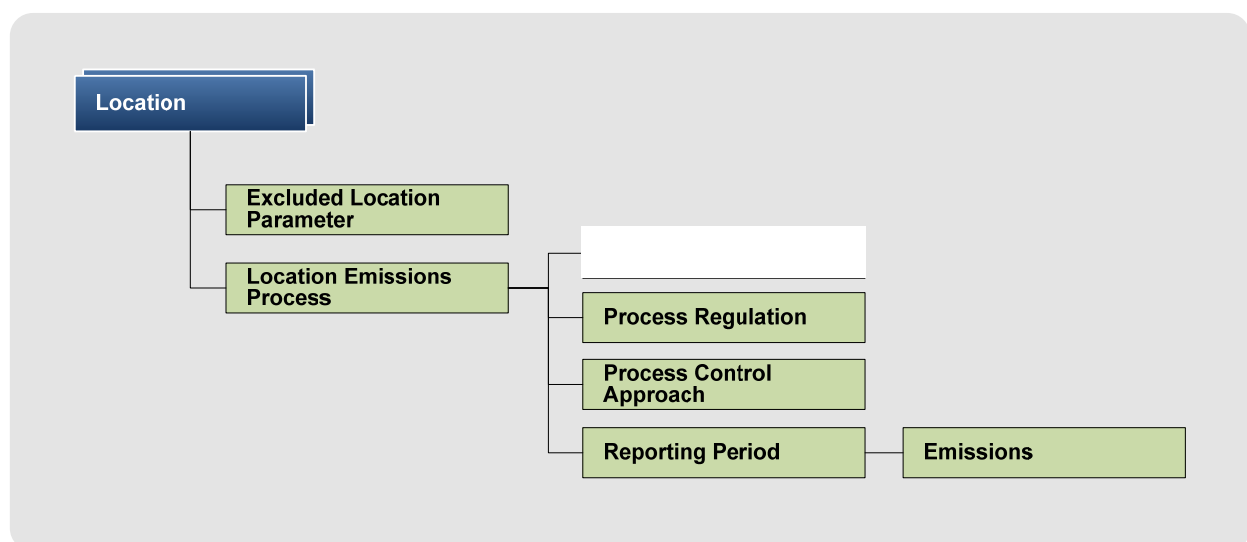
5.9.4 ReleasePointGeographicCoordinates Complex Type

The ReleasePointGeographicCoordinates complex type is used to identify the geographical location of an emissions release point. The data elements in this complex type consist of the Geographic Coordinates Data Block. See Section 5.6.8 and Figure 5-28 for specifications on the GeographicCoordinates complex type and information on how these data are processed.

5.10 Reporting Locations

Section 5.10 identifies all the complex types and data elements to report the location of nonpoint emissions sources. Figure 5-41 shows all the data blocks that are utilized in the Location Major Data Grouping. Typically, when submitting Location-based data, report all the data blocks that identify the location as well as the processes, control approach and emissions together in one submittal data block. See the Emissions Data Block for information on how emissions are associated with location-based processes and reporting periods.

Figure 5-43
Location Major Data Grouping with Hierarchy



5.10.1 Location Complex Type

The location complex type consists of the required complex types and data elements necessary to uniquely define the geographic location and processes of a nonpoint and onroad/nonroad emissions source.

How these data elements are processed: Report the codes that identify a nonpoint location, such as the State and County FIPS code, the tribal code or for more granular areas, the identifier for a census block, census tract or an EIS published GIS shapefile that identifies an area. Information from this complex type is used solely to uniquely identify the location of the emissions source. If the location exists in the EIS, no updates are made. If the location is not found, it is assumed a new county, tribal area, census tract, census block or other entity is reporting emissions for the first time. These data will not be added to the EIS.

Figure 5-44
Location Complex Type

Data Type	Name	Notes
xsd:string	StateAndCountyFIPSCode	The list is from FIPS Counties codes used for the identification of the Counties and County equivalents of the United States.
xsd:string	TribalCode	The code that represents the American Indian Tribe or Alaskan Native entity.
xsd:string	StateAndCountryFIPSCode	The code that represents a state and country for States in Mexico and Provinces in Canada.
xsd:string	CensusBlockIdentifier	The identifier that represents the post 2000 census block, which is the smallest geographic entity recognized by the census.
xsd:string	CensusTractIdentifier	The identifier that represents the post 2000 census tract, which is ideally a neighborhood within a city.
xsd:string	ShapeIdentifier	The shapefile identifier issued by EPA for a predefined geospatial shape.
xsd:string	LocationComment	Any comments regarding the location.
complex	ExcludedLocationParameter	Identifies the excluded locations from the primary reporting location by identifying one or more tribal codes, census block identifiers, census tract identifiers, or shape identifiers as parameters.
Process	LocationEmissionsProcess	Identifies the specific operational activities that produce emissions either directly or indirectly.

5.10.2 ExcludedLocation Complex Type

The ExcludedLocation complex type is used to identify one or more geographic locations that are excluded from the primary reporting location and for which no emissions will be reported. For a single geographic location reported, you may report one or more ExcludedLocation complex types, each of which can have only one geographic area identified as being excluded from the emissions being reported for the parent location.

How these data elements are processed: Excluded location parameters are reported as attribute - value pairs. The combination of LocationTypeCode and LocationParameter is a *tuple* that uniquely identifies what nonpoint areas are excluded from the reported emissions. The LocationTypeCode should contain one of the following values: County, Tribal, CensusBlock or Census Tract. For the LocationTypeCode reported, the LocationParameter should contain the identifier for the specified area. An example is the value-pair of Census Tract 1315, the City of Live Oaks is excluded from the reporting jurisdiction. You may submit any number of tuples *<attribute name, value>* indicating excluded locations within a reported location. This complex type is only used to report nonpoint, and onroad/nonroad data.

See Section 5.13.16 for an XML example of how to report a County which has excluded tribal lands from a nonpoint submission.

Figure 5-45
ExcludedLocation Complex Type

Data Type	Name	Notes
xsd:string	LocationTypeCode	Identifies the type of code or identifier that is being excluded.
xsd:string	LocationParameter	The code value or the identifier for the location type code.
xsd:string	LocationComment	Any comments regarding the excluded location.

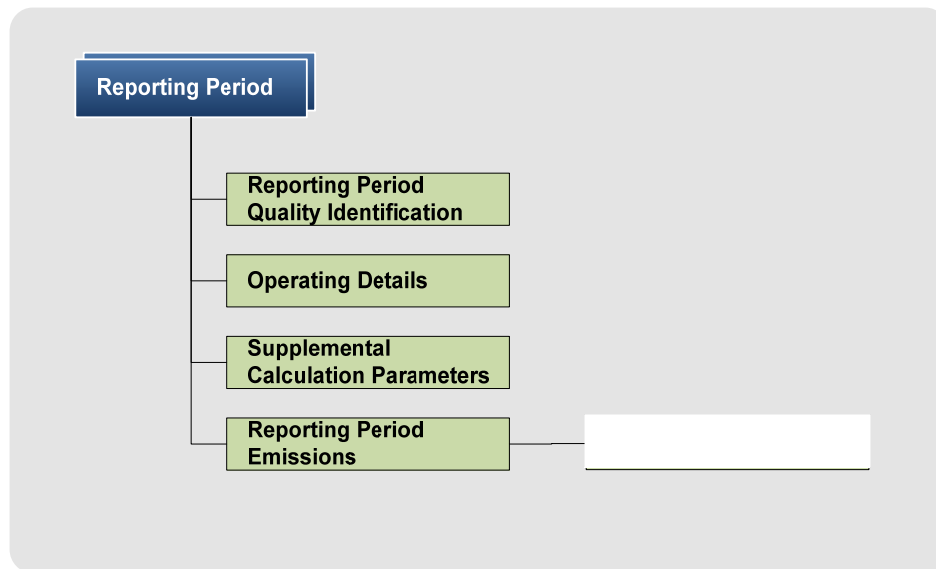
5.10.3 Location Emissions Process Complex Type

The LocationEmissionsProcess complex type is used specify operational activities that produce emissions either directly or indirectly. Report the SourceClassificationCode to identify the nonpoint process. See Section 5.8 and Figure 5-38 for specifications on the Process complex type and information on how these data are processed.

5.11 Reporting Emissions

The Emissions complex type and associated data elements are used by all the Major Data Groupings to report Emissions for a process, activity or event. The ReportingPeriod complex type captures the time period and the activity or throughput information for which emissions are reported. All child complex types under the ReportingPeriod complex type must be reported as a submittal data block. Figure 5-44 shows the data blocks that are utilized in the Emissions Major Data Group.

Figure 5-46
Emissions Major Data Grouping with Hierarchy



The SupplementalCalculationParameter complex type may be used to report additional activity information for a combustion process or nonpoint combustion sources. The OperatingDetails complex type may be used for point sources to report operational information about the emissions unit or it may be used for reporting nonpoint process. The ReportingPeriod and Emissions complex types are required to be reported for all categories of data. CO₂Equivalent is not supported by the EIS and should not be included.

How these data are processed: The ReportingPeriod, OperatingDetails, SupplementalCalculationParameter, and Emissions complex types must be reported together as a submittal data block. If any data are provided in these complex types, all required data must be complete for all of these due to their dependent relationship. All data contained within these complex types will totally replace any previously submitted data for the same emissions unit and Process ID (in the case of point data) or location and SCC (in the case of nonpoint, and onroad/nonroad data).

Figure 5-47
ReportingPeriod Complex Type

Data Type	Name	Notes
xsd:string	ReportingPeriodTypeCode	The time period type for which emissions are reported. Must match a value in code table.
xsd:string	EmissionOperatingTypeCode	Code identifying the operating state for the emissions being reported. Must match a value in code table. Reported for point data only.
xsd:date	StartDate	The date on which the reporting period began. Applies to the reporting of episodic or event emissions only.
xsd:date	EndDate	The date on which the reporting period ended. Applies to the reporting of episodic or event emissions only.
xsd:string	CalculationParameterTypeCode	Code indicating whether the material measured is an input to the process, an output of the process or a static count (not a throughput).
xsd:string	CalculationParameterValue	Activity or throughput of the process for a given time period.
xsd:string	CalculationParameterUnitof Measure	Code for the unit of measure for calculation parameter value.
xsd:string	CalculationMaterialCode	Code for material or fuel processed.
xsd:gYear	CalculationDataYear	The actual year represented by the data if it is different from the emissions year.
xsd:string	CalculationDataSource	The source of the data used.
xsd:string	ReportingPeriodComment	Any comments regarding the reporting period.
Quality Identification	ReportingPeriodQuality Identification	The verification findings applicable to a facility site, emissions unit activity, or a reporting period for which emissions have been reported.
complex	OperatingDetails	Identifies the typical operating schedule for the process during the reporting period. Reported for point only.
complex	SupplementalCalculation Parameter	Identifies additional emissions calculation input parameters beyond the general parameters that are used for calculating emissions. Reported for point only.
Emissions	ReportingPeriodEmissions	Identifies all pollutants being reported for the process and reporting period.

5.11.1 OperatingDetails Complex Type

The OperatingDetails complex type reports the typical operating schedule for the process during the reporting period. This complex type is reported for point and nonpoint emissions.

Figure 5-48
OperatingDetails Complex Type

Data Type	Name	Notes
xsd:string	ActualHoursPerPeriod	Actual number of hours the process is active or operating during for the reporting period.
xsd:string	AverageDaysPerWeek	The average number of days per week that the emissions process is active within the reporting period.
xsd:string	AverageHoursPerDay	The average number of hours per day that the emissions process is active within the reporting period.
xsd:string	AverageWeeksPerPeriod	The average number of weeks that the emissions process is active within the reporting period.
cer:percent	PercentWinterActivity	The percentage of the annual activity that occurred during the Winter months (December, January, February).
cer:percent	PercentSpringActivity	The percentage of the annual activity that occurred during the Spring months (March, April, May).
cer:percent	PercentSummerActivity	The percentage of the annual activity that occurred during the Summer months (June, July, August).
cer:percent	PercentFallActivity	The percentage of the annual activity that occurred during the Fall months (September, October, November).

5.11.2 SupplementalCalculationParameter Complex Type

This complex type supports reporting data elements for additional emissions calculation input parameters in addition to the general activity data. This open-ended data structure allows for future extension of supplemental parameters without modifying the CERS. Data reported in this complex type must be expressed as a collection of tuples *<attribute name, value>*; each element is an attribute-value pair. For each attribute, include the numerator and denominator unit of measure where applicable.

Figure 5-49
SupplementalCalculationParameter Complex Type

Data Type	Name	Notes
xsd:string	SupplementalCalculationParameter Type	Name of the parameter that describes the type of activity, throughput or input used in the calculation.
xsd:string	SupplementalCalculationParameter Value	The value of the parameter.
xsd:string	SupplementalCalculationParameter NumeratorUnitofMeasureCode	The numerator unit of measure for the parameter.
xsd:string	SupplementalCalculationParameter DenominatorUnitofMeasureCode	The denominator unit of measure for the parameter.
xsd:gYear	SupplementalCalculationParameter DataYear	The year represented by the supplemental data if it is different from the emissions year.
xsd:string	SupplementalCalculationParameter DataSource	The source of the supplemental parameter data used.
xsd:string	SupplementalCalculationParameter Comment	Any comments regarding the parameter.

5.11.3 Emissions Complex Type

The Emissions complex type contains the pollutants that were emitted for a process and reporting period. This complex type is reported for all categories of data.

How these data are processed: Any data submitted in the Emissions complex type will totally replace any previously reported emissions. If you submitted ten pollutants in a previous submission and then submitted new emissions with only five pollutants that had different emissions values, the previous ten would be deleted from the inventory and replaced with only the newly submitted five. Always report your entire set of emissions containing all pollutants, activity data, and operating details when submitting emissions.

Figure 5-50
Emissions Complex Type

Data Type	Name	Notes
xsd:string	PollutantCode	Code identifying the pollutant for which emissions are reported.
xsd:string	TotalEmissions	Total calculated or estimated amount of the pollutant.
xsd:string	EmissionsUnitofMeasureCode	Unit of measure for reported emissions.
xsd:string	EmissionFactor	The emission factor used for the emissions value if a calculated value was provided.
xsd:string	EmissionFactorNumeratorUnitofMeasureCode	The numerator for the unit of measure of the reported emission factor.
xsd:string	EmissionFactorDenominatorUnitofMeasureCode	The denominator for the unit of measure of the reported emission factor.
xsd:string	EmissionFactorFormulaCode	Code that identifies the emission factor formula used to calculate emissions.
xsd:string	EmissionFactorText	Explanation for emission factor.
xsd:string	EmissionCalculationMethodCode	Code that defines the method used to calculate emissions.
xsd:string	EmissionFactorReferenceText	Reference given for the emission factor used in the calculation.
xsd:string	AlgorithmFormulaText	The formula used to calculate emissions.
xsd:string	AlgorithmComment	Information about the algorithm, including units of measure, for the calculation method.
xsd:string	CalculationMethodAccuracyAssessmentCode	The accuracy assessment of an emission. Examples Include: Tier A, Tier B, Tier C, CARB, Part 75, etc.
xsd:string	EmissionsDeMinimisStatus	Status indicating if emissions are de minimis.
xsd:string	EmissionsComment	Any comments regarding the emissions, method of calculation, or emission factor.
complex	CO ₂ Equivalent	The CO ₂ equivalent conversion of the pollutant.

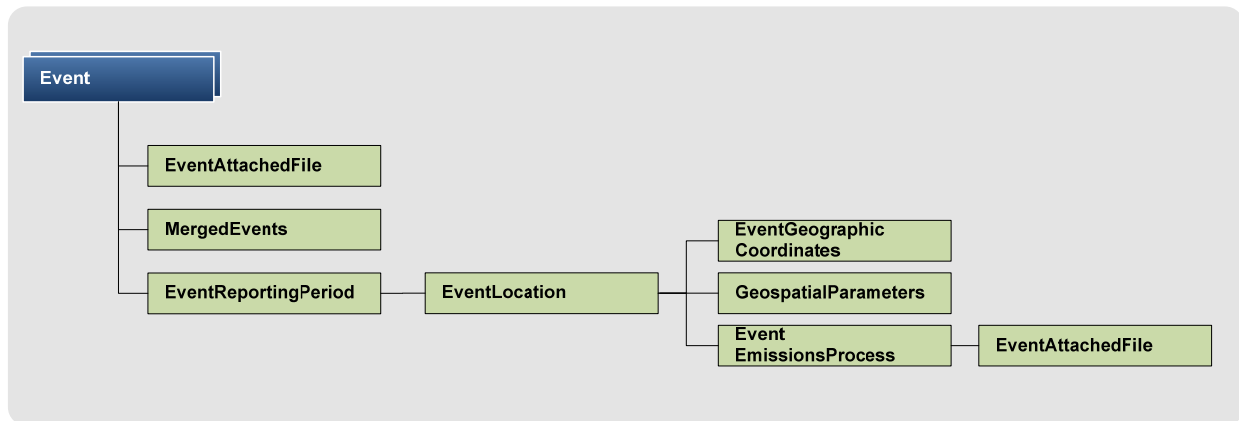
5.11.4 CO₂Equivalent Complex Type

The CO₂Equivalent complex type allows the reporting of the carbon equivalents for greenhouse gases. **Do not include this complex type in your XML document and do not report these data to the EIS.**

5.12 Reporting Events

Section 5.12 identifies all the complex types and data elements used to report events. Figure 5-49 shows all the data blocks that are utilized in the Events Major Data Grouping.

Figure 5-51
Events Major Data Grouping with Hierarchy



When submitting emissions for an event, you must always identify the time duration of the event. Several fires may merge and turn into a single fire, in which case a new event complex type is reported. This event complex type must have unique event identification and include one or more of the previous discrete fires as merged events. You must ensure that the event dates of the discrete fires do not overlap with the dates of the associated merged fire to avoid double reporting emissions.

5.12.1 Event Complex Type

This complex type supports reporting information about events, including fires. This includes event identification, name, reporting land manager, classification, and the duration. This complex type is used only to report events.

How these data are processed: Any data submitted in the Event complex type will totally replace any previously reported events. This includes all the child complex types which contain information regarding the fire. If you submitted complete or partial information regarding the event in a previous submission and then submitted new activities or emissions for the event, the previous event would be deleted from the inventory and replaced with only the newly submitted event data. Always report your entire set of activity and emissions when submitting events.

The Event Complex Type

The event complex type consists of the required complex types and XML elements necessary to uniquely define the time duration and the various geographic areas affected by the event (such as a fire), and the nested complex types needed to report emissions for that event.

Figure 5-52
Event Complex Type

Data Type	Name	Notes
xsd:string	EventIdentifier	An identifier provided by the land or event manager that identifies an event. This identifier is unique for each event.
xsd:string	ProgramSystemCode	An acronym or abbreviation for the system that contain the data about the event.
xsd:string	EventName	The name of the event.
xsd:string	LandManager	Identifies the Federal, State, Private, Municipal, County, Tribal agency or land owner that is managing the fire or responding to event.
xsd:string	LocationDescription	Description of the location of the event.
xsd:string	EventClassificationCode	Code that identifies the classification of the fire.
xsd:string	EventSizeSourceCode	The code that identifies the method used to determine the size of the event.
xsd:date	ContainmentDate	The date on which the event was contained.
xsd:string	RecurrenceIndicatorCode	Indicates whether a prescribed or agricultural fire has occurred previously at this location (Y/N).
xsd:gYear	RecurrenceYear	The most recent year in which the fire recurred in this location.
xsd:string	GroundBasedDataSourceCode	Indicates whether ground-based data were included and if so, identifies their source.
xsd:string	RemoteSensingDataSourceCode	Indicates whether remotely-sensed data were included and if so, identifies their source.
xsd:string	FuelConsumptionAndEmissionsModelCode	The model(s) used to calculate fuel consumption and emissions estimates.
xsd:string	FuelTypeModelCode	The fuel model used to characterize available fuel beds (e.g., FCCS or NFDRS).
xsd:string	FuelSelectionCode	The method used (on-site survey vs. GIS overlay) to select the appropriate fuel beds (e.g., red spruce, chaparral, sawgrass, or logging slash).
xsd:string	IgnitionMethodCode	The method used to ignite the fire (i.e., DAID, helitorch, or driptorch).
xsd:string	IgnitionLocationCode	The location and distribution of the ignition points within the burn area (e.g., center or multiple).
xsd:string	IgnitionOrientationCode	The technique used to direct the orientation of the fire's movement with respect to the wind (i.e., backing, strip-heading, or flanking).
xsd:string	EventComment	Any comments regarding the event.
AttachedFile	EventAttachedFile	References an attached file to the schema.

(cont.)

Figure 5-52
Event Complex Type (cont.)

Data Type	Name	Notes
complex	MergedEvents	Identifies discrete fires that merged into the current complex fire event.
complex	EventReportingPeriod	The time period for which emissions are reported.

5.12.2 EventAttachedFile

If you choose to report an event area's boundary by submitting a geospatial shapefile, you will use the GeospatialParameters component to report the parameters and attach the GIS files using the EventAttachedFile component.

For more information on reporting your GIS data, see Appendix 11, "Preparing GIS Data for Export." For additional information on the structure of shapefiles, see [ESRI Shapefile Technical Description](#).

Important Notice

You may report either Geographic Coordinates or Geospatial Parameters for an Event, but not both.

All the event shapefiles must be attached to the XML document. The attached shapefiles may contain geospatial data for multiple events. There may be more than one file attached to the event submission. For each attached file, an AttachedFile component must be included with event identifying information in the XML document. See Section 5.2.5, "The Exchange Network EIS Message" to see how attached files appear in the EIS message relative to the actual XML document.

Figure 5-53
EventAttachedFile Complex Type

Data Type	Name	Notes
xsd:string	AttachmentFileName	The text describing the descriptive name used to represent the file, including file extension.
xsd:string	AttachmentFileDescription	Description of file.
xsd:string	AttachedFileSize	The size of the attached file.
xsd:string	AttachmentFileContentTypeCode	A code describing the content type of a file.

5.12.3 MergedEvents Complex Type

This complex type supports reporting of one or more discrete fires that merged into the current fire complex event.

Figure 5-54
MergedEvents Complex Type

Data Type	Name	Notes
xsd:string	EventIdentifier	The identifier for the event. This must be unique for each event, and is assigned by the land or event manager.
xsd:string	ProgramSystemCode	An acronym or abbreviation for the system that contain the data about the event.
xsd:date	MergedDate	The first data that the discrete event is reported with the complex event.
xsd:string	MergedEventsComment	Any comments regarding the merged event.

5.12.4 Event Reporting Period Complex Type

The EventReportingPeriod complex type is used to report the dates and hours for which activity and/or emissions are reported, as well as the flaming or smoldering stage of the fire.

Figure 5-55
EventReportingPeriod Complex Type

Data Type	Name	Notes
xsd:date	EventBeginDate	The first day for which emissions are reported for the reporting period.
xsd:date	EventEndDate	The last day for which emissions are reported for the reporting period.
xsd:string	EventStageCode	Identifies whether emissions reported are due to flaming, smoldering, or both.
xsd:string	BeginHour	The hour of the day in which the event began. The hour is reported as a value between 00 and 23 inclusive, representing the hours of the day in 24 increments.
xsd:string	EndHour	The hour of the day in which the event ended. The hour is reported as a value between 00 and 23 inclusive, representing the hours of the day in 24 increments.
xsd:string	EventReportingPeriodComment	Any comments regarding the event reporting period.
complex	EventLocation	Identifies the location where the event occurred.

5.12.5 Event Location Complex Type

The EventLocation complex type allows the reporting of different locations and sizes for multiple time periods of the event. The location of the event can be reported with either its geographic coordinates or by geospatial characteristics. The EventLocation and either the EventGeographicCoordinates or the GeospatialParameters must be reported along with an EventEmissionsProcess.

Figure 5-56
EventLocation Complex Type

Data Type	Name	Notes
xsd:string	StateAndCountyFIPSCode	The list is from FIPS Counties codes used for the identification of the Counties and County equivalents of the United States.
xsd:string	TribalCode	Identifies the Tribal land in which the event is located for the event date.
xsd:string	StateAndCountryFIPSCode	The code that represents a State and Country for States in Mexico and Provinces in Canada.
Geographic Coordinates	EventGeographicCoordinates	Describes geographic location of event using latitude/longitude coordinates.
complex	GeospatialParameters	Describes geospatial location of event using shapefile information.
complex	EventEmissionsProcess	Describes the fuels, fuel conditions, combustion characteristics, and activity that produce emissions.

5.12.6 Event Geographic Coordinates Complex Type

Describes geographic location of event using latitude/longitude coordinates.

5.12.7 Geospatial Parameters Complex Type

This complex type support reporting event locations by geospatial shapes. A shapefile must be attached with the submission and identified in the Event complex type. This complex type is used only to report events.

Figure 5-57
EventGeospatialParameter Complex Type

Data Type	Name	Notes
xsd:string	ShapeFileIdentifier	An identifier provided by the reporting agency that identifies the geospatial shapefile for the reported emissions.
xsd:string	AreaWithinShape	Total area that is contained within the event shape for the reporting period.
xsd:string	AreaWithinShapeUnitofMeasure Code	Code that identifies the unit of measure for the area within the shapefile.
cer:percent	PercentofAreaProducingEmissions	The percent of the area within the shape or perimeter that was affected by the event (e.g., area actually blackened by a fire).
xsd:string	GeospatialParametersComment	Any comments regarding the geospatial parameters.

5.12.8 Event Emissions Process Complex Type

The EventEmissionsProcess component is used to report the event emissions-producing process. It includes the SCC, fire fuel descriptors, and emissions reduction techniques used.

Figure 5-58
EventEmissionsProcess Complex Type

Data Type	Name	Notes
xsd:string	SourceClassificationCode	EPA Source Classification Code that identifies an emissions process.
xsd:string	FuelConfigurationCode	The predominant configuration of the fuel burned (i.e., pile, windrow, broadcast or natural).
xsd:string	FuelLoading	Fuel per acre available to consume.
xsd:string	FuelLoadingUnitofMeasureCode	Code that identifies the numerator of the unit of measure for the fuel loading.
xsd:string	AmountofFuelConsumed	For a given day, the amount of fuel consumed in the defined geographic area.
xsd:string	AmountofFuelConsumedUnitofMeasureCode	Code that identifies the unit of measure for the amount of fuel consumed.
cer:percent	PercentTenHourFuelMoisture	The ten-hour fuel moisture for the location, on the particular day the fire or smoldering occurred, in percent.
cer:percent	PercentOneThousandHourFuelMoisture	The one-thousand-hour fuel moisture for the location, on the particular day the fire or smoldering occurred, in percent.
cer:percent	PercentLiveFuelMoisture	The amount of water expressed as the percent of oven dry weight of living plant matter.
cer:percent	PercentDuffFuelMoisture	The amount of water expressed as the percent of the oven dry weight of any cured or dead plant part. This may include dead plant matter still attached to living plants.
xsd:string	HeatRelease	The amount of effective thermal energy (measured in million BTUs per hour or day) available to provide buoyant plume rise.
xsd:string	HeatReleaseUnitofMeasureCode	Code that identifies the unit of measure for heat release.
xsd:string	EmissionReductionTechniqueCode	Code identifying the method used for reducing emissions from prescribed fires, agricultural fires, Native American Fires and Wildland Use fires emissions.
xsd:string	EventEmissionsProcessComment	Any comments regarding the event emissions process.
Emissions	EventEmissionsProcessEmissions	Identifies all pollutants being reported for the process and reporting period.

5.13 Creating the XML Document

The following section explains how to create a CERS conformant XML document. It includes advice on best practices for reporting your data as well as how to construct your XML document. In addition to the code snippets provided in this section, additional examples on how to report data for specific scenarios for each data category can be found in Appendix 2, "CERS and Examples."

5.13.1 Creating the XML file using Microsoft Applications

Many Microsoft applications have the capability to export data and create XML files. However, these files will not be compatible with the CERS structure. In particular, you **cannot** use MS Access to export your data and use the built-in functionality to create an XML document. You **cannot** use MS Excel to either export your data or create the XML document. These applications will create an XML document that is not in compliance with EPA's guidelines and will not validate against the CERS.xsd.

5.13.2 Size of the Submission File

The business rules for facility inventory and emissions data, and to limit the size of the file during transport, require that you limit each submission to one data category. During peak submission periods, large volume files may be processed at a lower priority in the system's queue. Limiting the content of your file to include only data that is new or should be updated will reduce the size of the file. This practice will also result in smaller feedback reports and reliable response time during transport of files over the network node and when downloading your feedback reports.

5.13.3 Reporting Comments

If an XML tag contains the word "comment," it is an optional element in which you can provide explanations, caveats or any other information about the data in the complex type. If you provide a comment as part of a resubmission of the same complex type, the EIS will compare the comment to the previous comments. If the comment is different, it will retain the prior comment and store the incoming comment as a new comment. If you would like to edit or delete the earlier comment, you cannot use the batch submission process. You must go to the EIS Gateway and edit the comment there.

5.13.4 Codes

If the last word in an XML tag is "code", the element must contain data in a specified list of values from a code list. EPA has published the acceptable values and they can be found in the EIS Gateway. The code tables are provided in Appendix 6, "EIS Code Tables." Codes are validated by the EIS QA check process, not the schema itself.

5.13.5 How to Report Identifiers

If an XML tag contains the word "identifier," it must contain an alphanumeric identifier assigned to an element or type of data for identification purposes. An identifier uniquely identifies that data within an information system. Identifiers from different systems may have

different formats, lengths, and characteristics. There are two approaches that you can take when using identifiers.

5.13.5.1 EIS Identifiers

The EIS will assign unique identifiers to each facility site, emissions unit, release point, and control approach. For the 2008 submission cycle, the facility inventory in EIS is populated with unique identifiers assigned by the EIS. These identifiers will be included in all reports available for download from the EIS Gateway. You are encouraged, but not required, to store these identifiers in your Agency systems and report these numbers in your XML document. Reporting your point emissions with these unique identifiers is the most efficient and accurate way for the EIS to process your data.

5.13.5.2 Agency Identifiers

Should you choose not to store and report EIS identifiers, you may identify your facility site, emissions unit, emissions process, and release points using identifiers from your local data system. Since these identifiers are not unique within the EIS, you will need to include additional information for the EIS to identify these entities. Include information on the data system that provided these data in the ProgramSystemCode element for each facility site. This ensures that a facility site that might be known by the same identifier in another data system can be uniquely identified. Other important information to provide includes the StateCode, CountyCode, StateandCountryFIPSCode or TribalCode when identifying facility sites.

5.13.6 Data Types

Most data types in the CERS are strings, with the exception of date, year and percentile data. When a data element is identified as a string but appears to be storing values, you are expected to provide the correct numeric format as indicated in reporting instructions, Sections 6 through 12. The EIS will convert the string values into the formats defined and apply checks for these data types. Data which are not consistent with these formats defined in these sections will be rejected.

5.13.7 Dates and Years

All date and year tags are handled as xsd:date and xsd:gyear in the schema.

- **Date.** If a tag name contains the word "date," the data element is for a specific day. These should be represented as an eight digit sequences of numeric characters in a string format of YYYYMMDD and should include leading zeros between the representative elements containing only one digit. No separators or dashes shall be used. If you are submitting a date, it should be in the prescribed format, otherwise it may be left null.
- **Year.** If a tag name contains the word "year," the data element is for a calendar year. This data should be reported as a four digit sequence of numeric characters in a string format of YYYY, otherwise it may be left null.

5.13.8 Reporting Numbers

There are several different reporting formats for numbers. Although the schema accepts strings for most numeric values, the proper formats for reporting numerical values are provided in each reporting section. These formats include the data type and its attributes, such as width, scale, and precision. The EIS will convert the string into the formats defined in each section and apply checks for data type. Data which are not consistent with these formats will be rejected.

The following table describes each data type:

Figure 5-59
Reporting Formats for Numbers

Content Type	Reporting Format	Example
Integer(width)	Whole number (no decimal places, preceding zeroes not retained). <i>Width</i> = Maximum number of digits allowed.	Int (3) Valid: 2, 15, 930 Invalid: 4000, -1
Decimal(width, scale)	Decimal number with fixed number of decimal places. <i>Width</i> = Maximum number of digits including those on both sides of the decimal point, and includes the decimal point. <i>Scale</i> = Number of decimal places; that is, digits to the right of the decimal point.	Dec (5,1) Valid: 100.0, 34.6, 0.3, 0.0 Invalid: 99.75, 256.45
Float(precision)	Decimal number with floating decimal point; that is, variable number of decimal places. No width is given, as this is variable. Floating decimals may also be represented with scientific notation. <i>Precision</i> = Maximum number of significant figures (see below).	Float (3) Valid: 0.00845 <i>or</i> 8.45E-3 10.6 <i>or</i> 1.06E15 Invalid: 2,347 <i>or</i> 2.347E3 43.50 <i>or</i> 4.350E1
Percent	Decimal number of three digits with a fixed number of two decimal places.	Percent Valid: 100, 98.3 Invalid: 1 (representing 100 %), .983 (representing 98.3%)

- Rounding.** If a value is reported with greater than the maximum stated precision, the EIS will round the submitted value and store the modified value instead. Values will not be truncated. The EIS will provide a warning message to the submitter showing the modified value. These values may be resubmitted within maximum precision to avoid

EIS rounding or no action need be taken if upon review, the modified values are determine to be acceptable.

- **Percent.** If a tag contains the word "percent" or "percentage" then the data element should be reported as a percent. The number should be reported as a whole number with a decimal rather than a fraction of one, e.g., 85.5% should be reported as 85.5.
- **Precision.** Precision refers to the number of significant digits provided in a floating point decimal number, or the number of decimal places for a fixed decimal number. The EIS will not store precision beyond the maximum stated precision for the data element; it will round off excess precision. See the boxes below for more information on significant figures and rounding:

Figure 5-60
Significant Figures and Rounding

<ul style="list-style-type: none"> • Significant figures. Significant figures include all of the digits in a measurement that are known with certainty as well as the last digit, which is considered an approximation. • The EIS will assume trailing zeros to be significant; leading zeros are not. • Examples of numbers with three significant digits include: <div style="display: flex; justify-content: space-between;"> <div> 0.00253 100 99.9 20.3 </div> <div> 4.00 133E-2 670 104E5 </div> </div>	<ul style="list-style-type: none"> • Rounding. If a value is reported with greater than the maximum stated precision, the EIS will round the submitted value and store the modified value instead. Values will not be truncated. The EIS will provide a warning message to the submitter showing the modified value. If you receive this message, you should either: • (a) review the modified value to determine if appropriate, and/or • (b) resubmit within maximum precision to avoid EIS rounding.
---	---

5.13.9 The CERS Namespace

The consistent use of namespaces provides a means for uniquely identifying XML constructs across the Exchange Network. Complex types and XML elements used in the EIS schema must be qualified by a Uniform Resource Identifier (URI) in order to be processed and routed properly by the CDX and the EIS. While there are two patterns for namespace identification, Uniform Resource Name (URN) and Uniform Resource Location (URL), the Exchange Network has recommended the implementation of the URL formatted namespace.

The CERS namespace uses a URL to reference the location of the current version of the CERS on the CDX network, and allows the user to reference it through a prefix "cer:." The major version number of the CERS is also included in the namespace. Without this reference, all complex types and XML elements cannot be validated resulting in an XML file validation error.

Figure 5-59 provides an XML example which declares the CERS namespace through the use of the xmlns (XML Namespace) schema attribute and assigns the namespace a prefix of "cer":

Figure 5-61
Declaring the CERS Namespace

```
<cer:CERS xsi:schemaLocation="http://www.exchangenetwork.net/schema/cer/1
CER_CERS_v1.0.xsd" xmlns:cer="http://www.exchangenetwork.net/schema/cer/1"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
```

The declaration of the namespace is included at the top of each XML file, and allows the user to reference the CERS complex types and elements with the "cer:" prefix followed by a colon (as in cer:Location). Each complex type and XML element, including root elements, must contain the namespace prefix.

5.13.10 Reporting Data Categories

The following section provides XML code samples that show how XML tags within the identification complex type are used to identify the facility site or the emissions unit.

5.13.11 Identifying a Facility Site

All facility sites are identified in the FacilityIdentification component by using either EIS Identifiers or the Agency assigned Identifiers and ProgramSystemCode along with additional location information.

The preferred method for reporting a facility site is to identify the site using only EIS Identifiers. Figure 5-60 shows an example where a facility site and an emissions unit are reported using EIS identifiers. The code represented in the following two examples is not a complete representation of a Submittal Data Block. The code snippet is presented here to demonstrate the concept of reporting identifiers within a complex type.

Figure 5-62
Identifying a Facility Site and Emissions Unit with EIS Identifiers

```
<cer:FacilityIdentification>
  <cer:FacilitySiteIdentifier>70244</cer:FacilitySiteIdentifier>
  <cer:ProgramSystemCode>EIS</cer:ProgramSystemCode>
</cer:FacilityIdentification>
....
<cer:UnitIdentification>
  <cer:Identifier>1476821</cer:Identifier>
  <cer:ProgramSystemCode>EIS</cer:ProgramSystemCode>
</cer:UnitIdentification>
```

Alternately, an Agency that chooses not to store EIS Identifiers in their local system may instead report a unique facility site using the FacilitySiteIdentifier in conjunction with their ProgramSystemCode, and report as well their StateandCountyFIPSCode, StateandCountryFIPSCode or TribalCode.

Figure 5-63
Identifying a Facility Site Using Agency Identifiers

```
<cer:FacilityIdentification>  
  <cer:FacilitySiteIdentifier>176428</cer:FacilitySiteIdentifier>  
  <cer:ProgramSystemCode>IN DEQ</cer:ProgramSystemCode>  
  <cer:StateAndCountyFIPSCode>18125</cer:StateAndCountyFIPSCode>  
</cer:FacilityIdentification>
```

While the FacilitySite complex type contains additional information about a facility site, it does not uniquely identify the facility site. Identifying the facility site can only be accomplished by reporting identifiers in the FacilityIdentification complex type.

5.13.12 Reporting Point Emissions

Once a facility site, emission units, emission processes, and emission release points have been reported to the EIS, point emissions can be submitted using just their identifiers.

The hierarchy of the CERS links the facility site, emissions unit, and emissions process to point emissions without the need to resubmit the Agency's entire facility inventory. An Agency need only supply the identifying information required to uniquely identify each facility site, emissions unit and SCC, and then the emissions for the reporting period.

The following example shows how a State Agency would supply the required information to link emissions using the CERS identifiers from previously submitted facility inventory.

Figure 5-64
Reporting Point Emissions Using EIS Identifiers

```

<cer:FacilitySite>
  <cer:FacilityIdentification>
    <cer:FacilitySiteIdentifier>176428</cer:FacilitySiteIdentifier>
    <cer:ProgramSystemCode>EIS</cer:ProgramSystemCode>
  </cer:FacilityIdentification>
  <cer:EmissionsUnit>
    <cer:UnitIdentification>
      <cer:Identifier>1476821</cer:Identifier>
      <cer:ProgramSystemCode>EIS</cer:ProgramSystemCode>
    </cer:UnitIdentification>
    <cer:UnitEmissionsProcess>
      <cer:ProcessIdentification>
        <cer:Identifier>1478909</cer:Identifier>
        <cer:ProgramSystemCode>EIS</cer:ProgramSystemCode>
      </cer:ProcessIdentification>
    </cer:UnitEmissionsProcess>
  </cer:EmissionsUnit>
</cer:FacilitySite>
.....
<cer:ReportingPeriod>
  <cer:ReportingPeriodTypeCode>A</cer:ReportingPeriodTypeCode>
  <cer:EmissionOperatingTypeCode>R</cer:EmissionOperatingTypeCode>
  <cer:CalculationParameterTypeCode>I</cer:CalculationParameterTypeCode>
  <cer:CalculationParameterValue>1475683</cer:CalculationParameterValue>
  <cer:CalculationParameterUnitofMeasure>TON</cer:CalculationParameterUnitofMeasure>
  <cer:CalculationMaterialCode>717</cer:CalculationMaterialCode>
  <cer:CalculationDataYear>2008</cer:CalculationDataYear>
  <cer:CalculationDataSource>Dept. of Energy production records.</cer:CalculationDataSource>
  <cer:ReportingPeriodComment>Dept. of Energy production records.</cer:ReportingPeriodComment>
  <cer:OperatingDetails>
    <cer:ActualHoursPerPeriod>8025</cer:ActualHoursPerPeriod>
    <cer:AverageDaysPerWeek>7</cer:AverageDaysPerWeek>
    <cer:AverageHoursPerDay>24</cer:AverageHoursPerDay>
    <cer:AverageWeeksPerPeriod>52</cer:AverageWeeksPerPeriod>
  </cer:OperatingDetails>
  <cer:ReportingPeriodEmissions>
    <cer:PollutantCode>NOX</cer:PollutantCode>
    <cer>TotalEmissions>2195.9</cer>TotalEmissions>
    <cer:EmissionsUnitofMeasureCode>TON</cer:EmissionsUnitofMeasureCode>
    <cer:EmissionCalculationMethodCode>1</cer:EmissionCalculationMethodCode>
  </cer:ReportingPeriodEmissions>
</cer:ReportingPeriod>
.....

```

5.13.13 Reporting Nonpoint Emissions

Nonpoint data must be reported using the Location complex type. The following example shows a State reporting their emissions for a single County and SCC. A real-world submission would include multiple pollutants for this SCC.

Figure 5-65
Reporting Nonpoint Emissions with Agency Identifiers

```
<cer:Location>
  <cer:StateAndCountyFIPSCode>53067</cer:StateAndCountyFIPSCode>
  <cer:LocationEmissionsProcess>
    <cer:SourceClassificationCode>2420000055</cer:SourceClassificationCode>
```

5.13.14 Reporting Onroad/Nonroad Emissions

Onroad and nonroad emissions are submitted using the same XML structure as nonpoint emissions. This is done by identifying a location, SCC and emissions type, and reporting period for emissions. However, since emissions for onroad/nonroad often are generated from mobile models, information regarding the model used should be reported using the EIS root elements. See Section 9, "Reporting Onroad and Nonroad Emissions."

The following example shows an onroad source being reported for a County. The data was generated from NMIM. This information is shown in the CER root elements. For the purposes of this example, a single County is shown, with one SCC and emission type, one reporting period and one pollutant reported. A real-world submission would show multiple SCCs each with multiple emissions reported for every month.

Figure 5-66
Reporting Onroad Emissions

```
<cer:Model>NMIM</cer:Model>
<cer:ModelVersion>20060310</cer:ModelVersion>
<cer:EmissionsCreationDate>20090702</cer:EmissionsCreationDate>
<cer:Location cer:StateAndCountyFIPSCode="16035">
  <cer:EmissionsProcess>
    <cer:SourceClassificationCode>2265006005</cer:SourceClassificationCode>
    <cer:EmissionsTypeCode>X</cer:EmissionsTypeCode>
    <cer:EmissionsProcessIdentification />
    <cer:ReportingPeriod cer:ReportingPeriodTypeCode="A">
      <cer:Emissions cer:PollutantCode="VOC">
        <cer:TotalEmissions>3.91E-1</cer:TotalEmissions>
        <cer:EmissionsUnitofMeasureCode>TON</cer:EmissionsUnitofMeasureCode>
      </cer:Emissions>
    </cer:ReportingPeriod>
  </cer:EmissionsProcess>
</cer:Location>
```

5.13.15 Reporting Locomotives and Commercial Marine Vessels Emissions

One of the ways emissions for locomotives and commercial marine vessel can be reported is by associating them with a shape. This is done by reporting the shapefile identifier

for the line segment of the track or the shape identifier of the shipping port, and then reporting the associated emissions. The library of shape identifiers for these line segments and ports are available on the EIS Gateway. The following example shows how to include the shape identifier within the location complex type for identifying a locomotive line segment.

Figure 5-67
Reporting a Shape Identifier for Locomotive Segments

```
<cer:Location cer:ShapeIdentifier="237"></cer:Location> />
```

5.13.16 Excluding a Location

The following example shows how the County of St. Louis in Minnesota has excluded the tribal lands of the Fond du Lac Band of Chippewa from an emissions submission.

Figure 5-68
Excluding a Location

```
<cer:Location cer:StateAndCountyFIPSCode="04013">
  <cer:ExcludedLocationParameter cer:LocationTypeCode="Tribal" cer:LocationParameter="614" />
  <cer:EmissionsProcess>
    <cer:SourceClassificationCode>229600000</cer:SourceClassificationCode>
    <cer:EmissionsProcessIdentification />
    <cer:ReportingPeriod cer:ReportingPeriodTypeCode="A" cer:EmissionOperatingTypeCode="R">
      <cer:CalculationParameterValue>786.3</cer:CalculationParameterValue>
      <cer:CalculationParameterUnitofMeasure>E3MILE</cer:CalculationParameterUnitofMeasure>
      <cer:CalculationDataYear>2007</cer:CalculationDataYear>
      <cer:CalculationDataSource>FWHA Statistics</cer:CalculationDataSource>
      <cer:Emissions cer:PollutantCode="PM10-FIL">
        <cer:TotalEmissions>4969.8</cer:TotalEmissions>
        <cer:EmissionsUnitofMeasureCode>TON</cer:EmissionsUnitofMeasureCode>
        <cer:EmissionFactor>573.9</cer:EmissionFactor>
        <cer:EmissionFactorNumeratorUnitofMeasureCode>G</cer:EmissionFactorNumeratorUnitofMeasureCode>
        <cer:EmissionFactorDenominatorUnitofMeasureCode>MILE</cer:EmissionFactorDenominatorUnitofMeasureCode>
        <cer:EmissionsCalculationMethodCode>9</cer:EmissionsCalculationMethodCode>
        <cer:EmissionsComment>Local emission factor created during SIP development.</cer:EmissionsComment>
      </cer:Emissions>
      <cer:Emissions cer:PollutantCode="PM25-FIL">
        <cer:TotalEmissions>744.3</cer:TotalEmissions>
        <cer:EmissionsUnitofMeasureCode>TON</cer:EmissionsUnitofMeasureCode>
        <cer:EmissionFactor>85.95</cer:EmissionFactor>
        <cer:EmissionFactorNumeratorUnitofMeasureCode>G</cer:EmissionFactorNumeratorUnitofMeasureCode>
        <cer:EmissionFactorDenominatorUnitofMeasureCode>MILE</cer:EmissionFactorDenominatorUnitofMeasureCode>
        <cer:EmissionsCalculationMethodCode>9</cer:EmissionsCalculationMethodCode>
        <cer:EmissionsComment>Local emission factor created during SIP development.</cer:EmissionsComment>
      </cer:Emissions>
    </cer:ReportingPeriod>
  </cer:EmissionsProcess>
</cer:Location>
```

5.13.17 Apportioning Emissions to Release Points

To report emissions from a process that is producing emissions from units that are physically routed to multiple release points, report the percent of emissions that are apportioned to each release point in the ReleasePointApportionment complex type. The following example shows emissions being vented to two stacks. The total apportionment must equal 100%. Note how percents are reported as decimals.

Figure 5-69
Apportioning Emissions to Multiple Release Points

```
<cer:EmissionsUnit>
  <cer:UnitIdentification cer:ProgramSystemCode="BLR 100" />
  <cer:EmissionsProcess>
    <cer:SourceClassificationCode>10100302</cer:SourceClassificationCode>
    <cer:EmissionsProcessIdentification />
    <cer:ReleasePointApportionment>
      <cer:AveragePercentEmissions>50.0</cer:AveragePercentEmissions>
      <cer:LastEmissionsYear>2006</cer:LastEmissionsYear>
      <cer:ReleasePointIdentification cer:ReleasePointIdentifier="1" />
    </cer:ReleasePointApportionment>
    <cer:ReleasePointApportionment>
      <cer:AveragePercentEmissions>50.0</cer:AveragePercentEmissions>
      <cer:LastEmissionsYear>2006</cer:LastEmissionsYear>
      <cer:ReleasePointIdentification cer:ReleasePointIdentifier="2" cer:ProgramSystemCode="EIS" />
    </cer:ReleasePointApportionment>
  </cer:EmissionsProcess>
</cer:EmissionsUnit>
```

5.13.18 Attaching Model Data and Shapefiles

In addition to the XML document, a submission can also include file attachments, such as GIS shapefiles. These binary objects are referenced in the document and should be attached to the message during submission via the node. GIS files may be attached when reporting events geospatially, or files may be attached when reporting NMIM activity data. For information on how to extract model data from your NMIM data base or preparing GIS shapefiles for export, see Appendix 9, "Preparing NMIM County Database," and Appendix 11 "Preparing GIS Data for Export." For information on the correct naming conventions and extensions for NMIM activity data, see Section 9, "Reporting Instructions for Onroad and Nonroad Activity Data."

5.13.19 Identifying an Attached File through Reference in an XML Document

The following example shows how you would attach file in your XML document. Use the AttachedFile complex type to reference the file name and identify the file content.

Figure 5-70
Attaching a File through Reference

```
<cer:Event>
  <cer:EventIdentifier>5608</cer:EventIdentifier>
  <cer:ProgramSystemCode>MAIRIS</cer:ProgramSystemCode>
  <cer:EventName>Sample Event Attachment</cer:EventName>
  <cer:EventAttachedFile>
    <cer:AttachmentFileName>support_doc.txt</cer:AttachmentFileName>
    <cer:AttachmentFileDescription>Supporting Documentation</cer:AttachmentFileDescription>
    <cer:AttachmentFileSize>64</cer:AttachmentFileSize>
    <cer:AttachmentFileContentTypeCode>DOC</cer:AttachmentFileContentTypeCode>
  </cer:EventAttachedFile>
</cer:Event>
```

5.14 Schema Validation

The following section describes the various tools that are available and validation rules you should implement prior to submitting your XML document to the EIS. This includes information on how to validate your XML document, the few built-in constraints that the schema will enforce, and the cardinality rules that you should avoid when constructing your data.

5.14.1 Validating Your File Prior to Submission

Before testing your data in the QA environment or submitting your file to the Production environment, you should validate your XML file against the CERS_CERS_v1.0.xsd file structure. This will ensure that your file is well-formed and valid. You can do this by using one of several tools found at EPA's [Exchange Document Validation Services Site](#).

The CERS contains few validation business rules regarding the content of the submission, however, some data types are constrained. You will receive all business logic checks, including invalid reporting codes used through a feedback report sent from the EIS during the quality assurance checking process. For more information on the QA approach with the EIS, see Section 1, "Introduction to the NEI and EIS," especially Section 1.11.11. There are very few basic validation checks that are constructed in the schema. The following table identifies these checks.

Figure 5-71
Schema Validation Checks

Name	Check	Explanation
UserIdentifier	Required Element	Must be a valid registered user of the EIS to submit files. This account may be mapped to an existing EPA account for authentication.
EmissionsYear	Required Element	The EIS only accepts emissions and inventory data for Inventory Years for open submission periods.
ProgramSystemCode	Required Element	Information management system acronym must be provided for source of data.
Date DataType	Format	All dates must be in xsd:date format (YYYYMMDD).
Percent DataType	Format	All percents must be reported as decimal as fractionDigits="1" minInclusive="0.0" maxInclusive="100.0"
Year DataType	Format	All years must be reported in xsd:gYear format (YYYY).

5.14.2 Cardinality Rules

While your XML file may pass well-formed schema checks and file validation checks, it may still encounter cardinality errors. In most cases, the following cardinality errors are assumed to be code generation errors and therefore the file submission may be rejected. The EIS will apply the following rules while processing the data contained within the XML document.

Rule 1: No Duplication of XML Elements within a Complex Type

You may not report the same XML element twice within a complex type. This will result in ambiguous identification of information and the data within the complex type or block will be rejected. The example below demonstrates a facility site complex type with two FacilitySiteNames reported when only one is expected. This is assumed to be a systemic error in the system that generated the XML document. This file will be rejected in its entirety.

Figure 5-72
Duplicate XML Elements in a Complex Type

```
<cer:FacilitySite>
  <cer:FacilitySiteName>Ivy Sanitary Landfill</cer:FacilitySiteName>
  <cer:FacilitySiteName>Ivory Sanitation Landfill</cer:FacilitySiteName>
</cer:FacilitySite>
```

Rule 2: No Duplication of Complex Data Types

You may not report the same complex type containing duplicate identifiers with inconsistent information twice. This will result in contradictory information and the data in the complex type will be rejected. The example below demonstrates two complex types reported

with the same emissions release point identifier within the document, each with different stack parameters. This is assumed to be a systemic error in the system that generated the XML document. This file will be rejected in its entirety.

Figure 5-73
Duplication of a Complex Data Type

```
<cer:ReleasePoint>
  <cer:ReleasePointTypeCode>2</cer:ReleasePointTypeCode>
  <cer:ReleasePointDescription>Boiler Stack</cer:ReleasePointDescription>
  <cer:ReleasePointStackHeightMeasure>45</cer:ReleasePointStackHeightMeasure>
  <cer:ReleasePointStackDiameterMeasure>3.0</cer:ReleasePointStackDiameterMeasure>
  <cer:ReleasePointExitGasVelocityMeasure>43</cer:ReleasePointExitGasVelocityMeasure>
  <cer:ReleasePointIdentification cer:ReleasePointIdentifier="205" />
</cer:ReleasePoint>
<cer:ReleasePoint>
  <cer:ReleasePointTypeCode>1</cer:ReleasePointTypeCode>
  <cer:ReleasePointFugitiveWidthMeasure>54823</cer:ReleasePointFugitiveWidthMeasure>
  <cer:ReleasePointFugitiveLengthMeasure>54823</cer:ReleasePointFugitiveLengthMeasure>
  <cer:ReleasePointComment>The entire base is a fugitive release point.</cer:ReleasePointComment>
  <cer:ReleasePointIdentification cer:ReleasePointIdentifier="205" />
</cer:ReleasePoint>
```

Rule 3: No Duplication of Major Data Blocks

You should not report two sets of information regarding the same facility site, location or event within a submission file. If more than one unique location data block is found within a submission file for a specific process, the system will overwrite the previous transaction recorded for that location collection. The example below demonstrates how the first location collection recorded a transaction for a location and process identified as "1A", followed by a replacement transaction for a duplicate location and process identified as "1B" found in the same submission file. This demonstrates that the last transaction recording the process identifier "1B" submitted for this location is the transaction is recorded.

Figure 5-74
Duplication of a Location Complex Type

```

<cer:Location>
  <cer:StateAndCountyFIPSCode>53067</cer:StateAndCountyFIPSCode>
  <cer:LocationEmissionsProcess>
    <cer:SourceClassificationCode>2420000055</cer:SourceClassificationCode>
    <cer:ProcessIdentification>
      <cer:Identifier>1A</cer:Identifier>
      <cer:ProgramSystemCode>WS</cer:ProgramSystemCode>
    </cer:ProcessIdentification>
  </cer:LocationEmissionsProcess>
</cer:Location>
<cer:Location>
  <cer:StateAndCountyFIPSCode>53067</cer:StateAndCountyFIPSCode>
  <cer:LocationEmissionsProcess>
    <cer:SourceClassificationCode>2420000055</cer:SourceClassificationCode>
    <cer:ProcessIdentification>
      <cer:Identifier>1B</cer:Identifier>
      <cer:ProgramSystemCode>WS</cer:ProgramSystemCode>
    </cer:ProcessIdentification>
  </cer:LocationEmissionsProcess>
</cer:Location>

```

5.15 Overall Steps to Submitting Your File

The basic steps for submitting your file to the EIS is as follows:

1. Create an XML file containing either facility inventory, location or event data content.
2. Create the exchange header document for the file.
3. Attach any supporting documents or artifacts for Events or onroad and nonroad activity data.
4. Zip both the header document CERS.xml and supporting documents into a single file.
5. Log into your node client with your CDX credentials, and select the "submit" option.
6. Create a description for the submission, select the EIS destination node and dataflow and chose the single zipped file to submit.
7. Once you submit the file, the node package is sent to the EIS node.
8. EIS unzips the package and processes the contents.

Exchange Node 2.0

The EIS node is expected to be 2.0 compliant. This section includes specifications for 2.0 exchanges. Revisions and other specification for 1.1 compatibility will be in the Flow Configuration Document (FCD).

5.15.1 Acquiring a CDX Account

In order to submit your XML document to the EIS the submitter is required to have a CDX account. The following steps outline the general process for how users acquire CDX accounts and access to the EIS community.

- User goes to a registration area of the EPA Portal, registers as a new user, and asks for access to the EIS Community.
- The EIS account manager is notified of the request and can approve or deny the account, and community access. This process results in an Web Access Management (WAM) identity, and authorization to access the EIS Community. The authorization will include the authorization to access the EIS Gateway and to submit files.
- The user is notified of successful registration, after which they can then access the EIS and submit files.

5.16 File Submission Implementation

The following section shows the various portions that need to be implemented in the EIS submission file. In addition to the XML document, the file must contain the following information in order to be processed properly in route through the network and to the EIS. The header document is a "wrapper" that provides the following information:

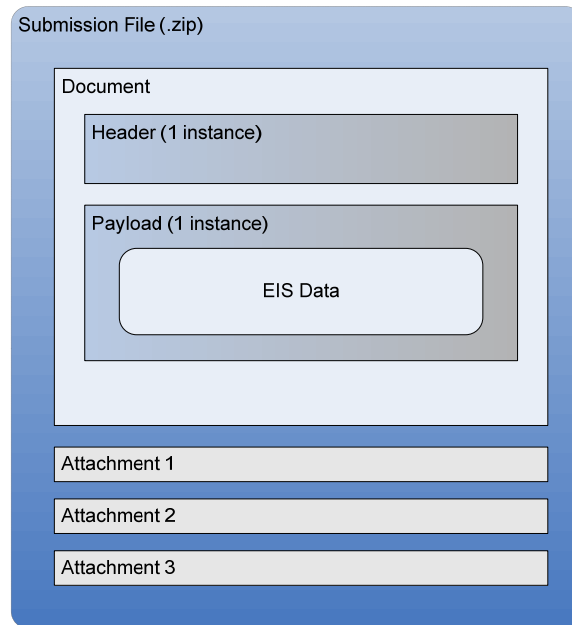
- Description of payload.
- Routing information for documents transferred across the Exchange Network.
- Additional information such as the document creator and data of creation.
- Identifies operations to perform by the EIS.

The header is required to be provided for all Submit operations through the Exchange Network.

5.16.1 Header Document Structure

Any submission files sent to the EIS must use the Header Document structure to meet EPA CDX processing requirements for transporting the file through the Exchange Network. This document serves as an XML wrapper around a given payload. The header contains information about the submitter and data about the contents of the payload. The root element of the header document is the Document element, with two child elements, Header and Payload. The Payload contains the actual EIS data, adhering to the structure of the CERS. Any supporting documents (for the NMIM activity data or GIS files) are attached in the form of binary attachments. These data attachments are referenced by name in the CERS payload section of the document, but the data attachment content exists as separate documents external to the Header Document structure. Figure 5-73 shows the file submission structure.

Figure 5-75
Submission File Structure



The Document elements are used by the Exchange Network to identifier the document and the default namespace for the header. The CERS payload has a separate namespace for its payload.

Figure 5-76
Exchange Header 2.0 Document Elements

Name	Description	Example	Required
ID	A unique identifier for the payload that is created during the time of submission.	ID123456789	Yes
XML Namespace	The Exchange Header 2.0 namespace. This is not the CERS namespace which is contained in the CERS document.	http://www.exchangenetwork.net/schema/heaer/2	Yes

The header document contains information on the individual that generated and submitted the XML file (this may not be the same person who prepared the data), the

organization that prepared the data, the date and time the file was created, and any additional comments.

Figure 5-77
Exchange Header 2.0 Elements

Name	Description	Example	Required	Notes
AuthorName	Originator of the document. This should be the name of a person or a network node ID if the document is automatically generated	John Smith	Yes	Used for reference only.
Organization Name	The organization to which the author belongs. It may be a state name, an organization name or a company name. For submissions to the CDX node, this should be the name of the organization.	State X Department of Environmental Quality	Yes	Used for reference only.
DocumentTitle	Title of the document.	Must be "EIS"	Yes	Reference to the flow.
CreationDate Time	This is a timestamp that marks when the document, including payloads and header part, was created.	2006-04-05T09:30:47-05:00	Yes	Must be in valid xsd:datetime format.
Keywords	Words that best describe the payload. Multiple keywords should be separated by commas. This is for transaction categorization and searching.		No	
Comment	Additional comments for processors.	The payload contains Point Data.	No	
DataFlowName	The name of the data flow associated with the payload. It could be the name of the data source for Query results.	EIS_V1.0	No	Subject to change once FCD is published.
DataService Name	Not used by EIS.		No	
SenderContact	The sender's additional contact information. It could contain sender's electronic address and/or telephone numbers where the author can be reached.	P.O. Box 1234 Richmond, VA	No	Element is not used by EIS. If data is provided it will be ignored.

(cont.)

Figure 5-77
Exchange Header 2.0 Elements (cont.)

Name	Description	Example	Required	Notes
Application UserIdentifier	The user identifier for the backend system if it is different from the NAAS user ID.		No	Element is not used in the EIS exchange. If a value is provided, it will be ignored by the EIS node and destination processor.
SenderAddress	A well-formed URI where results or reports can be sent	mailto:jsmith@example.com	Yes	
Property	Other properties of the document using named value pairs.		No	Element is not used by the EIS.
Signature	An XML signature associated with the document.		No	Element is not used by the EIS.

Figure 5-78
Exchange Header 2.0 Payload Elements

Name	Description	Example	Required	Notes
ID	A unique identifier for the payload.		No	Element is not used by EIS.
Operation	Identification of the payload content which triggers an operation that is carried out by the EIS.	Facility Inventory Emissions Location Event	Yes	Operation parameters are subject to change. Refer to the EIS Flow Configuration Document for these parameters.

The following example demonstrates how the exchange header document is used as a wrapper to the CERS data.

Figure 5-79
Example of XML Header

```
<hdr:Document xmlns:hdr="http://www.exchangenetwork.net/schema/header/2" xmlns:xsi="
http://www.w3.org/2001/XMLSchema-instance" id="ID02">
  <hdr:Header>
    <hdr:AuthorName>John Smith</hdr:AuthorName>
    <hdr:OrganizationName>Main Department of Environmental Protection</hdr:OrganizationName>
    <hdr:DocumentTitle>Facility Inventory Submission</hdr:DocumentTitle>
    <hdr:CreationDateTime>2006-04-05T09:30:47-05:00</hdr:CreationDateTime>
    <hdr:Comment>This demonstrates the Document Header</hdr:Comment>
    <hdr:DataFlowName>EIS_V1.0</hdr:DataFlowName>
    <hdr:SenderAddress>mailto:jsmith@example.com</hdr:SenderAddress>
  </hdr:Header>

  <hdr:Payload operation="refresh">

    <cer:CERS xmlns:cer="http://www.exchangenetwork.net/schema/cer/1" xmlns:xsi="
http://www.w3.org/2001/XMLSchema-instance">
      <cer:UserIdentifier>jsmith</cer:UserIdentifier>
      <cer:ProgramSystemCode>MAIRIS</cer:ProgramSystemCode>
      <cer:EmissionsYear>2008</cer:EmissionsYear>
      <cer:EmissionsCreationDate>2008-12-31</cer:EmissionsCreationDate>

    </cer:CERS>

  </hdr:Payload>
</hdr:Document>
```

5.16.2 Submitting Your File

All file submissions are required for the user to have an authorized EIS and CDX account and access to the EIS dataflow. All files must utilize EPA's exchange network to transport their files. EPA's network of nodes makes it possible for State, Local, and Tribal Agency users to exchange data with other exchanges, providing they have nodes. However, not all S/L/Ts have nodes. There are several options for how to transport the XML file through the network.

CDX Network Node: A server that facilitates the interface between database systems and the Exchange Network. It is a partners "point of presence" on the Exchange Network. Nodes that supports:

- Server accessibility on the Web;
- Complies with the protocols to ensure secure exchanges;
- Sends and receives standards-based messages;
- Returns requested information as XML; and
- Each partner has only one Node.

CDX Web: EPA's site for submitting environmental information via standard web browsers. The web client supports:

- Users to submit data via web-based forms and file uploads (flat file, XML file);
- Users to receive submission confirmation and processing reports;
- Supports XML for the payload or file;
- Supports Simple Object Access Protocol (SOAP) as a wrapper for the payload;
- Web Services Description Language (WSDL) for network exchange functions and services; and
- Hypertext Transfer Protocol (HTTP) for secure communication via the Internet.

Once files are pushed into the data flow, CDX will submit the XML document to the EIS back-end node and discards the submission payload; the payload is not archived. Once the EIS back-end node accepts the XML file it generates submittal identification information and begins processing the data content within the payload.

5.16.3 Quality Assurance and Receiving Feedback

All EIS messages are submitted through EPA's CDX environment. To check that the data in your XML document have been prepared and formatted properly for submission to the EIS, you may use the Quality Assurance Environment. You are encouraged to use this environment as frequently as necessary to help ensure that the submission is of the highest quality. You will receive a feedback report, which indicates critical errors and potential issues, upon submitting your XML document to either the QA environment or the Production environment and after the EIS has completed checking. The report is divided into two sections, technical errors for the IT developer with content regarding well-formedness, cardinality and other schema errors, and data content errors for Program personnel with regards to reporting codes, range errors, and any other business rule violations. You are expected to correct the problems with your data content or the XML document structure and resubmit the file to ensure the entire content of the document is checked. After the EIS processes the payload content, the resulting data can be viewed on the EIS Gateway generally within one to two business days. The results from onroad and nonroad activity data generally take longer to process; allow as much as one month before expecting to access the data online. In all cases you will receive notification when the processing of your data is complete.

For more information, see Section 1, "Introduction to the NEI and EIS," especially 1.11.11.