



**LANDBASE MAINTENANCE SYSTEM
DATA MODEL DOCUMENT**

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1. INTRODUCTION

1.1 Purpose

This documentation provides detailed information to support the SanGIS Business Process Reengineering effort.

1.2 Approach

The template of this documentation was specified and provided by County of San Diego, and supported by the City of San Diego, using a Northrop Grumman format

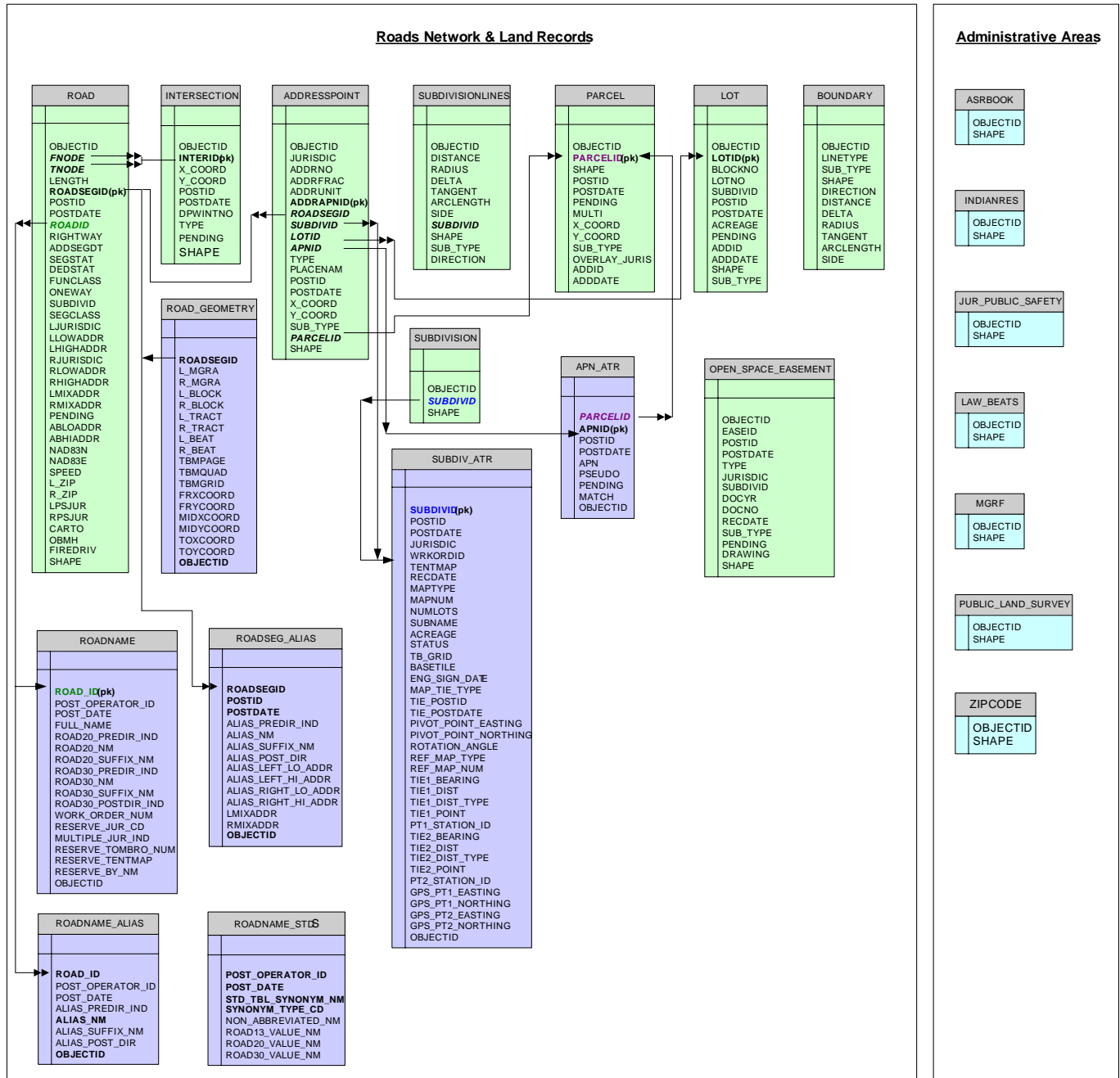
2. DATA MODEL OVERVIEW

The SanGIS Regional Landbase Maintenance System maintains 16 feature classes required for the City and County of San Diego. The features are stored in Oracle databases and utilize ArcSDE gateway.

There are two key elements in the SanGIS Landbase Maintenance System (LMS) - feature class and business table. Feature class is categorized as Roads Network, Land Records and Administrative Areas. Business table contains additional tabular data related to the landbase feature classes and is organized in the third normalized form. The following table summarizes the features class and business table.

Roads Network & Land Records			Administrative Areas
Type	Feature Class	Business Table	Feature Class
Roads & Addresses Network	ROAD	ROAD_GEOMETRY	ASRBOOK
		ROADSEG_ALIAS	INDIANRES
		ROADNAME	JUR_PUBLIC_SAFETY
		ROADNAME_ALIAS	LAW_BEATS
		ROADNAME_STDS	MGRF
	INTERSECTION		PUBLIC_LAND_SURVEY
	ADDRESSPOINT		ZIPCODE
Land Records	SUBDIVISION	SUBDIV_ATR	
	SUBDIVISIONLINES		
	PARCEL	APN_ATR	
	LOT		
	BOUNDARY		
	OPEN_SPACE_EASEMENT		

The SanGIS LMS feature data can be viewed as two major groups – Core and Auxiliary. The core group is comprised of the Roads Network and Land Records. The auxiliary group is comprised of features closely associated to changes made to the core group. The two groups and their intra-relations are diagrammed below.



3. DATA MODEL – LOGICAL VIEW

3.1 Roads Network Logical View

- **ROAD** - Road centerlines between intersections

The road business table stores block ranges, jurisdictions, zipcodes and characteristics of roads. Additional Roads related data are stored in the following business data tables:

- ROAD_GEOMETRY

This business table stores the left and/or right side of Census MGRF, Law Beats and Thomas Bros. ID within which the Road feature is located. From, to and mid X,Y points of road centerlines are included.

There is a one-to-one relationship with the road feature class.

The purpose of this table is to minimize processing time when performing topology checks.

- ROADSEG_ALIAS

This business table allows Roads to have different names and block ranges assigned to each segment.

- ROADNAME

This business table has a many-to-one relationship with the ROAD feature class.

- ROADNAME_ALIAS

This business table allows road names to have alternate names assigned to each segment.

- ROADNAME_STDS

This business table enforces road naming standards.

- **INTERSECTION** – the point/node where road centerlines cross and connect. An intersection point can also be placed at a designated break in a road segment where a specified block range is to be assigned (e.g. an intersection within a municipal boundary.)

A unique sequential number is used to form the primary key - INTERID - of the intersection point feature class. The primary key is also used as the “from node” (FNODE) and the “to node” (TNODE) in the Road feature class to facilitate roads network connections.

Column DPWINTNO is stored to facilitate the County DPW road network traverse process.

- **ADDRESSPOINT** - Building addresses adjacent to road centerlines.

This point feature class table also stores the primary keys of Subdivision, Parcel, Lot and Road feature classes where addresses reside.

3.1.1 Roads Network Logical View Description

The following table summarizes additional Roads Network Data Model information.

Roads Network			
Table	Source	Process Description	Remarks
Road	City roads submitted by DSD County roads submitted by DPLU Other agencies		
Road_Geometry	Additional roads attributes: - Left/right MGRA, block, tract, beat - Thomas Bros. page, grid - Roads from, to and mid x,y points	The purpose of this table is to minimize process time during topology check Attributes are programmatically calculated	
Roadseg_Alias	Requested by departments		Allows road segments to have different road names
Anno_Blockrange		Absolute high and low address numbers of a block	
Anno_Oneway		Arrow sign indicates the direction of a one-way road	
Anno_RoadName	Road-30 format		
Road_Com		Stores comments Not maintained.	
Intersection	Programmatically created from road end points	Primary key - INTERID - becomes the FNODE. TNODE in Road feature class	
Intersection_com		Stores comments Not maintained	
Roadname	City road names submitted by SDFD County road names submitted by DPLU	Must adhere to RUIS naming standards	

Roadname_Alias	Requested by departments		Allows multiple names for the same road, eg SD-274 and Balboa Ave.
Roadname_Com		Stores comments Not maintained.	
Addresspoint	<p>City addresses submitted by DSD</p> <p>County addresses, if any, submitted by various County and incorporated Cities.</p>	<p>New City addresses are loaded into table LOG_SD_ADDRESS.</p> <p>Reports of new addresses are assigned to be entered into Address point feature class</p> <p>Stores primary keys of tables apn_atr, lot, road, parcel & subdivision</p>	
Anno_Address	Address number		

3.2 Land Records Logical View

- **SUBDIVISION** – Aggregated areas of lots

- SUBDIV_ATR – SUBDIVISION tabular data

This table was designed to have a one-to-one relationship with the SUBDIVISION polygon feature class, related by SUBDIVID. At the present time only subdivisions with coordinates for control monuments have features in the subdivision layer.

- **SUBDIVISIONLINES** – Subdivision lines

Includes three types of lines LINE_TYPE (Subtype):

- (1) Subdivision Boundary
- (2) Tie Lines
- (3) Other Reference Lines

- **PARCEL** - Ownership polygon feature class as shown on Assessor Parcel Maps

Includes six types of parcels, designated by type code in column PARCEL_TYPE (Subtype):

- (1) parcels with APN
- (2) unparcelled private road
- (3) unparcelled government land
- (4) unparcelled common area
- (5) right of way
- (6) pending parcel

- APN_ATR – additional PARCEL business data

This table has a one-to-many relationships with the PARCEL feature class, related by PARCELID.

- Right_of_Way_ATR – additional PARCEL business data

This table has a one-to-many relationship with the PARCEL feature class, related by PARCELID.

- **LOT** – Division of land shown on a recorded Subdivision or Parcel Map

Includes two type of lots SUB_TYPE (Subtype):

- (1) Lots
- (2) Lots no SUBDIVID

- **BOUNDARY** – Parcel, Lot, ParLot (Coincident Parcel & Lot Lines), Right of Way, and Delimited lines

- **OPEN_SPACE_EASEMENT** – Land area reserved as open space designated on recorded documents or maps

Includes three types of easements EASE_TYPE (Subtype):

- (1) Open Space
- (2) Biological
- (3) Recreational

3.2.1 Land Records Logical View Description

The following table summarizes additional Land Records Data Model information.

Land Records			
Table	Source	Process Description	Remarks
Subdivision	Maps and digital forms are supplied by City DSD, County DPLU and other City departments		Only subdivisions with coordinates are created. Attributes are stored in business table subdiv_atr.
Subdivisionlines			
Subdiv_atr			All Subdivisions and Parcel Maps
Lot			
Parcel	Assessor Maps		
APN_Atr			Many APNs to one parcel
Assessor_MPR_Owners	Supplied by Assessor. Encompass all parcel APNs in San Diego County	APNs of apartments, condos and timeshares are added to table APN_ATR once their base parcel is established in the database.	PL/SQL Procedures: T.MPR_Process
Anno_APN	APN – Entered by SanGIS technicians		
Boundary	Polylines of Parcels and Lots		
Open_Space_Easement	Recorded subdivision or parcel maps or recorded deeds.	COGO from source documents	

3.3 Administrative Areas Logical View

- **ASRBOOK** – Assessor Books

This feature class represents the division of Assessor's parcels into various books.

- **INDIANRES** – Indian Reservations

This feature class represents the Indian Reservation boundaries for San Diego County.

- **JUR_PUBLIC_SAFETY** – Public Safety Jurisdiction

This feature represents the jurisdictional boundaries used by law enforcement which do not always match the political jurisdictional boundaries (Municipal layer) maintained by the Assessor from tax rate areas.

- **LAW_BEATS** – Sheriff and Police Beats

This feature class represents the law beats for the law enforcement agencies that are members of the Automated Regional Justice Information System (ARJIS).

- **MGRF** – Master Geographic Reference File, containing Federal Census Tract/Block

This feature class represents the United States Census Bureau's 2000 census tracts for San Diego County. It was rectified to match the SanGIS landbase.

- **PUBLIC_LAND_SURVEY** – Sections, Township & Range, and land grant boundaries

- **ZIPCODE**

This feature class represents the United States Post Office's 5-digit postal zones for San Diego County.

3.3.1 Administrative Areas Logical View Description

The following table summarizes additional Administrative Areas information.

Administrative Areas			
Table	Source	Process Description	Remarks
Asrbook	The Assessor notifies SanGIS when updates are made affecting book boundaries.	Book boundaries are aligned with parcel or road features.	Assessor Book boundary changes are made annually, usually in May or June.
Indianres	Assessor pages, recorded documents or recorded maps	Align with road, parcel and other landbase feature.	
Jur_Public_Safety	Law_Beats feature class.		This feature class represents the jurisdictional boundaries used by law enforcement which do not always match the political jurisdictional boundaries maintained by the Assessor from tax rate areas. ARJIS Geo File is based on this feature class.
Law_Beats	Submitted by jurisdictions in fax or email forms.	Align with road, parcel and other landbase feature.	The beat boundaries do not always align with jurisdictional boundaries, as shown in the Municipal layer. Jur_Public_Safety is generated from this feature.
MGRF	US Census Bureau's 2000 census.	Align with road, parcel and other landbase feature.	Census maintenance is primarily a rectification task, adjusting the boundaries to align with landbase movements.
Public_Land_Survey		Adjustments made as new information determines locations of section corners	

Zipcode	The USPS sends zip code changes to SanGIS (usually once a year).	On-screen digitizing is used.	Attention is given to align zip code polygon boundaries with road centerlines as appropriate.
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4. BUSINESS APPLICATIONS

- o County, City, SDDPC & SANDAG ArcGIS applications.

Roads network, Land Records and Administrative Areas features classes are refreshed weekly in the SanGIS ArcSDE for access by County, City, SDDPC and SANDAG staff who are connected to the SanGIS network. Shapefiles of roads network and land records, and coverages of addresspoint and roads are also refreshed weekly.

Business Applications Feature Classes			
Type	Landbase Maintenance Feature Class Name	SanGIS Published Layer Name	Comments
Roads Network	Addresspoint	AddrAPN	
	Intersection	Roads_Intersection	
	Road	Roads_All	
		Roads_Freeway	Segclass = 1
		Roads_Freeway_Ramp	Segclass = 9
		Roads_Highway	Segclass = 4
		Roads_Major	Segclass = 3
		Roads_Transition_Ramp	Segclass = 8
Land Records	Boundary	Landbase_Boundaries	
	Lot	Lots	
	Open_Space_Easement	Esmt_Open_Space	
	Parcel	Parcel	Non Stack
		Parcels_All	Stack
		Right_of_Way	Subtype = 5
	Subdivision	Subdivision	
	Subdivisionlines	Subdivision_Line	
Administrative Areas	Asrbook	Asr_Book	
	Indianres	Indian_Reservations	
	Jur_Public_Safety	Jur_Public_Safety	
	Law_Beats	Law_Beats	
	Public_Land_Survey	Pub_Land_Sur	
	Zipcode	Zipcode	

- ARJIS

Geofile with ROAD feature class geocoded with “left and right” law beats, public safety jurisdiction and MGRF are provided quarterly to ARJIS.

- ADMATCH

Audit trails of daily changes to the Road Network and Land Records are recorded in a set of change tables as part of the versioning post/reconcile process.

One major benefactor is SDDPC’s ADMATCH system.

SDDPC address validation routine maintains synchronization with SanGIS roads and addresses business tables by receiving daily new and update of road block ranges, road names, addresses and APNs.

- Internet

Roads, Lots and Parcels are refreshed monthly at **www.sangis.org**.

5. DATA MODEL – PHYSICAL VIEW

5.1 Feature Data Set (F Table) and Spatial Index (S Table)

Using Oracle as RDBMS, in order to manage geometry and ways to rapidly search and retrieve of features, in addition to the obvious business table that each feature class is named after, ArcSDE automatically adds a Feature class (F table) and a Spatial Index (S table). F and S tables have a naming convention of Fnnn and Snnn, whereas nnn is a unique Layer ID assigned to the feature class when the feature is loaded into a GeoDatabase. The Layer ID is an ascending number in the order of feature class load sequence.

5.2 Shape Column and Object ID

ArcSDE adds the SHAPE column to business tables and uses the column to join F and S tables which have FID and SP_FID as the primary key respectively. SHAPE is a foreign key to reference F and S tables.

ArcSDE adds the OBJECTID column to business tables when the feature class is registered to GeoDatabase. If a layer is not registered, and an attempt is made to identify the features in the layer using ArcMap, a "Network I/O Error".

5.3 Domains, Relationship Classes, Sub Types and Validation Rules

ArcSDE uses Domains, Relationship Classes and Validation Rules to perform value edits and enforce referential integrity, similar to Oracle Check constraints and Triggers.

These objects are accessible via ArcCatalog application. Source of data are stored in schema SDE, under tables gdb_domain, gdb_relrules, gdb_subtypes and gdb_validrules.

5.4 Versioning Delta Tables

The SanGIS LMS adopts a version process to allow concurrent edits by multiple users. Two additional tables, or Delta Tables, are automatically added to the feature class's table schema. Additions and updates of features class and business tables are stored in both A and D tables. Deletions are stored in D tables.

5.5 Annotations

- Roads Annotations
 - Anno_address
 - Anno_blockrange
 - Anno_freefrm
 - Anno_oneway

- Anno_roadname
- Lots Annotations
 - Anno_blocknum
 - Anno_landmark
 - Anno_lotnum (feature linked)
- Parcels Annotations
 - Anno_apn
- Subdivisions Annotations
 - Anno_mapnum
 - Anno_subname
 - Anno_tentmap

5.6 Special Input Data

- Assessors MPR and PAR Data

Master Property Record (MPR) provides property ownership information and is the source of SanGIS condominiums, apartments and timeshare parcels business data. The data is loaded into table t.assessor_mpr_original to match with SanGIS Parcels business data.

Property Appraisal Records (PAR) is the source for parcel property details. The data is loaded into table t.assessor_par.

- San Diego City New Address Data

The City of San Diego Development Services Department (DSD) provides files of new City addresses to be added into SanGIS Addresspoint feature class. The interim table is Log_SD_Address.

Addresses with a City work order number will be entered into the Addresspoint as part of the subdivision map maintenance work process. Those without a work order number will be entered individually based on their roads network and/or land records information.

The following table summarizes additional Input Data information.

Special Data			
Business Table	Source	Application	Comments
1.Assessor_MPR_Original 2.Assessor_MPR_Owners 3.MPR_APN_Multi 4.Parcel_Own_T 5.MPR_Addreapn 6.MPR_Addrapn_Multi	Assessors MPR File	<ul style="list-style-type: none"> Adds apartments, condos and time-shares APNs to table APN_ATR. Provides ownership information for SanGIS publish layer – Parcels_All. 	Data loaded by Oracle procedure – Parse_MPR .
1.Assessor_PAR	Assessors PAR File	<ul style="list-style-type: none"> Provides real estate information for SanGIS publish layer – Parcels_All. 	Data loaded to table by SQL Loader
Daily maintenance data change: 1.Change_Addresspoint 2.Change_Easement 3.Change_Intersection 4.Change_Jur_Pub_Safety 5.Change_Lot 6.Change_Parcel 7.Change_Road 8.Change_Subdivision	Maintenance tables: 1.Addresspoint 2.Open_Space_Easement 3.Intersection 4.Jur_Public_Safety 5.Lot 6.Parcel 7.Road 8. Subdivision	<ul style="list-style-type: none"> “Change_Addresspoint” & “Change_Road provides” daily transitional data for SDDPC address validation routine – ADMATCH. Provides SanGIS Landbase Maintenance audit trails. 	
Log_SD_Address	City of San Diego - DSD	<p>Addresses with Work Order numbers are entered into SanGIS Addresspoint feature class as part of the subdivision map maintenance work flow.</p> <p>Addresses without Work Order numbers number are entered individually after researching its location within roads and parcels.</p>	Reports a

5.7 Current Disk Space Usage

Feature Class	Number of Records	Space Usage (MB)
ROAD	149,602	116
ADDRESSPOINT	742,055	181
INTERSECTION	119,045	26
SUBDIVISION	1,421	5
SUBDIVISIONLINES	33,944	20
PARCEL	807,913	550
LOT	904,123	635
BOUNDARY	3,190,477	848
OPEN_SPACE_EASEMENT	5,070	8
ASRBOOK	600	8
INDIANRES	35	3
JUR_PUBLIC_SAFETY	18	16
LAW_BEATS	632	14
MGRF	33,390	41
PUBLIC_LAND_SURVEY	3,574	3
ZIPCODE	114	9
Business Table	Number of Records	Space Usage (in MB)
ROAD_GEOMETRY	149,602	27
ROADSEG_ALIAS	1,523	0.1
ROADNAME	44,672	5
ROADNAME_ALIAS	7,951	0.1
ROADNAME_STDS	1,127	0.1
APN_ATR	994,963	57
SUBDIV_ATR	36,397	19

5.8 Estimate Annual Growth

Estimated annual growth of all feature classes is 10%.

5.9 Security

Two Oracle roles were designed to control data access:

SDE_Editor – Delete, Insert, Select, Update

SDE_Viewer – SelectEditors are granted with SDE_Editor role, viewers are granted with SDE_Viewer role.

5.10 Performance

Versions must be compressed and tables analyzed daily.

5.11 Capacity

Estimated data growth rate is approximately 10% annually.

5.12 Data Access

Refer to documents “Software Design” and “Detailed Process Requirements and Data Specifications”.

5.13 Error Handling

Refer to documents “Software Design” and “Detailed Process Requirements and Data Specifications”.

5.15 Installation and Deployment Strategy

Oracle Database Server, ArcSDE Server, ArcGIS Client

5.16 Data Initialization

Initial data were derived from spatial reference data sources.

5.17 Data Management

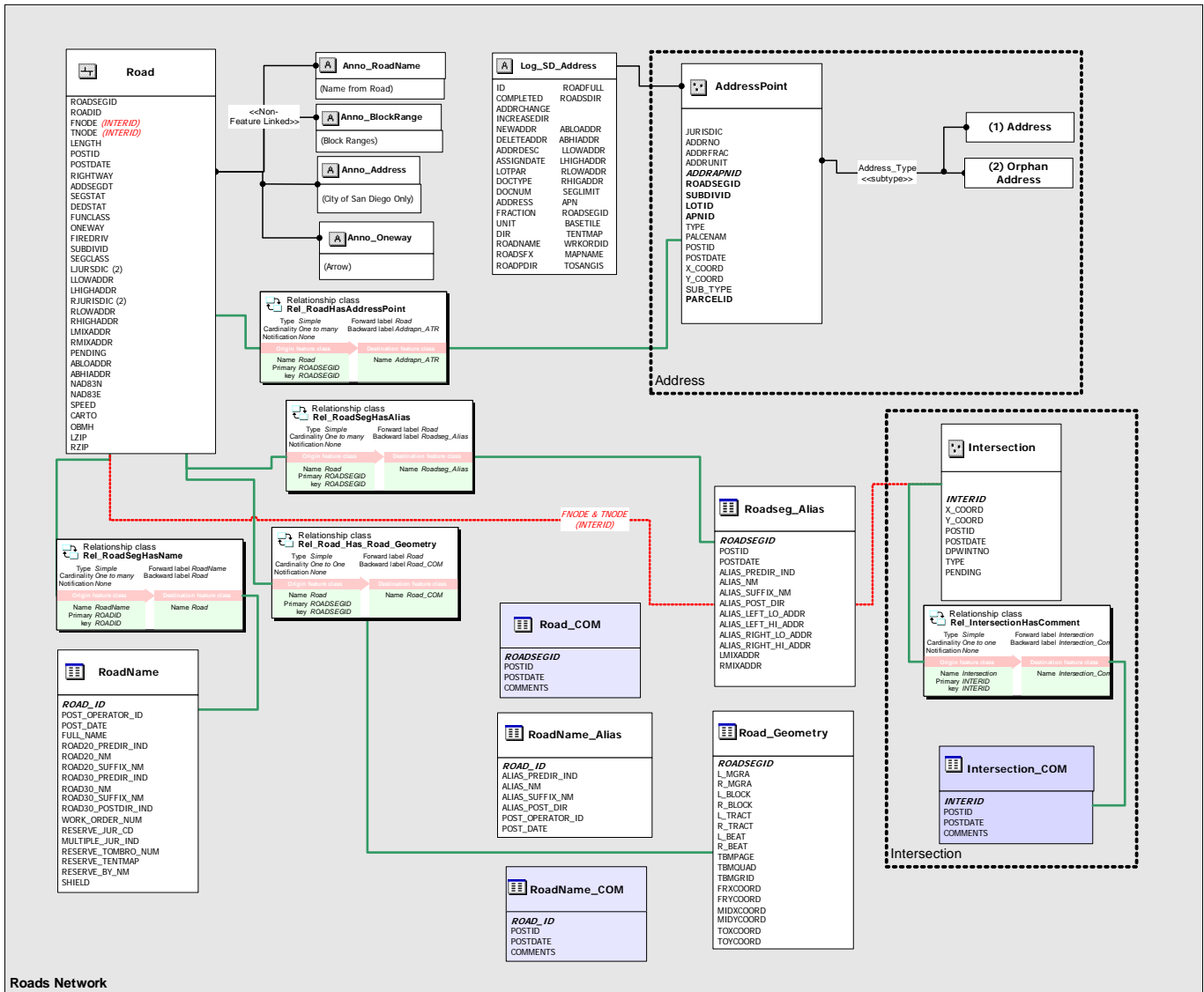
NAS for data storage. NAS snapshot, Oracle export and SDE export for data backup. Refer to document “Information Technology Requirements”.

6. Data Dictionary

6.1 Roads Network

6.1.1 Entity-Relationship Diagram

The following figure diagrams the attributes and intra-relationships within the Road and Address layers in the SanGIS LMS.



6.1.2 Data Description

6.1.2.1 ROAD

The following table lists the attributes and their format for the Road layer in the SanGIS LMS.

Column Name	Index	Data Type	Constraints	Mandatory	Unique	Source
OBJECTID	YES	NUMBER(38)		NOT NULL	YES	
FNODE		NUMBER(8)				
TNODE		NUMBER(8)				
LENGTH		NUMBER(38,8)				
ROADSEGID	YES	NUMBER(8)			YES	
POSTID		VARCHAR2(20)				
POSTDATE		DATE				
ROADID	YES	NUMBER(8)				
RIGHTWAY		NUMBER(4)				
ADDSEGDT		DATE				
SEGSTAT		VARCHAR2(1)				
DEDSTAT		VARCHAR2(1)				
FUNCLASS		VARCHAR2(1)				
ONEWAY		VARCHAR2(1)				
SUBDIVID		NUMBER(8)				
SEGCLASS		VARCHAR2(1)				
LJURISDIC		VARCHAR2(2)				
LLOWADDR		NUMBER(6)				
LHIGHADDR		NUMBER(6)				
RJURISDIC		VARCHAR2(2)				
RLOWADDR		NUMBER(6)				
RHIGHADDR		NUMBER(6)				
LMIXADDR		VARCHAR2(1)		NOT NULL		
RMIXADDR		VARCHAR2(1)		NOT NULL		
PENDING		VARCHAR2(1)				
ABLOWADDR		NUMBER(6)				
ABHIADDR		NUMBER(6)				
NAD83N		NUMBER(38,8)				
NAD83E		NUMBER(38,8)				
SPEED		NUMBER(4)				
L_ZIP		NUMBER(5)				
R_ZIP		NUMBER(5)				
LPSJUR		VARCHAR2(2)				
RPSJUR		VARCHAR2(2)				
CARTO		VARCHAR2(1)				
OBMH		VARCHAR2(1)				
FIREDRIV		VARCHAR2(1)				
SHAPE	YES	NUMBER(38)			YES	

Road Table:Description

6.1.2.2 ROAD_GEOMETRY

The following table lists the attributes and their format for the Road_Geometry layer in the SanGIS LMS.

Column. Name	Index	Data Type	Constraints	Mandatory	Unique	Source
ROADSEGID	YES	NUMBER(8)			YES	
L_MGRA		NUMBER(6)				
R_MGRA		NUMBER(6)				
L_BLOCK		NUMBER(6)				
R_BLOCK		NUMBER(6)				
L_TRACT		NUMBER(6)				
R_TRACT		NUMBER(6)				
L_BEAT		NUMBER(3)				
R_BEAT		NUMBER(3)				
TBMPAGE		VARCHAR2(4)				
TBMQUAD		VARCHAR2(4)				
TBMGRID		VARCHAR2(3)				
FRXCOORD		NUMBER(38,3)				
FRYCOORD		NUMBER(38,3)				
MIDXCOORD		NUMBER(38,3)				
MIDYCOORD		NUMBER(38,3)				
TOXCOORD		NUMBER(38,3)				
TOYCOORD		NUMBER(38,3)				
OBJECTID	YES	NUMBER(38)		NOT NULL	YES	

Road_Geometry Table:Description

6.1.2.3 ROADSEG_ALIAS

The following table lists the attributes and their format for the Roadseg-Alias layer in the SanGIS LMS.

Column. Name	Index	Data Type	Constraints	Mandatory	Unique	Source
ROADSEGID	YES	NUMBER(8)				
POSTID		VARCHAR2(20)				
POSTDATE		DATE				
ALIAS_PREDIR_IND		VARCHAR2(2)				
ALIAS_NM		VARCHAR2(30)				
ALIAS_SUFFIX_NM		VARCHAR2(4)				
ALIAS_POST_DIR		VARCHAR2(2)				
ALIAS_LEFT_LO_ADDR		NUMBER				
ALIAS_LEFT_HI_ADDR		NUMBER				
ALIAS_RIGHT_LO_ADDR		NUMBER				
ALIAS_RIGHT_HI_ADDR		NUMBER				
LMIXADDR		VARCHAR2(1)				
RMIXADDR		VARCHAR2(1)				
OBJECTID	YES	NUMBER(38)		NOT NULL	YES	

Roadseg_Alias Table:Description

6.1.2.4 ROADNAME

The following table lists the attributes and their format for the Roadname layer in the SanGIS LMS.

Column. Name	Index	Data Type	Constraints	Mandatory	Unique	Source
ROAD_ID	YES	NUMBER(8)		NOT NULL		
POST_OPERATOR_ID		VARCHAR2(20)				
POST_DATE		DATE				
FULL_NAME		VARCHAR2(50)		NOT NULL		
ROAD20_PREDIR_IND		VARCHAR2(1)				
ROAD20_NM		VARCHAR2(20)				
ROAD20_SUFFIX_NM		VARCHAR2(2)				
ROAD30_PREDIR_IND		VARCHAR2(2)				
ROAD30_NM		VARCHAR2(30)				
ROAD30_SUFFIX_NM		VARCHAR2(4)				
ROAD30_POSTDIR_IND		VARCHAR2(2)				
WORK_ORDER_NUM		VARCHAR2(10)				
RESERVE_JUR_CD		VARCHAR2(2)				
MULTIPLE_JUR_IND	YES	VARCHAR2(1)				
RESERVE_TOMBRO_NUM		VARCHAR2(6)				
RESERVE_TENTMAP		VARCHAR2(14)				
RESERVE_BY_NM		VARCHAR2(20)				
OBJECTID		NUMBER(38)		NOT NULL	YES	

Roadname Table:Description

6.1.2.5 ROADNAME_ALIAS

The following table lists the attributes and their format for the Roadname_Alias layer in the SanGIS LMS.

Column. Name	Index	Data Type	Constraints	Mandatory	Unique	Source
ROADSEGID	YES	NUMBER(8)				
POSTID		VARCHAR2(20)				
POSTDATE		DATE				
ALIAS_PREDIR_IND		VARCHAR2(2)				
ALIAS_NM		VARCHAR2(30)				
ALIAS_SUFFIX_NM		VARCHAR2(4)				
ALIAS_POST_DIR		VARCHAR2(2)				
ALIAS_LEFT_LO_ADDR		NUMBER				
ALIAS_LEFT_HI_ADDR		NUMBER				
ALIAS_RIGHT_LO_ADDR		NUMBER				
ALIAS_RIGHT_HI_ADDR		NUMBER				
LMIXADDR		VARCHAR2(1)				
RMIXADDR		VARCHAR2(1)				
OBJECTID	YES	NUMBER(38)		NOT NULL	YES	

Roadname_Alias Table:Description

6.1.2.6 *ROADNAME_STDS*

The following table lists the attributes and their format for the Roadname_Stds layer in the SanGIS LMS.

Column. Name	Index	Data Type	Constraints	Mandatory	Unique	Source
POST_OPERATOR_ID		VARCHAR2(20)		NOT NULL		
POST_DATE		DATE		NOT NULL		
STD_TBL_SYNONYM_NM		VARCHAR2(30)		NOT NULL		
SYNONYM_TYPE_CD		VARCHAR2(1)		NOT NULL		
NON_ABBREVIATED_NM		VARCHAR2(30)				
ROAD13_VALUE_NM		VARCHAR2(13)				
ROAD20_VALUE_NM		VARCHAR2(20)				
ROAD30_VALUE_NM		VARCHAR2(30)				

Roadname_Stds Table:Description

6.1.2.7 *INTERSECTION*

The following table lists the attributes and their format for the Intersection layer in the SanGIS LMS.

Column. Name	Index	Data Type	Constraints	Mandatory	Unique	Source
OBJECTID	YES	NUMBER(38)		NOT NULL		
INTERID	YES	NUMBER(8)		NOT NULL		
X_COORD		NUMBER(38,8)		NOT NULL		
Y_COORD		NUMBER(38,8)		NOT NULL		
POSTID		VARCHAR2(20)		NOT NULL		
POSTDATE		DATE				
DPWINTNO		NUMBER(8)		NOT NULL		
TYPE		VARCHAR2(1)				
PENDING		VARCHAR2(1)		NOT NULL		
SHAPE	YES	NUMBER(38)				

Intersection Table:Description

6.1.2.8 ADDRESSPOINT

The following table lists the attributes and their format for the Addresspoint layer in the SanGIS LMS.

Column. Name	Index	Data Type	Constraints	Mandatory	Unique	Source
OBJECTID	YES	NUMBER(38)		NOT NULL	YES	
JURISDIC		VARCHAR2(2)				
ADDRNO		NUMBER(8)				
ADDRFRAC		VARCHAR2(3)				
ADDRUNIT		VARCHAR2(8)				
ADDRAPNID	YES	NUMBER(8)		NOT NULL	YES	
ROADSEGID	YES	NUMBER(8)				
SUBDIVID	YES	NUMBER(8)				
LOTID	YES	NUMBER(8)				
APNID	YES	NUMBER(8)				
TYPE		VARCHAR2(1)				
PLACENAM		VARCHAR2(20)				
POSTID		VARCHAR2(20)				
POSTDATE		DATE				
X_COORD		NUMBER(38,8)				
Y_COORD		NUMBER(38,8)				
SUB_TYPE		NUMBER(4)				
PARCELID	YES	NUMBER(38)				
SHAPE	YES	NUMBER(38)				

Addresspoint Table:Description

6.2.2 Data Description

6.2.2.1 SUBDIVISION

The following table lists the attributes and their format for the Subdivision layer in the SanGIS LMS.

Column. Name	Index	Data Type	Constraints	Mandatory	Unique	Source
OBJECTID		NUMBER(38)		NOT NULL	Yes	
SUBDIVID		NUMBER(8)			Yes	
SHAPE		NUMBER(38)			Yes	

Subdivision Table:Description

6.2.2.2 SUBDIV_ATR

The following table lists the attributes and their format for the Subdiv_Atr layer in the SanGIS LMS.

Column. Name	Index	Data Type	Constraints	Mandatory	Unique	Source
SUBDIVID	Yes	NUMBER(8)		NOT NULL	Yes	
POSTID		VARCHAR2(20)				
POSTDATE		DATE				
JURISDIC		VARCHAR2(2)				
WRKORDID		VARCHAR2(10)				
TENTMAP		VARCHAR2(14)				
RECDATE		DATE				
MAPTYPE		VARCHAR2(3)				
MAPNUM		VARCHAR2(8)				
NUMLOTS		NUMBER				
SUBNAME		VARCHAR2(64)				
ACREAGE		NUMBER(10,3)				
STATUS		VARCHAR2(1)				
TB_GRID		VARCHAR2(10)				
BASETILE		VARCHAR2(5)				
ENG_SIGN_DATE		DATE				
MAP_TIE_TYPE		NUMBER(1)				
TIE_POSTID		VARCHAR2(20)				
TIE_POSTDATE		DATE				
PIVOT_POINT_EASTING		NUMBER(10,3)				
PIVOT_POINT_NORTHING		NUMBER(10,3)				
ROTATION_ANGLE		NUMBER(10,3)				
REF_MAP_TYPE		VARCHAR2(10)				
REF_MAP_NUM		NUMBER(10)				
TIE1_BEARING		VARCHAR2(10)				
TIE1_DIST		NUMBER(10)				
TIE1_DIST_TYPE		VARCHAR2(50)				
TIE1_POINT		NUMBER(10)				
PT1_STATION_ID	Yes	NUMBER(8)				
TIE2_BEARING		VARCHAR2(10)				
TIE2_DIST		NUMBER(10)				
TIE2_DIST_TYPE		VARCHAR2(50)				
TIE2_POINT		NUMBER(10)				
PT2_STATION_ID	Yes	NUMBER(8)				
GPS_PT1_EASTING		NUMBER(10,3)				
GPS_PT1_NORTHING		NUMBER(10,3)				
GPS_PT2_EASTING		NUMBER(10,3)				
GPS_PT2_NORTHING		NUMBER(10,3)				
OBJECTID	Yes	NUMBER(38)		NOT NULL	Yes	

Subdiv_Atr Table:Description

6.2.2.3 SUBDIVISIONLINES

The following table lists the attributes and their format for the Subdivisionlines layer in the SanGIS LMS.

Column. Name	Index	Data Type	Constraints	Mandatory	Unique	Source
OBJECTID	Yes	NUMBER(38)		NOT NULL	Yes	
DISTANCE		VARCHAR2(20)				
RADIUS		VARCHAR2(20)				
DELTA		VARCHAR2(20)				
TANGENT		VARCHAR2(20)				
ARCLENGTH		VARCHAR2(20)				
SIDE		VARCHAR2(1)				
SUBDIVID	Yes	NUMBER(8)				
SHAPE	Yes	NUMBER(38)			Yes	
SUB_TYPE		NUMBER(4)				
DIRECTION		VARCHAR2(20)				

Subdivisionlines Table:Description

6.2.2.4 PARCEL

The following table lists the attributes and their format for the Parcel layer in the SanGIS LMS.

Column. Name	Index	Data Type	Constraints	Mandatory	Unique	Source
OBJECTID	Yes	NUMBER(38)		NOT NULL	Yes	
PARCELID	Yes	NUMBER(9)		NOT NULL	Yes	
SHAPE	Yes	NUMBER(38)				
POSTID		VARCHAR2(20)				
POSTDATE		DATE				
PENDING		VARCHAR2(1)				
MULTI		VARCHAR2(1)				
X_COORD		NUMBER(38,8)				
Y_COORD		NUMBER(38,8)				
SUB_TYPE		NUMBER(4)				
OVERLAY_JURIS		VARCHAR2(2)				
ADDID		VARCHAR2(20)				
ADDDATE		DATE				

Parcel Table:Description

6.2.2.5 APN_ATR

The following table lists the attributes and their format for the APN_Atr layer in the SanGIS LMS.

Column. Name	Index	Data Type	Constraints	Mandatory	Unique	Source
PARCELID	Yes	NUMBER(8)				
APNID	Yes	NUMBER(8)		NOT NULL		
POSTID		VARCHAR2(20)		NOT NULL		
POSTDATE		DATE		NOT NULL		
APN	Yes	VARCHAR2(14)		NOT NULL		
PSEUDO		VARCHAR2(1)				
PENDING		VARCHAR2(1)		NOT NULL		
MATCH		VARCHAR2(1)				
OBJECTID	Yes	NUMBER(38)		NOT NULL	Yes	

APN_Atr Table:Description

6.2.2.6 Right_of_Way_ATR

The following table lists the attributes and their format for the Right_of_Way_ATR layer in the SanGIS LMS.

Column. Name	Index	Data Type	Constraints	Mandatory	Unique	Source
OBJECTID	Yes	NUMBER(38)		NOT NULL	Yes	
PARCELID	Yes	NUMBER(38)				
POSTID		VARCHAR2(20)				
POSTDATE		DATE				
TYPE		NUMBER(4)				
SUBDIVID		NUMBER(38)				
DOC_YR		DATE				
DOC_NUM		NUMBER(38)				
DDOR		VARCHAR2(30)				
REC_DATE		DATE				
DRAWING		VARCHAR2(30)				
PENDING		VARCHAR2(1)				
ADDDATE		DATE				
ADDID		VARCHAR2(20)				

Right_of_Way_Atr Table:Description

6.2.2.7 LOT

The following table lists the attributes and their format for the Lot layer in the SanGIS LMS.

Column. Name	Index	Data Type	Constraints	Mandatory	Unique	Source
OBJECTID	Yes	NUMBER(38)		NOT NULL	Yes	
LOTID	Yes	NUMBER(8)			Yes	
BLOCKNO		VARCHAR2(4)				
LOTNO		VARCHAR2(6)				
SUBDIVID	Yes	NUMBER(8)				
POSTID		VARCHAR2(20)				
POSTDATE		DATE				
ACREAGE		NUMBER(38,8)				
PENDING		VARCHAR2(1)				
ADDID		VARCHAR2(20)				
ADDDATE		DATE				
SHAPE	Yes	NUMBER(38)			Yes	
SUB_TYPE		NUMBER(4)				

Lot Table:Description

6.2.2.8 BOUNDARY

The following table lists the attributes and their format for the Boundary layer in the SanGIS LMS.

Column. Name	Index	Data Type	Constraints	Mandatory	Unique	Source
OBJECTID	Yes	NUMBER(38)		NOT NULL	Yes	
LINETYPE		VARCHAR2(1)				
SUB_TYPE		NUMBER(4)				
SHAPE	Yes	NUMBER(38)			Yes	
DIRECTION		VARCHAR2(20)				
DISTANCE		VARCHAR2(20)				
DELTA		VARCHAR2(20)				
RADIUS		VARCHAR2(20)				
TANGENT		VARCHAR2(20)				
ARCLENGTH		VARCHAR2(20)				
SIDE		VARCHAR2(1)				

Boundary Table:Description

6.2.2.9 OPEN_SPACE_EASEMENT

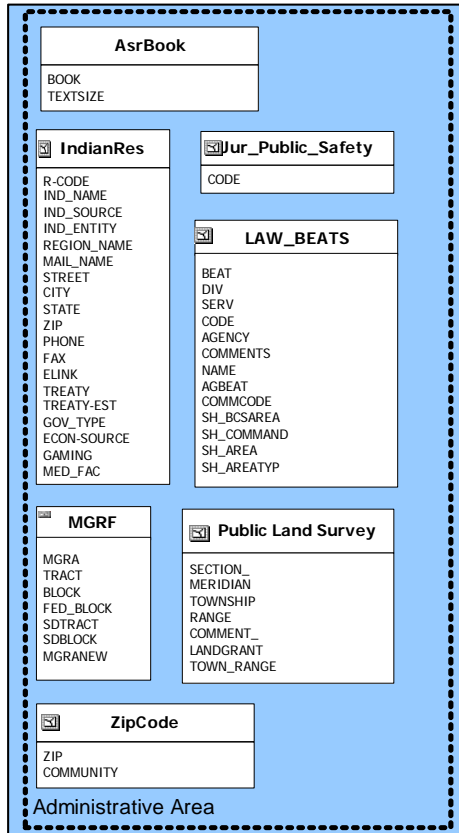
The following table lists the attributes and their format for the Open_Space_Easement layer in the SanGIS LMS.

Column. Name	Index	Data Type	Constraints	Mandatory	Unique	Source
OBJECTID	Yes	NUMBER(38)		NOT NULL	Yes	
EASEID		NUMBER(8)				
POSTID		VARCHAR2(20)				
POSTDATE		VARCHAR2(20)				
TYPE		VARCHAR2(2)				
JURISDIC		VARCHAR2(2)				
SUBDIVID	Yes	NUMBER(8)				
DOCYR		VARCHAR2(4)				
DOCNO		VARCHAR2(10)				
RECDATE		VARCHAR2(20)				
SUB_TYPE		NUMBER(4)				
PENDING		VARCHAR2(1)				
DRAWING		VARCHAR2(30)				
SHAPE	Yes	NUMBER(38)			Yes	

Open_Space_Easement Table:Description

6.3 Administrative Areas

6.3.2 Entity-Relationship Diagram



6.3.3 Data Description

6.3.3.1 ASRBOOK

The following table lists the attributes and their format for the Asrbook layer in the SanGIS LMS.

Column. Name	Index	Data Type	Constraints	Mandatory	Unique	Source
OBJECTID		NUMBER(38)		NOT NULL	Yes	
BOOK		VARCHAR2(3)				
TXTSIZE		VARCHAR2(1)				
SHAPE		NUMBER(38))			Yes	

Asrbook Table:Description

6.3.3.2 INDIANRES

The following table lists the attributes and their format for the Indianres layer in the SanGIS LMS.

Column. Name	Index	Data Type	Constraints	Mandatory	Unique	Source
OBJECTID		NUMBER(38)		NOT NULL	Yes	
IND_NAME		VARCHAR2(4)				
IND_SOURCE		VARCHAR2(60)				
IND_ENTITY		VARCHAR2(30)				
REGION_NAME		VARCHAR2(150)				
MAIL_NAME		VARCHAR2(16)				
STREET		VARCHAR2(50)				
CITY		VARCHAR2(60)				
STATE		VARCHAR2(60)				
ZIP		VARCHAR2(2)				
PHONE		VARCHAR2(5)				
FAX		VARCHAR2(10)				
ELINK		VARCHAR2(10)				
TREATY		VARCHAR2(100)				
TRIBAL_EST		VARCHAR2(60)				
GOV_TYPE		VARCHAR2(100)				
ECON_SOURCE		VARCHAR2(100)				
GAMING		VARCHAR2(100)				
MED_FAC		VARCHAR2(1)				
SHAPE		VARCHAR2(100)			Yes	
		NUMBER(38)				

IndianRes Table:Description

6.3.3.3 JUR_PUBLIC_SAFETY

The following table lists the attributes and their format for the Jur_Public_Safety layer in the SanGIS LMS.

Column. Name	Index	Data Type	Constraints	Mandatory	Unique	Source
OBJECTID		NUMBER(38)		NOT NULL	Yes	
CODE		VARCHAR2(2)				
SHAPE		NUMBER(38)			Yes	

Jur_Public_Safety Table:Description

6.3.3.4 *LAW_BEATS*

The following table lists the attributes and their format for the Law_Beats layer in the SanGIS LMS.

Column. Name	Index	Data Type	Constraints	Mandatory	Unique	Source
OBJECTID		NUMBER(38)		NOT NULL	Yes	
BEAT		NUMBER(4)				
DIV		NUMBER(38)				
SERV		NUMBER(38)				
CODE		VARCHAR2(2)				
AGENCY		VARCHAR2(3)				
COMMENTS		VARCHAR2(75)				
NAME		VARCHAR2(60)				
AGBEAT		VARCHAR2(10)				
COMMCODE		VARCHAR2(4)				
SHAPE		NUMBER(38)			Yes	
SH_BCSAREA		VARCHAR2(30)				
SH_COMMAND		VARCHAR2(30)				
SH_AREA		VARCHAR2(30)				
SH_AREATYP		VARCHAR2(30)				

Law_Beats Table:Description

6.3.3.5 *MGRF*

The following table lists the attributes and their format for the MGRF layer in the SanGIS LMS.

Column. Name	Index	Data Type	Constraints	Mandatory	Unique	Source
OBJECTID		NUMBER(38)		NOT NULL	Yes	
AREA		NUMBER(38,8)				
PERIMETER		NUMBER(38,8)				
MGRF_PD_		NUMBER(38)				
MGRF_PD_ID		NUMBER(38)				
MGRA		NUMBER(38)				
TRACT		NUMBER(38)				
BLOCK		NUMBER(38)				
FED_BLOCK		NUMBER(38)				
SDTRACT		NUMBER(38)				
SDBLOCK		NUMBER(38)				
SHAPE		NUMBER(38)			Yes	
MGRANEW		NUMBER(38,8)				

MGRF Table:Description

6.3.3.6 PUBLIC_LAND_SURVEY

The following table lists the attributes and their format for the Public_Land_Survey layer in the SanGIS LMS.

Column. Name	Index	Data Type	Constraints	Mandatory	Unique	Source
OBJECTID		NUMBER(38)		NOT NULL	Yes	
AREA		NUMBER(38,8)				
PERIMETER		NUMBER(38,8)				
SECTION_		NUMBER(38)				
MERIDIAN		NUMBER(38)				
TOWNSHIP		NUMBER(38)				
RANGE		NUMBER(38)				
COMMENT_		NUMBER(38)				
LANDGRANT		NUMBER(38)				
TOWN_RANGE		NUMBER(38)				
SHAPE		NUMBER(38)			Yes	
		NUMBER(38,8)				

Public_Land_Survey Table:Description

6.3.3.7 ZIPCODE

The following table lists the attributes and their format for the Zipcode layer in the SanGIS LMS.

Column. Name	Index	Data Type	Constraints	Mandatory	Unique	Source
OBJECTID		NUMBER(38)		NOT NULL	Yes	
ZIP		NUMBER(38)				
SHAPE		NUMBER(38)			Yes	
COMMUNITY		VARCHAR2(20)				

Zipcode Table:Description

8 FINAL SECTIONS

8.1 Definitions, Acronyms, and Abbreviations

8.2 References and Related Documents

SanGIS Business Definition Document
SanGIS Business Process Reengineering Scope of Work
SanGIS Detailed Process Requirements and Data Specifications
SanGIS Information Technology Architecture & Requirements Document
SanGIS Intranet & Internet Data Model Document
SanGIS Policies & Procedures Document, February 2007
SanGIS Staff Profiles & Responsibilities
SanGIS Software Design Document

SanGIS Staff Profiles and Responsibilities

8.3 Acknowledgements

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