A reference document for submitting Emergency Service Boundary (ESB), PSAP Boundary, and Road Centerline files. This document includes examples of acceptable and unacceptable submissions.

Kentucky NG911 Mapping Guide

Kenucky Office of Homeland Security
Kentucky 911 Services Board
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Contents

Change Log

Version 1.0

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Version 1.1

Addition of attribute tables and descriptions as well as supporting appendices. Published September 3, 2019.

Version 1.2

Addition of change log and minor error changes. Published November 4, 2019.

Version 1.3

Addition of Site and Structure Address Points Section and Access Points section. Published February 1, 2021.

Section 1 – Acceptable Emergency Service Boundary (ESB) Submissions

An Emergency Service Boundary layer defines the geographic area for the primary providers of response services. An Emergency Service Boundary (ESB) is used by PSAPs to identify the appropriate entities/first responders to be dispatched. Each Emergency Service Boundary layer may contain one or more polygon boundaries that define the primary emergency services for that geographic area. There MUST be a separate Emergency Service Boundary layer for each type of service; Law Enforcement (**Law**), **Fire**, and Emergency Medical Services (**EMS**).

These boundaries will show which Law, Fire, and EMS Agency responds in every area within the PSAP boundary. The ***OUTER*** boundary of the Law, Fire, and EMS ESB datasets ***WILL*** all cover the same geography.

The boundaries submitted by each PSAP should ***ONLY*** include areas where that PSAP is the primary PSAP, and thus receiving the 9-1-1 call directly. If another PSAP is the primary PSAP for a geographic area, the area should be included within their boundary submittal. It is the responsibility of each PSAP to work with adjacent PSAPs to determine who the primary PSAP is when more than one primary PSAP is designated for a specific geographic area. If an agreement cannot be reached amongst the multiple primary PSAPs designated for the same area, the 911 Services Board will establish an Arbitration Panel to determine which PSAP is the primary PSAP.

The purpose of these examples is to show the NG911 boundary layers that will be submitted by the PSAPs as well as to clarify how to handle situations where ESB and PSAP boundaries extend outside of their given county.

In the following examples, Fulton County 911 Dispatch is the **primary PSAP** for most of Fulton County.

Example 1: Fulton County 911 Dispatch Law ESB

The primary Law agency for the unincorporated areas of Fulton County, excluding the New Madrid Bend area, is the Fulton County Sheriff's Office. The City of Hickman and City of Fulton Police Departments are the primary Law agency within their respective jurisdictions.

Given this scenario, the Fulton County Law ESB would be depicted as follows:

Figure 1: **Law Emergency Service Boundaries for Fulton County 911 Dispatch**

Please note all areas within the Fulton County PSAP boundary shown on the map are equal to the Fulton County ESBs (i.e. all of Fulton County excluding the New Madrid Bend). The areas outside of this PSAP boundary are part of an adjacent PSAP's ESB.

The portion of Fulton County within the New Madrid Bend **WOULD NOT** be included in the Fulton County ESB and PSAP boundaries, but **WOULD** be included in the ESB and PSAP boundaries for Lake County, Tennessee because Fulton County is not the Primary PSAP for this area.

Example 2: Fulton County 911 Dispatch EMS ESB

For EMS, all of Fulton County is served by KenTenn EMS or Lake County (TN) Emergency Services. Lake County (TN) Emergency Services is the primary EMS agency for the New Madrid Bend area. KenTenn EMS serves the remainder of Fulton County and is the primary EMS for a portion of Hickman County and for South Fulton, Tennessee.

Given this scenario, the Fulton County EMS ESB would be depicted as follows:
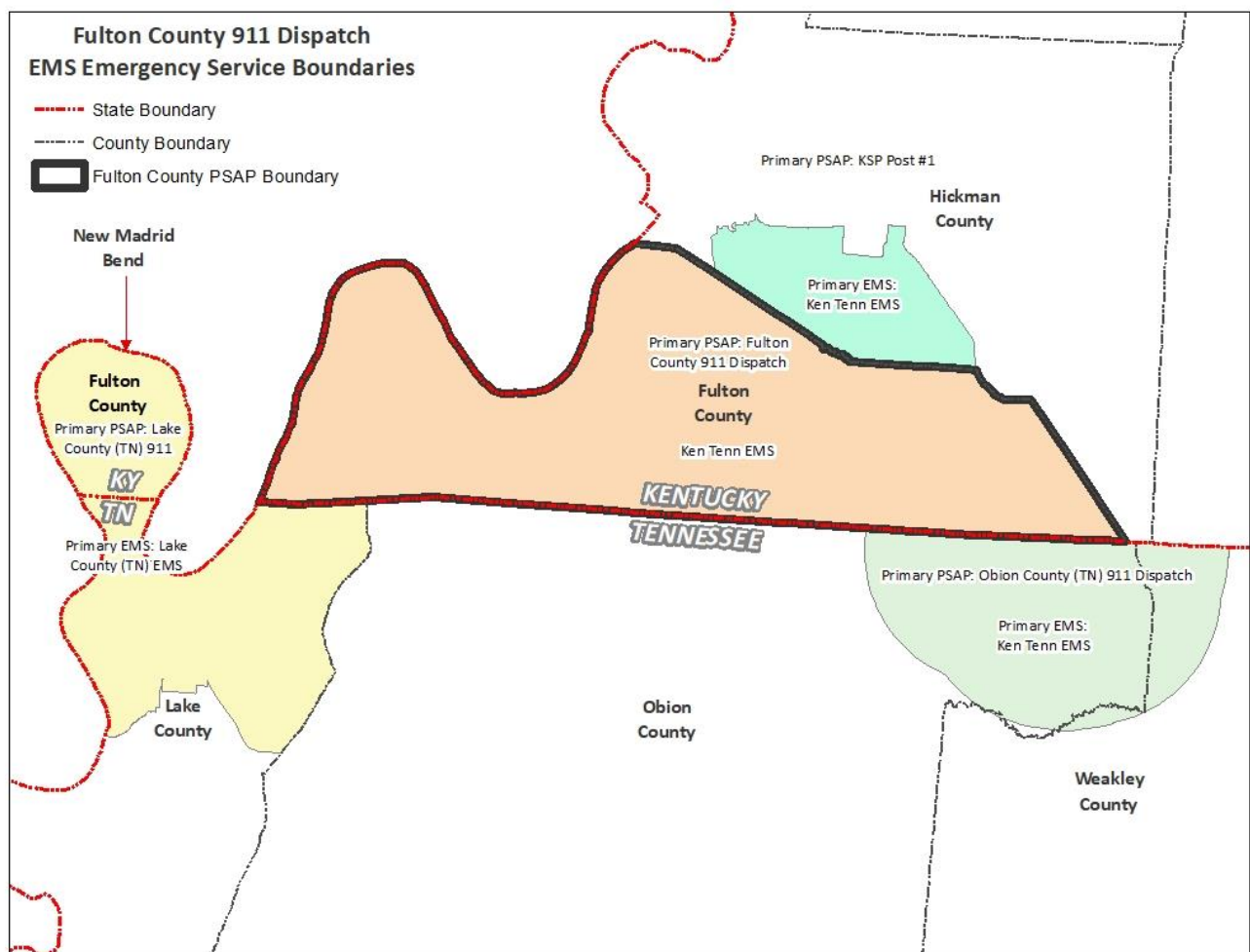
Figure 2: **EMS Emergency Service Boundaries for Fulton County 911 Dispatch**

Once again, please note all areas within the Fulton County PSAP boundary shown on the map equal the Fulton County ESBs (i.e. all of Fulton County excluding the New Madrid Bend). The areas outside of this PSAP boundary are part of an adjacent PSAP's ESB.

Example 3: Fulton County 911 Dispatch Fire ESB

For Fire, Fulton County is served by six (6) unique Fire Departments (FD). The Fulton County Fire Department serves the vast majority of Fulton County, the Tiptonville (TN) Fire Department serves the New Madrid Bend area, Hickman City FD and Fulton City FD respond within their jurisdiction plus additional designated properties, while the Cayce FD and Water Valley FD have unique geographic areas for first response.

Given this scenario, the Fulton County Fire ESB would be depicted as follows:
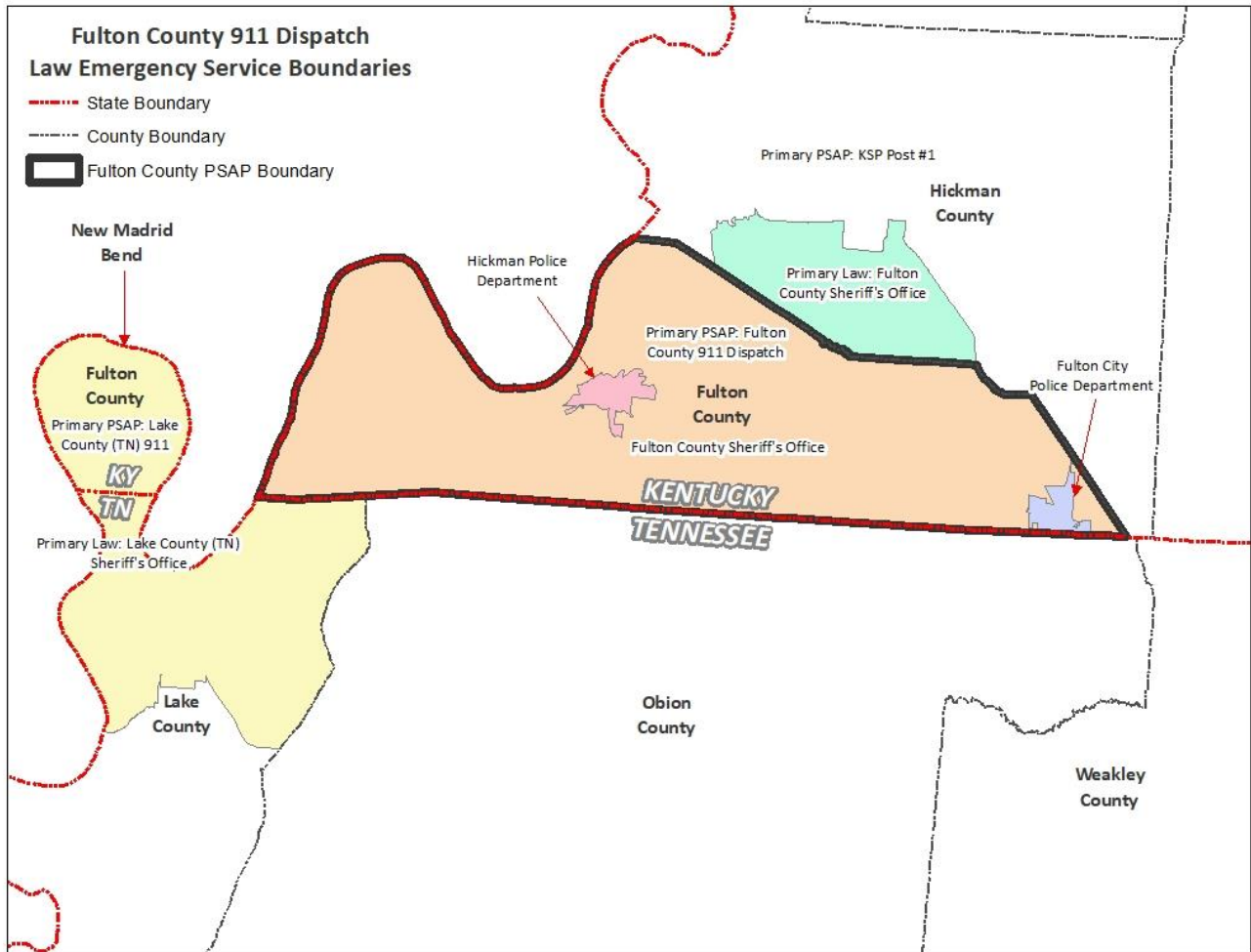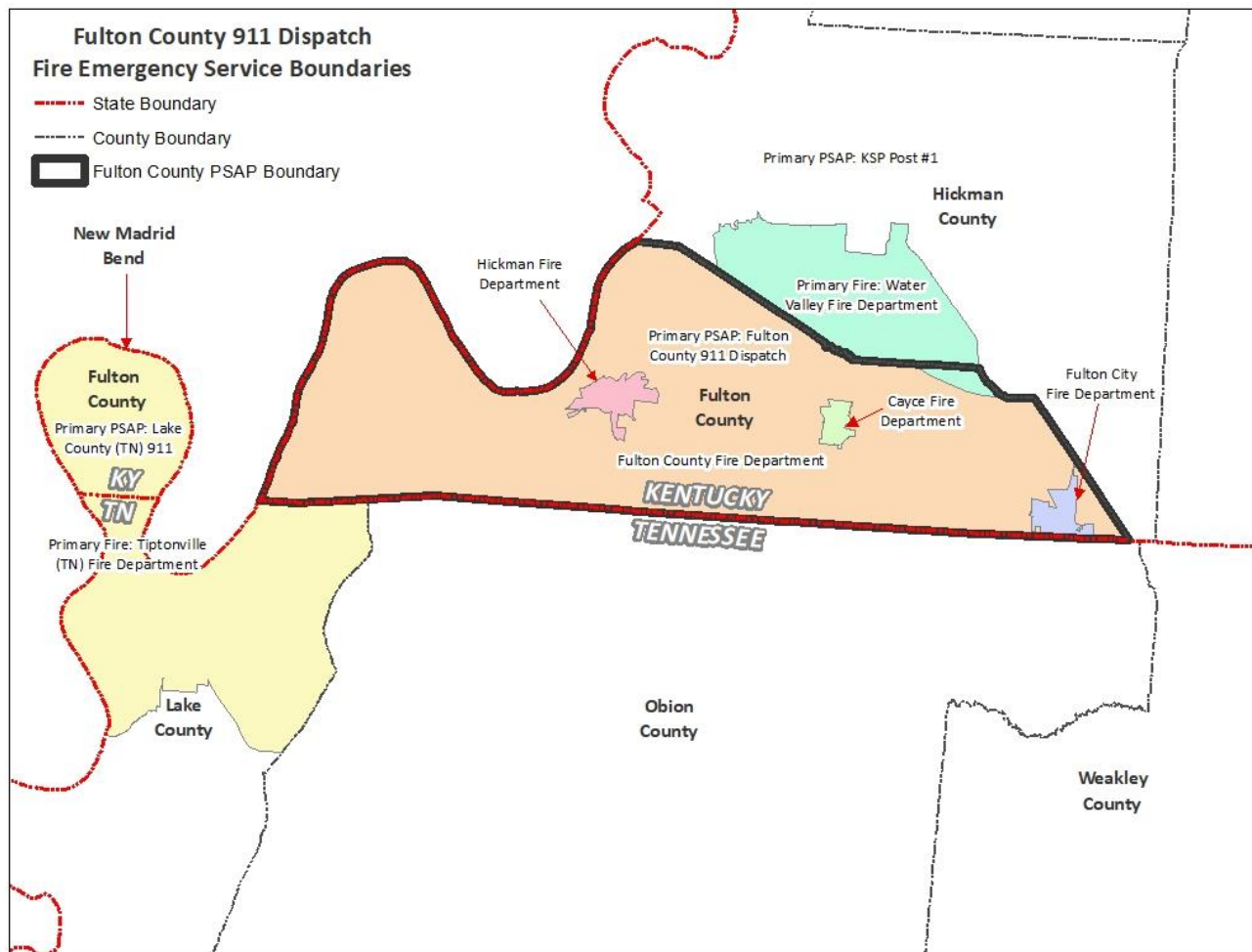

Figure 3: **Fire Emergency Service Boundaries for Fulton County 911 Dispatch**

Once again, please note all areas within the Fulton County PSAP boundary shown on the map are the Fulton County ESBs (i.e. all of Fulton County including the New Madrid Bend). The areas outside of this PSAP boundary are part of an adjacent PSAP's ESB.

Example 4: Fulton County 911 Dispatch PSAP Boundary

The *OUTER* Boundary of the Law, Fire and EMS ESB datasets *WILL* match the *OUTER* boundary of the PSAP boundary for each specific PSAP. The PSAP boundary is all ESBs merged into a single polygon. No geographic area will be included in more than one (1) PSAP boundary. There will also be no gaps between adjacent PSAP boundaries. The PSAP boundary layer will be used to route calls within Kentucky.

The PSAP for Fulton County would be a single polygon that covers all ESBs as shown:
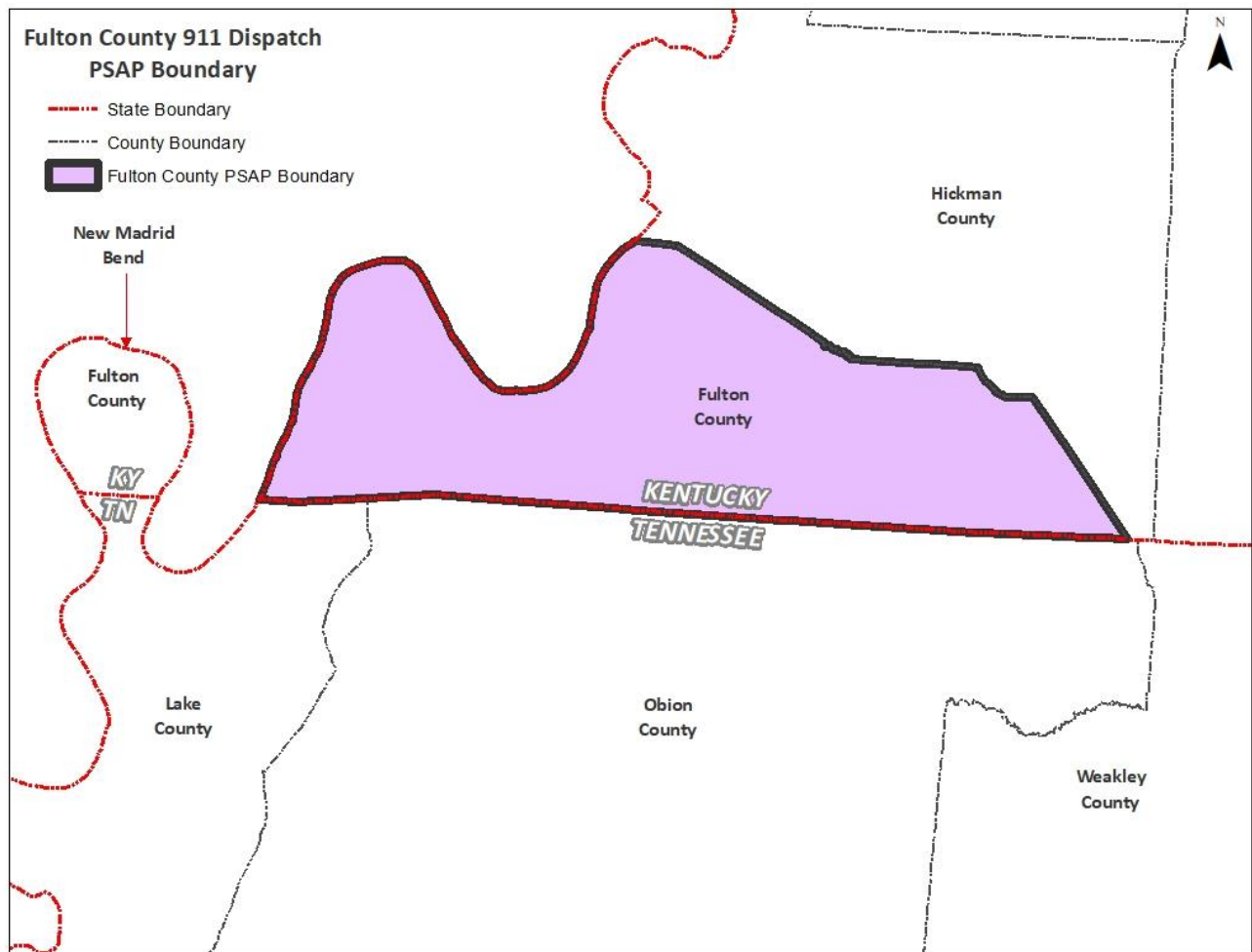
Figure 4: **PSAP Boundary for Fulton County 911 Dispatch**

Section 2: Unacceptable ESB Submissions

As stated above, The **OUTER** boundary of the Law, Fire and EMS ESB datasets **WILL** match the **OUTER** boundary of the PSAP boundary for each specific PSAP. In other words, the three ESB district boundaries (for Law, Fire and EMS) put together must encompass the same geographic area. The PSAP boundary is the sum of these districts and therefore must be the exact same geographic area.

Example 5: Bullitt County 911 Fire ESB

Bullitt County Fire ESB is missing fire districts from their dataset. If Bullitt County 911 is the primary PSAP for these districts, but a fire department from another district responds to this area, these districts should still be included in the Bullitt County 911 Fire ESB with the primary responding fire department listed. See Figure 3 in the New Madrid Bend area in Example 3 above.
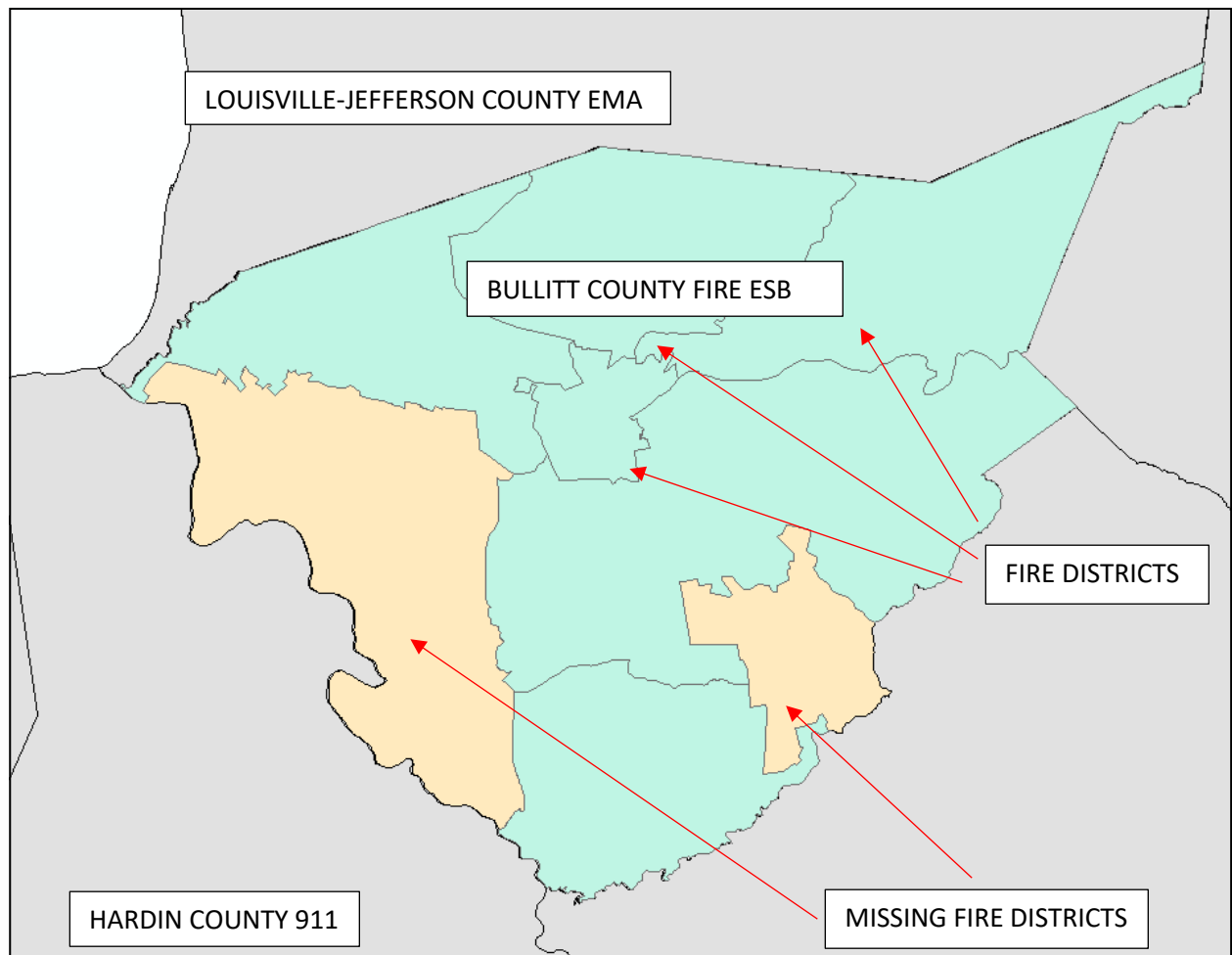
Figure 5: **The missing fire districts above should be included in the Bullitt County Fire ESB and PSAP boundary. If not, they should be included in one of the surrounding PSAP and Fire ESBs, and removed from Bullitt County's PSAP boundary.**

Example 6: Butler County Fire ESB

In this example, the Butler County Fire ESB does not match exactly with the PSAP boundary. As stated above, these two layers must cover the same geography.
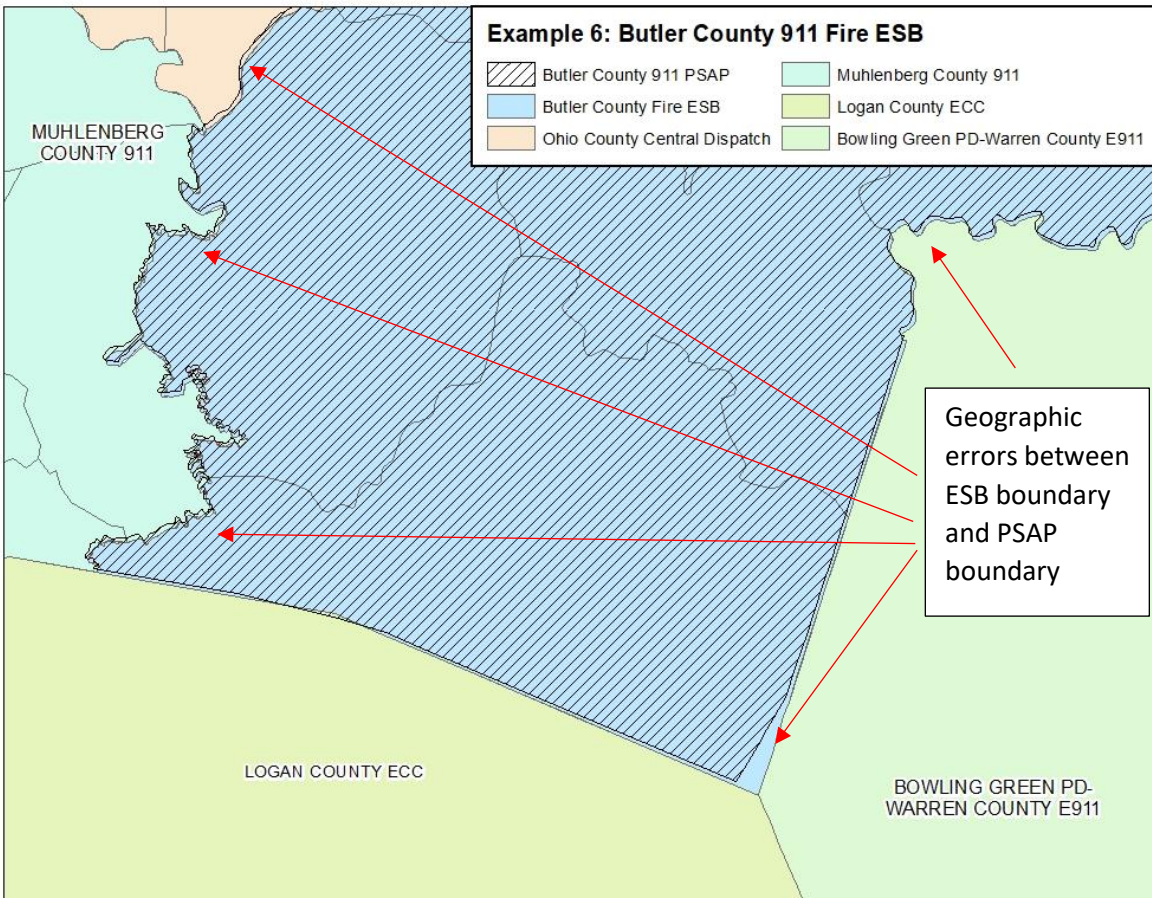
Figure 6: **The ESB and PSAP boundaries must geographically have the same outside boundary**.

Section 3 – Acceptable PSAP Boundary Submissions

The primary use for the PSAP boundary is to route call/emergency requests within a NG9-1-1 system and to identify the current dispatching authority. This layer depicts the polygon(s) and related attribute information that defines the geographic area of all PSAP boundaries within a given 9-1-1 Authority's geographic coverage area. Each PSAP boundary defines the geographic area of a PSAP that has primary responsibilities for an emergency request.

The geographic boundary of each PSAP must align with each of the neighboring PSAP boundaries. There can be no boundary overlap, void areas or disputed boundary areas. Any boundary disputes will be settled through Arbitration.

Example 7: Danville-Boyle E911 Center PSAP

The Danville E911 Center PSAP and its surrounding PSAPs have boundaries without overlaps, voids or disputed territory. The Bluegrass E911 PSAP to the southeast includes a section annexed from the Danville-Boyle E911 PSAP, which is reflected in both boundaries. Similarly, the river border between the two align without void or overlap areas.
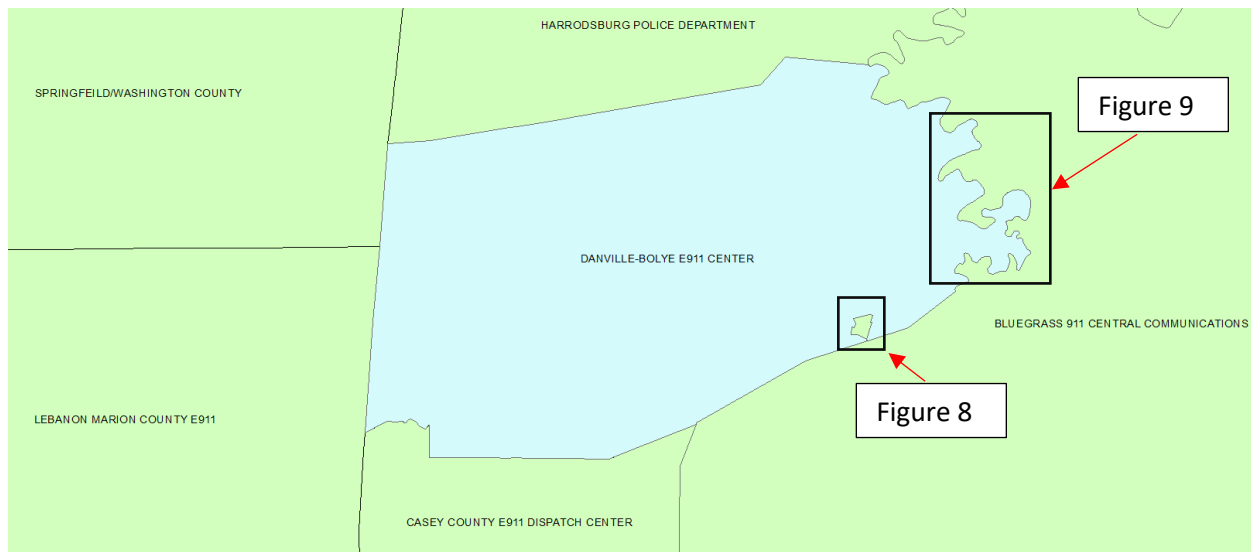
Figure 7: **Boundary does not overlap with surrounding counties, including the river border and new annexation with Bluegrass 911 Central communications PSAP.**
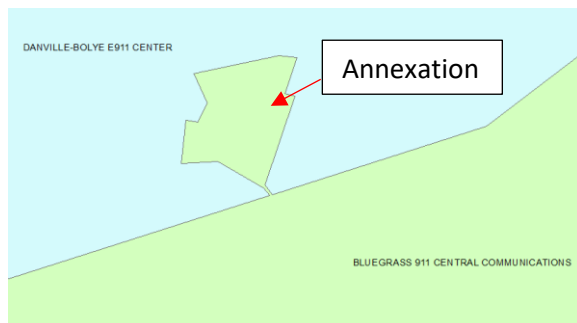
Figure 8: **Annexation Border is correct for both PSAP boundaries.**
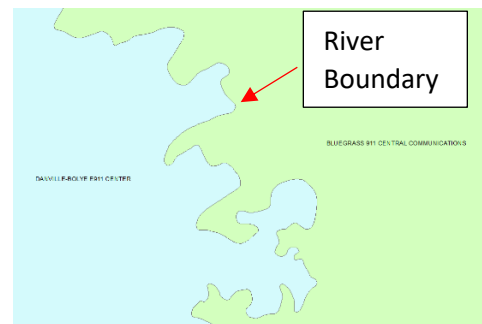
Figure 9: **River boundary is correct and aligns for both PSAP boundaries.**

Example 8: Multiple County PSAP

A PSAP may be larger than a single county. For example, you can see from Figure 7 that Bluegrass E911 Central Communications PSAP consists of Garrard and Lincoln Counties. Similarly, as indicated below in Figure 10, Kentucky State Police Post 9-Pikeville PSAP includes Martin, Magoffin, Floyd and Pike Counties, and Kentucky State Police Post 13-Hazard PSAP includes Breathitt, Knott and Letcher Counties. The PSAP boundaries of these two KSP PSAPs align with no overlaps, voids or disputed areas. Also, note that the PSAP boundaries do not contain internal lines representing individual county boundaries.
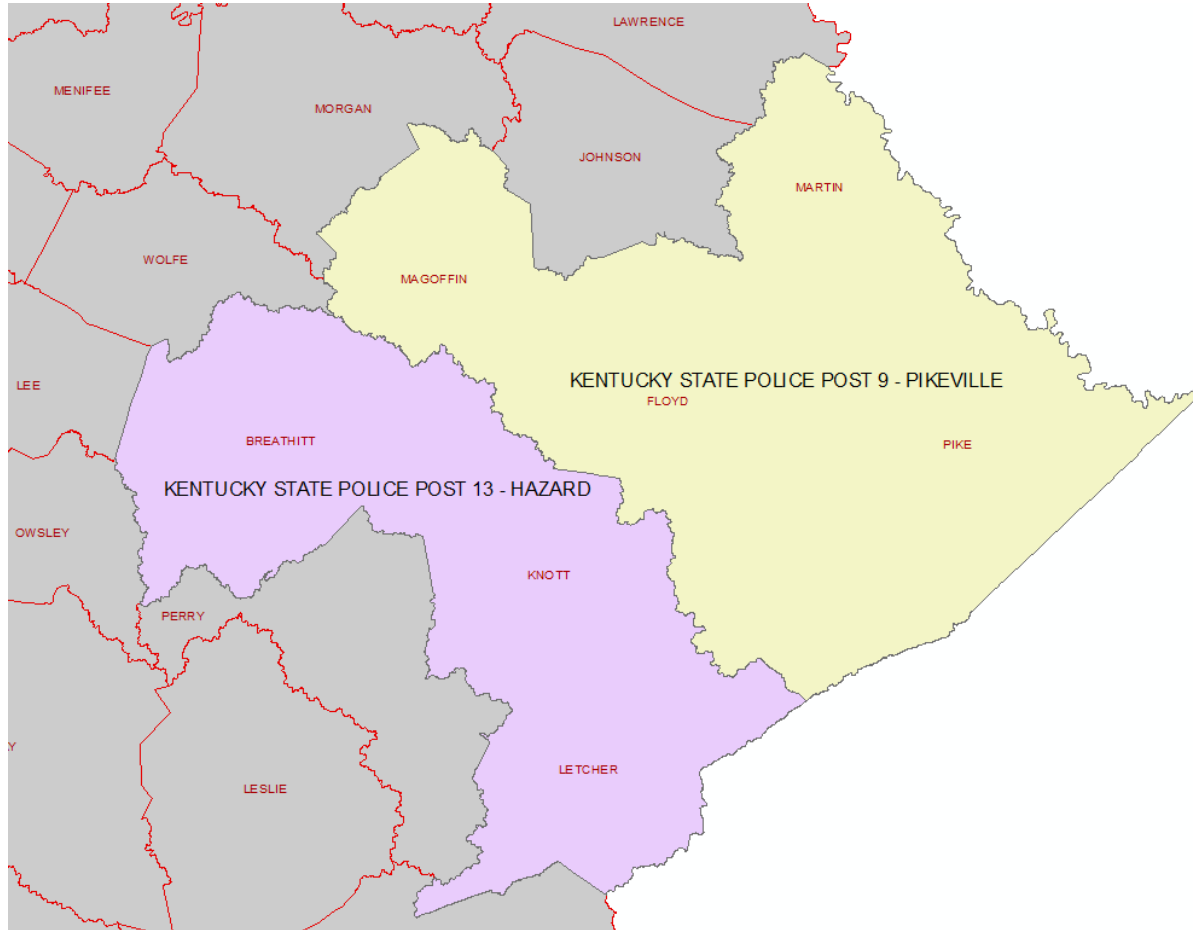
Figure 10: **Two PSAPS consisting of multiple counties. Boundaries still match with no overlaps, voids or disputed territory.**

Section 4 - Unacceptable PSAP Boundary Submissions

Each PSAP boundary defines the geographic area of a PSAP that has primary responsibilities for an emergency request. Each PSAP boundary must be defined and match the surrounding PSAPs so there are no overlaps or gaps in coverage. Disputed boundaries will be defined through an arbitration process by the 911 Services Board. The examples that follow show unacceptable boundaries.

Example 9: Lexington Enhanced 911 Overlap

In this example, Lexington Enhanced 911 PSAP boundary overlaps with the Jessamine County E911 PSAP's boundary. This scenario will require communication between the two PSAPs to define the exact geographic boundary. If no exact geographic boundary definition can be agreed upon and reflected in each individual PSAP boundary, arbitration will be required through the 911 Services Board.
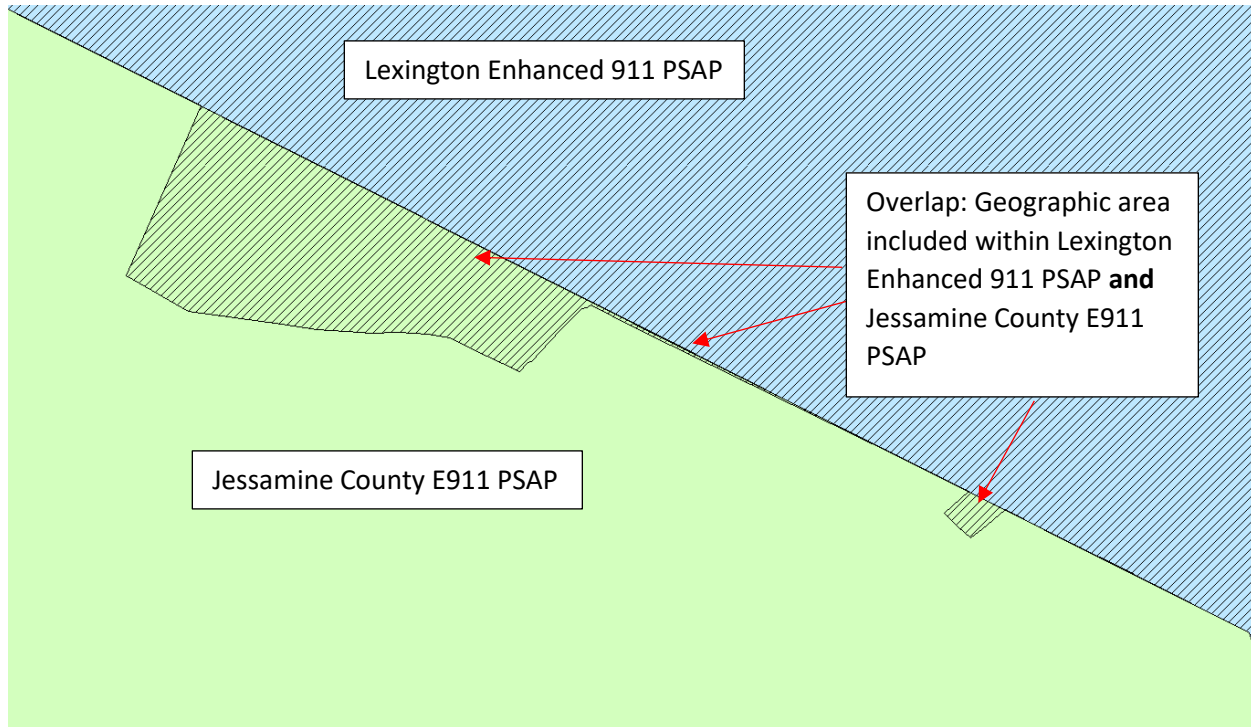
Figure 11: **The boundary of Lexington Enhanced 911 PSAP overlaps with the boundary of Jessamine County E911 PSAP. This is unacceptable and will need to be resolved by the PSAP through communication or by Arbitration.**

Example 10: Boone County PSCC Overlap

The PSAP boundary for Boone County PSCC bleeds into several surrounding PSAP boundaries. Communication between all neighboring PSAPs is required to resolve and define the exact geographic boundaries, and ensure the borders align precisely. If agreements cannot be made, arbitration will be required through the 911 Services Board.
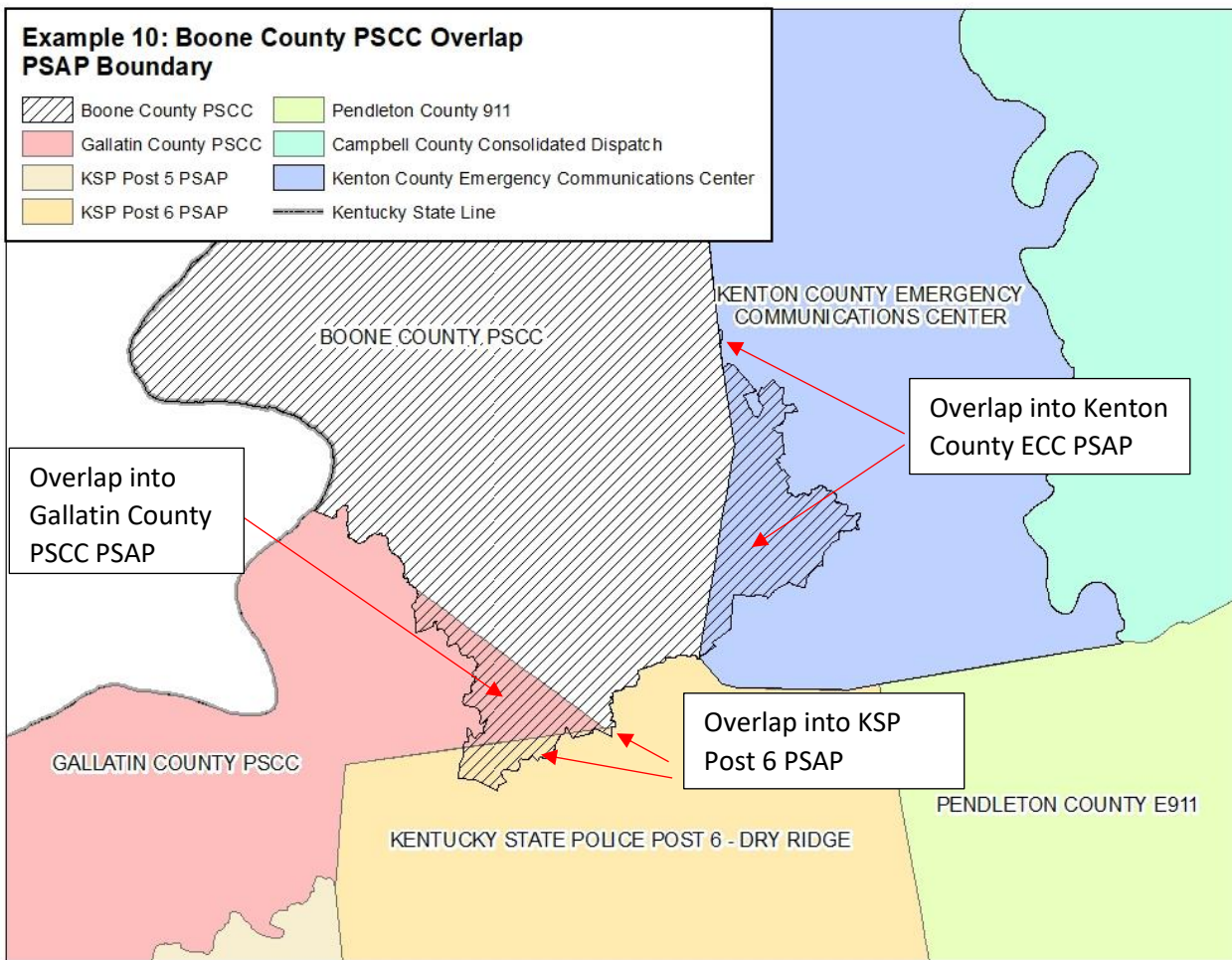
Figure 12: **Boone County PSCC overlaps with neighboring PSAPs. Resolution requires communication between multiple PSAPs or through Arbitration.**

Example 11: Butler County 911

The PSAP boundary does not align with neighboring PSAPs. There is a combination of voids (areas not covered by a PSAP boundary) and overlaps. Every inch of territory must be covered within a PSAP boundary. Void areas are unacceptable. This will require communication with multiple PSAPs to reach an agreed upon the boundary, or through 911 Services Board arbitration.
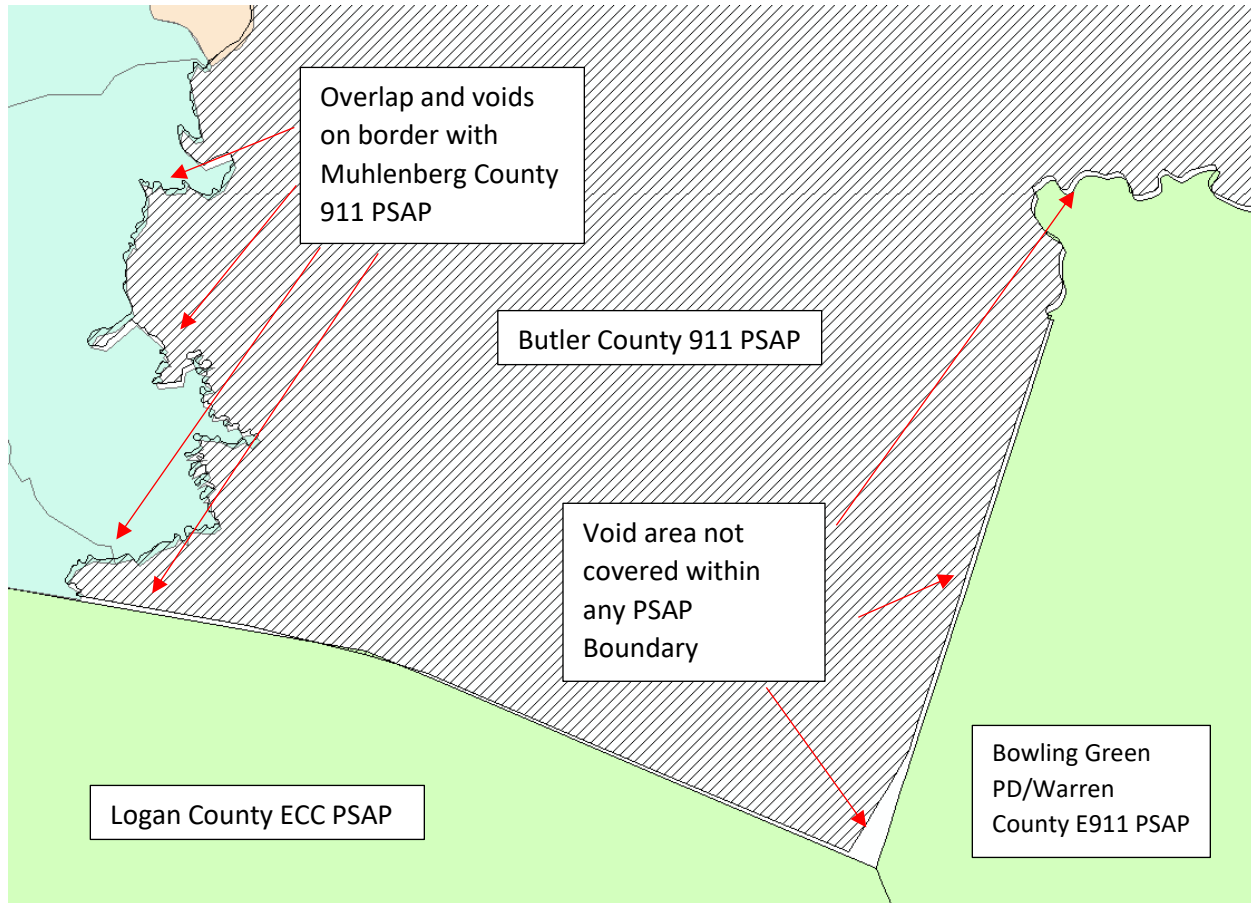
Figure 13: **Butler County 911 PSAP boundary contains voids and overlaps with surrounding PSAPs. Every inch must be covered within a PSAP boundary.**

Section 5 – Use of Authoritative County Boundary as PSAP Boundary

The Authoritative County Boundaries are maintained and managed by the State GIS Office housed within the State Geospatial Data Clearinghouse. County Boundary datasets for each individual county are available at no cost and the Board requires the use of this information within the GIS solutions used within the PSAP. Individual County boundary shapefiles can be downloaded here:

ftp://ftp.kymartian.ky.gov/county/SingleCounties/

Any PSAP may designate a county boundary as the geographic representation of their PSAP boundary by providing written notification (see Appendix C for sample agreement) specifically identifying all or part of the county boundary as all or part of their designated PSAP boundary. If this is done, the PSAP shall utilize the authoritative county boundaries available from the State Geospatial Data Clearinghouse.

The Danville-Boyle E911 Center PSAP (Figure 7 above) could designate the entire Boyle County boundary to represent their PSAP boundary, as all aspects of their PSAP boundary are depicted as the county boundary. If this is done, the PSAP shall utilize the authoritative county boundary available from the State Geospatial Data Clearinghouse.

The Boone County PSCC (Figure 10 above) could designate that only their northern boundary that abuts the Ohio River and the eastern boundary shared with the Kenton County Emergency Communications Center shall be geographically represented by the boundaries within the Authoritative County Boundary database, if applicable. Such a designation would require Boone County PSCC to provide the southern and eastern PSAP boundaries, which are not duplicative of a county boundary designation, to the appropriate level of detail AND submit a "PSAP Boundary Agreement" for these two boundaries.

Appendix B provides an example PSAP Boundary Agreement to be executed by each of the PSAP's authorizing official where the agreed upon boundary is NOT concurrent with an authoritative county boundary.

When adjacent PSAPs both designate a shared boundary to be represented by the Authoritative County Boundary, the 911 Services Board will recognize the actions as a mutual agreement by the PSAPs to the PSAP boundary, as depicted by the Authoritative County Boundary, until otherwise advised by both PSAPs.

Section 6 – Site and Structure Address Points

Site and structure address points represent addresses assigned by the local addressing authority, which may not reflect the addresses used in commercial or United States Postal Service (USPS) databases. Identifying when or how addresses need to be assigned, labeled or symbolized is not the intent or within the scope of these guidelines. Rather, the intent is to provide guidelines for site/structure address point GIS data development to support the needs of public safety applications and NG911 components.

These guidelines are intended to identify the spatial location(s) in a 9-1-1 GIS layer to use for existing addresses. Site/structure address points that follow these guidelines can be used in current 9-1-1 systems and future NG9-1-1 systems.

Structure Points

Structure points must be placed within each structure's footprint. The point can be placed at the main point of entry to identify the access point into the structure.
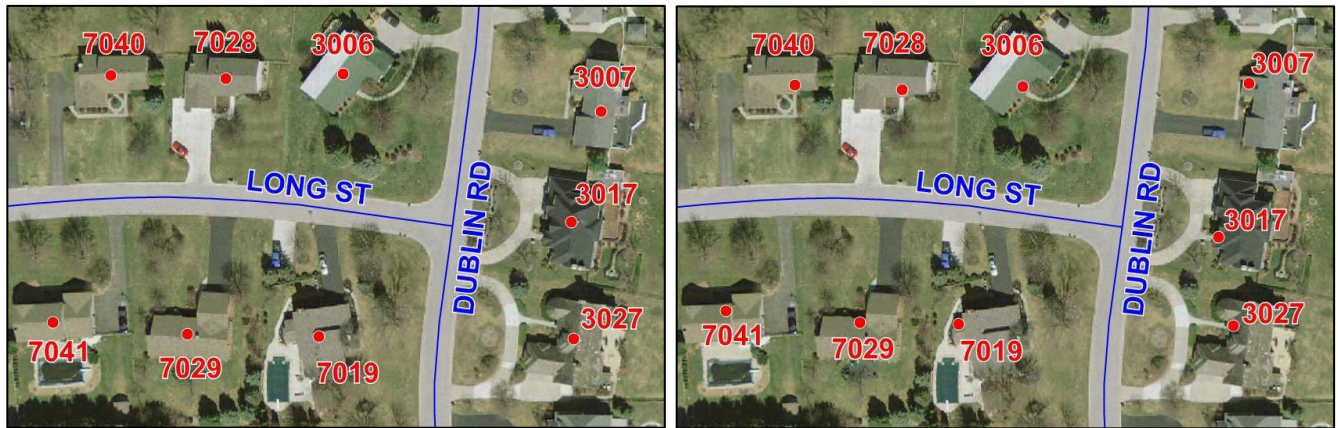
Figure 14: **Structure points placed within building footprint or at entry point within the building footprint.**

Figure 15: **Multiple units (residential): Place individual points within one building footprint to designate uniquely addressed units within a building or structure.**
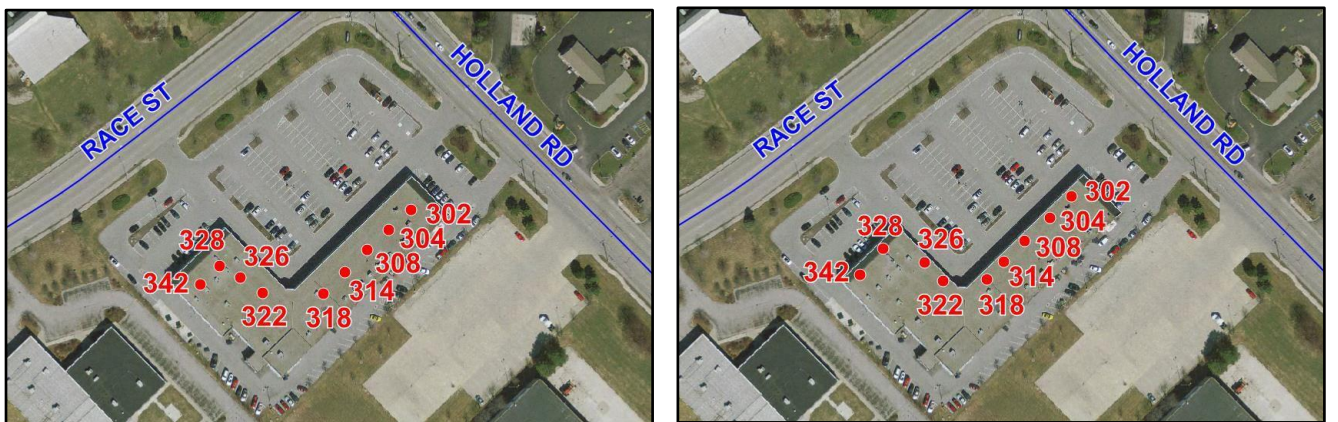
Figure 16: **Multiple units (commercial): Place individual points within one building footprint to designate uniquely addressed units within a building or structure.**

Commercial sites, school campuses, or trailer parks may have multiple structures but only have one street address assigned to the property. Multiple points should be placed within each structure, attributed with the same street address and additional attributes such as building name, number, or lot number assigned to each point as a subaddress, often via a unit designation.

Figure 17: **Commercial site with one point for address or multiple structures with same street address with unique subaddresses.**
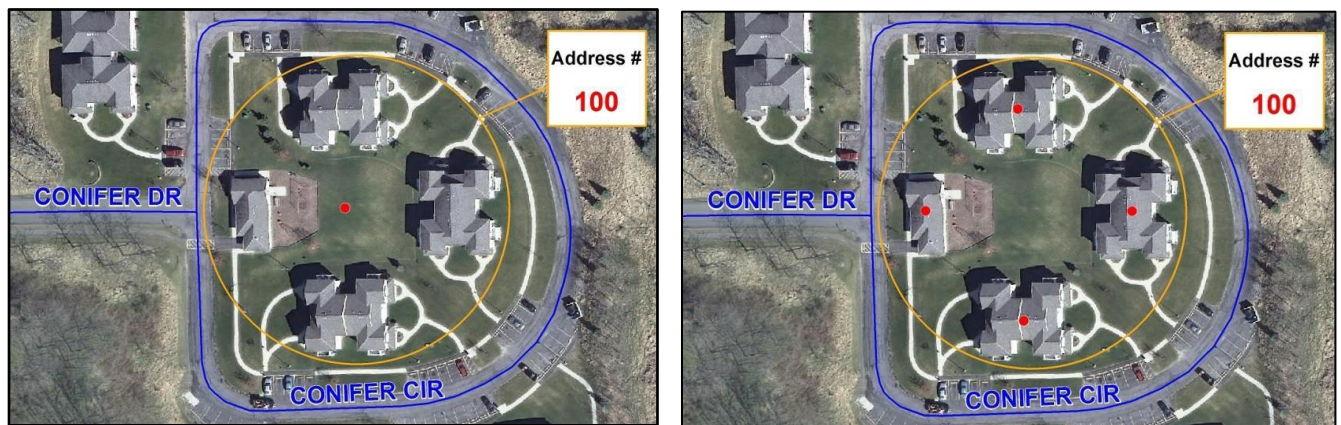
Figure 18: **Apartment buildings assigned the same address depicted as one point or multiple points with unique a subaddress (i.e. building number designations) for each.**

Figure 19: **Trailer park represented with one address or multiple points with a unique subaddress (i.e. lot number) assigned to each structure.**

Site Points

Site points represent an identified or recognized location that may not have a defined boundary or a structure but is designated or recognizable by its function. The location of the address point should be located within the site. Examples include recreational facilities and fields, parks, camp sites and lakes.
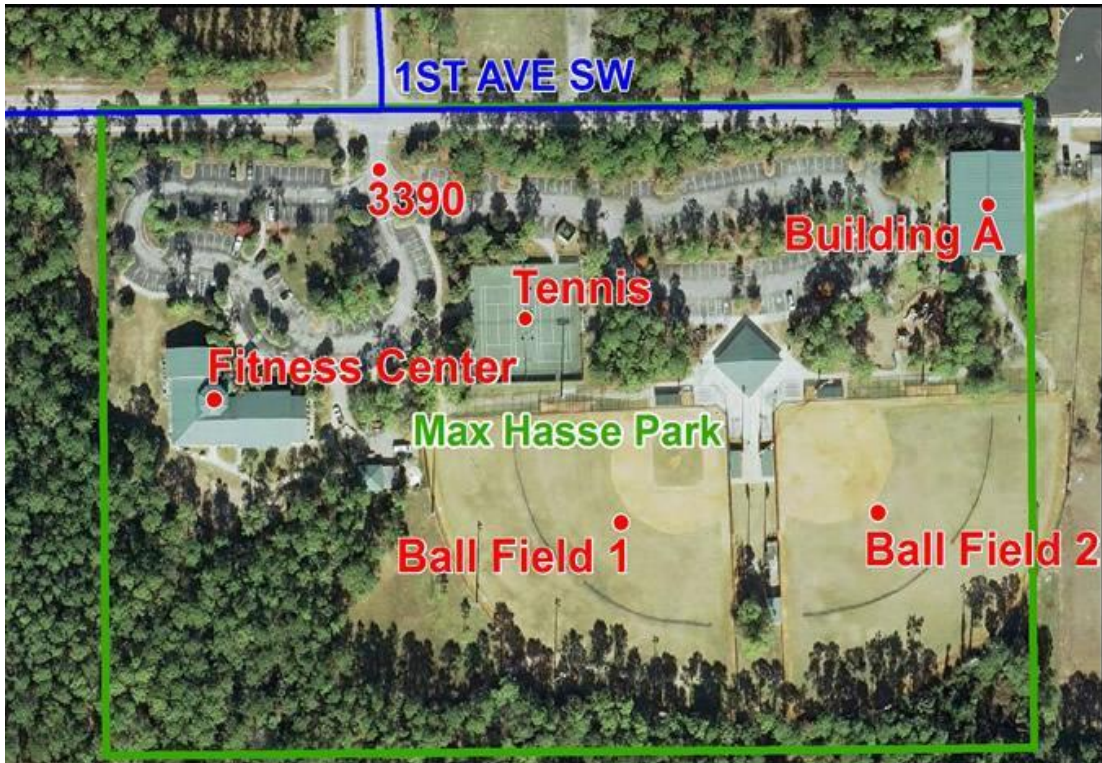
Figure 20: **Recreation campus with site points for ball fields, courts and structures assigned the same street address, and with unit designation for each site.**

In Figure 21, the green dots are addressed structures (homes), additional points can be created for both the middle of each water body as well as boat ramps and other sites that will assist with emergency response.
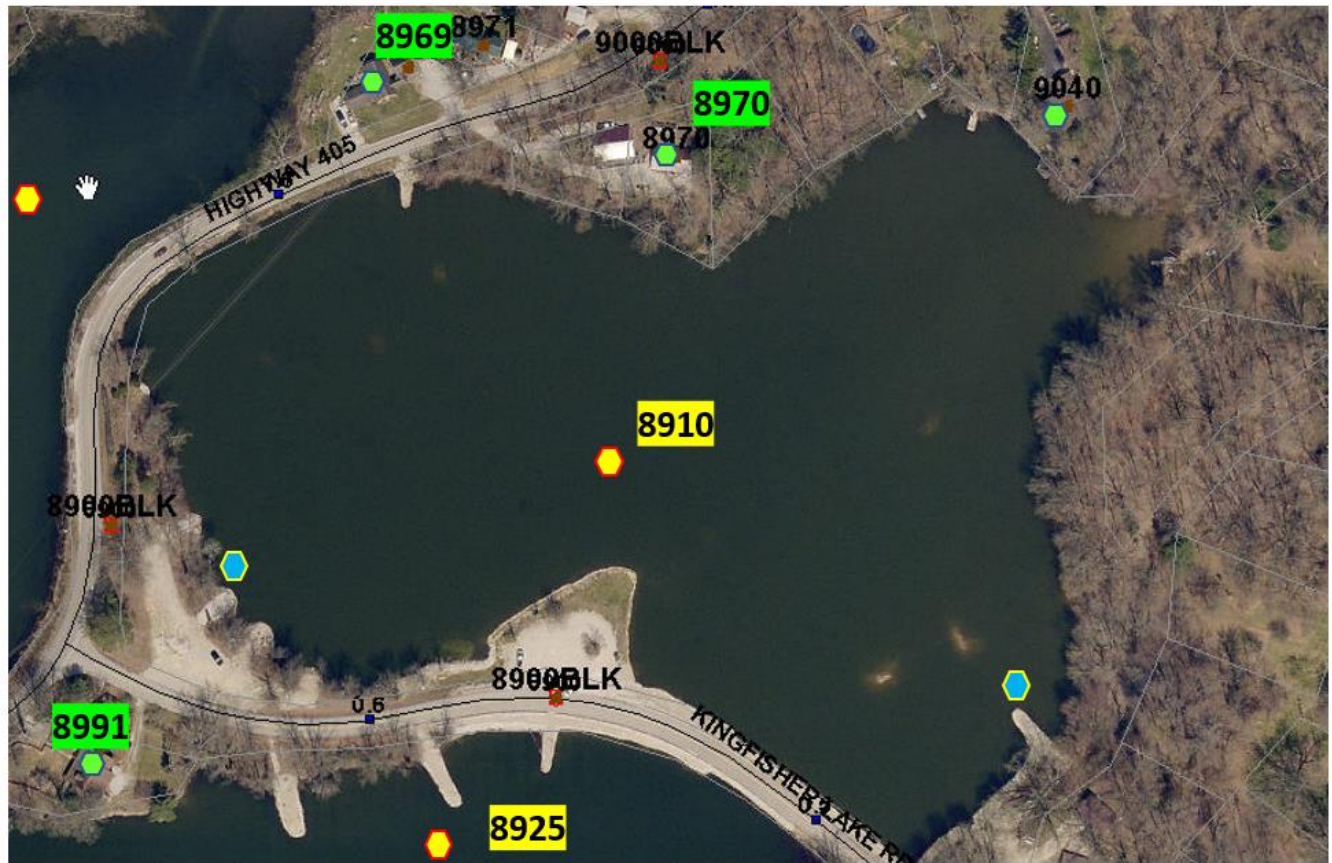
Figure 21: **Lake with site points at boat ramps and in the lake center. Existing structure points in green.**

Section 6 – Access Points

Access points are not required but can be very helpful for emergency response.

The distinction between address points and access points is a common source of confusion, particularly considering that in many cases a single point can be interpreted as both an access and address point. Mapping applications used by call takers and dispatchers have traditionally relied upon not only the location of an address point on a map, but also on the point of access to it, such as a driveway, gate, or other entrance.

The access point is a critical feature for directing emergency responders to an address, either by visual cue, or for use in Computer Aided Dispatch systems. In many cases both an address point AND an access point may be useful. Additionally, other access-related features may need to be considered, such as driveways, gates, multiple building entrances, etc.

The relationship between access and site/structure points (address points) shall be determined at the local level. An address point can only be related to one access point; however, an access point may be related to many address points. The link between these features within a GIS is dependent upon local data structure, software requirements, and maintenance procedures. The Board does not require the submittal of access points nor will the Board accept access points within the required address point submittals unless the designated point is both an access and an address point feature.

Figures 23 and 24 depict access points associated with one address point. Each example highlights the advantage an access point can have in assisting in the routing and dispatching of services to a structure whose point of entry is not intuitive or straight forward in the field.
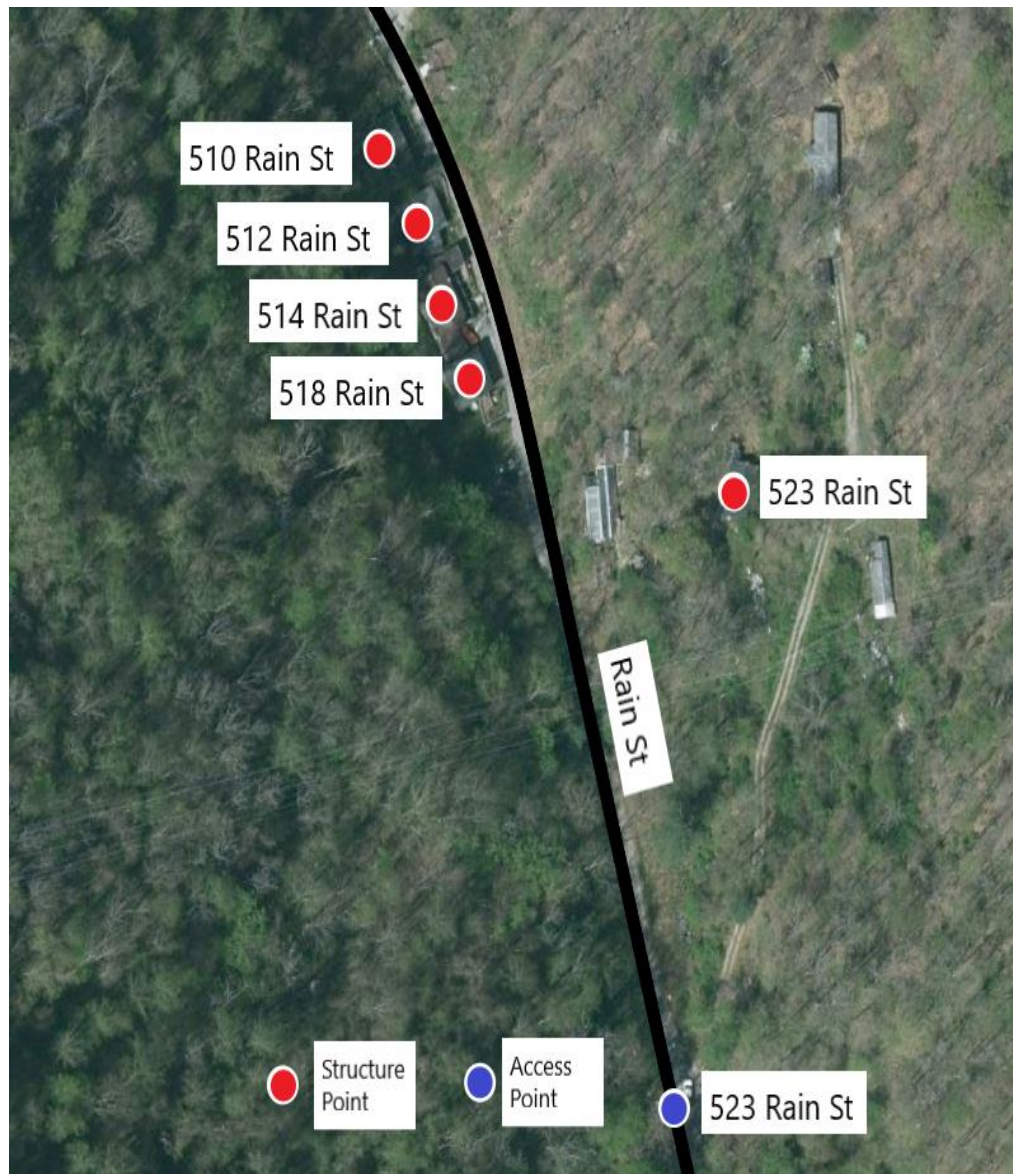
Figure 23: **Most of the structures are near the street but 523 Rain St. is back on a long driveway. The access point can help responders responding to a call from 523 Rain St.**

Figure 24: **The structure is accessed by a long private drive.**

Figures 25 depicts access points associated with one address point, access points associated with many address points and an address point with multiple points of entry from the named road. Each example highlights the advantage an access point can have in assisting in the routing and dispatching of services to a structure whose point of entry is not intuitive or straight forward in the field.
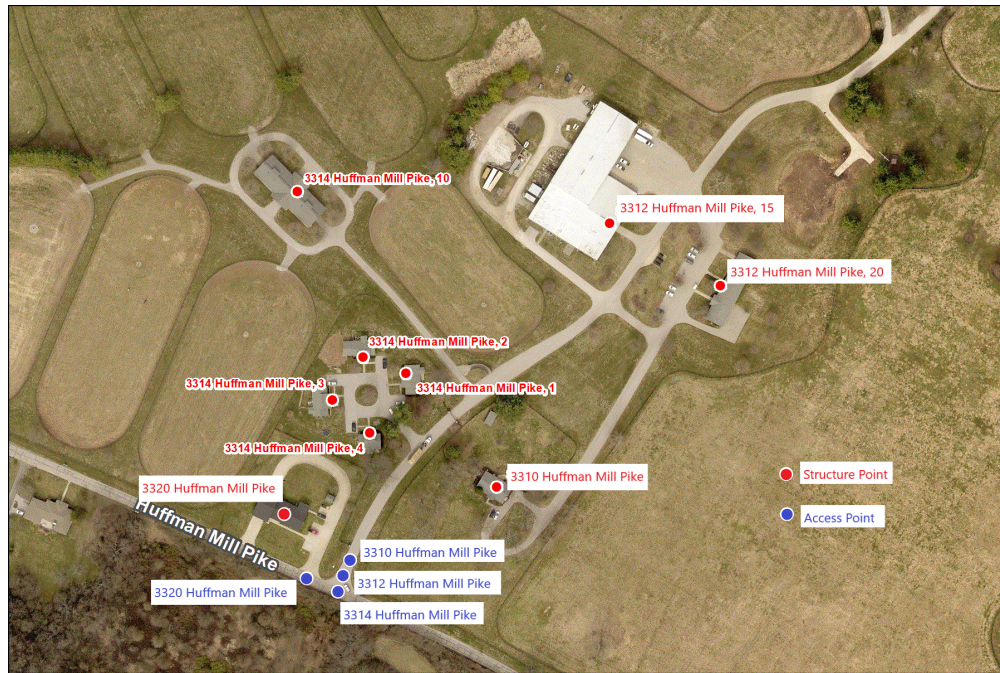
Figure 25: **Multiple addresses on this farm are accessed at the same driveway. Therefore there are multiple access points associated with each of the unique street addresses.**

Appendix A: Data Structure

Locally maintained GIS data layers are REQUIRED to include all "Mandatory" data fields within this GIS Data Model, but are NOT REQUIRED to include "Conditional" fields if no data exists to be populated within the "Conditional" fields. If attribute information does exist for a "Conditional" field, it MUST be provided. If there are no records in the entire database for a specific "Conditional" or "Optional" data field, then the data field itself is NOT REQUIRED. Local policy may dictate that all data fields be included in the structure regardless if data exists.

As indicated below, the terms "Mandatory", "Conditional", and "Optional" refer to the data field content (the attribute values), not the data field itself.

In the GIS data layer tables below, each layer has a heading of Descriptive Name, Field Name, Field Width, M/C/O, and Type.

The "Descriptive Name" is provided to clarify the intent of the information contained in the "Field Name."

The "Field Name" column gives the standardized GIS data field name that MUST be used. While local entities MAY use their own field names for internal processes, utilization of GIS data within and between the NG9-1-1 system functional elements MUST conform to this standard structure.

The "M/C/O" column is used to specify whether the attribute information for individual data fields is **M**andatory (**M**), **C**onditional (**C**), or **O**ptional (**O**). Items designated as "**M ***" are Mandatory data fields but population with attributes is postponed until appropriate values are identified on a statewide level.

In regards to populating the data fields:
- **Mandatory** – An attribute value MUST be provided for the data field for each record. The data field MUST NOT be blank.
- **Conditional** – If an attribute value exists, it MUST be provided. If no value exists for the attribute, the data field is left blank.
- **Optional** – An attribute value MAY or MAY NOT be provided in the data field.

In the GIS data layer tables, the "Type" column indicates the type of data used within the data field and attributes.
- **P** – Printable ASCII characters (decimal codes 32 to 126). Case is not important, except in legacy fields which require upper case as per NENA 02-010, NENA Standard for Data Formats for 9-1-1 Data Exchange & GIS Mapping [8].
- **E** – UTF-8 restricted to character sets designated by the 9-1-1 Authority, but not including pictographic characters.
- **U** – A Uniform Resource Identifier (URI) as described in Section 7.9, Abbreviations, Terms, and Definitions, and defined in RFC 3986 [9], and also conforming to any rules specific to the scheme (e.g. sip:, https:, etc.) of the chosen URI.
- **D** – Date and Time may be stored in the local database date/time format with the provision that local time zone MUST be recorded and time MUST be recorded to a precision of at least 1 second and MAY be recorded to a precision of 0.1 second.
- **F** – Floating (numbers that have a decimal place). There is no defined field length of a floating number; it is system dependent.

N – Non-negative integer

Table 1: ESB Data Table

Descriptive Name	Field Name	M/C/O	Type	Field Width
Discrepancy Agency ID	DiscrpAgID	M	P	75
Date Updated	DateUpdate	M	D	-
Effective Date	Effective	O	D	-
Expiration Date	Expire	O	D	-
Emergency Service Boundary NENA Globally Unique ID	ES_NGUID	M *	P	254
State	State	M	P	2
Agency ID	Agency_ID	M	P	100
Service URI	ServiceURI	M *	U	254
Service URN	ServiceURN	M *	P	50
Service Number	ServiceNum	O	P	15
Agency vCard URI	AVcard_URI	M *	U	254
Display Name	DsplayName	M	P	60

NOTE: The following fields ("M *") are NG911 requirements. Appropriate values will be provided in the future and can currently be left unpopulated by the PSAP: **ES_NGUID, ServiceURI, ServiceURN, and AVcard_URI.**

Table 2: PSAP Data Table

Descriptive Name	Field Name	M/C/O	Type	Field Width
Discrepancy Agency ID	DiscrpAgID	M	P	75
Date Updated	DateUpdate	M	D	-
Effective Date	Effective	O	D	-
Expiration Date	Expire	O	D	-
Emergency Service Boundary NENA Globally Unique ID	ES_NGUID	M *	P	254
State	State	M	P	2
Agency ID	Agency_ID	M	P	100
Service URI	ServiceURI	M *	U	254
Service URN	ServiceURN	M *	P	50
Service Number	ServiceNum	O	P	15
Agency vCard URI	AVcard_URI	M *	U	254
Display Name	DsplayName	M	P	60

NOTE: The following fields ("M *") are NG911 requirements. Appropriate values will be provided in the future and can currently be left unpopulated by the PSAP: **ES_NGUID, ServiceURI, ServiceURN, and AVcard_URI.**

Table 3: Road Centerline Data Table

Descriptive Name	Field Name	M/C/O	Type	Field Width
Discrepancy Agency ID	DiscrpAgID	M	P	75
Date Updated	DateUpdate	M	D	-
Effective Date	Effective	O	D	-
Expiration Date	Expire	O	D	-
Road Centerline NENA Globally Unique	RCL_NGUID	M	P	254
Left Address Number Prefix	AdNumPre_L	C	P	15
Right Address Number Prefix	AdNumPre_R	C	P	15
Left FROM Address	FromAddr_L	M	N	6
Left TO Address	ToAddr_L	M	N	6
Right FROM Address	FromAddr_R	M	N	6
Right TO Address	ToAddr_R	M	N	6
Parity Left	Parity_L	M	P	1
Parity Right	Parity_R	M	P	1
Street Name Pre Modifier	St_PreMod	C	E	15
Street Name Pre Directional	St_PreDir	C	P	9
Street Name Pre Type	St_PreTyp	C	E	50
Street Name Pre Type Separator	St_PreSep	C	E	20
Street Name	St_Name	M	E	60
Street Name Post Type	St_PosTyp	C	E	50
Street Name Post Directional	St_PosDir	C	P	9
Street Name Post Modifier	St_PosMod	C	E	25
Legacy Street Name Pre Directional*	LSt_PreDir	C	P	2
Legacy Street Name*	LSt_Name	C	P	75
Legacy Street Name Type*	LSt_Type	C	P	4
Legacy Street Name Post Directional*	LSt_PosDir	C	P	2
ESN Left*	ESN_L	C	P	5
ESN Right*	ESN_R	C	P	5
MSAG Community Name Left*	MSAGComm_L	C	P	30
MSAG Community Name Right*	MSAGComm_R	C	P	30
Country Left	Country_L	M	P	2
Country Right	Country_R	M	P	2
State Left	State_L	M	P	2
State Right	State_R	M	P	2
County Left	County_L	M	P	40
County Right	County_R	M	P	40
Additional Code Left	AddCode_L	C	P	6

Additional Code Right	AddCode_R	C	P	6
Incorporated Municipality Left	IncMuni_L	M	E	100
Incorporated Municipality Right	IncMuni_R	M	E	100
Unincorporated Municipality Left	UnincCom_L	O	E	100
Unincorporated Municipality Right	UnincCom_R	O	E	100
Neighborhood Community Left	NbrhdCom_L	O	E	100
Neighborhood Community Right	NbrhdCom_R	O	E	100
Postal Code Left	PostCode_L	O	P	7
Postal Code Right	PostCode_R	O	P	7
Postal Community Name Left	PostComm_L	O	P	40
Postal Community Name Right	PostComm_R	O	P	40
Road Class	RoadClass	O	P	15
One-Way	OneWay	O	P	2
Speed Limit	SpeedLimit	O	N	3
Validation Left	Valid_L	O	P	1
Validation Right	Valid_R	O	P	1

Table 4: Site and Structure Address Point Data Table

Descriptive Name	Field Name	M/C/O	Type	Field Width
Discrepancy Agency ID	DiscrpAgID	M	P	75
Date Updated	DateUpdate	M	D	-
Effective Date	DateUpdate	O	D	-
Expiration Date	Expire	O	D	-
Site NENA Globally Unique ID	Site_NGUID	M	P	254
Country	Country	M	P	2
State	State	M	P	2
County	County	M	P	40
Additional Code	AddCode	C	P	6
Additional Data URI	AddDataURI	C	U	254
Incorporated Municipality	Inc_Muni	M	E	100
Unincorporated Community	Uninc_Comm	O	E	100
Neighborhood Community	Nbrhd_Comm	O	E	100
Address Number Prefix	AddNum_Pre	C	P	15
Address Number	Add_Number	C	N	6
Address Number Suffix	AddNum_Suf	C	P	15
Street Name Pre Modifier	St_PreMod	C	E	15
Street Name Pre Directional	St_PreDir	C	P	9
Street Name Pre Type	St_PreTyp	C	E	50

Street Name Pre Type Separator	St_PreSep	C	E	20
Street Name	St_Name	C	E	60
Street Name Post Type	St_PosTyp	C	E	50
Street Name Post Directional	St_PosDir	C	P	9
Street Name Post Modifier	St_PosMod	C	E	25
Legacy Street Name Pre Directional*	LSt_PreDir	C	P	2
Legacy Street Name*	LSt_Name	C	P	75
Legacy Street Name Type*	LSt_Type	C	P	4
Legacy Street Name Post Directional*	LSt_PosDir	C	P	2
ESN*	ESN	C	P	5
MSAG Community Name*	MSAGComm	C	P	30
Postal Community Name	Post_Comm	O	P	40
Postal Code	Post_Code	O	P	7
ZIP Plus 4	PostCode_4	O	P	4
Building	Building	O	P	75
Floor	Floor	O	P	75
Unit	Unit	O	P	75
Room	Room	O	P	75
Seat	Seat	O	P	75
Additional Location Information	Addtl_Loc	O	E	225
Complete Landmark Name	LandmkName	C	E	150
Mile Post	Mile_Post	C	P	150
Place Type	Place_Type	O	P	50
Placement Method	Placement	O	P	25
Longitude	Long	O	F	-
Latitude	Lat	O	F	-
Elevation	Elev	O	N	6

Appendix B: PSAP and ESB Descriptive Name Definitions

Discrepancy Agency ID

Description: Agency that receives a Discrepancy Report (DR), should a discrepancy be discovered, and will take responsibility for ensuring discrepancy resolution. This may or may not be the same as the 9-1-1 Authority. This MUST be represented by a domain name that is an Agency Identifier as defined in the NENA Master Glossary.

Domain: None

Example: Vermont911.vt.us.gov; nct911.dst.tx.us

Date Updated

Description: The date and time that the record was created or last modified. This value MUST be populated upon modifications to attributes, geometry, or both.

Domain: Date and Time may be stored in the local database date/time format with the proviso that local time zone MUST be recorded and time MUST be recorded to a precision of at least 1 second and MAY be recorded to a precision of 0.1 second. If the local database date/time format does not meet these specifications, the database SHOULD record both the local date/time format and a string conforming to W3C dateTime format as described in XML Schema Part 2: Datatypes Second Edition [10].

Example: (of a W3C dateTime with optional precision of .1 second)
2017-12-21T17:58.03.1-05:00 (representing a record updated on December 21, 2017 at 5:58 and 3.1 seconds PM US Eastern Standard Time);
2017-07-11T08:31:15.2-04:00 (representing a record updated on July 11, 2017 at 8:31 and 15.2 seconds AM US Eastern Daylight Time)

Effective Date

Description: The date and time that the record is scheduled to take effect. **Domain**: Date and Time may be stored in the local database date/time format with the proviso that local time zone MUST be recorded and time MUST be recorded to a precision of at least 1 second and MAY be recorded to a precision of 0.1 second. If the local database date/time format does not meet these specifications, the database SHOULD record both the local date/time format and a string conforming to W3C dateTime format as described in XML Schema Part 2: Datatypes Second Edition [10].

Example: (of a W3C dateTime with optional precision of .1 second)
2017-02-18T02:30:00.1-05:00 (representing a record that will become active on February 18, 2017 at 2:30 and 0.1 seconds AM US Eastern Standard Time); 2017-10-09T13:01:35.2-04:00 (representing a record that will become active on October 9, 2017 at 1:01 and 35.2 seconds PM US Eastern Daylight Time)

Note: This field is used when time and date of a change is known. For example, the time and date an annexation takes effect.

Expiration Date

Description: The date and time when the information in the record is no longer considered valid.

Domain: Date and Time may be stored in the local database date/time format with the proviso that local time zone MUST be recorded and time MUST be recorded to a precision of at least 1 second and MAY be recorded to a precision of 0.1 second. If the local database date/time format does not meet these specifications, the database SHOULD record both the local date/time format and a string conforming to W3C dateTime format as described in XML Schema Part 2: Datatypes Second Edition [10].

Example: (of a W3C dateTime with optional precision of .1 second)

2017-02-18T02:30:00-05:00.1 (representing a record that will expire and no longer be valid on February 18, 2017 at 2:30 and 0.1 seconds AM US Eastern Standard Time);
2017-10-09T13:01:35.2-04:00 (representing a record that will expire and no longer be valid on October 9, 2017 at 1:01 and 35.2 seconds PM US Eastern Daylight Time) **Note:** This field is used when the time and date of a change is known. For example, the time and date an annexation takes effect and the previous boundary is retired.

NENA Globally Unique IDs (NGUID)

NENA Globally Unique IDs (NGUID) are REQUIRED for all GIS data elements. NENA Globally Unique IDs SHALL be generated and maintained within a GIS database by combining a 9-1-1 Authority-generated "locally assigned ID", which can be numeric and/or text, and the "Agency Identifier" (a domain representing that authority, as defined in NENA-STA-010 [1]) of the 9-1-1 Authority, into a new single ID. For example, a road with a locally unique ID of RCL12085303, combined with an Agency Identifier of county.tx.us, would result in an NGUID of RCL12085303@county.tx.us.

The local agency maintains the Agency Identifier, which is a domain name as defined in STA-010. The domain name is obtained from any Domain Name System (DNS) registrar. NENA Globally Unique IDs MUST exist for each feature record within the GIS.

The NGUID examples in this document use a prefix suggestive of the layer the NGUID is found in. For example, RCL for Road Centerline, followed by a locally assigned ID. The inclusion of the prefix would ensure the locally assigned ID is locally unique across all layers. This locally unique ID and the domain name would ensure the NGUID is globally unique.

Each NGUID should be stable for as long as possible, so that it supports the reporting and resolution of errors from a quality control process, including the discrepancy reporting.

State

Description: The name of a state or state equivalent, represented by the two-letter abbreviation given in USPS Publication 28 [14], Appendix B. A state is a primary governmental division of the United States.
Domain: ISO 3166-2 includes the same abbreviations as USPS Publication 28 [14], Appendix B, with the exception of the additional one for the nine minor uninhabited islands owned by the US: These abbreviations are freely available at
https://www.census.gov/geo/reference/ansi_statetables.html
Example: TN; NM; OR

Agency ID

Description: A Domain Name System (DNS) domain name which is used to uniquely identify an agency. An agency is represented by a domain name as defined in RFC 1034. Each agency MUST use one domain name consistently in order to correlate actions across a wide range of calls and incidents. Any domain name in the public DNS is acceptable so long as each distinct agency uses a different domain name. This ensures that each agency ID is globally unique.
Domain: MUST be a registered DNS domain name.
Example: psap.harriscounty.tx.us; police.allegheny.pa.us
Note: The Agency ID is a field in the PSAP Boundary and an Emergency Service Boundary which identifies the agency the boundary defines. It is also used in the Emergency Incident Data Document, the Service/Agency Locator, and may be used in constructing NGUIDs.

Service URI

Description: URI for call routing. This attribute is contained in the Emergency Service Boundary layer and will define the Service URI of the service. The URI is usually a Session Initiation Protocol (e.g. SIP or SIPs) URI but MAY be a telephone number (e.g. tel) URI that defines the route to

reach the service.

Domain: Registered domain name; RFC 1035 (available at https://www.ietf.org/rfc/rfc1035.txt) defines the process to register a domain name.

Example: sips:sos.psap@eoc.houston.tx.us; tel:+12025551212

Service URN

Description: The URN used to select the service for which a route is desired. The ECRF is queried with a location and a service URN that returns the Service URI.

Domain: RFC 5031 defines the Service URN; NENA-STA-010 [1] defines the domain of allowable values. PSAP boundaries SHOULD only contain features with Service URN values of "urn:nena:service:sos.psap". Values to be used for emergency service boundaries for other responding agencies are found in NENA Registry System - urn:nena:service:responder registry.

Example: urn:nena:service:sos.psap; urn:nena:service:responder.police; urn:nena:service:responder.fire; urn:nena:service:responder.ems

Note: A boundary with a service URN of urn:service:sos MUST be provisioned in the ECRF. 9-1-1 Authorities responsible for the ECRF or their designees/vendors will need to generate such a boundary from the boundaries in all the GIS systems provisioned to that ECRF. If provisioning a boundary to the ECRF, it MUST conform to the definition of Service Boundary in NENA-STA-010 [1], Appendix B.

Service Number

Description: The numbers that would be dialed on a 12-digit keypad to reach the emergency service appropriate for the location. This is not the same as an Emergency Service Number (ESN) in Legacy E9-1-1 systems. This field is used for all Emergency Boundaries including PSAP; Law; Fire; EMS; and others such as Poison Control. Within the United States the Service Number for most emergency services is 9-1-1, however, there may be Emergency Service boundaries that have a different number that may be associated with them such as Poison Control. Additionally, in areas outside of the United States, different numbers may be used for Law, Fire, and EMS – this field would be used to denote those numbers.

Domain: A dialable number or dial string

Example: 911; 18002221212

Agency vCard URI

Description: A vCard is a file format standard for electronic business cards. The Agency vCard URI is the internet address of an eXtensible Markup Language (XML) data structure which contains contact information (Name of Agency, Contact phone numbers, etc.) in the form of a vCard (RFC 6350). vCard files may be exported from most email programs or created with a text editor. The vCard URI is used in the service boundary layers to provide contact information for that agency. The Agency Locator (see STA-010) will provide these URIs for Agencies listed in it.

Domain: None

Example: https://vcard.psap.allegheny.pa.us; https://vcard.houstontx.gov/fire

Display Name

Description: A description or "name" of the service provider that offers services within the area of a PSAP or an Emergency Service Boundary. This value MUST be suitable for display.

Domain: None

Example: New York Police Department; Med-Life Ambulance Service

Appendix C: PSAP and ESB Attribution Examples

In addition to the accurate geographic representation of each Public Safety Answering Point (PSAP) jurisdictional boundary and the Emergency Service Boundary (ESB) for each responding agency, the proper population of each data element is essential to the accurate routing of 9-1-1 calls.

The primary use for the PSAP boundary is to route call/emergency requests within a NG9-1-1 system and to identify the current dispatching authority. Each PSAP boundary defines the geographic area of the PSAP that has primary responsibilities for **receiving** an emergency request and the related attributes provide the critical routing parameters.

The Emergency Service Boundary (ESB) is used to identify the appropriate entities/first responders to be **dispatched**. Each Emergency Service Boundary layer may contain one or more polygon boundaries that define the primary emergency services for that geographic area.

This document provides both graphic and tabular samples for each data item within the PSAP and ESB data set. A detailed definition of each item is available within the *PSAP Guide Definitions*.

Items that are denoted with an asterisk (*) must be populated but the appropriate values will be provided in the future and can currently be left unpopulated by the PSAP. Each of these items are populated with sample text in the examples below for clarity.

PSAP Boundary Attribution Example:

Example 1: PSAP Attributes
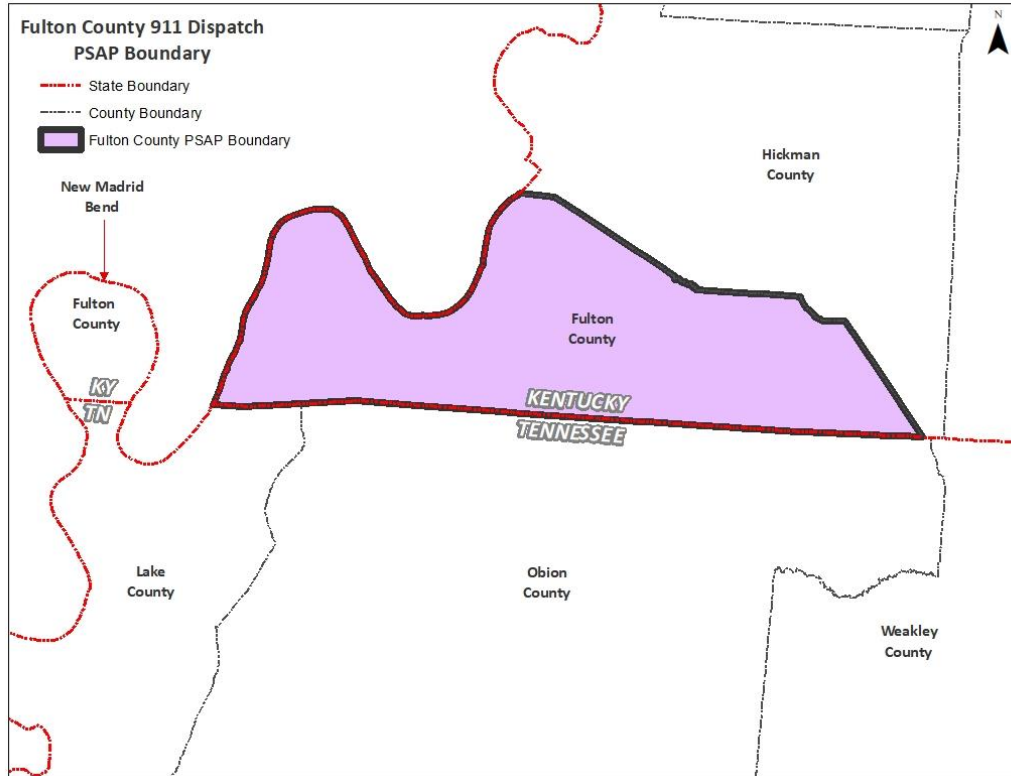
OBJECTID	1
DiscrpAgID	PUADD.add.ky.us
DateUpdated	8/15/2019
Effective	8/15/2019
Expire	<Null>
ES_NGUID *	PSAP1@psap.fultoncounty911dispatch.ky.us
State	KY
Agency_ID	psap.fultoncounty911dispatch.ky.us
ServiceURI *	<Null>
ServiceURN *	<Null>
ServiceNum	911
AVcard_URI *	https://vcard.psap.fultoncounty911dispatch.ky.us
DsplayName	Fulton County 911 Dispatch
SHAPE_Length	433866.084015
SHAPE_Area	5681582130.656258

DiscrpAgID: The discrepancy agency could be the Purchase Area Development District or any specified agency that is tasked to resolve inquiries related to the boundaries depicted.

ES_NGUID: PSAP1 is a placeholder and will be represented by a unique number generated by the integrator composed of other elements within the data set, including the assigned unique identifier for each feature.

*****For guideline purposes only. Data in table does not represent actual values*****

LAW ESB Attribution Examples:

Fulton County 911 Dispatch Law ESB will consist of <u>four</u> polygons for the jurisdictions of: Unincorporated Fulton County (<u>2</u>), Hickman Police Department (<u>1</u>) and Fulton City Police Department (<u>1</u>). The New Madrid Bend and Hickman County areas are **NOT** within the Fulton County 911 PSAP Boundary and will be depicted within the boundaries provided by the jurisdictions that receive the 9-1-1 calls directly, Lake County (TN) and KSP Post 1 PSAPs, respectively (See Figure 5 & 6).

Example 2: Unincorporated Fulton County LAW Attributes

The primary PSAP is Fulton County 911 Dispatch and the Fulton County Sheriff's office responds to law enforcement calls in the unincorporated areas.
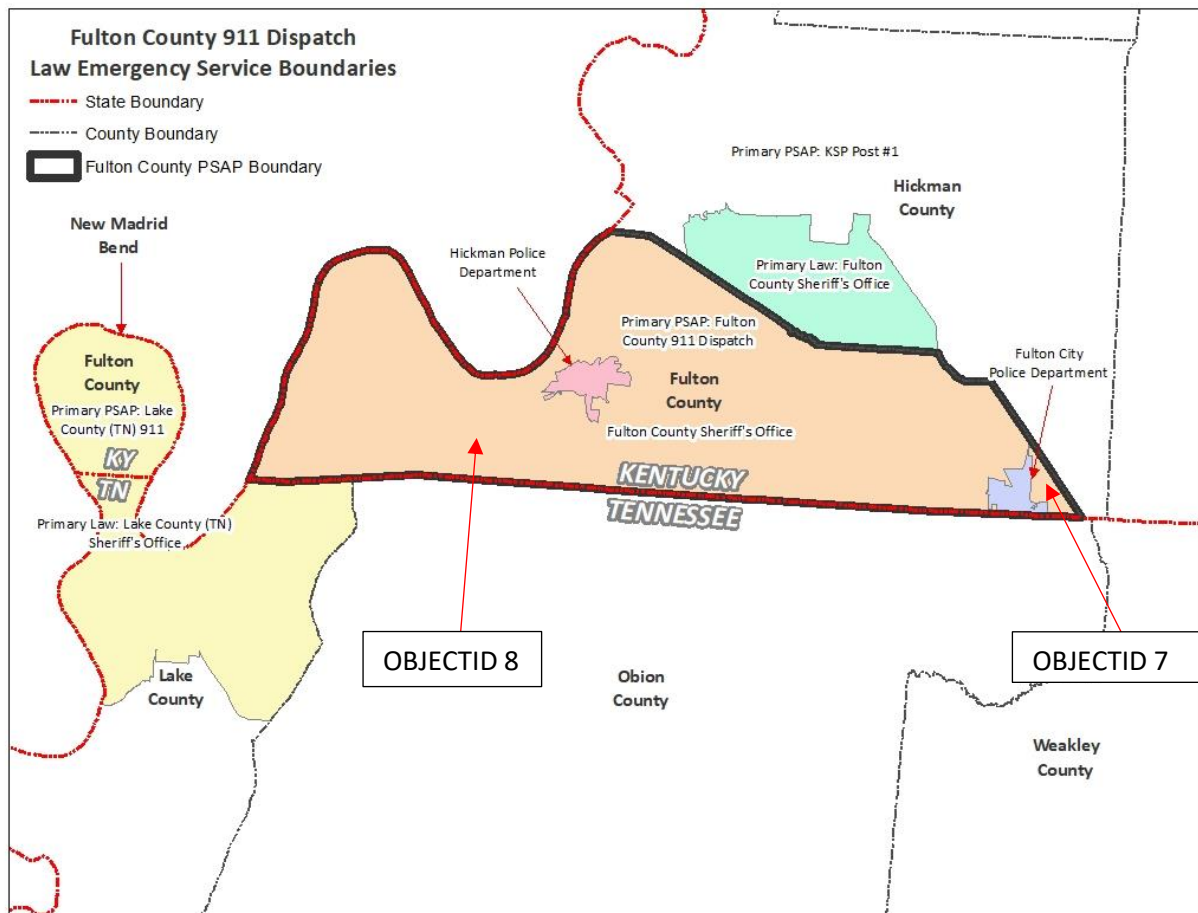
Unincorporated Fulton County is represented by two separate polygons. They are differentiated by the OBJECTID field which is automatically generated by the software. This automatically generated Unique ID will be used to identify each specific polygon, with the other attributes remaining constant across both polygons.

*****For guideline purposes only. Data in table does not represent actual values*****

OBJECTID	8
DiscrpAgID	PUADD.add.ky.us
DateUpdated	8/15/2019
Effective	8/15/2019
Expire	8/14/2020
ES_NGUID *	LAW8@fultoncountysheriff.fultoncounty.ky.us
State	KY
Agency_ID	fultoncountysheriff.fultoncounty.ky.us
ServiceURI *	<Null>
ServiceURN *	<Null>
ServiceNum	911
AVcard_URI *	https://vcard.fultoncountysheriff.fultoncounty.ky.us
DsplayName	Fulton County Sheriff's Office
SHAPE_Length	529182.849433
SHAPE_Area	5427035865.209584

DiscrpAgID: The discrepancy agency could be the Purchase Area Development District or any specified agency that is tasked to resolve inquiries related to the boundaries depicted. **ES_NGUID**: LAW8 (above) and LAW7 (below) are placeholders and will be represented by a unique number generated by the integrator composed of other elements within the data set, including the assigned unique identifier for each feature.

OBJECTID	7
DiscrpAgID	PUADD.add.ky.us
DateUpdated	8/15/2019
Effective	8/15/2019
Expire	8/14/2020
ES_NGUID *	LAW7@fultoncountysheriff.fultoncounty.ky.us
State	KY
Agency_ID	fultoncountysheriff.fultoncounty.ky.us
ServiceURI *	<Null>
ServiceURN *	<Null>
ServiceNum	911
AVcard_URI *	https://vcard.fultoncountysheriff.fultoncounty.ky.us
DsplayName	Fulton County Sheriff's Office
SHAPE_Length	50681.029986
SHAPE_Area	71546023.099044

*****For guideline purposes only. Data in table does not represent actual values*****

Example 3: Hickman (city) Police Department LAW Attributes

The primary PSAP is Fulton County 911 Dispatch and the city of Hickman Police department responds to law enforcement calls in this area.
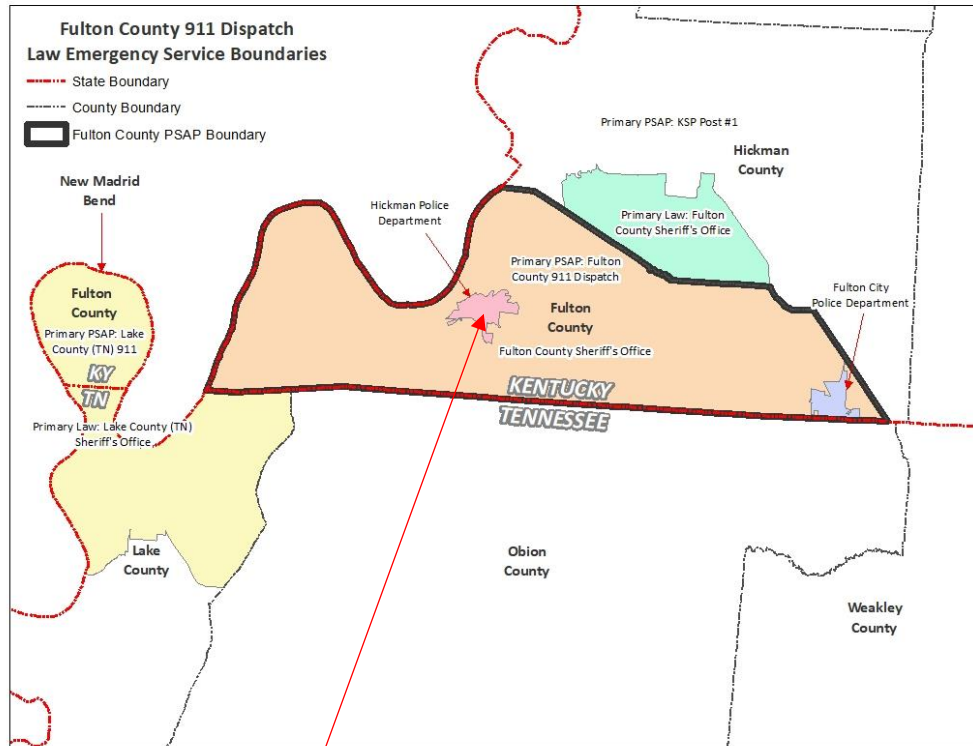
OBJECTID	4
DiscrpAgID	PUADD.add.ky.us
DateUpdated	8/15/2019
Effective	8/15/2019
Expire	<Null>
ES_NGUID *	LAW4@hickmanpolice.fultoncounty.ky.us
State	KY
Agency_ID	hickmanpolice.fultoncounty.ky.us
ServiceURI *	<Null>
ServiceURN *	<Null>
ServiceNum	911
AVcard_URI *	http://vcard.hickmanpolice.fultoncounty.ky.us
DsplayName	Hickman Police Department
SHAPE_Length	79660.23016
SHAPE_Area	99968459.781784

DiscrpAgID: The discrepancy agency could be the Purchase Area Development District or any specified agency that is tasked to resolve inquiries related to the boundaries depicted.
ES_NGUID: LAW4 is a placeholder and will be represented by a unique number generated by the integrator composed of other elements within the data set, including the assigned unique identifier for each feature.

*****For guideline purposes only. Data in table does not represent actual values*****

Example 4: Fulton City Police Department LAW Attributes

The primary PSAP is Fulton County 911 Dispatch and the Fulton City Police Department responds for law enforcement in this area.

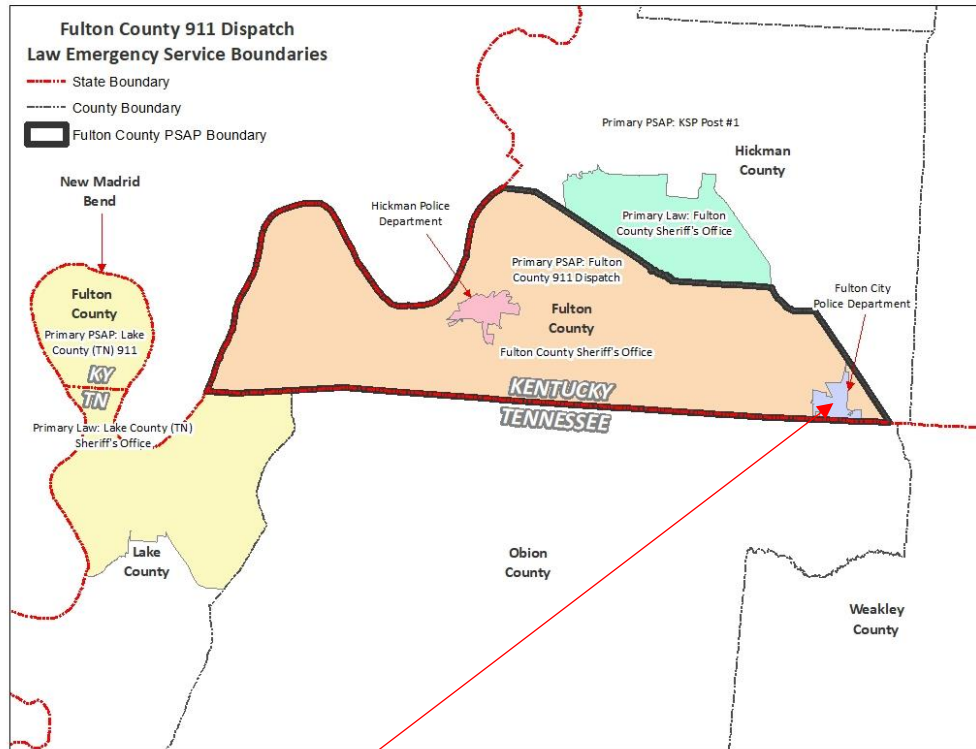| OBJECTID	5
DiscrpAgID	PUADD.add.ky.us
DateUpdated	8/15/2019
Effective	8/15/2019
Expire	<Null>
ES_NGUID *	LAW5@fultoncitypolice.fultoncounty.ky.us
State	KY
Agency_ID	fultoncitypolice.fultoncounty.ky.us
ServiceURI *	<Null>
ServiceURN *	<Null>
ServiceNum	911
AVcard_URI *	https://vcard.fultoncitypolice.fultoncounty.ky.us
DsplayName	Fulton City Police Department
SHAPE_Length	66336.51731
SHAPE_Area	83144964.198197

DiscrpAgID: The discrepancy agency could be the Purchase Area Development District or any specified agency that is tasked to resolve inquiries related to the boundaries depicted.

ES_NGUID: LAW5 is a placeholder and will be represented by a unique number generated by the integrator composed of other elements within the data set, including the assigned unique identifier for each feature.

*****For guideline purposes only. Data in table does not represent actual values*****

Service Areas outside of PSAP Boundary:

It is common for an Emergency Response Agency (Law, Fire, EMS, etc.) to provide primary service outside of a single PSAP Boundary. However; an ESB represents an area that is wholly contained within a single PSAP Boundary, the PSAP that receives the primary 9-1-1 call (i.e. first PSAP to answer the call directly).

Dispite being part of Fulton County (KY), the New Madrid Bend area is serviced by the Lake County (TN) Sheriff's Office and thus within the Lake County (TN) PSAP boundary. This area will be included in the Lake County (TN) ESB boundaries, and **NOT** in Fulton County 911 Dispatch's PSAP or ESB boundaries.

Example 5: New Madrid Bend LAW Attributes
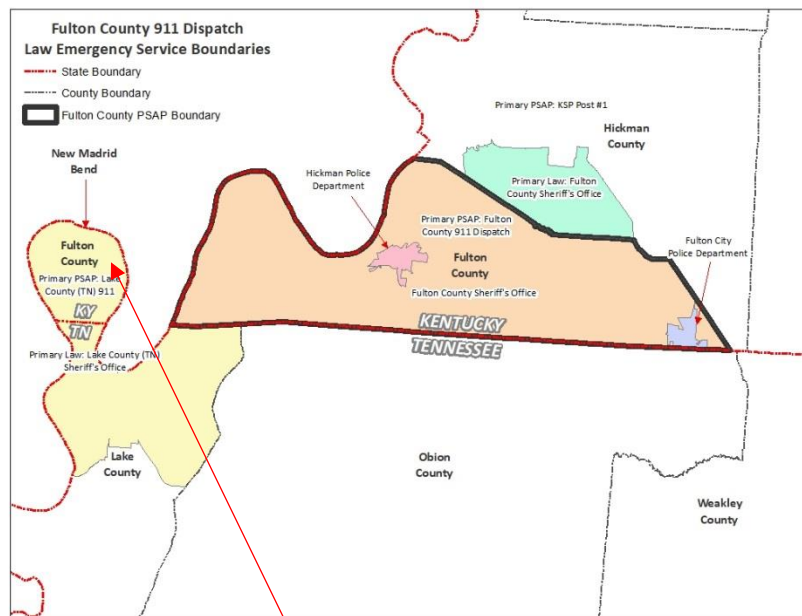
OBJECTID	3
DiscrpAgID	ctas.lakecounty.tn.us
DateUpdated	8/15/2019
Effective	8/15/2019
Expire	<Null>
ES_NGUID *	LAW3@lakecountypolice.lakecounty.tn.us
State	TN
Agency_ID	lakecountypolice.lakecounty.tn.us
ServiceURI *	<Null>
ServiceURN *	<Null>
ServiceNum	911
AVcard_URI *	https://vcard.police.lakecounty.tn.us
DsplayName	Lake County Police
SHAPE_Length	315687.666998
SHAPE_Area	2688097199.626804

DiscrpAgID: CTAS is the County Technical Assistance Service for TN and could be the discrepancy agency or any specified agency that is tasked to resolve inquiries related to the boundaries depicted.
**ES_NGUID**: LAW3 is a placeholder and will be represented by a unique number generated by the integrator composed of other elements within the data set, including the assigned unique identifier for each feature.

*****For guideline purposes only. Data in table does not represent actual values*****

Example 6: Hickman County LAW Attributes

Despite being serviced by the Fulton County Sheriff's Office for law enforcement calls, the primary PSAP for this area is KSP Post 1. This area will be included in the ESB and PSAP boundaries submitted by KSP Post 1.
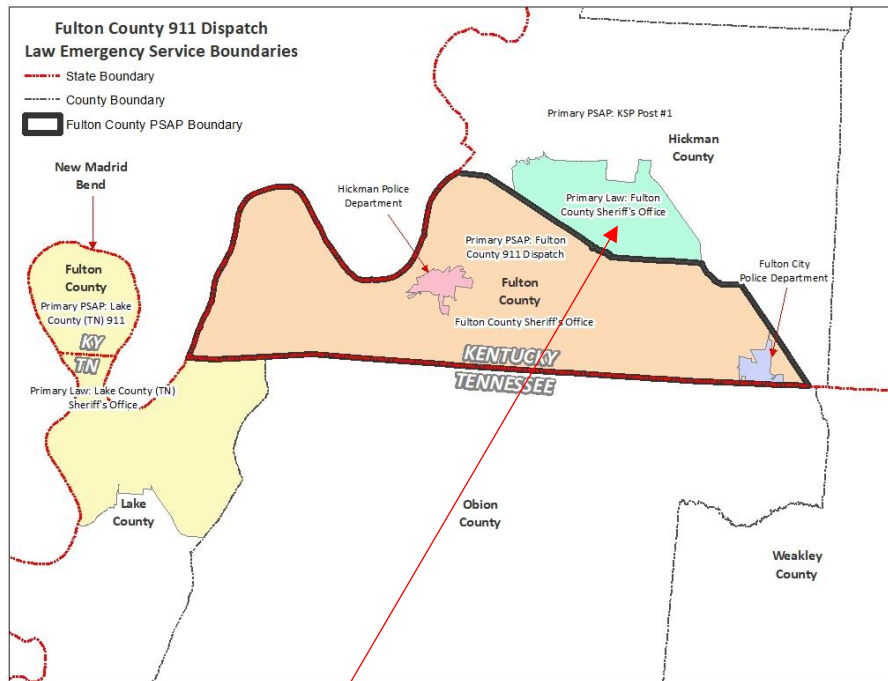
OBJECTID	1
DiscrpAgID	ksppost1.hickmancounty.ky.us
DateUpdated	8/15/2019
Effective	8/15/2019
Expire	<Null>
ES_NGUID　＊	LAW1@fultoncountysheriff.fultoncounty.ky.us
State	KY
Agency_ID	fultoncountysheriff.fultoncounty.ky.us
ServiceURI　＊	<Null>
ServiceURN　＊	<Null>
ServiceNum	911
AVcard_URI　＊	https://fultoncountysheriff.fultoncounty.ky.us
DsplayName	Fulton County Sheriff's Office
SHAPE_Length	160126.611531
SHAPE_Area	934567345.757609

DiscrpAgID: The discrepancy agency could be KSP Post 1 or any specified agency that is tasked to resolve inquiries related to the boundaries depicted.

ES_NGUID: LAW1 is a placeholder and will be represented by a unique number generated by the integrator composed of other elements within the data set, including the assigned unique identifier for each feature.

*****For guideline purposes only. Data in table does not represent actual values*****

Appendix D: PSAP Boundary Agreement

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KENTUCKY 911 SERVICES BOARD
PSAP BOUNDARY AGREEMENT
LAST UPDATED MAY 15, 2019

The 911 Services Board recognizes that accurate mapping forms the cornerstone of Next Generation 911. As Kentucky forges a path to the deployment of a statewide NG911 solution, it is essential that all certified PSAPs adhere to Board-established GIS mapping guidelines.

The establishment of the jurisdictional boundary of a public safety answering point (PSAP) is outlined in Section 1, Subsection 4(b)(5) of 202 KAR 6:050 as a condition of 911 Services Board certification. In order to maintain certification, PSAPs must submit certain information to the Board on an annual basis, as outlined in Section 2 of 202 KAR 6:100.

The 911 Services Board created the "Kentucky NG911 Mapping Guide" to provide guidance to certified PSAPs in the formulation of proper PSAP boundaries, emergency response boundaries, road centerlines and site/structure points.

This form serves as a template agreement between the originating PSAP and an adjoining PSAP that both entities are in agreement as to the originating PSAP's jurisdictional boundary. An official MOU, local ordinance or similar agreements which document an established PSAP boundary between PSAPs may be submitted as supporting documents.

In the event of a boundary dispute, the 911 Services Board will follow guidelines outlined in Section 2, Subsection 2(C)(1) of 202 KAR 6:100.

Originating PSAP (PSAP 1): _____

Adjoining PSAP (PSAP 2): _____

By signing this form dated _____, all parties acknowledge the PSAP boundary between _____*(PSAP 1)*_____ and _____*(PSAP 2)*_____ as depicted in the following description and graphic representations (maps) is acceptable to all parties and that all future boundary submittals by the Originating PSAP will represent the agreed upon boundary and will adhere to standards outlined within the Kentucky 911 Services Board's "Kentucky NG911 Mapping Guide."

Boundary Description:

(written description of PSAP boundary between PSAP 1 and PSAP 2)

Boundary Map:

(graphic representation of PSAP boundary between PSAP 1 and PSAP 2)

Originating PSAP   **Adjoining PSAP**

_____*(PSAP 1)*_____   _____*(PSAP 1)*_____

BY: _____   BY: _____

Print Name: _____   Print Name: _____

Title: _____   Title: _____

Date: _____   Date: _____

Appendix E: PSAP Boundary is the Authoritative County Boundary Agreement

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KENTUCKY 911 SERVICES BOARD
PSAP Boundary is the Authoritative County Boundary Agreement
LAST UPDATED MAY 15, 2019

The establishment of the jurisdictional boundary of a public safety answering point (PSAP) is outlined in Section 1, Subsection 4(b)(5) of 202 KAR 6:050 as a condition of 911 Services Board certification. In order to maintain certification, PSAPs must submit certain information to the Board on an annual basis, as outlined in Section 2 of 202 KAR 6:100.

This form serves as a template agreement between two PSAPs that a shared PSAP boundary shall be equal to the corresponding authorized county boundary, as maintained and managed by the Kentucky GIS Office, housed within the State Geospatial Data Clearinghouse.

In the event of a boundary dispute, the 911 Services Board will follow guidelines outlined in Section 2, Subsection 2(C)(1) of 202 KAR 6:100.

Originating PSAP (PSAP 1): _____

Adjoining PSAP (PSAP 2): _____

By signing this form dated _____, all parties acknowledge the PSAP boundary between
_____*(PSAP 1)*_____, operating within _____*(county name)* County___ and
_____*(PSAP 2)*_____, operating within _____*(county name)* County___ is the
corresponding authorized county boundary between the two PSAPs, as maintained and managed by the Kentucky GIS Office, and is acceptable to all parties and that all future boundary submittals by both PSAPs will represent the agreed upon boundary and will adhere to standards outlined within the Kentucky 911 Services Board's "Kentucky NG911 Mapping Guide."

Originating PSAP   **Adjoining PSAP**

_____*(PSAP 1)*_____   _____*(PSAP 1)*_____

BY: _____   BY: _____

Print Name: _____   Print Name: _____

Title: _____   Title: _____

Date: _____   Date: _____

Appendix F: Structure and Site Indexes

Table 1: Structures requiring a unique address point.

Address	Sub-Address	Description
M		Single structure on single property – one address
M	C	Multiple structures on single property – one address
M	C	Multiple structures on single property – multiple addresses
M	C	Duplex (taking into account different entrance types)
M	C	Multifamily residence (single or multi-storied)
M	C	Mixed use structure (businesses and residences located in same building; home based business within family residence)
M	C	Mobile home parks
M	C	Apartment complexes
M	C	Business Parks
M	C	Strip malls/ shopping malls
M	C	Multistory office buildings

(M) Mandatory, (C) Conditional

Table 2: Sites requiring a unique address point.

Address	Sub-Address	Description
M	C	Campgrounds
M	C	Marina slips
M	C	Landmarks (e.g., monuments, statues, traffic circles, bridges)
M	C	Recreational areas without structures present (e.g., boat launch, picnic areas)
M	C	Athletic Field/Courts without structures present (e.g. soccer, football, baseball, basketball court, tennis court)
M	C	Phone Booths, roadside phones
M	C	Barns
M	C	Water body (public access)
M	C	Cell towers

(M) Mandatory, (C) Conditional

Table 3: Structure and Site recommended for address point assignment

Address	Sub-Address	Description
R	C	Utility Nodes (e.g., phone poles, substations, water tanks/towers, etc.)
R	C	Oil wells, gas wells, mines, borrow pits, etc.
R	C	Water body (greater than 2 acres or designated for recreational use)
R	C	Temporary addresses (e.g., construction trailers for transportation projects, vegetable stands, firework stands, kiosks with static addresses with different users throughout the year)
R	C	Other (e.g., addresses assigned by local authorities for cemetery plots, airfields, railroad crossings, phones at gates, train control boxes, etc.)
R		Vacant lots

(R) Recommend, (C) Conditional