PROVISIONING & ADDRESSING ERRORS IN GIS

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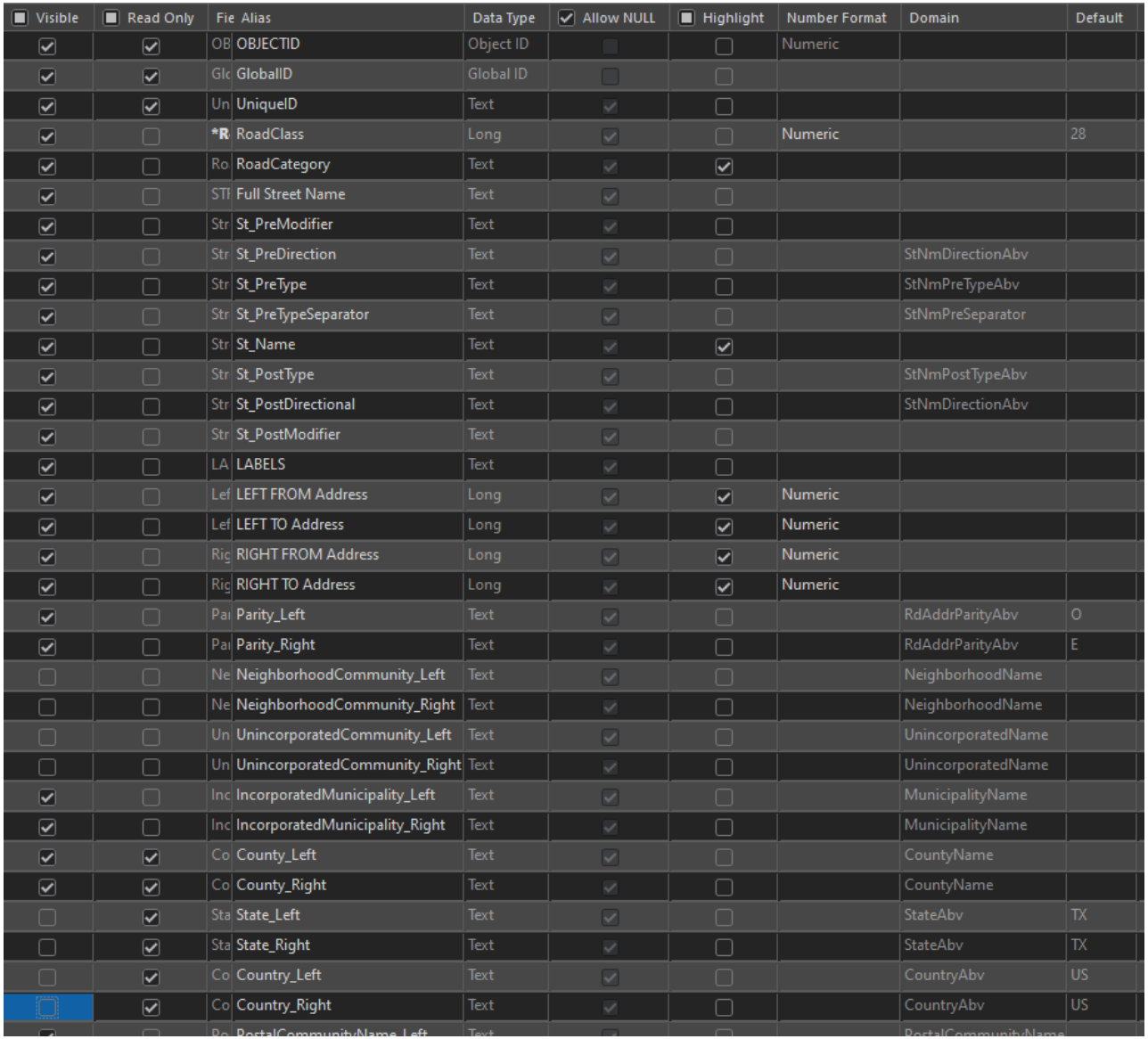
Preventing Errors with Map Settings

- Field visibility
- Fields can be made Read-Only
- Highlight Fields
- Use snapping settings and topology editing
- In ArcPro, manage editable layers carefully



Visible	Read Only	Fie	Alias	Data Type	Allow NULL	Highlight	Number Format	Domain	Default
☑	☑	OB	OBJECTID	Object ID	☐	☐	Numeric		
☑	☑	Glc	GlobalID	Global ID	☐	☐			
☑	☑	Un	UniqueID	Text	☑	☐			
☑	☐	*R	RoadClass	Long	☑	☐	Numeric		28
☑	☐	Ro	RoadCategory	Text	☑	☑			
☑	☐	STI	Full Street Name	Text	☑	☐			
☑	☐	Str	St_PreModifier	Text	☑	☐			
☑	☐	Str	St_PreDirection	Text	☑	☐		StNmDirectionAbv	
☑	☐	Str	St_PreType	Text	☑	☐		StNmPreTypeAbv	
☑	☐	Str	St_PreTypeSeparator	Text	☑	☐		StNmPreSeparator	
☑	☐	Str	St_Name	Text	☑	☑			
☑	☐	Str	St_PostType	Text	☑	☐		StNmPostTypeAbv	
☑	☐	Str	St_PostDirectional	Text	☑	☐		StNmDirectionAbv	
☑	☐	Str	St_PostModifier	Text	☑	☐			
☑	☐	LA	LABELS	Text	☑	☐			
☑	☐	Lef	LEFT FROM Address	Long	☑	☑	Numeric		
☑	☐	Lef	LEFT TO Address	Long	☑	☑	Numeric		
☑	☐	Rig	RIGHT FROM Address	Long	☑	☑	Numeric		
☑	☐	Rig	RIGHT TO Address	Long	☑	☑	Numeric		
☑	☐	Par	Parity_Left	Text	☑	☐		RdAddrParityAbv	O
☑	☐	Par	Parity_Right	Text	☑	☐		RdAddrParityAbv	E
☐	☐	Ne	NeighborhoodCommunity_Left	Text	☑	☐		NeighborhoodName	
☐	☐	Ne	NeighborhoodCommunity_Right	Text	☑	☐		NeighborhoodName	
☐	☐	Un	UnincorporatedCommunity_Left	Text	☑	☐		UnincorporatedName	
☐	☐	Un	UnincorporatedCommunity_Right	Text	☑	☐		UnincorporatedName	
☑	☐	Inc	IncorporatedMunicipality_Left	Text	☑	☐		MunicipalityName	
☑	☐	Inc	IncorporatedMunicipality_Right	Text	☑	☐		MunicipalityName	
☑	☑	Co	County_Left	Text	☑	☐		CountyName	
☑	☑	Co	County_Right	Text	☑	☐		CountyName	
☐	☑	Sta	State_Left	Text	☑	☐		StateAbv	TX
☐	☑	Sta	State_Right	Text	☑	☐		StateAbv	TX
☐	☑	Co	Country_Left	Text	☑	☐		CountryAbv	US
☐	☑	Co	Country_Right	Text	☑	☐		CountryAbv	US

Preventing Errors with Database Settings

- Assign Domains (drop-downs) to attributes wherever possible (ex: parity, directional, type, municipality, county, etc…)
- Assign field defaults where possible (ex: Country, State, etc…)
- Make fields required where relevant (ex: ServiceURI)
- User permissions can prevent accidental edits. (ex: Do your addressing staff need to be able to edit polygons?)
- Use Versioning to review edits before they are approved
- Use Archiving to recover from accidental mass-edits
- Use new ArcPro capabilities, like:
  - Attribute Rules (ex: auto-populate fields)
  - Contingent Values (ex: if County A, must be one of 3 cities)
  - Tasks (ex: guided, semi-automated workflows to prevent missing a step)

GDH2: Transformation Validation Tasks

- Don’t count toward your error %, review initially anyway
- Most can be safely ignored.
- Can indicate what you may not need to maintain
- Could indicate causes of unexplainable errors
  - Truncated values, missing attributes, and other schema issues

QC_CHECK_NAME	DESCRIPTION
Transformation_Validation_Task	Inventory field ('LAW', 'DETCOG_CODES') is not being converted
Transformation_Validation_Task	Inventory field ('LAW', 'UpdateNotes') is not being converted
Transformation_Validation_Task	Inventory field ('LAW', 'Shape_Length') is not being converted
Transformation_Validation_Task	Inventory field ('LAW', 'Shape_Area') is not being converted
Transformation_Validation_Task	No input has been specified for target field '('ALI', 'auto_id')'
Transformation_Validation_Task	No input has been specified for target field '('SiteAddressPoints', 'AddCode')'
Transformation_Validation_Task	No input has been specified for target field '('SiteAddressPoints', 'auto_id')'
Transformation_Validation_Task	No input has been specified for target field '('EMS', 'auto_id')'
Transformation_Validation_Task	No input has been specified for target field '('Fire', 'auto_id')'
Transformation_Validation_Task	No input has been specified for target field '('Law', 'auto_id')'
Transformation_Validation_Task	No input has been specified for target field '('ProvisioningBoundary', 'auto_id')'
Transformation_Validation_Task	No input has been specified for target field '('PSAP_Boundary', 'auto_id')'
Transformation_Validation_Task	No input has been specified for target field '('RoadCenterlines', 'AdNumPre_L')'
Transformation_Validation_Task	No input has been specified for target field '('RoadCenterlines', 'AdNumPre_R')'
Transformation_Validation_Task	No input has been specified for target field '('RoadCenterlines', 'AddCode_L')'
Transformation_Validation_Task	No input has been specified for target field '('RoadCenterlines', 'AddCode_R')'
Transformation_Validation_Task	No input has been specified for target field '('RoadCenterlines', 'auto_id')'
Transformation_Validation_Task	No input has been specified for target field '('RoadCenterlines', 'ATT_Exception')'
Transformation_Validation_Task	No input has been specified for target field '('IncorporatedMunicipality', 'auto_id')'
Transformation_Validation_Task	No input has been specified for target field '('IncorporatedMunicipality', 'AddCode')'
Transformation_Validation_Task	No input has been specified for target field '('County', 'auto_id')'
Transformation_Validation_Task	The combined length of the sources for: ['DETCOG_TN.COMMUNITY_NAME'] is 8000 but the total width of ALI.CommunityName is 32 from source table DETCOG_TN to target table ALI. Some data may be lost.
Transformation_Validation_Task	The source column ESN is of a data type INT32 that does not have a column length specified and cannot determine if data may be lost.
Transformation_Validation_Task	The combined length of the sources for: ['DETCOG_TN.ESN'] is 0 but the total width of ALI.ESN is 5 from source table DETCOG_TN to target table ALI. Some data may be lost.
Transformation_Validation_Task	The source column HOUSE_NUMBER is of a data type INT32 that does not have a column length specified and cannot determine if data may be lost.
Transformation_Validation_Task	The combined length of the sources for: ['DETCOG_TN.HOUSE_NUMBER'] is 0 but the total width of ALI.HouseNum is 10 from source table DETCOG_TN to target table ALI. Some data may be lost.

Parse GDH Error Extended Info

QC_CHECK_NAME	DESCRIPTION	EXTENDED_INF
SSAP_to_RCL_Synchronization	This QC reports SSAP features that don't have a corresponding road segment in the road centerlines feature layer.	The SSAP record's address number does not fit within any of the corresponding road segment's ranges | SSAP: Address: Stringtown Road, & Comm
SSAP_to_RCL_Synchronization	This QC reports SSAP features that don't have a corresponding road segment in the road centerlines feature layer.	The SSAP record's address number does not fit within any of the corresponding road segment's ranges | SSAP: Address: Stringtown Road, & Comm
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SSAP_to_RCL_Synchronization	This QC reports SSAP features that don't have a corresponding road segment in the road centerlines feature layer.	The SSAP record's address number does not fit within any of the corresponding road segment's ranges | SSAP: Address: Thompson Street, & Comm
SSAP_to_RCL_Synchronization	This QC reports SSAP features that don't have a corresponding road segment in the road centerlines feature layer.	The SSAP record's address number is greater than the maximum possible address number that the corresponding road segments allow | SSAP: Add
SSAP_to_RCL_Synchronization	This QC reports SSAP features that don't have a corresponding road segment in the road centerlines feature layer.	The SSAP record's address number is greater than the maximum possible address number that the corresponding road segments allow | SSAP: Add
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SSAP_to_RCL_Synchronization	This QC report	
SSAP_to_RCL_Synchronization	This QC report	
SSAP_to_RCL_Synchronization	This QC report	
SSAP_to_RCL_Synchronization	This QC report	
SSAP_to_RCL_Synchronization	This QC report	

QC_ISSUE	STREET	COMMUNITY	ESN
Fail: Wrong side	<Null>	<Null>	<Null>
The SSAP record only corresponds to and fits within the ranges of road segments with a different community	FM 325	LUFKIN	520
The SSAP record only corresponds to and fits within the ranges of road segments with a different community	Ellen Street	LUFKIN	525
The SSAP record only corresponds to and fits within the ranges of road segments with a different community	Dogwood Place	POINT BLANK	421
The SSAP record only corresponds to and fits within the ranges of road segments with a different community	Dogwood Place	POINT BLANK	421
The SSAP record only corresponds to and fits within the ranges of road segments with a different community	Dogwood Place	POINT BLANK	421
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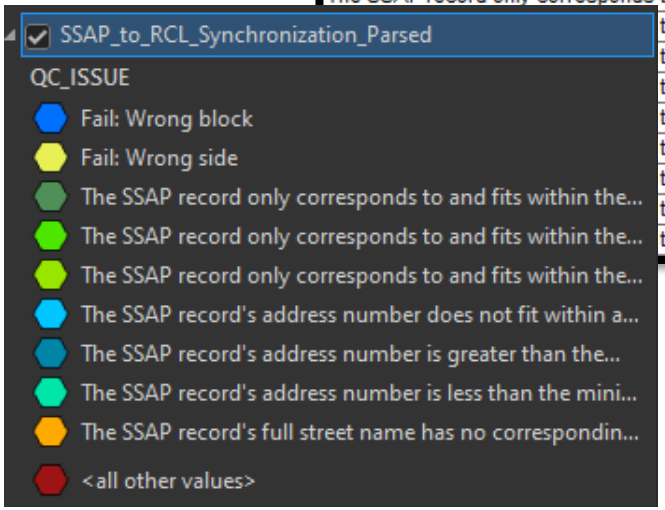
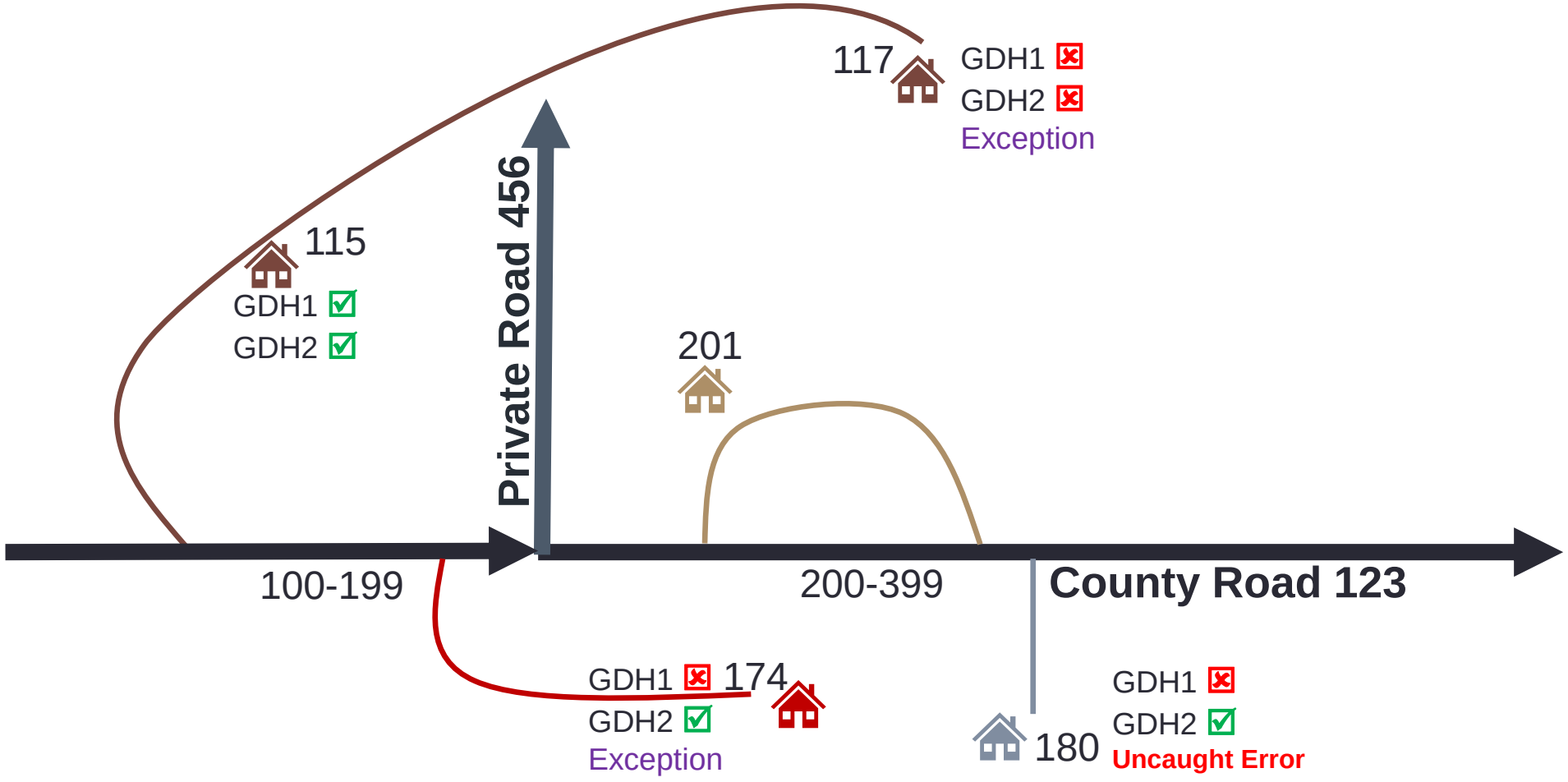
to and fits within the ranges of road segments with a different community	Dogwood Place	POINT BLANK	421
to and fits within the ranges of road segments with a different community	Hill Street	POINT BLANK	421
to and fits within the ranges of road segments with a different community	Holly Road	POINT BLANK	421
to and fits within the ranges of road segments with a different community	Lakeview Lane	POINT BLANK	421
to and fits within the ranges of road segments with a different community	Northwoods Drive	POINT BLANK	421
to and fits within the ranges of road segments with a different community	Northwoods Drive	POINT BLANK	421



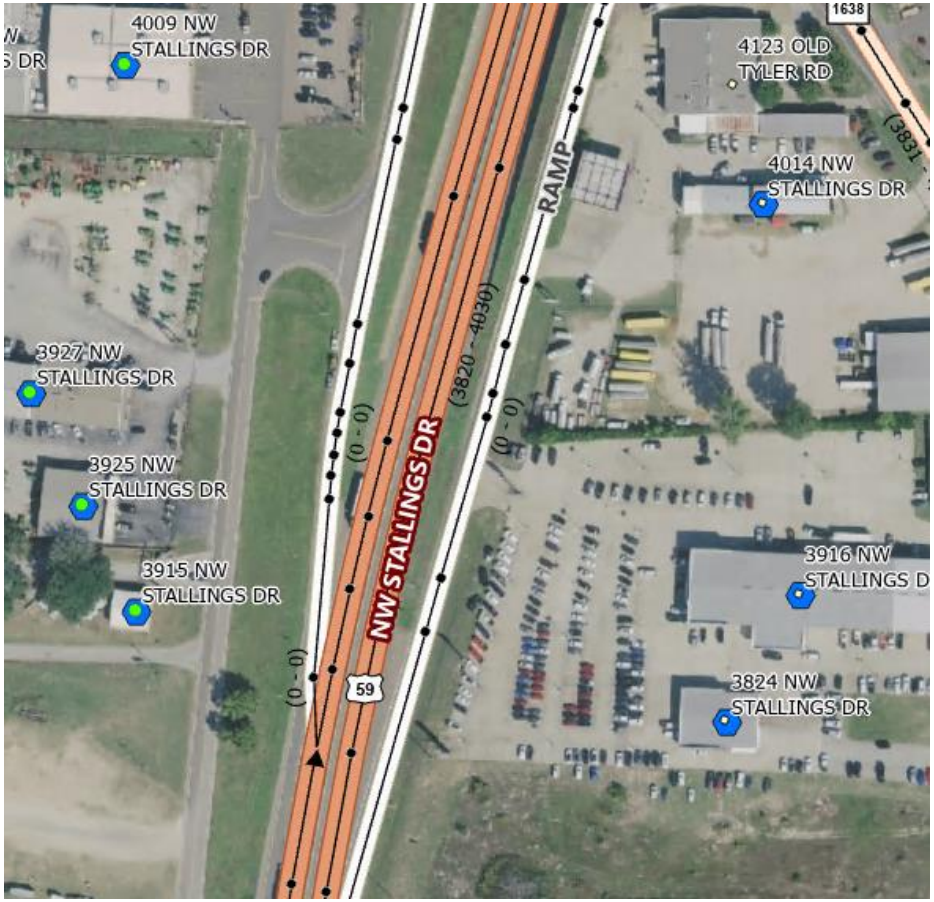
Add new field QC_ISSUE (Text 200)
Field Calculator (Python): QC_ISSUE = !EXTENDED_INFORMATION!.split('|')[0].strip()

GDH 1 vs GDH 2 Validation Differences Example: Wrong Block



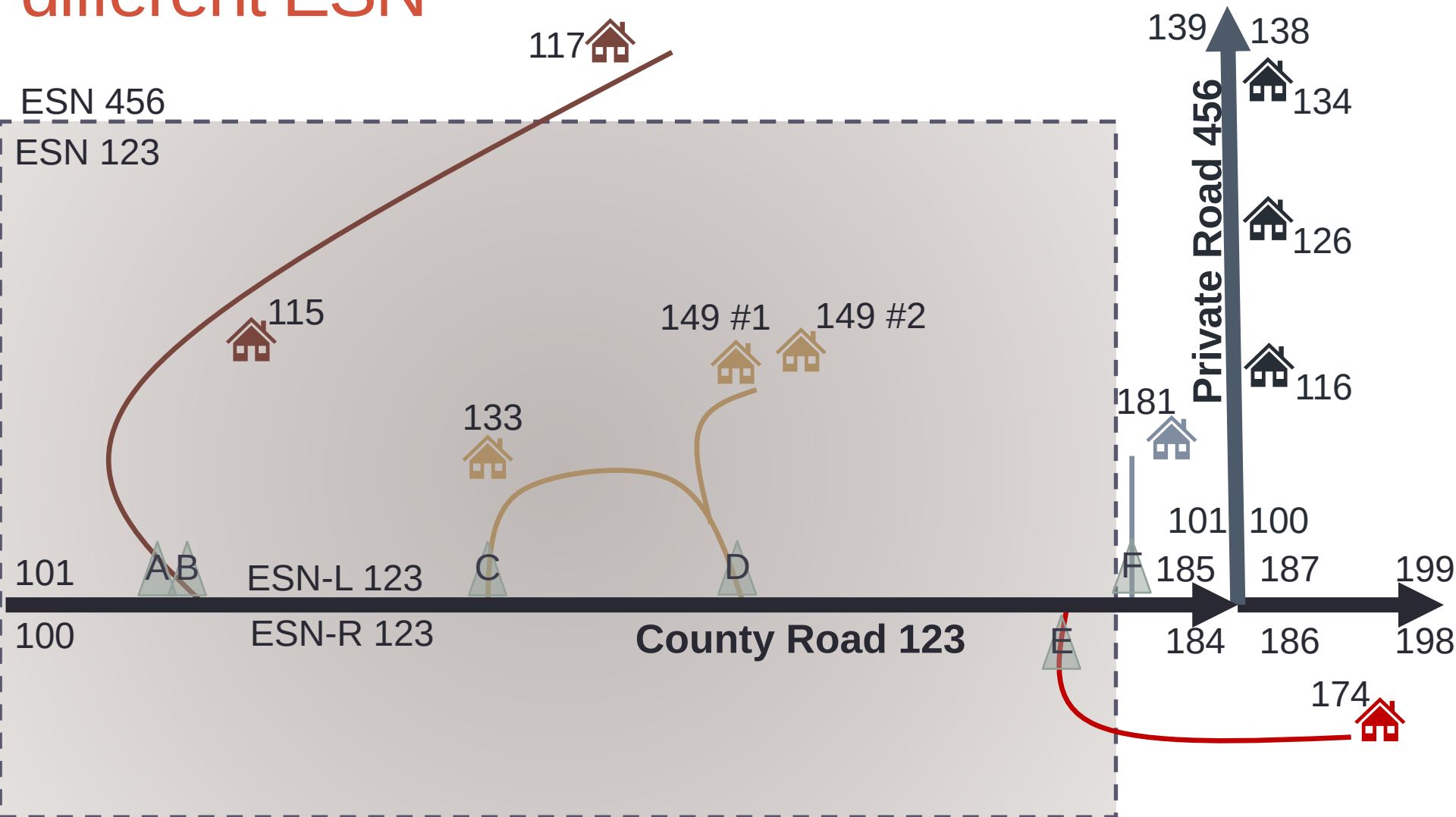
GDH 2 – Wait for Exception Codes

Fail: Wrong Block



Fail: Wrong Side

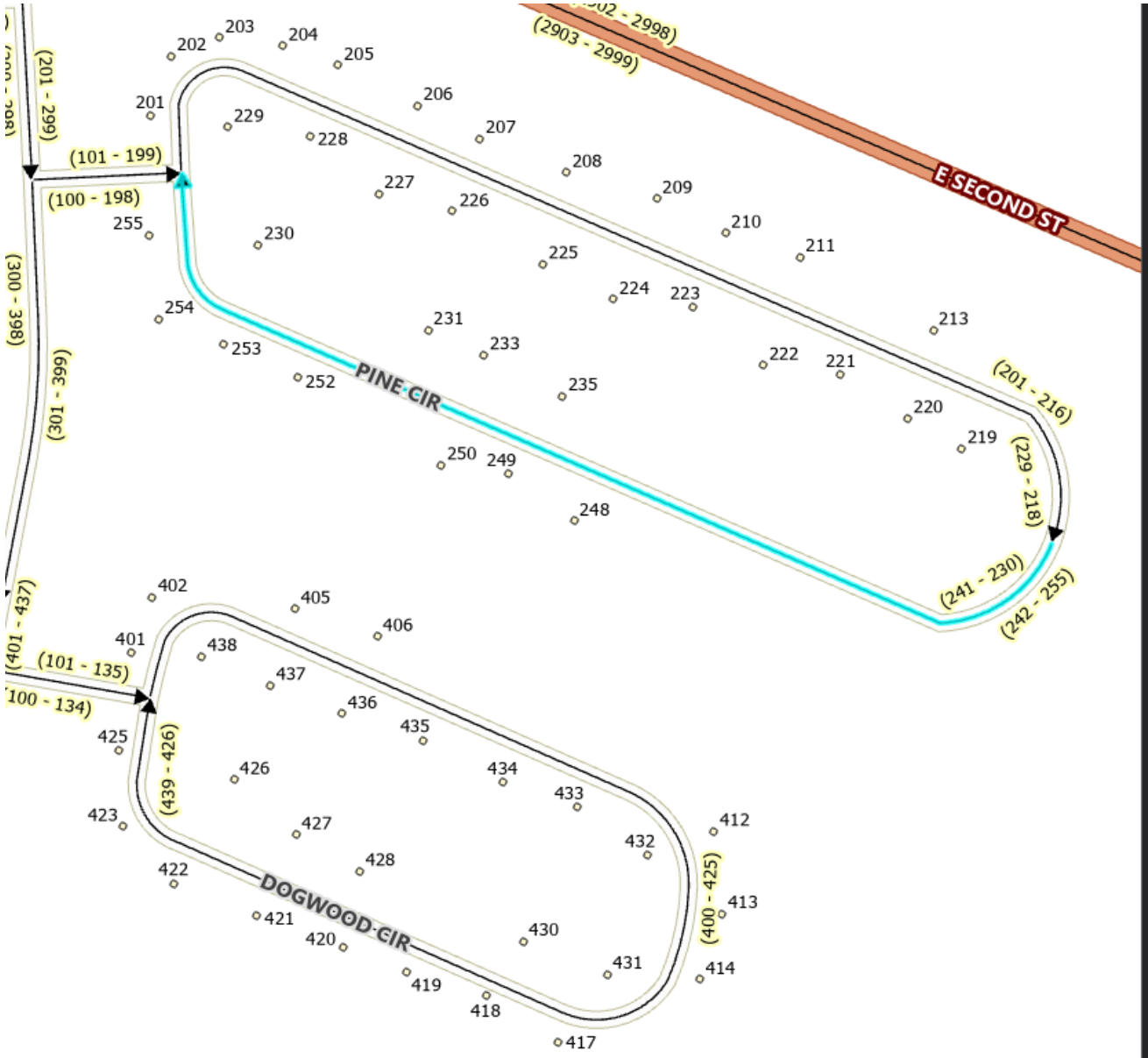
The SSAP record only corresponds to and fits within the ranges of road segments with a different ESN



Vertex Symbology in ArcPro

Ensure complete edge matching and snapping

Use Parity: B for sequential/lot style addressing



Attributes | Geometry

St_PostModifier	<Null>
LABELS	PINE CIR
LEFT FROM Address	242
LEFT TO Address	255
RIGHT FROM Address	241
RIGHT TO Address	230
Parity_Left	B
Parity_Right	B
NeighborhoodCommunity_Left	<Null>
NeighborhoodCommunity_Right	<Null>
UnincorporatedCommunity_Left	<Null>
UnincorporatedCommunity_Right	<Null>
IncorporatedMunicipality_Left	Corrigan
IncorporatedMunicipality_Right	Corrigan
County_Left	Polk County
County_Right	Polk County
State_Left	TX
State_Right	TX
Country_Left	US
Country_Right	US

Add “Generic” address point when subaddressing

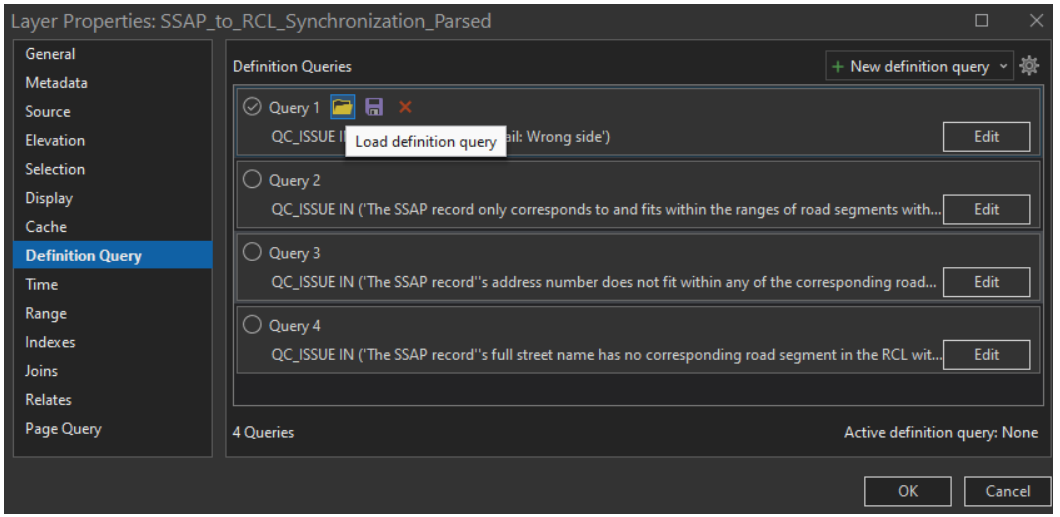
Can help with ALI to SSAP Comparisons and geocoding results in other programs, like CAD systems

ALI Errors

- Build TelCo Contacts List – Submitting TNCR doesn't mean telco updates TN
- Other Sources to compare against
  - Parcel Data
  - Registered Voter list
  - Utility Company data (ex: local water supply district)
  - City/County Permits/Records
  - Cooperative postmasters & long-time city staff

VUID	EDR	NAME	DOB	Registration Date	Status Date	Status	Unit Desig	Hisp	Gender	FPCA Flag	FPCA Ballot Delivery	FPCA Party	Pct	USREP	STREP	STSEN	COMM	JP	SBE	CITY	SCHL
1175028902	12/09/2010	[redacted]	11/06/1992	11/09/2010	11/09/2010	V			M				18	36	11	3	COMM 1	1	7		18
			Residence Address: 318 CO RD 4113 CALL TX 75933																		
			Mailing Address: 318 CO RD 4113 CALL TX 75933																		
2142654104	02/22/2018	[redacted]	11/10/1999	01/23/2018	02/05/2018	V			F				6	36	11	3	COMM 2	2	7	1	NISD 6
			Residence Address: 194 PVT RD 5030 NEWTON TX 75966																		
			Mailing Address: P.O. BOX 1435 NEWTON TX 75966																		
2129067067	10/27/2016	[redacted]	07/29/1998	09/27/2016	09/29/2016	V			M				1	36	11	3	COMM 3	3	7	1	NISD 1
			Residence Address: 511 FAIR PARK NEWTON TX 75966																		
			Mailing Address: 511 FAIR PARK NEWTON TX 75966																		
2172137461	11/01/202[redacted]	[redacted]	7/29/1956	10/02/2020	10/05/2020	V			M				15	36	11	3	COMM 1	1	7		15
			Residence Address: 158 PVT RD 8010 NEWTON TX 75966																		
			Mailing Address: 158 PVT RD 8010 NEWTON TX 75966																		
2122895014	05/07/2016	[redacted]	05/03/1966	04/07/2016	04/08/2016	V			M				21	36	11	3	COMM 4	4	7		21
			Residence Address: 533 CO RD 3140 ORANGE TX 77632																		
			Mailing Address: 533 CO RD 3140 ORANGE TX 77632																		

Check Data with SQL Expressions



- **FieldName <> UPPER(FieldName)** – find features that aren't uppercase
- **FieldName <> TRIM(BOTH ' ' FROM FieldName)** – find features that have leading/trailing spaces
- **POSITION(' ' IN FieldName) <> 0** – find features that have 2 adjacent spaces (ex: Searching ABC ST won't return ABC ST)
- **CHAR_LENGTH(FieldName) > 30** – find field values longer than set number of characters (30 in this example) (ex: don't let data get unknowingly truncated by a picky CAD system)
- **CombinedField <> CONCAT(Field1, CONCAT(' ', CONCAT(Field2, CONCAT(' ', CONCAT(Field3)))))** – find where concatenated and parsed fields don't match (use caution if any of the Field1-3 could be empty though)

QUESTIONS?

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PS: Have new GIS staff or new email address, let me know so I can add them to the Tx GIS 911 User Group email list