

Using the Data Reviewer and LGIM for Road Center line QC

Macon – Bibb County GIS

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Macon-Bibb County's Road Centerline Situation:

- * Centerlines maintained by multiple agencies and personnel with different departmental needs.
- * Lack of Standards and/or training for Personnel maintaining road centerlines
- * Addressing standards inconsistent from department to department (or nonexistent).

And, by the way.....

- * A merger of 2 Governments and Multiple Enterprise software packages being implemented with GIS data needed for multiple departments and purposes.

After reviewing the road centerline Data some of the QC issues are:

- * Road Names not spelled the same:
 - * La Grange - Lagrange or Long Acre – Longacre
- * Different Road Types:
 - * Liberty Trlc – Liberty Trce or Lokchapee Ldg - Lokchapee Lndg
- * Address Ranges
 - * All zeros, to low, to high or duplicated when road was split
- * Roads not in Database – Exist in the real word but.....
- * Duplicate Road Names – Same Names in different locations

After reviewing the road centerline Geography some of the QC issues are:

- * Roads not split at intersections
- * Roads split at intersections of over/under passes
- * Road end points are not the same
- * Duplicate roads
- * Self intersecting road segments
- * Address ranges out of sync

We are not alone!!

- * This is a typical situation with Local Government road data without enforced organization wide Addressing data standards

Time Considerations for fixing the roads:

- * Time is a major consideration, we need this fixed in 6 months! There are 12,000 plus road segments...
- * 6 Months = 24 weeks = 960 hours = 57,600 minutes
- * 57600 minutes divided by 12,087 road segments
- * = 4.8 minutes per segment (that's with no phone calls, interacting with citizens or personnel, no breaks).

Options?

- * In-house with traditional GIS tools – check and correct every road segment: Topology, Street Names, Address Ranges, Address Range continuity.
- * Hire an outside vendor.
- * Or try the Data Reviewer (whatever that is) on a test area and see what happens.

ArcGIS Data Reviewer?

- * An Extension to ArcGIS Desktop and Server that provides automation and facilitates data QC.
- * **Benefits of Data Reviewer:**
 - * Automation and Simplicity
 - * Consistent Organization-wide data review Process
 - * Automated Validations
 - * Tracking and Reporting
 - * Industry-specific QC templates
 - * Customization

What is a LGIM?

- * LGIM is short for Local Government Information Model
- * The LGIM is based on pre-defined GIS Databases, Web Services, Maps and Web-based Applications for Enterprise GIS.

Received 60-day trial version for Data Reviewer

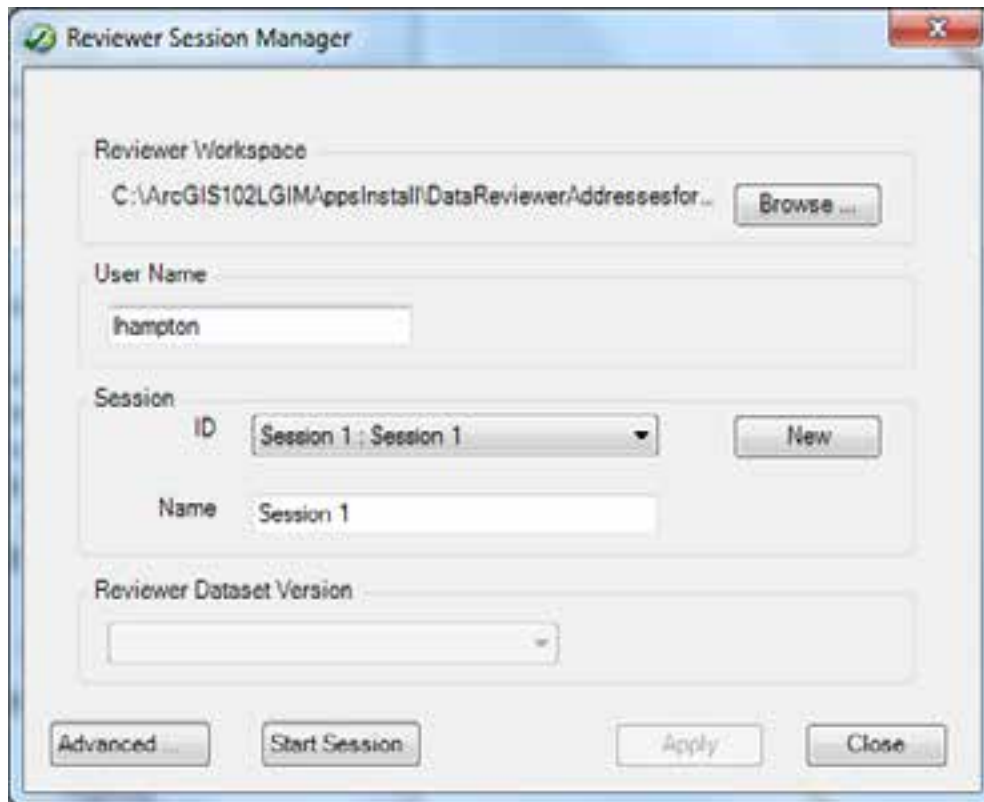
- * Activated Extension
- * Downloaded Templates
 - * Address Data Management for 10.2
 - * Data Reviewer Addresses for 10.2
- * Installed Add-ins
 - * Address Management and Attribute Assistant from Address Data Management for 10.2

Configuring Address Data Management Template MXD

- * Rename or delete Address Data Management Local Government Geodatabase.
- * Open Address Data Management Template MXD and repair the connections to your data. (ours is an enterprise SQL Database)
- * Verify Add-ins are installed and turn on Attribute Assistant and Address Editing toolbars.

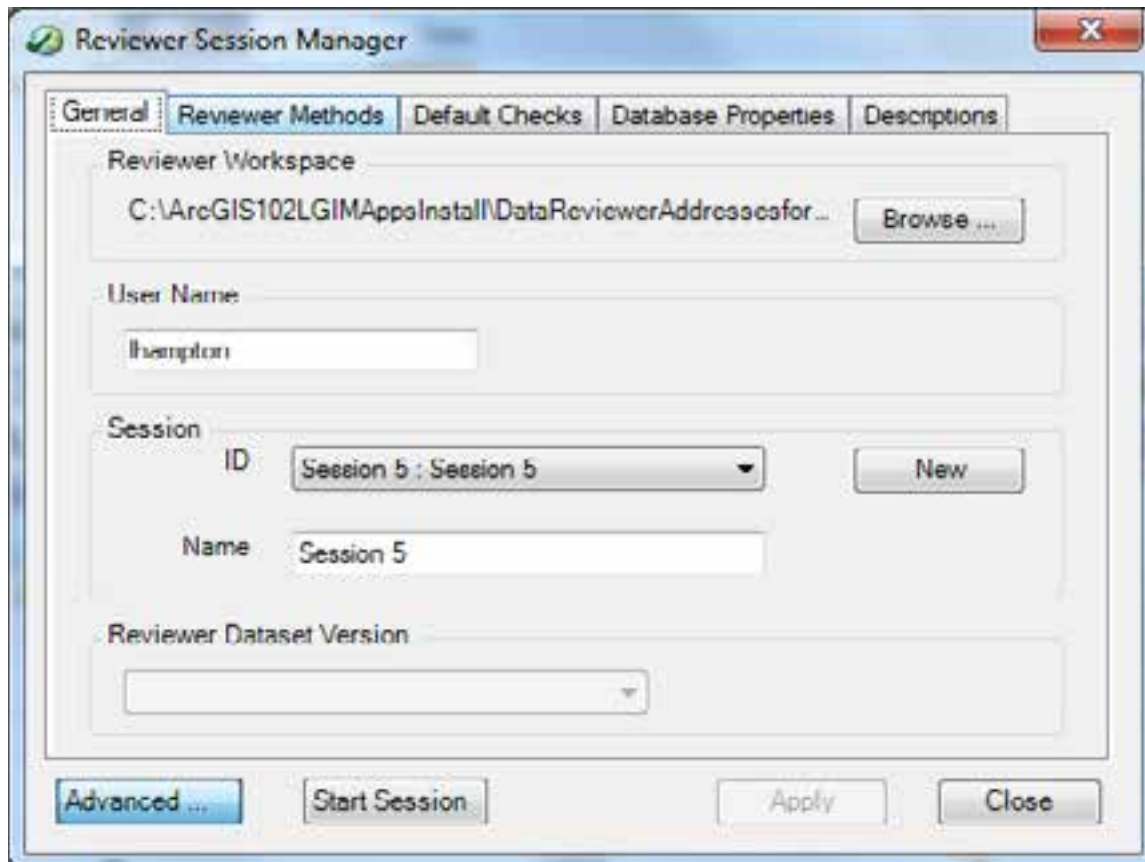
Run Data Reviewer

- * Start Data Reviewer Session Manager and make a new Session.

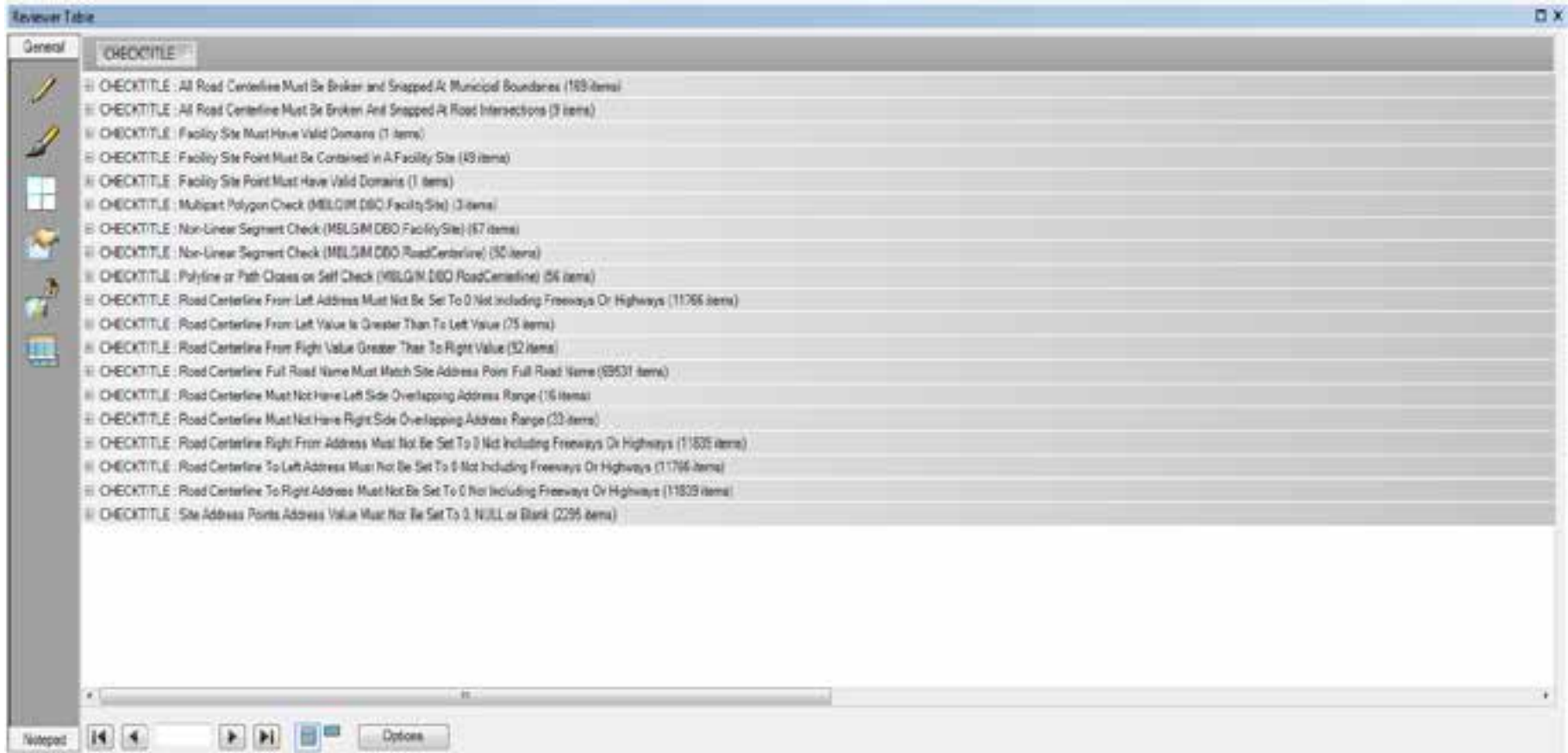


Check Configuration Properties

- * Reviewer Methods and Default Checks
- * Apply Changes and Close



Initial results of Data Reviewer Check



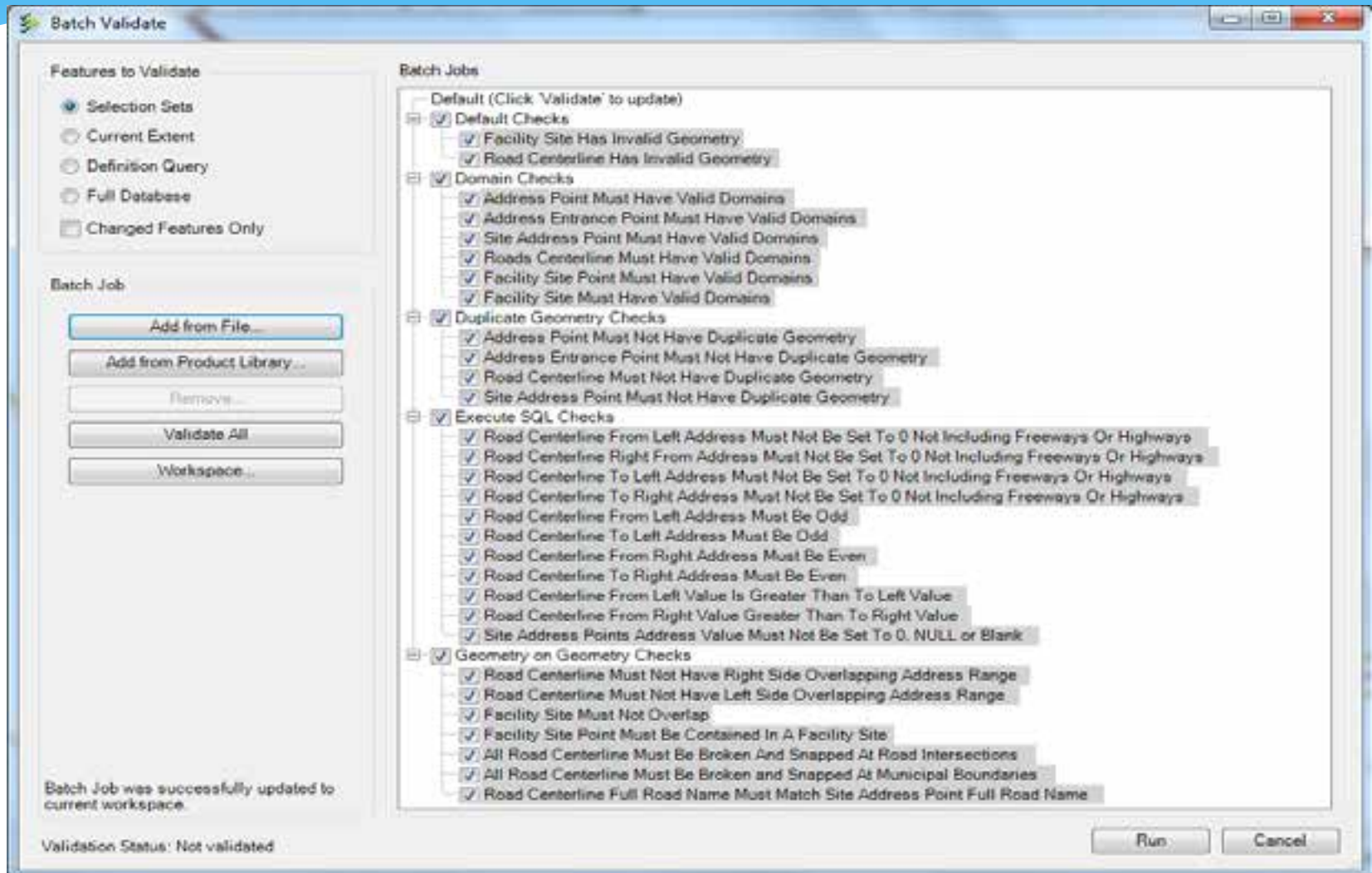
The screenshot shows a software window titled "Reviewer Table" with a "General" tab selected. The window contains a list of 18 data review checks, each with a checkmark icon and a description of the check along with the number of items affected. The checks are as follows:

Check Description	Item Count
CHECKTITLE : All Road Centerline Must Be Broken and Snapped At Municipal Boundaries	169 items
CHECKTITLE : All Road Centerline Must Be Broken And Snapped At Road Intersections	3 items
CHECKTITLE : Facility Site Must Have Valid Domains	1 items
CHECKTITLE : Facility Site Point Must Be Contained In A Facility Site	49 items
CHECKTITLE : Facility Site Point Must Have Valid Domains	1 items
CHECKTITLE : Multipart Polygon Check (MELGIM DBO FacilitySite)	3 items
CHECKTITLE : Non-Linear Segment Check (MELGIM DBO FacilitySite)	67 items
CHECKTITLE : Non-Linear Segment Check (MELGIM DBO RoadCenterline)	50 items
CHECKTITLE : Polyline or Path Closes on Self Check (MELGIM DBO RoadCenterline)	56 items
CHECKTITLE : Road Centerline From Left Address Must Not Be Set To 0 Not Including Freeways Or Highways	11766 items
CHECKTITLE : Road Centerline From Left Value Is Greater Than To Left Value	25 items
CHECKTITLE : Road Centerline From Right Value Greater Than To Right Value	32 items
CHECKTITLE : Road Centerline Full Road Name Must Match Site Address Point Full Road Name	69531 items
CHECKTITLE : Road Centerline Must Not Have Left Side Overlapping Address Range	16 items
CHECKTITLE : Road Centerline Must Not Have Right Side Overlapping Address Range	33 items
CHECKTITLE : Road Centerline Right From Address Must Not Be Set To 0 Not Including Freeways Or Highways	11835 items
CHECKTITLE : Road Centerline To Left Address Must Not Be Set To 0 Not Including Freeways Or Highways	11796 items
CHECKTITLE : Road Centerline To Right Address Must Not Be Set To 0 Not Including Freeways Or Highways	11829 items
CHECKTITLE : Site Address Points Address Value Must Not Be Set To 0, NULL or Blank	2295 items

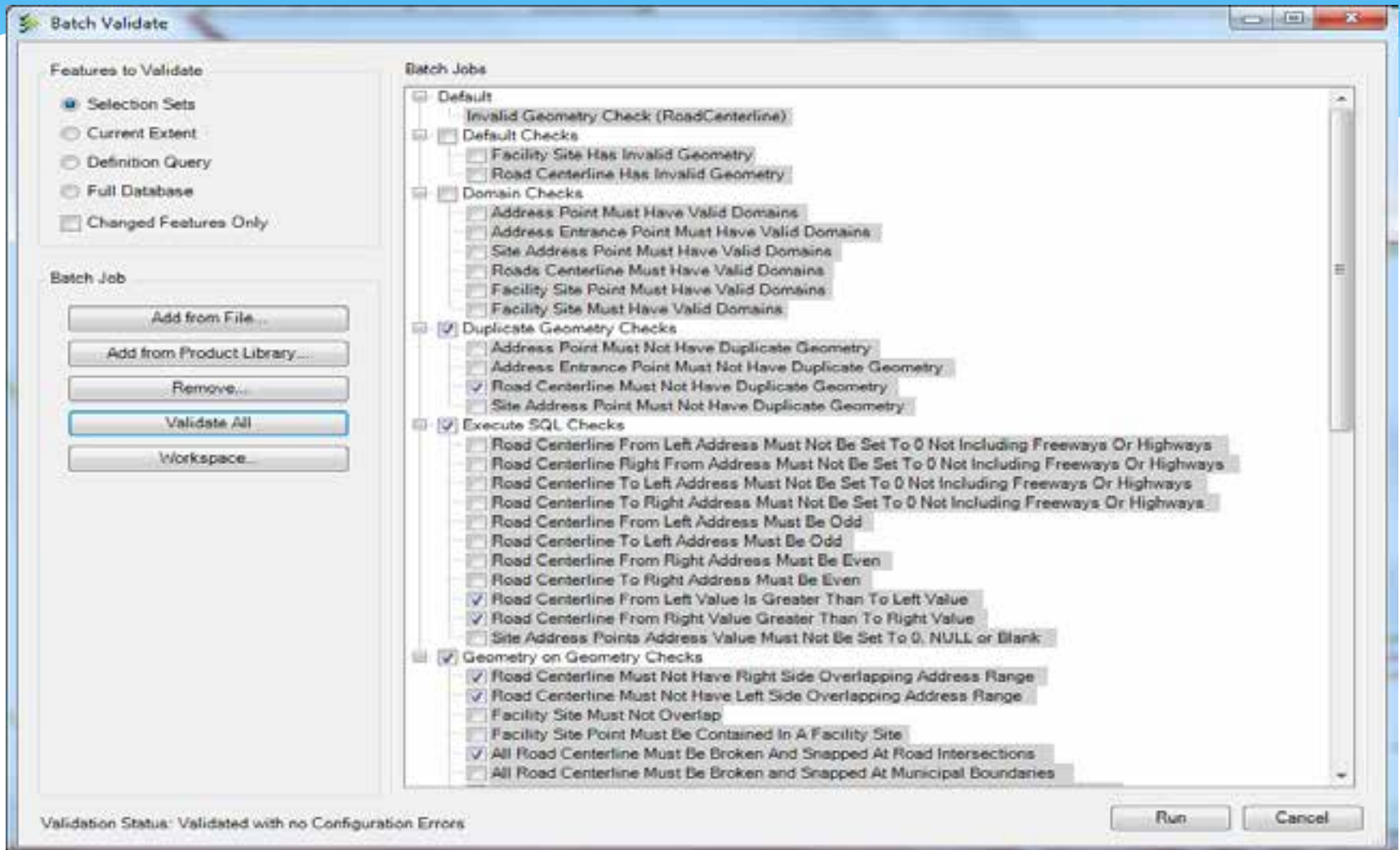
Some Data Checks may not be relevant at the time:

- * Looking back at previous slide note Address must not be set to Zero
- * Site Address Points
- * Municipal Boundaries

Reviewer Checks are Customizable and can be turned on and off



Selection of relevant checks.



Results from Check with only relevant checks run

The screenshot shows a software interface with a 'CHECKLIST' tab. The top section lists several checks with their titles and item counts. Below this is a detailed table of results for these checks.

Checklist items:

- 1 CHECKTITLE: All Road Centerline Must Be Broken And Snapped At Road Intersections (13 items)
- 1 CHECKTITLE: Facility Site Point Must Be Contained In A Facility Site (10 items)
- 1 CHECKTITLE: Road Centerline From Left Value Is Greater Than To Left Value (2 items)
- 1 CHECKTITLE: Road Centerline From Right Value Greater Than To Right Value (6 items)
- 1 CHECKTITLE: Road Centerline Must Not Have Left Side Overlapping Address Range (30 items)
- 1 CHECKTITLE: Road Centerline Must Not Have Right Side Overlapping Address Range (32 items)

RECORDID	OBJECTID	SUBTYPE	REVIEWCATEGORY	CATEGORY	REVIEWCODE	SESSIONID	DRGTABLE	DRGCHKCHK	NOTES	PARAMETERS	SEVERITY	REVIEWSTATUS	IDENTIFIER
122118	48585			Feature Record	39	3	MELGM DBO Pk	Geometry or		{Connector1}	5	Polyline touches	<Null>
122120	49176			Feature Record	39	3	MELGM DBO Pk	Geometry or		{Connector1}	5	Polyline touches	<Null>
122122	49273			Feature Record	39	3	MELGM DBO Pk	Geometry or		{Connector1}	5	Polyline touches	<Null>
122125	50655			Feature Record	39	3	MELGM DBO Pk	Geometry or		{Connector1}	5	Polyline touches	<Null>
122128	51482			Feature Record	39	3	MELGM DBO Pk	Geometry or		{Connector1}	5	Polyline touches	<Null>
122130	51746			Feature Record	39	3	MELGM DBO Pk	Geometry or		{Connector1}	5	Polyline touches	<Null>
122131	51818			Feature Record	39	3	MELGM DBO Pk	Geometry or		{Connector1}	5	Polyline touches	<Null>
122132	51901			Feature Record	39	3	MELGM DBO Pk	Geometry or		{Connector1}	5	Polyline touches	<Null>
122135	52409			Feature Record	39	3	MELGM DBO Pk	Geometry or		{Connector1}	5	Polyline touches	<Null>
122139	52795			Feature Record	39	3	MELGM DBO Pk	Geometry or		{Connector1}	5	Polyline touches	<Null>
122140	53027			Feature Record	39	3	MELGM DBO Pk	Geometry or		{Connector1}	5	Polyline touches	<Null>
122142	53605			Feature Record	39	3	MELGM DBO Pk	Geometry or		{Connector1}	5	Polyline touches	<Null>
122143	53626			Feature Record	39	3	MELGM DBO Pk	Geometry or		{Connector1}	5	Polyline touches	<Null>
122144	53967			Feature Record	39	3	MELGM DBO Pk	Geometry or		{Connector1}	5	Polyline touches	<Null>
122145	54355			Feature Record	39	3	MELGM DBO Pk	Geometry or		{Connector1}	5	Polyline touches	<Null>
122146	54552			Feature Record	39	3	MELGM DBO Pk	Geometry or		{Connector1}	5	Polyline touches	<Null>
122149	54647			Feature Record	39	3	MELGM DBO Pk	Geometry or		{Connector1}	5	Polyline touches	<Null>
122150	55708			Feature Record	39	3	MELGM DBO Pk	Geometry or		{Connector1}	5	Polyline touches	<Null>
122151	55709			Feature Record	39	3	MELGM DBO Pk	Geometry or		{Connector1}	5	Polyline touches	<Null>
122153	56022			Feature Record	39	3	MELGM DBO Pk	Geometry or		{Connector1}	5	Polyline touches	<Null>
122156	56113			Feature Record	39	3	MELGM DBO Pk	Geometry or		{Connector1}	5	Polyline touches	<Null>
122156	56108			Feature Record	39	3	MELGM DBO Pk	Geometry or		{Connector1}	5	Polyline touches	<Null>

Tracking Reviews, Corrections and Approvals

Reviewer Table

General

CHECKTITLE

CHECKTITLE: Road Centerline Must Not Have Right Side Overlapping Address Range (5 items)

SITES	PARAMETERS	SEVERITY	REVIEWSTATUS	IDENTIFIER	REVIEWTECHNICIAN	REVIEWDATE	CORRECTIONTECHNICIAN	CORRECTIONDATE	CORRECTIONSTATUS	VERIFICATIONTECHNICIAN
	{Connection1}	5	Polyline touches	<Null>	Harpton	Thursday, December 19, 2013	<Null>	<Null>	<Null>	<Null>
	{Connection1}	5	Polyline touches	<Null>	Harpton	Thursday, December 19, 2013	<Null>	<Null>	<Null>	<Null>
	{Connection1}	5	Polyline touches	<Null>	Harpton	Thursday, December 19, 2013	<Null>	<Null>	<Null>	<Null>
	{Connection1}	5	Polyline touches	<Null>	Harpton	Thursday, December 19, 2013	<Null>	<Null>	<Null>	<Null>
	{Connection1}	5	Polyline touches	<Null>	Harpton	Thursday, December 19, 2013	<Null>	<Null>	<Null>	<Null>

W CHECKTITLE: Road Centerline From Right Value Greater Than To Right Value (2 items)

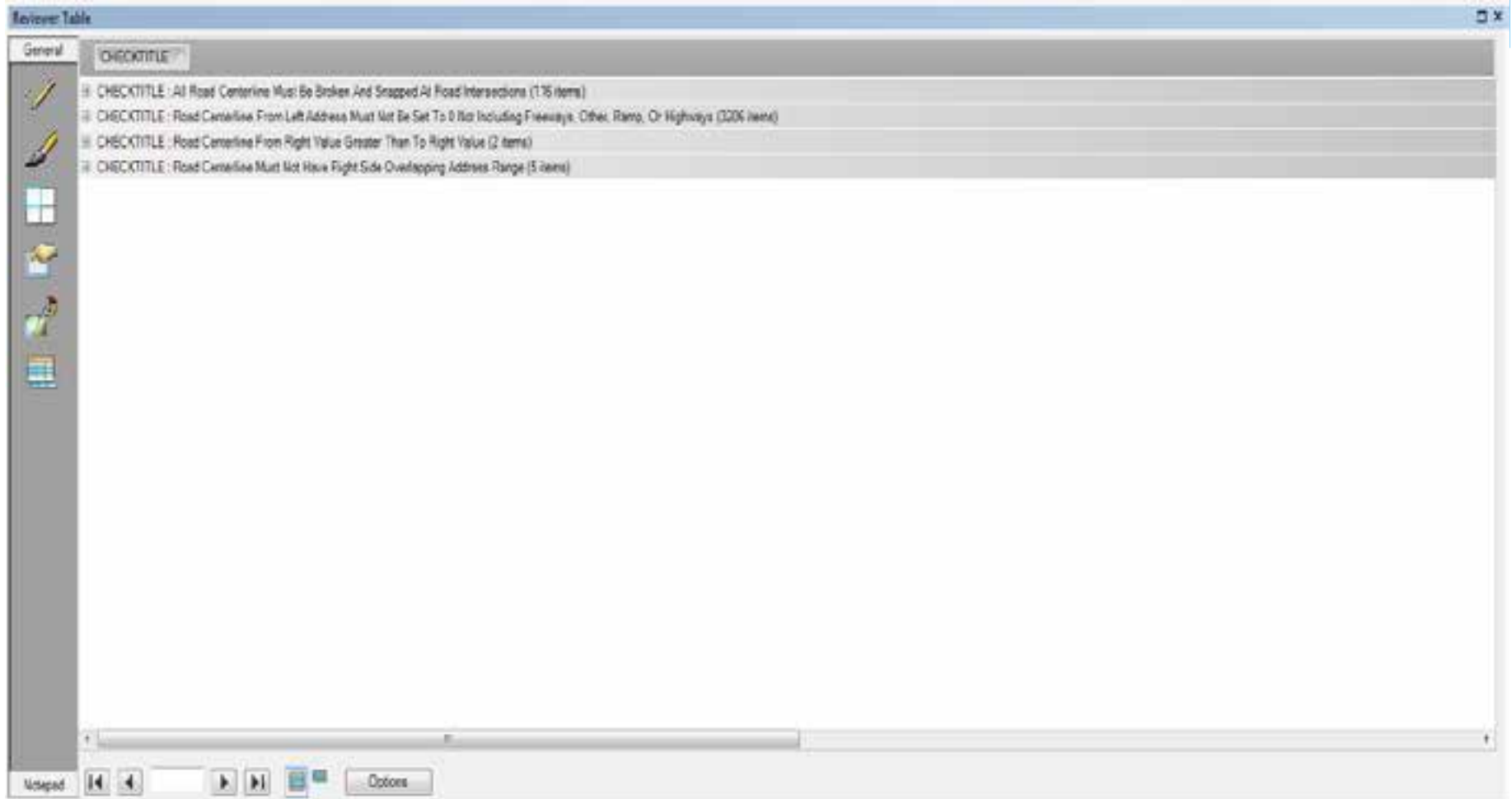
W CHECKTITLE: Road Centerline From Left Address Must Not Be Set To 0 Not Including Freeways, Other, Ramp, Or Highways (3206 items)

W CHECKTITLE: All Road Centerline Must Be Broken And Stopped At Road Intersections (116 items)

Notepad

Options

Final Check Results: Listed Errors are exceptions



Simple Statistics Report

* User : lhampton
* Session : Address Batch Validation
* Definition Query : SESSIONID = 1

* ORIGINTABLE	* CHECKTITLE	* FREQUENCY
* MBLGIM.DBO.FACILITYSITE	* FACILITY SITE MUST HAVE VALID DOMAINS	* 1
* MBLGIM.DBO.FACILITYSITEPOINT	* FACILITY SITE POINT MUST BE CONTAINED IN A FACILITY SITE	* 49
* MBLGIM.DBO.FACILITYSITEPOINT	* FACILITY SITE POINT MUST HAVE VALID DOMAINS	* 1
* MBLGIM.DBO.ROADCENTERLINE	* ALL ROAD CENTERLINE MUST BE BROKEN AND SNAPPED AT MUNICIPAL BOUNDARIES	* 169
* MBLGIM.DBO.ROADCENTERLINE	* ALL ROAD CENTERLINE MUST BE BROKEN AND SNAPPED AT ROAD INTERSECTIONS	* 9
* MBLGIM.DBO.ROADCENTERLINE	* ROAD CENTERLINE FROM LEFT ADDRESS MUST NOT BE SET TO 0 NOT INCLUDING FREEWAYS OR HIGHWAYS	* 11766
* MBLGIM.DBO.ROADCENTERLINE	* ROAD CENTERLINE FROM LEFT VALUE IS GREATER THAN TO LEFT VALUE	* 75
* MBLGIM.DBO.ROADCENTERLINE	* ROAD CENTERLINE FROM RIGHT VALUE GREATER THAN TO RIGHT VALUE	* 92
* MBLGIM.DBO.ROADCENTERLINE	* ROAD CENTERLINE MUST NOT HAVE LEFT SIDE OVERLAPPING ADDRESS RANGE	* 16
* MBLGIM.DBO.ROADCENTERLINE	* ROAD CENTERLINE MUST NOT HAVE RIGHT SIDE OVERLAPPING ADDRESS RANGE	* 33
* MBLGIM.DBO.ROADCENTERLINE	* ROAD CENTERLINE RIGHT FROM ADDRESS MUST NOT BE SET TO 0 NOT INCLUDING FREEWAYS OR HIGHWAYS	* 11839
* MBLGIM.DBO.ROADCENTERLINE	* ROAD CENTERLINE TO LEFT ADDRESS MUST NOT BE SET TO 0 NOT INCLUDING FREEWAYS OR HIGHWAYS	* 11766
* MBLGIM.DBO.ROADCENTERLINE	* ROAD CENTERLINE TO RIGHT ADDRESS MUST NOT BE SET TO 0 NOT INCLUDING FREEWAYS OR HIGHWAYS	* 11839
* MBLGIM.DBO.SITEADDRESSPOINT	* ROAD CENTERLINE FULL ROAD NAME MUST MATCH SITE ADDRESS POINT FULL ROAD NAME	* 69531
* MBLGIM.DBO.SITEADDRESSPOINT	* SITE ADDRESS POINTS ADDRESS VALUE MUST NOT BE SET TO 0, NULL OR BLANK	* 2295

Report By Total Record Count

Report generated on 1/31/2014 12:55 PM by lhampton
 Reviewer Workspace Location: C:\LGIM_Maps_Apps\DataReviewer\Basemaps\MapsandGeodatabase\DataReviewer.gdb
 Session(s): Session 5 : Parcel Check WITH ZONING

Origin Table	Check Type	Check Title	Results Severity	Total Records*	Total Results	Total Percent Accuracy #NUM!	Distinct Results	Distinct Percent Accuracy
					0			#####
MBLGIM.DBO.AdministrativeAreaBoundaryLine	Invalid Geometry Check			328	1	99.70%	1	99.70%
		Invalid Geometry Check (MBLGIM.DBO.AdministrativeAreaBoundaryLine)	5	328	1	99.70%		
MBLGIM.DBO.BuildingFootprint	Invalid Geometry Check			85213	10	99.99%	10	99.99%
		Invalid Geometry Check (MBLGIM.DBO.BuildingFootprint)	5	85213	10	99.99%		
MBLGIM.DBO.CountyBoundary	Execute SQL Check			1	1	0.00%	1	0.00%
		County Boundary COUNTYAREA Must Not Be Null	5	1	1	0.00%		
MBLGIM.DBO.FacilitySitePoint	Execute SQL Check			414	98	76.33%	98	76.33%
		Facility Site Point FACAREA Must Not Be NULL	5	414	98	76.33%		
MBLGIM.DBO.MunicipalBoundary	Execute SQL Check			6	6	0.00%	6	0.00%
		Municipal Boundary MUNIAREA Must Not Be Null	5	6	6	0.00%		
MBLGIM.DBO.OwnerParcel	Invalid Geometry Check			69532	3	100.00%	1	100.00%
		Invalid Geometry Check (MBLGIM.DBO.OwnerParcel)	5	69532	3	100.00%		
MBLGIM.DBO.PLSSBoundary	Invalid Geometry Check			2840	3	99.89%	3	99.89%
		Invalid Geometry Check (MBLGIM.DBO.PLSSBoundary)	5	2840	3	99.89%		
MBLGIM.DBO.Railroad	Execute SQL Check			400	3	99.25%	3	99.25%
		Railroad Name Must Not Be NULL Or Blank	5	400	3	99.25%		
MBLGIM.DBO.RoadCenterline	Execute SQL Check			12112	1	99.99%	1	99.99%
		Road Centerline Full Name Must Not Be NULL Or Blank	5	12112	1	99.99%		
MBLGIM.DBO.SiteAddressPoint	Execute SQL Check			69531	673	99.03%	673	99.03%
		Site Address Point Address Number Must Not Be NULL Or Blank	5	69531	673	99.03%		
MBLGIM.DBO.TaxParcel	Invalid Geometry Check			69532	3	100.00%	1	100.00%
		Invalid Geometry Check (MBLGIM.DBO.TaxParcel)	5	69532	3	100.00%		
MBLGIM.DBO.Waterbody	Execute SQL Check			746	325	56.43%	325	56.43%
		Waterbody WATERAREA Must Not Be NULL	5	746	325	56.43%		
Total				310655	1127	99.64%		#####

*This report is based on the total number of records in the Origin Table at the time this report is generated.

Results from Data Reviewer vs more traditional clean-up methods

- * Did not have to check all the roads for errors
- * Data Reviewer had pre-built check that might not have been possible without it. (really you all can write that scripting?)
- * The Data Reviewer has the ability to document if errors were checked, the status of the solutions and the final approval of the edits. (yes you could build a spread sheet to do that)

Results from Data Reviewer vs more traditional clean-up methods

- * The Data Reviewer has multiple pre formatted reports to make sense of the clean up process and the status of the project for managers.
- * Map Templates streamline editing and verification while enforcing editing standards and practices.
- * Add-ins (Some free without Data Reviewer) extremely helpful for Creating and Maintaining Road Centerlines

Software Demo and Questions

* Time Permitting.