



GIS-T 2003

State-Wide LRS/GIS Base Map

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Transportation**

and

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State-Wide LRS/GIS Base Map

Introduction

This presentation will address the following components of Ohio DOT's LRS base map:

- Road Inventory Development
- Perpetuation Process
- Ohio Revised Code (ORC) – State Mandates
- LRS Distribution Methods
- GIS Integration
- State System
- On-Going Evolution of GIS at ODOT
- LRS Data Availability





State-Wide LRS/GIS Base Map Road Inventory Development - Historical Background



Ohio State System Road Inventory

- Done in 1947-1950
- LRM – County/Route logmile
- 5 two man crews drove roads with DMI
- Thoroughly documented



Local System Inventory

- Done from 1951-1956 (majority in 1953)
- Similar criteria to State Inventory data collection
 - LRM is County/Route logmile
 - Completely documented





State-Wide LRS/GIS Base Map

Form RI-1001. **ROAD INVENTORY FIELD SHEET**
 (B) Recorder Richard [unclear] (5) Division 65
 (2) Date 09/11/97 (6) County GUERNSEY
 (3) Sheet 1 of 29 (7) System STATE
 (4) Odometer Reads 110.0 per mile (8) Road No. US 40

Overlap Routes (C)	Grades (D)	Sight Dist. (E)	Curvatures (F)	Station (G)	Surface (H)	(I) Cultural Developments (I)						
						More	200'	100'	100'	200'	More	
				1.00					0			
				.90					9			
				.80					8			
				.70					7			
				.60					6			
				.50					5			
				.40					4			
				.30					3			
				.20					2			
				.10					1			
				0.00								

US 22 (written vertically in column C)
 OVER-LAPS US-22 (written vertically in column H)

Co. King
 Muskingum Co. Ohio





State-Wide LRS/GIS Base Map

Form RI-1001. ROAD INVENTORY FIELD SHEET
 (B)
 (1) Recorder Reynolds (5) Division 5
 (2) Date 9/11/49 (6) County GUERNSEY
 (3) Sheet 10 of 29 (7) System STATE
 (4) Odometer Reads 1.00 per mile (8) Road No. US 40

Overlap Routes (C)	Grades (D)	Sight Dist. (E)	Curvatures (F)	Station (G)	Surface (H)	(I) Cultural Developments (I)											
						More	200'	100'	100'	200'	More						
				10.00	$\frac{C}{N}$ 6-20'-L												
				.00						R	70						
				.80													
				.70						F	7						
				.60						R	7						
				.50						R	7						
				.40						R	7						
				.30						R	7						
				.20						R	7						
				.10						R	7						
				9.00						R	7						

Handwritten notes on table:
 Local Road
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State-Wide LRS/GIS Base Map

Perpetuation Process - Maintenance & Update

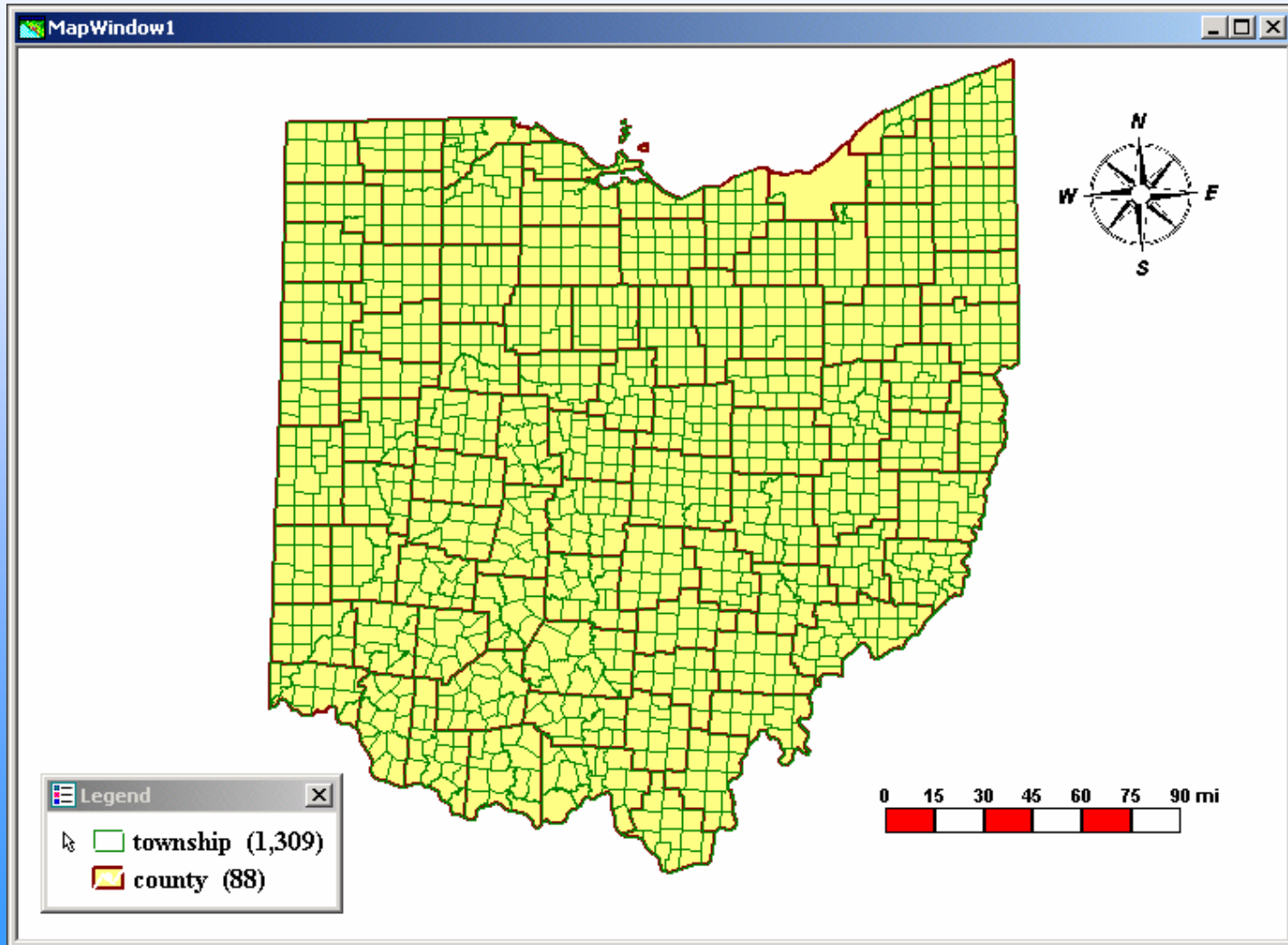
Structured Process

- County Engineer
 - Elected official responsible for County road system
 - PE & PS level professional (licensed by state)
 - 1 per county (88 counties)
- Township Trustee & Clerk
 - Elected official (3 trustees & 1 clerk)
 - Currently 1,309 Townships
- State DOT personnel conduct update meetings each year with the above elected officials





State-Wide LRS/GIS Base Map Perpetuation Process





State-Wide LRS/GIS Base Map

Legislative Requirements

● Ohio Revised Codes (ORC)

- County Engineer (ORC 5543.01 & 5543.03)
- Highway Classifications (ORC 5535.01)
 - State Roads
 - County
 - Township
- County Roads
 - County Commissioners (ORC 5541.02)
 - Road System (ORC 5541.01)
 - Naming of Roads and bridges (ORC 5543.04)
 - Renaming Roads (ORC 5541.04)
- Township Trustees (ORC 5541.03)





State-Wide LRS/GIS Base Map

County Engineer - Responsibilities

❁ Granted by ORC 5543.01 to include:

- Construction, reconstruction, maintenance of all highways and bridges under;
 - Board of county commissioner
 - Board of township trustees
 - Road districts
- Review of plans by independent engineers hired by townships for projects
- Monitor all plans for improvement within a county
- Consultation to boards of township trustees on maintenance





State-Wide LRS/GIS Base Map

County Engineer - Accountability

- Demanded by ORC 5543.03
 - Reports to State Director of Transportation
 - Provides information to State Director of Transportation relative to county:
 - Highways
 - Bridges
 - Files duplicate copies with the board of county commissioners





State-Wide LRS/GIS Base Map

Highway Classes

Three classes of roads established by ORC 5535.01:

➤ State

- Interstate
- US
- State Routes

➤ County

- Established by ORC 5541.01 to 5541.03
- Maintained by County Commissioners

➤ Township

- All public roads other than state or county
- Maintained by Board of Township Trustees
- Can seek assistance from County Commissioners





State-Wide LRS/GIS Base Map County System

- County system mandated by ORC 5541.02:
 - Designated by County Commissioners
 - Approved by Director of Transportation
 - County Engineer creates map of county system
 - Copy submitted to the Director of Transportation
 - Route
 - Mileage
 - Brief statement describing the system
 - Copy of map in each township clerk's office within the county
 - Board of County Commissioners can make changes to system





State-Wide LRS/GIS Base Map County System - Creation


Creation based on ORC 5541.01

- The Board of Township trustees creates a report to the County Commissioners and County Engineer detailing:
 - Relative value of each road in township in consecutive order as a used highway
 - Type of traffic over such road
 - Length of the road
 - Present condition





State-Wide LRS/GIS Base Map County System - Road and Bridge Naming and Numbering

-  ORC 5543.04 empowers County Engineer:
- To name and number all public roads in county
 - To number bridges and culverts on roads
 - Roads shall be:
 - Divided into sections
 - Sections not to exceed 3 miles
 - Numbered consecutively
 - Sections extend to all roads on north and east line of county





State-Wide LRS/GIS Base Map County System - Road and Bridge Naming and Numbering

- Make a map of the roads depicting:
 - Number
 - Location
 - Length
- In addition the map will depict:
 - Position of bridges and culverts on road
 - Public recreational trails
 - Schools
 - Lakes
 - Churches





State-Wide LRS/GIS Base Map County System - Road Name Changing

- Counties are empowered to rename roads (ORC 5541.04)
 - Board of County Commissioners can create a resolution
 - Multiple roads can be renamed in one resolution
- Resolution certified by:
 - County Engineer
 - County Recorder
 - County Auditor





State-Wide LRS/GIS Base Map Township Road Improvements

ORC 5541.03 requires:

- Board of Township trustees to apply in writing to board of County Commissioners for road:
 - Construction
 - Reconstruction
 - Improvements
- Board of County Commissioners the directs County Engineer devise plans
- County Engineer then files the following with the Board of County Commissioner:
 - Plans
 - Cost Estimates





State-Wide LRS/GIS Base Map


Perpetuation Tools

- The following slides contain examples of the perpetuation tools used by Ohio DOT in the road maintenance and update process.





State-Wide LRS/GIS Base Map Notification of Contract Award

 This tool is used to show an impending project will have an effect on the existing LRS.

BUREAU OF TECHNICAL SERVICES STATE OF OHIO DEPARTMENT OF TRANSPORTATION U.S. DEPARTMENT OF TRANSPORTATION - FEDERAL HIGHWAY ADMINISTRATION			
NOTIFICATION OF CONTRACT AWARD			
<u>ROAD INVENTORY</u>	DATE OF SALE		<u>06/07/01</u>
THE DIRECTOR OF TRANSPORTATION HAS AWARDED THE CONTRACT FOR CONSTRUCTION AS HEREIN DESCRIBED:			
TYPE: <u>FOUR LANE RESURFACING</u>			
#446 RESURFACING ONLY			
PROJECT LIMITS:			
LIC-70 STA. 19.54 TO 23.84 GUE-70 STA. 9.49 TO 10.45 AND 24.16 TO 27.43 GUE-77 STA. 11.67 TO 12.66 AND 17.43 TO 23.44 GUE-40 STA. 16.49 TO 18.65 GUE-209 STA. 7.71 TO 10.83 GUE-285 STA. 7.94 TO 8.02 MUS-70 STA. 21.16 TO 27.13			
<i>P205 16.49 to 16.63 16.21 to 16.63 to 2nd LINE</i>			
NO CHANGE TO SLD'S, HPMS SECTIONS ON LIC-70 AND GUE-209 FIELD SHEETS MADE FOR HPMS			
COMPLETED CONSTRUCTION (OFFICE USE ONLY)			
DISTRICT:	05 05	COUNTY(s):	LIC GUE,MUS
ROUTE(s):	1R70		
SECTION(s):	19.54		
CITY OF CAMBRIDGE			
STATE ROUTE CONST. FILE:	No	CONTRACT NO.	000316
STATE ROUTE BASIC FILE:	No	S.H.PROJECT NO.	316
STATE ROUTE SUPPL. FILE :	No	TYPE:	FOUR LANE RESURFACING
LOCAL ROAD CONST. FILE		FEDERAL PROJ. NO.	
BASE COUNTY MAP TRACING:			
COUNTY FED. AID OVERLAYS:		COMPLETION DATE:	
OTHER RECORDS:	4 CR 3/24/01	AWARD COST:	\$3,147,803.00
REMARKS (Office):	A & B Bidding		
REMARKS (Field):			
PL-307-REV. 5-93		Supervisors Initials:	



State-Wide LRS/GIS Base Map Notification of Contract Award



Another example of contract notification of impending changes to the LRS.

OHIO HIGHWAY PLANNING SURVEY
State of Ohio - Department of Highways
Federal Works Agency - Public Roads Administration

Road Inventory Department

NOTIFICATION OF CONTRACT AWARD

Date of sale April 27, 1948

The Highway Director has awarded contract for construction as herein described:

Guernsey County, USR 40, Sections (18.83-22.90), F-632 (16). Wills and Oxford Twp., Type T-35. Grading, constructing drainage structures, widening, resurfacing and paving with asphaltic concrete. Part. 24', Rdwy. variable. 4.313 miles. Date set for completion November 30, 1948.

Not Complete 3/17/48

<u>COMPLETED CONSTRUCTION</u>	Contract No. <u>9736</u>
Const. Code Sheets <u>1100</u>	Project No. <u>122</u>
Basic Code Sheets <u>300</u>	Proposal No. _____
Suppl. Code Sheets <u>300</u>	County <u>Guernsey</u>
Straight Line Diagrams <u>P.D.M.</u>	Division <u>5</u>
O. K. To File _____	
Remarks _____	


_____	Road Inventory Manager.

Form 1005 - Rev. 3-15-48





State-Wide LRS/GIS Base Map Highway System Mileage Certification

 This tool is used to certify and convey the official road mileage for each county.



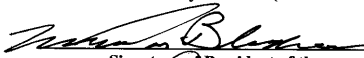

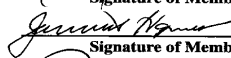

OHIO DEPARTMENT OF TRANSPORTATION
CENTRAL OFFICE, P.O. Box 899, COLUMBUS, OHIO 43216-0899

Annual County Highway System Mileage Certification (2001)

As certified by the Board of County Commissioners and reported by the Director of Transportation, in accordance with the provisions specified in the Ohio Revised Code, Section 4501.04 (Distribution of Revenues), the total certified mileage for January through December 2000 for VINTON County was 197.85 miles.

If the calculated total mileage for calendar year 2001 differs from the above previously certified mileage for calendar year 2000, supporting documentation detailing the changes must be submitted to ODOT for consideration and processing.

Based upon submitted documentation, the Board hereby certifies a total of 197.85 miles for calendar year 2001 (Effective 01/01/2001) 2002 BMS 12-05-01

	<u>12-10-01</u>
Signature of President of the Board of County Commissioners	Date
	<u>12-10-01</u>
Signature of Member	Date
	<u>12-10-01</u>
Signature of Member	Date
	<u>12-05-01</u>
Signature of County Engineer	Date

Comments:

Please return this signed and completed form to the following address:

Ohio Department of Transportation
Attn. Joseph Hausman, Roadway Information Manager
1980 West Broad St, 2nd Floor
Columbus, Ohio 43223

11/01/2001

AN EQUAL OPPORTUNITY EMPLOYER

RGRAPH
d Geospatial Solutions





State-Wide LRS/GIS Base Map Technical Services Road Inventory

Road Inventory form used to request specific maintenance on a road. In addition, it is also used to make notification that supporting documentation needs to be updated.

**BUREAU OF TECHNICAL SERVICES
ROAD INVENTORY**

ACTION TO TAKE:

HOLD	RECHECK	CARRY OVER	DATE: <u>2/5/96</u>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DISTRICT: <u>05</u>
			COUNTY: <u>GRV</u>
			ROUTE: <u>285</u>
			RT. NAME: <u>SR</u> US 40
			SYSTEM: <u>S</u>
			LOCATION: _____

REQUEST:

MIKE: THE OVERLAP ADJUSTMENT THAT WAS MADE IN 1991 IS NOT CORRECT. SINCE THERE ARE TWO EQUATIONS ON THIS ROUTE, PLEASE DO A NEW BASIC. REFERENCE AND WORK IN PROJ 725 ON US40. SHOW OLD RAMP WITH RED DOTTED LINES. SHOW ALL OLD ALIGNMENTS IN RED. WORK THE FOOTAGE FOR ALL NEW ALIGNMENTS AND RAMP NOSE CHANGES. VERIFY COUNTY AND CORP LINES. HAND IN DOCUMENTATION FOR ANY CHANGES. NEW BASICS ARE IN 100TH. I'VE CLEARED THIS WITH BOB BUT PLEASE SCHEDULE IT WITH HIM.

THANKS, LIZ

RESPONSE:

LIZ: I REVIEWED OLD SHP 725 (89) PLANS AND FOUND THAT THE O/L ADJUSTMENT WAS NOT PICKED UP FOR THE S.I.D. THE CURRENT S.I.D. FOR SR285 HAVE US 40 AT STA 8.04. THROUGH RESEARCH AND FIELD CHECKS THE STA SHOULD BE 8.02 (SEE SHP 725) IN PERP BOOK. THIS STA WAS CHANGED DUE TO A RAMP LOCATION. THE NEW O/L FOR SR285 IS FROM STA 8.02 TO 8.48B, WHICH IS 0.44 MILE. THE O/L SECTION FOR US 40 IS 18.65 TO 18.21 ALSO 0.44 MILE. SLD HAVE US 40 CORRECT. I HAVE ATTACHED NEW FIELD SHEETS FOR BOTH US40 AND SR285. PLANS REVIEWED AT DIST'S OFFICE & FIELD CHECKS RAN ON 2/5/96. CORRECTED PROJECT PLANS IN PERP BOOK FOR US40.

M.E.G.

OFFICE USE ONLY

State Route Constr:	<u>NEW 2-21-96</u>	Muni Map Updates:	_____
State Route Basic:	<u>NEW 2-21-96</u>	Annexation:	_____
State Route Supplemental:	<u>NEW 2-21-96</u>	Effective Date:	_____
Straight Line Diagrams:	<u>NEW 2-23-96</u>	Ordinance No.:	_____
Local Route Basic:	_____		_____
Local Road Constr:	_____		_____
Basic Map Updates:	_____	CADD Update:	_____





State-Wide LRS/GIS Base Map Annual Revisions Perpetuation Report

This report shows mileage adjustments to roads within a county. It also conveys the total mileage for the road within the county.

373

**ANNUAL REVISIONS
PERPETUATION REPORT**

County System _____
Township System

Township Name JACKSON County Name LUCAS

The following revisions to the Planning Survey basic inventory are required to correct the Planning Survey records effective January 1, 1973.

ROAD NUMBER		DESCRIPTION OF CHANGE OR TYPE OF WORK PERFORMED	PLUS (+)	MINUS (-)	ACCUM. MILEAGE TOTAL
OLD	NEW				
T-1141	/	GREENWOOD ST - E-2 to H-2			
T-1161	/	JACKSON ST - C to F			
T-1160	/	JACKSON ST - E-2 to F 000-011			
T-1135	/	T-204 - 000-120			(36.46)
T-1107	/	EXTENDED 0.00 to 0.03 B	0.03		36.49
T-1109	/	" 0.00 to 0.03 B	0.03		36.52
T-1158	/	COMPLETE INV. 0.00 to 0.08 B (1114)	0.08		36.60
T-1165	/	NEW INV. EXTENDED - CORRECTED (1377 ST.)	0.02		36.62
T-1165	T-3489	CORRECTED LOCATION - THIS IS AN ALLEY -	(0.02)		36.70
T-1144	/	1 1/2 TH ST - EXTENDED 0.14 - 0.26	0.14		36.84
T-1160	/	EXT. 0.13 - 0.20 JACKSON ST	0.07		36.91
T-1104	/	WINDMILL ST EXT. 0.30 - 0.32	0.02		36.93
T-1166	/	OLIVE ST. (TOL ST. H. 1120 on LEAD) 0.62	0.62		37.03
		ERROR IN MI. ON T1147 - NEW TOTAL	37.23		37.23

Date 3/14/73 Name Jack





State-Wide LRS/GIS Base Map

LRS Distribution

- ④ LRS data is distributed in the following formats:
 - Straight Line Diagrams (SLD's)
 - Reports
 - Maps
- ④ The following slides will show examples of each of these distribution tools.

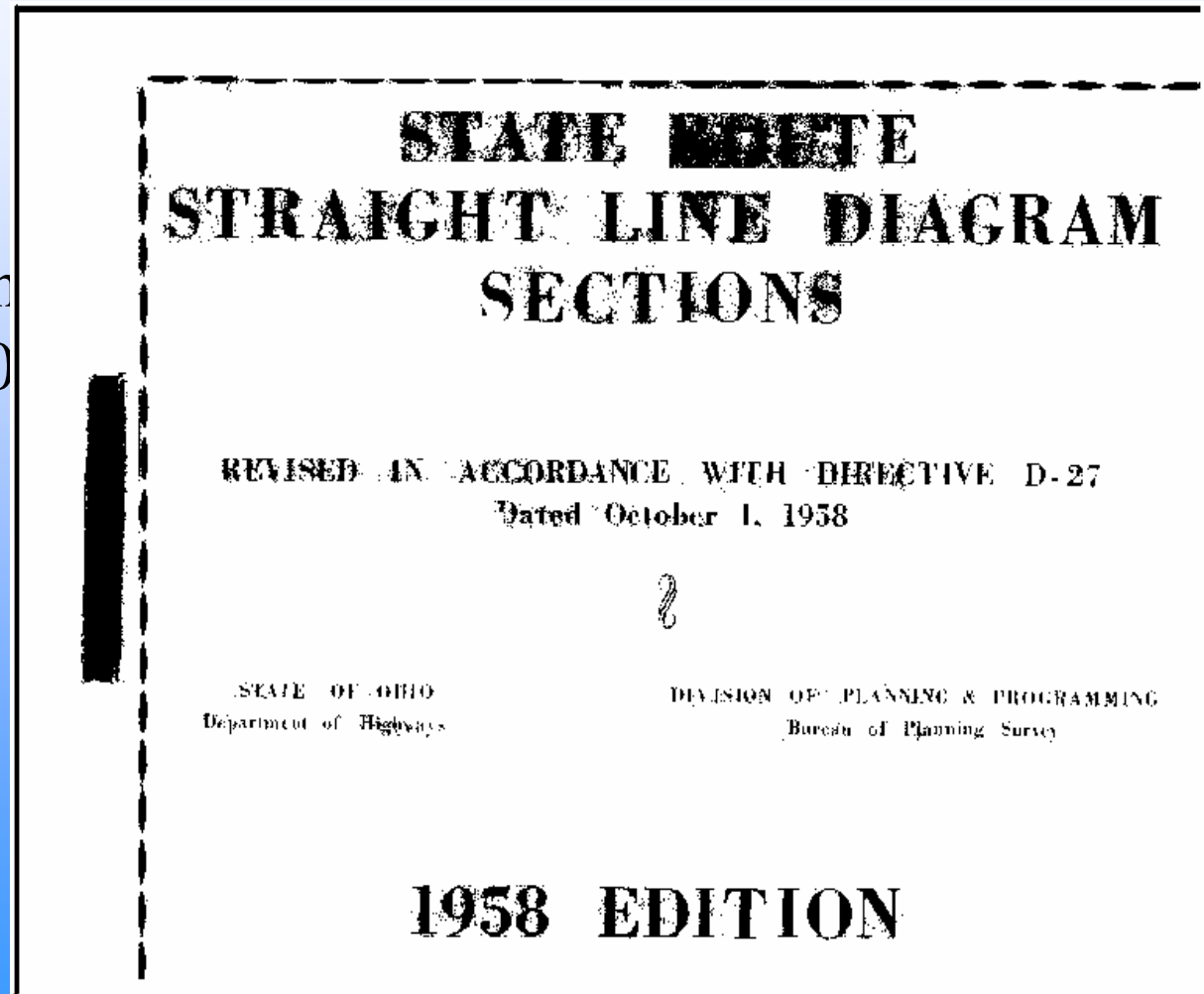




State-Wide LRS/GIS Base Map

LRS Distribution - SLD

SLD's have been used to convey pertinent information about the LRS for 50 years. SLD's are still a viable LRS information today.

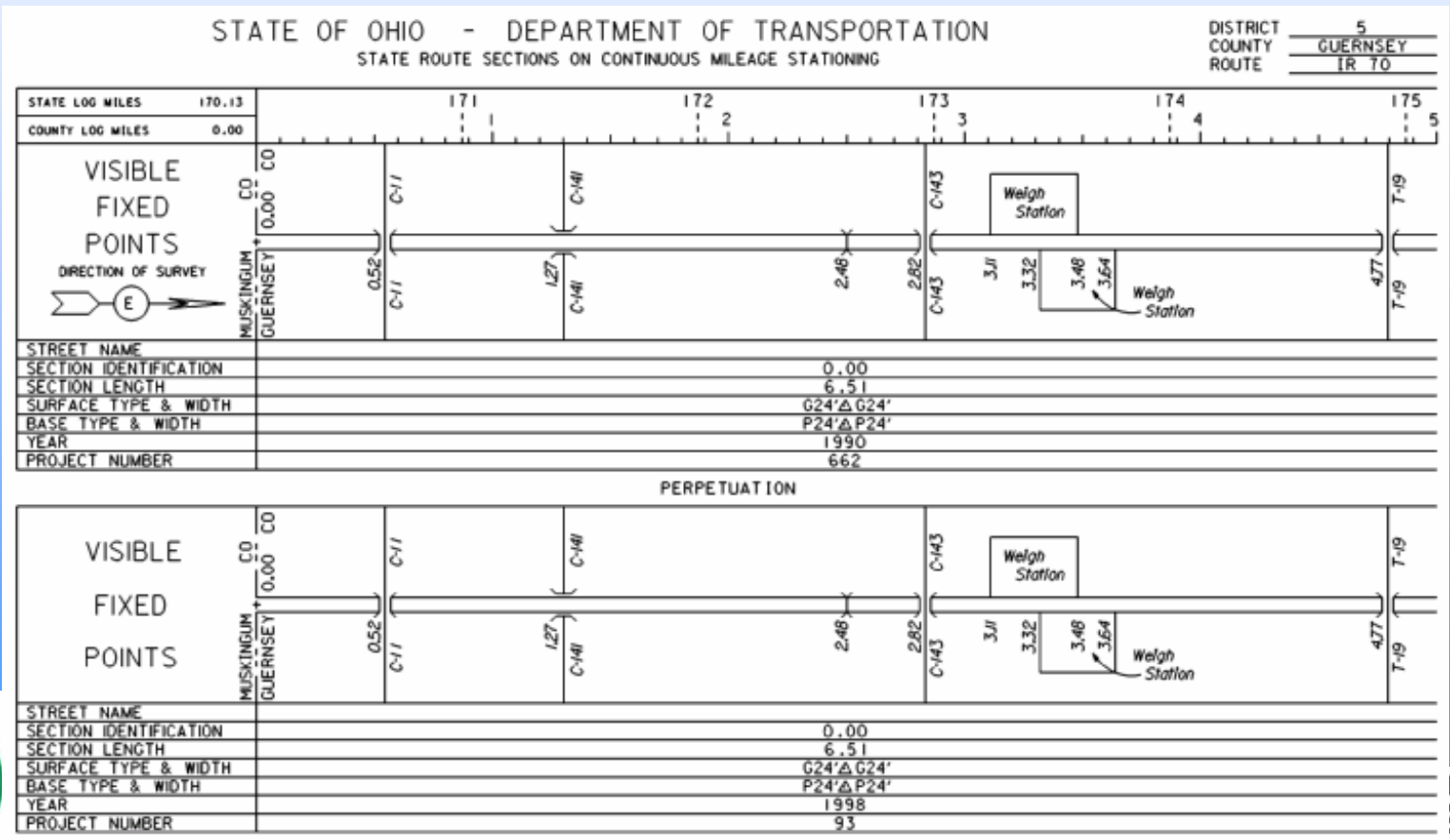




State-Wide LRS/GIS Base Map

LRS Distribution - SLD

Below is an example of an SLD





State-Wide LRS/GIS Base Map

LRS Distribution - Roadway reports

- ❁ Road reports are an important tool used to convey LRS information.
- ❁ LRS information is conveyed in reports for the following systems:
 - State
 - County
 - Local
- ❁ The following slides provide examples of reports.





State-Wide LRS/GIS Base Map

LRS Distribution - State System Report

Below is an example of a Basic State System report conveying LRS information.

07/01/02		STATE SYSTEM BASIC ROAD INVENTORY AS OF 0102															RI-06	PAGE	2																	
COU	MCL	ROUTE	LOG	LENG	SURFACE SUMMARY				SYSTEM		COMBINED-OR-DIVIDED				OLD N H M O				MUNICIPALITY	DH R L D CONTRL																
					TYP	BS	BPR	SW	RW	CL	CD	POP	---	LEFT	---	MED	---	RIGHT	---	YR	FAP	H	P	N	/		IW	C	N	I	FC	AC				
														S	M	T	U										VY	S	S	S						
GVE	2	040R	0882	0030	G	X	I	51	51	A	U	0115	G	T	20	G	L	31	96						40	O	CAMBRIDGE	N	04	05	16	711				
GVE	2	040R	0912	0013	G	X	I	51	51	A	U	0115	G	T	20	G	L	31	96						40	O	CAMBRIDGE	N	04	05	16	711				
GVE	2	040R	0925	0005	D		J	32	44	A	U	0115	D	J	16	12	D	J	16	96						40	O	CAMBRIDGE	*	N	02	05	16	711		
GVE	2	040R	0930	0006	D		J	32	48	A	U	0115	D	J	16	12	D	J	16	96						40	O	CAMBRIDGE	*	N	02	05	16	711		
GVE	1	040R	0936	0034	G	P	I	32	48	A	G		G	P	I	16	12	G	P	I	16	96			40			*	N	02	05	07	000			
GVE	1	040R	0970	0006	G	X	I	24	36	A	G		G	T	20	G	L	04	96						40			N	02	05	07	000				
GVE	1	040R	0976	0101	G	X	I	24	36	A	G		G	T	20	G	L	04	00						40			N	02	05	07	000				
GVE	1	040R	1077	0123	G	X	I	24	36	A	G		G	T	20	G	L	04	00						40			N	02	05	07	000				
GVE	1	040R	1200	0054	G	X	I	24	36	A	G		G	T	20	G	L	04	96						40			N	02	05	07	000				
GVE	1	040R	1254	0300	G	X	I	24	36	A	G		G	T	20	G	L	04	00						40			N	02	05	07	000				
GVE	1	040R	1554	0006	G	X	I	24	36	A	G		G	T	20	G	L	04	00						40			N	02	05	07	000				
GVE	2	040R	1560	0006	G	X	I	24	36	A	G	0002	G	T	20	G	L	04	96					40	U	OLD WASHINGTON	L	02	05	07	000					
GVE	2	040R	1566	0030	G	P	I	24	40	A	G	0002						96						40	U	OLD WASHINGTON	L	02	05	07	000					
GVE	2	040R	1596	0025	G	P	I	24	40	A	G	0002						00						40	U	OLD WASHINGTON	L	02	05	07	000					
GVE	2	040R	1621	0028	G	I	I	24	34	A	G	0002						96						40	U	OLD WASHINGTON	N	02	05	07	000					
GVE	1	040R	1649	0006	G	I	I	24	34	A	G							96						40			N	02	05	07	000					
GVE	1	040R	1655	0010	G	I	I	24	34	A	G							96						40			N	02	05	07	000					
GVE	1	040R	1665	0005	G	P	I	32	54	A	G		G	P	I	16	99	G	P	I	16	96			40			*	N	02	05	07	000			
GVE	1	040R	1670	0011	G	P	I	32	44	A	G		G	P	I	16	99	G	P	I	16	96			40			*	N	02	05	07	000			
GVE		040R		8.59	ROUTE MILEAGE																															





State-Wide LRS/GIS Base Map

LRS Distribution- County System Report

Below is an example of a County System report conveying LRS information.

06/04/02		OHIO DEPARTMENT OF TRANSPORTATION - BUREAU OF TRANSPORTATION TECHNICAL SERVICES																PAGE 0001									
ROAD INVENTORY SYSTEM																		RI-34A									
LISTING OF LOCAL ROADS INVENTORY SECTIONS																											
COUNTY	TWP	ADM	ROUTE	FED	IDENTIFICATION	PTS	SECT	SECT	SURE	SURE	ROAD	MI	RD	FC	C	AR	FED	TWP	ADJ	ADJ	ADJ	ADJ	HP	NUM	N	SEQ	YEAR
				AID			BEG.	LENG	TYPE	WDTH	WDTH	CL	CL	L	CD		AID	ATH	COU	TWP	ADM	ROAD	MS	IND	H	S	
																	NO.					ATH	NO.				
GUE	17	C	0014	***	(ROAD NAME)	***	0000	****	PATCH RD																	N	
GUE	17	C	0014		BEGIN JCT C411		0000	0089	E2	18	26	1	1	09	000												75
GUE	17	C	0014		JCT T142 RT		0089	0052	E2	20	26	1	1	09	000												75
GUE	17	C	0014		JCT T140 LT		0141	0057	E2	18	24	1	1	09	000												75
GUE	17	C	0014				0198	0040	I	16	26	1	1	09	000												75
GUE	17	C	0014				0238	0066	I	16	24	1	1	09	000												92
GUE	17	C	0014		END JCT US22 40		0304																				75
GUE							C	3.04	*																		
GUE	14	C	0015	***	(ROAD NAME)	***	0000	****	CLAYSVILLE RD																	N	
GUE	14	C	0015		BEGIN JCT C215		0000	0148	E2	12	18	1	1	09	000												73
GUE	14	C	0015		JCT C26 LT		0148	0012	E2	20	26	1	1	08	000												76
GUE	14	C	0015		JCT C26 RT		0160	0096	E2	20	26	1	1	09	000												76
GUE	17	C	0015		SPENCER TWP LINE		0256	0046	I	20	24	1	1	09	000												92
GUE	17	C	0015		JCT SR313		0302	0376	I	20	24	1	1	08	000												92
GUE	17	C	0015		JCT C44 LT		0678	0198	I	20	26	1	1	08	000												85
GUE	17	C	0015		WESTLAND TWP LN LT		0876	0019	I	20	26	1	1	08	000												85
GUE	02	C	0015		WESTLAND TWP LN RT		0895	0131	I	20	26	1	1	08	000												85
GUE	02	C	0015	***	(ROAD NAME)	***	1026	****	GEORGETOWN RD																	N	
GUE	02	C	0015	S	JCT C340 LT		1026	0137	I	20	24	1	1	07	000	0867											93
GUE	02	C	0015	U	URBAN AREA LINE		1163	0022	I	20	24	1	1	17	711	4521											98
GUE	02	C	0015	***	(ROAD NAME)	***	1185	****	CLAYSVILLE RD																	N	
GUE	02	C	0015	U	CAMBRIDGE SWCL		1185	0021	I	20	26	8	1	17	711	4521											92
GUE	02	C	0015	U			1206	0003	I	20	26	8	1	17	711	4521											77
GUE	02	C	0015	U	CAMBRIDGE SWCL		1209	0035	I	20	26	8	1	17	711	4521											76
GUE	02	C	0015	U	END JCT SR209		1244									4521											76
GUE							C	11.85	*																		





State-Wide LRS/GIS Base Map

LRS Distribution - Township System Report

Below is an example of a Local System report conveying LRS information.

06/05/02		OHIO DEPARTMENT OF TRANSPORTATION - OFFICE OF TRANSPORTATION TECHNICAL SERVICES															PAGE 0001											
ROAD INVENTORY SYSTEM																	RI-34B											
LISTING OF TOWNSHIP INVENTORY SECTIONS																												
ADAMS																	TOWNSHIP JAN. 1, 2002											
COUNTY	TWP	ADM	ROUTE	FED	IDENTIFICATION	PTS	SECT	SECT	SURE	SURE	ROAD	MI	RD	FC	C	AR	FED	TWP	ADJ	ADJ	ADJ	ADJ	HP	NUM	N	SEQ	YEAR	
				RID			BEG.	LENG	TYPE	WDTH	WDTH	CL	CL	L	CD		RID	ATH	COU	TWP	ADM	ROAD	MS	IND	H	S		
GUE	01	T	0011		WESTLAND TWP LINE		0068	0056	H2	16	22	1	1	09	000													95
GUE	01	T	0011				0124	0382	H2	12	16	1	1	09	000													96
GUE	01	T	0011				0506	0028	I	16	22	1	1	09	000													93
GUE	01	T	0011		END JCT SR209		0534																					75
								4.66	*	ROUTE TOTAL																		
GUE	01	T	0019		WESTLAND TWP LINE		1142	0019	I	16	20	1	1	09	000													94
GUE	01	T	0019				1161	0040	I	16	26	1	1	09	000													94
GUE	01	T	0019		OVERLAP US22		1201	0043						9														73
GUE	01	T	0019	***	(ROAD NAME) ***		1244	****	JACKSON RUN RD																			N
GUE	01	T	0019		JCT US 22 40 RT		1244	0008	I	16	22	1	1	09	000													93
GUE	01	T	0019				1252	0162	H2	16	22	1	1	09	000													95
GUE	01	T	0019		END JCT C418		1414																					86
								2.29	*	ROUTE TOTAL																		
GUE	01	T	0062		BEGIN MUS CO LINE RT		0031	0007	F	18	26	1	1	09	000		2	MUS	08	T	0062		=					92
								0.07	*	ROUTE TOTAL																		
GUE	01	T	0141	***	(ROAD NAME) ***		0000	****	REDBUD LN																			N
GUE	01	T	0141		BEGIN JCT C416		0000	0079	F	10	14	1	1	09	000													75
GUE	01	T	0141				0079	0147	F	12	16	1	1	09	000													75
GUE	01	T	0141		END JCT T11		0226																					75
								2.26	*	ROUTE TOTAL																		
GUE	01	T	0161	***	(ROAD NAME) ***		0000	****	CAMPEIRE RD																			N
GUE	01	T	0161		BEGIN JCT C416		0000	0285	F	12	16	1	1	09	000													95
GUE	01	T	0161		END JCT SR209		0285																					73
								2.85	*	ROUTE TOTAL																		
GUE	01	T	0166	***	(ROAD NAME) ***		0000	****	HAUGHT RD																			N
GUE	01	T	0166		BEGIN JCT C164		0000	0103	F	14	20	1	1	09	000													73
GUE	01	T	0166	***	(ROAD NAME) ***		0103	****	LAKE RD																			N
GUE	01	T	0166		LEAVE JCT T615		0103																					73
GUE	01	T	0166		REENTER JCT SR209		0103	0155	F	14	20	1	1	09	000													1
GUE	01	T	0166		JCT T625 RT		0258	0041	F	14	20	1	1	09	000													99
GUE	01	T	0166				0299	0046	F	10	14	1	1	09	000													73
								3.45	*	ROUTE TOTAL																		





State-Wide LRS/GIS Base Map

LRS Distribution - Maps

- Maps have always been a tool used to distribute LRS information.
- Among the maps used to disseminate LRS information are:
 - County
 - Decision support





State-Wide LRS/GIS Base Map

Maps - County (Geo Tiff)

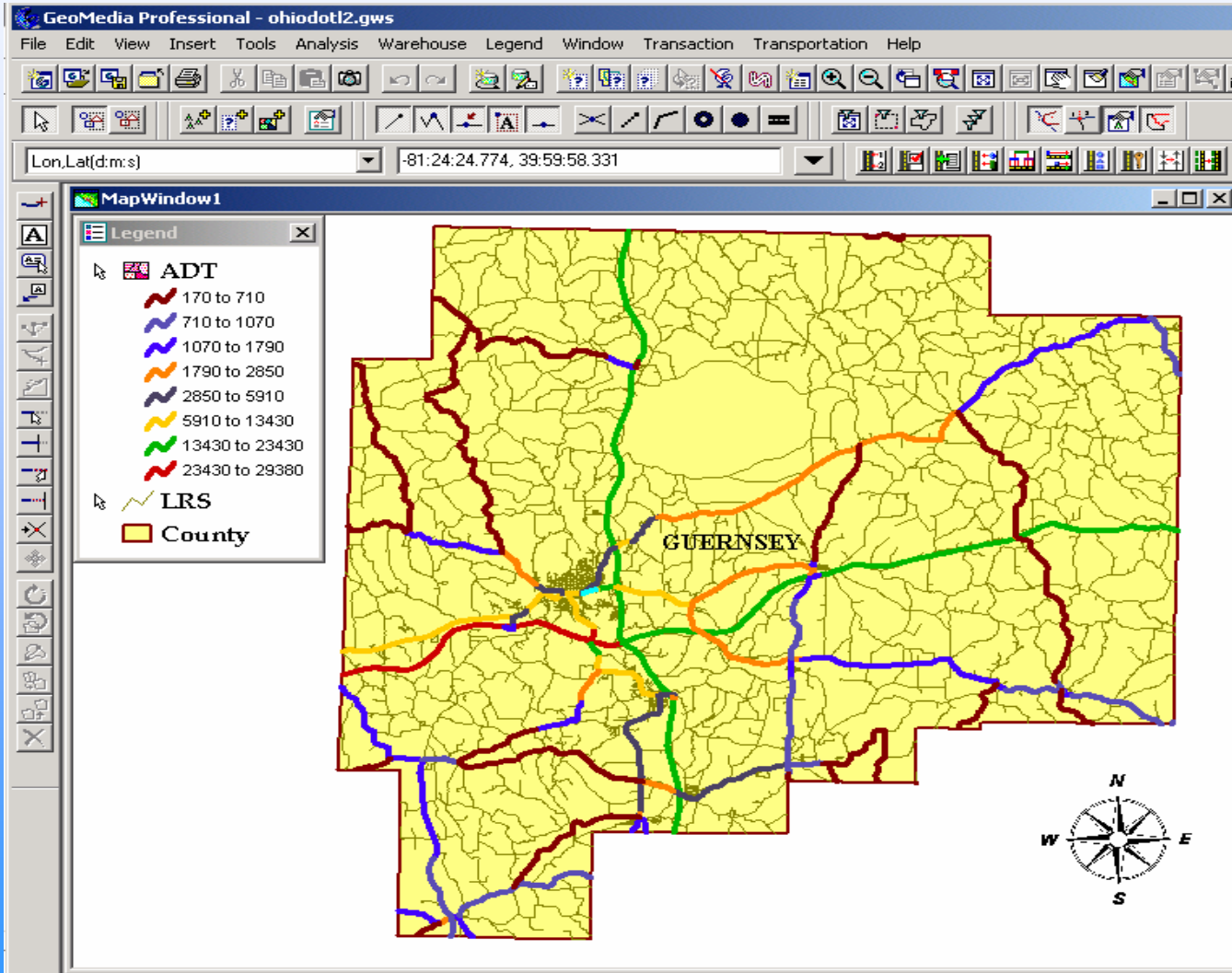
A screenshot of the GeoMedia Professional software interface. The title bar reads "GeoMedia Professional - ohiodotl2.gws". The menu bar includes "File", "Edit", "View", "Insert", "Tools", "Analysis", "Warehouse", "Legend", "Window", "Transaction", "Transportation", and "Help". Below the menu is a toolbar with various icons for map operations. A status bar at the top shows coordinates: "Lon,Lat(d:m:s) -81:37:48.256, 40:03:00.601". The main window, titled "MapWindow1", displays a map of Guernsey County, Ohio. A legend in the top-left corner identifies "Guernsey County" with a checkered pattern. The map includes a compass rose, a scale bar (0 to 10 miles), and a detailed legend on the right side. The map title is "GENERAL HIGHWAY MAP GUERNSEY COUNTY OHIO". The bottom-left corner of the map area shows a scale bar with markings at 0, 2, 4, 6, 8, and 10 miles.





State-Wide LRS/GIS Base Map

Map - Decision Support





State-Wide LRS/GIS Base Map

GIS Integration - Historical Foundation

- System Implementation in 1980
- System consisted of:
 - PDP 11/70
 - Intergraph's Interactive Graphics Design System (IGDS)
 - Intergraph's Data Management and Retrieval System (DMRS)
 - State Accident Identification and Reporting System (STAIRS)
- Purpose of the system was to display accidents against a linear base map via Dynamic Segmentation





State-Wide LRS/GIS Base Map

GIS Integration - Strategy

- ④ Federal 402 funds used to build system (Safety Money)
- ④ GIS Section constituted in Technical Services
- ④ Road Inventory also in Technical Services and this created a **CRUCIAL** synergy between the two depts.
- ④ Implementation timeline consisted of:
 - State System in 1 year (Had to show a tangible product)
 - All classes were built into the GIS in approximately 5 years
- ④ GIS/LRS system components consisted of:
 - County/Route log-mile LRM
 - USGS 7.5 Quads for digitizing of centerline
 - Original field documents to build database





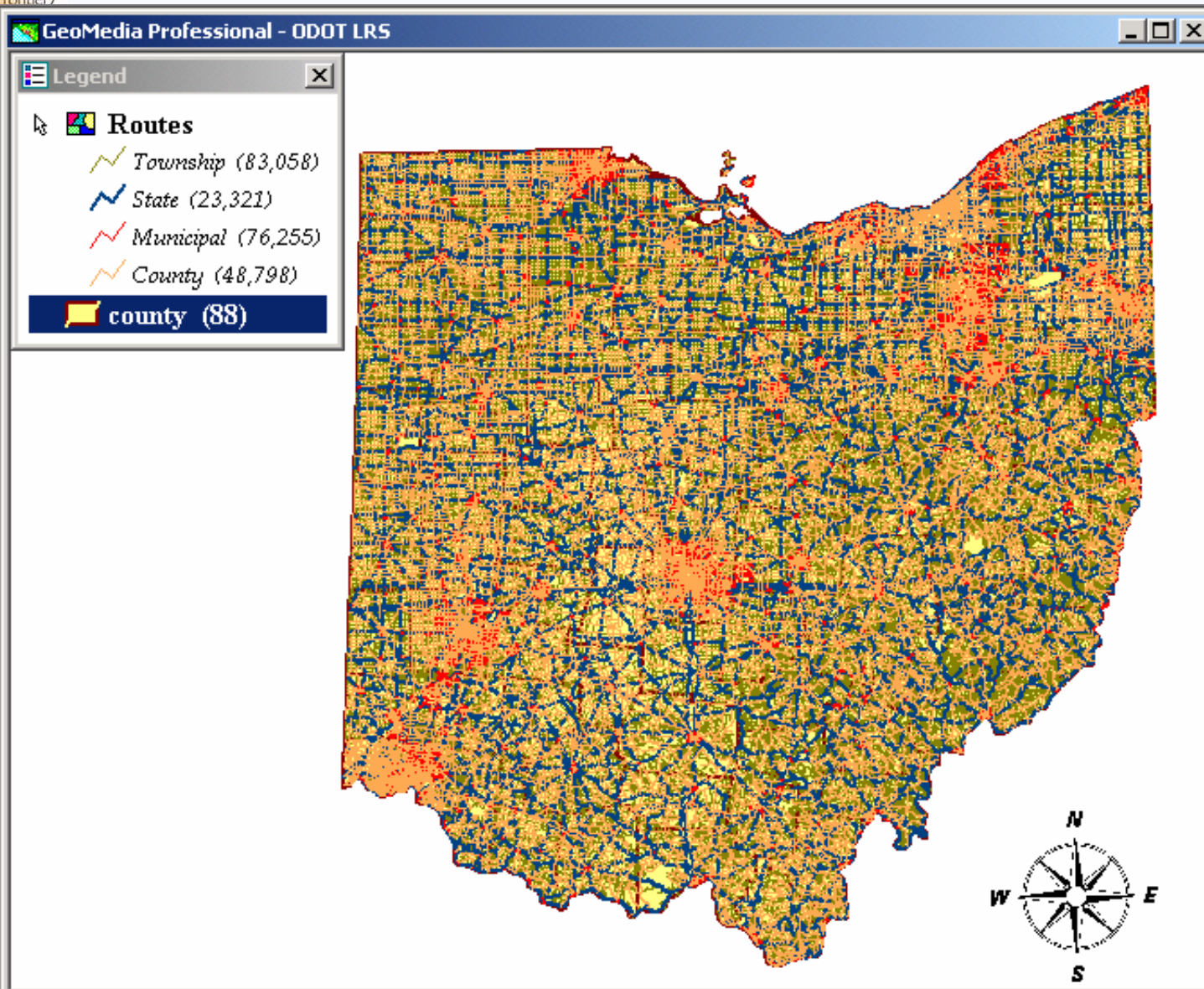
State-Wide LRS/GIS Base Map

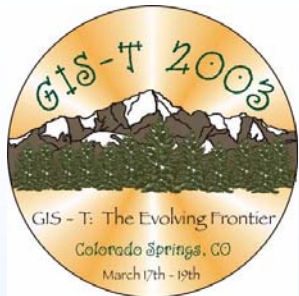
Ohio DOT GIS Initiative Result

- The GIS initiative undertaken by Ohio DOT produced a GIS/LRS system consisting of:
 - State Roadway System – 20,000 miles
 - County Roadway System – 30,000 miles
 - Township Roadway System – 43,000 miles
 - Municipal Roadway System – 25,000 miles
- Total System – approximately **118,000** miles



State-Wide LRS/GIS Base Map





State-Wide LRS/GIS Base Map

GIS Evolution - Development of Enterprise System

- Enterprise access limited until 5 years ago
- GIS deployed to district offices
 - 102 copies of GeoMedia distributed to end users
- Migration of distributed attribute/event data to Sybase enterprise database
- Creation of Base Transportation Referencing System (BTRS) Committee for enterprise policy





State-Wide LRS/GIS Base Map

LRS Availability - Old & New

SLD's

Maps:

- Decision Support Maps – Ad Hoc
- Official Map Products
 - Statewide
 - County Maps
 - District Maps
 - Wall Maps

Databases and/or Text files





State-Wide LRS/GIS Base Map

LRS Availability - Old & New

- GIS data on CD
 - GeoMedia Access Warehouse
 - Arcview Shape File
- Enterprise dissemination via web based applications built with GeoMedia Web Map





State-Wide LRS/GIS Base Map

Conclusion - Why has ODOT been successful?

- Strong historical underpinnings for LRS management
- Proven process for maintenance and updating LRS
- Legislative mandates for LRS creation and maintenance
- Early Adopter's of GIS technology for LRS analysis
- Pioneer's in the area of linear analysis – STAIRS and dynamic segmentation
- Enterprise-wide involvement (BTRS)

