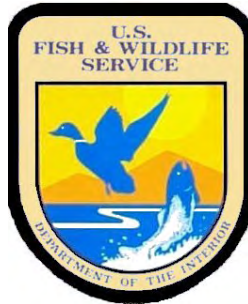


The Road Inventory of Benton Lake National Wildlife Refuge Black Eagle, MT



Prepared By:
Federal Highway Administration
Central Federal Lands Highway Division
August 2008



TABLE OF CONTENTS

<u>SECTION</u>		<u>PAGE</u>
I.	<u>INTRODUCTION</u>	1 - 1
II.	<u>SUMMARY INFORMATION</u> Summaries by Condition, Surface Type and Functional Class	2 - 1
III.	<u>REFUGE ROUTE LOCATION MAPS</u>	3 - 1
IV.	<u>ROUTE IDENTIFICATION LIST</u>	4 - 1
V.	<u>ROUTE CONDITION RATING SHEETS</u>	5 - 1
VI.	<u>PARKING LOT CONDITION RATING SHEETS</u>	6 - 1
VII.	<u>BRIDGE INVENTORY INFORMATION</u>	7 - 1
VIII.	<u>PHOTOGRAPHIC SHEETS</u>	8 - 1
IX.	<u>ACCIDENT SUMMARY</u>	9 - 1
	<u>APPENDIX</u>	
	Functional Classification Table	i
	Description of Rating System	ii

INTRODUCTION

The Transportation Equity Act for the 21st Century (Public Law 105-178) created the Refuge Roads Program. Refuge roads are those public roads that provide access to or within a unit of the National Wildlife Refuge System and for which title and maintenance responsibility is vested in the United States Government. Funds from the Highway Trust Fund are available for refuge roads and can be used by the station to pay the cost of:

- (a) Maintenance and improvements of refuge roads.
- (b) Maintenance and improvements of:
 - (1) Adjacent vehicle parking areas
 - (2) Provision for pedestrians and bicycles and
 - (3) Construction and reconstruction of roadside rest areas that are located in or adjacent to wildlife refuges
- (c) Administrative costs associated with such maintenance and improvements.

The funds available for refuge roads are to be disbursed based on the relative needs of the various refuges in the National Wildlife Refuge System, and taking into consideration:

- (a) The comprehensive conservation plan for each refuge;
- (b) The need for access as identified through land use planning; and
- (c) The impact of land use planning on existing transportation facilities.

To determine the relative needs of the U.S. Fish and Wildlife Service, the Federal Highway Administration (FHWA) was asked to inventory all public access roads and parking lots and provide a condition assessment of each. In 2008 the inventory was expanded to include administrative (service use only) roads and parking lots. An FHWA representative meets with refuge personnel to identify route segments and assign route numbers and functional classifications (See Appendix) for each route. All roads and parking lots are mapped using Trimble GPS units and visually assessed for condition using the RSL method of evaluation developed at Utah State University (See Appendix). Culverts, Gates, Guardrails and Low Water Crossings are also mapped and inspected for any obvious defects.

An estimate is provided, in year 2008 dollars, based on the condition determined by the rating system. Estimates are based upon data and location factors from the 2008 RS Means Heavy Construction Cost Data 22nd Annual Edition. Cost estimates should be evaluated on a case-by-case basis when being used for programming purposes.

Native Surfaced roads and parking lots already inventoried will not be re-inventoried and will not appear individually in report chapters 5, 6 and 8. Mileages and areas of native surfaced roads and parking lots will still appear in all summaries in the report and will remain in the road inventory database. In addition to this report, the FHWA will furnish the condition ratings of each route and segment to the Fish and Wildlife Service in a Microsoft Access database so the data can be included in their Real Property Inventory.

Benton Lake NWR

Summaries

Route Miles and Percentages by Functional Class and Condition

F. C.	Condition Rating (Based on RSL)*										TOTAL MILES
	Excellent		Good		Fair		Poor		Failed		
	MILES	%	MILES	%	MILES	%	MILES	%	MILES	%	
I	4.25	46.7%	4.86	53.3%							9.11
II			7.19	100%							7.19
III											
IV	0.33	32.0%	0.69	68.0%							1.02
V			9.83	80.6%	2.36	19.4%					12.19
Totals	4.57	15.5%	22.57	77%	2.36	8.0%					29.51

*For a description of condition ratings for the various surface types see the Appendix.

Route Miles and Percentages by Surface Type and Condition

S. T.	Paved Condition Rating [Condition(RSL)]										TOTAL MILES
	Excellent (19-20)		Good (13-18)		Fair (7-12)		Poor (1-6)		Failed (0)		
	MILES	%	MILES	%	MILES	%	MILES	%	MILES	%	
AS	1.946021	100.0%									1.95
CO											
Totals	1.95	100%									1.95

S. T.	Unpaved Condition Rating [Condition(RSL)]										TOTAL MILES
	Excellent (8-10)		Good (5-7)		Fair (3-4)		Poor (1-2)		Failed (0)		
	MILES	%	MILES	%	MILES	%	MILES	%	MILES	%	
GR	2.63	10.7%	21.90	89.3%							24.53
NA			0.39	28.2%	1.	71.8%					1.39
PR			0.28	17.2%	1.36	82.8%					1.64
Totals	2.63	9.5%	22.57	81.9%	2.36	8.6%					27.56

Square Footage (Parking Areas)

S. T.	Condition Rating										Total Square Feet
	Excellent		Good		Fair		Poor		Failed		
	Square Feet	%	Square Feet	%	Square Feet	%	Square Feet	%	Square Feet	%	
AS	10017	100%									10017
CO	1319	100%									1319
GR			108366	100%							108366
NA					52241	100%					52241
PR											
Totals	11336	6.6%	108366	63.0%	52241	30.4%					171943

Benton Lake NWR

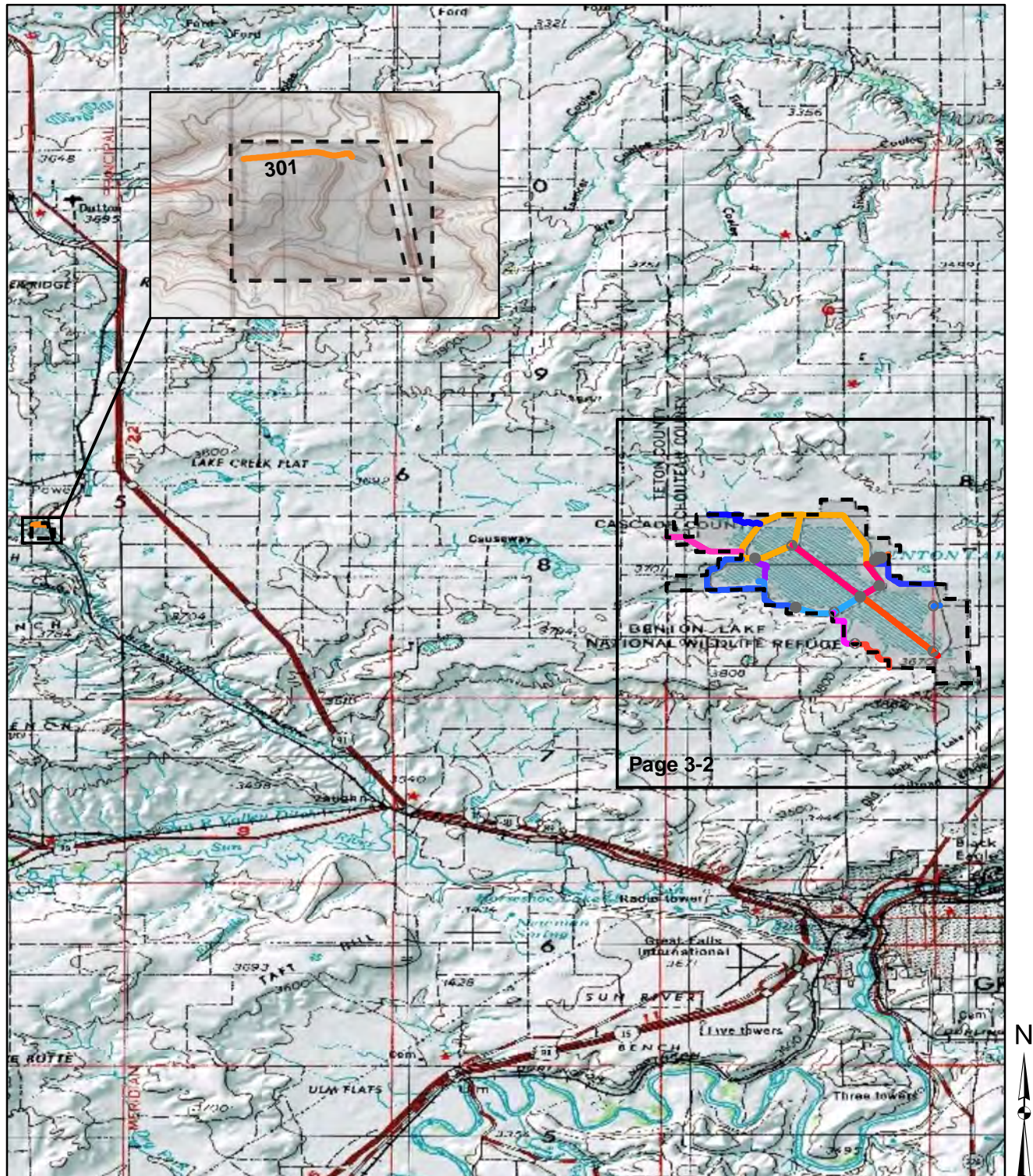
Summaries

Route Miles and Percentages by Use Type and Condition

USE TYPE	Road Condition Rating: Public/Administrative Use										TOTAL MILES	PERCENT TOTAL MILES
	Excellent		Good		Fair		Poor		Failed			
	MILES	%	MILES	%	MILES	%	MILES	%	MILES	%		
Public (FC I-III)	4.25	26.1%	12.05	74%							16.30	55%
Admin (FC IV-V)	0.33	2.5%	10.52	79.7%	2.36	17.9%					13.21	45%
Totals	4.57	15.5%	22.57	77%	2.36	8.0%					29.51	

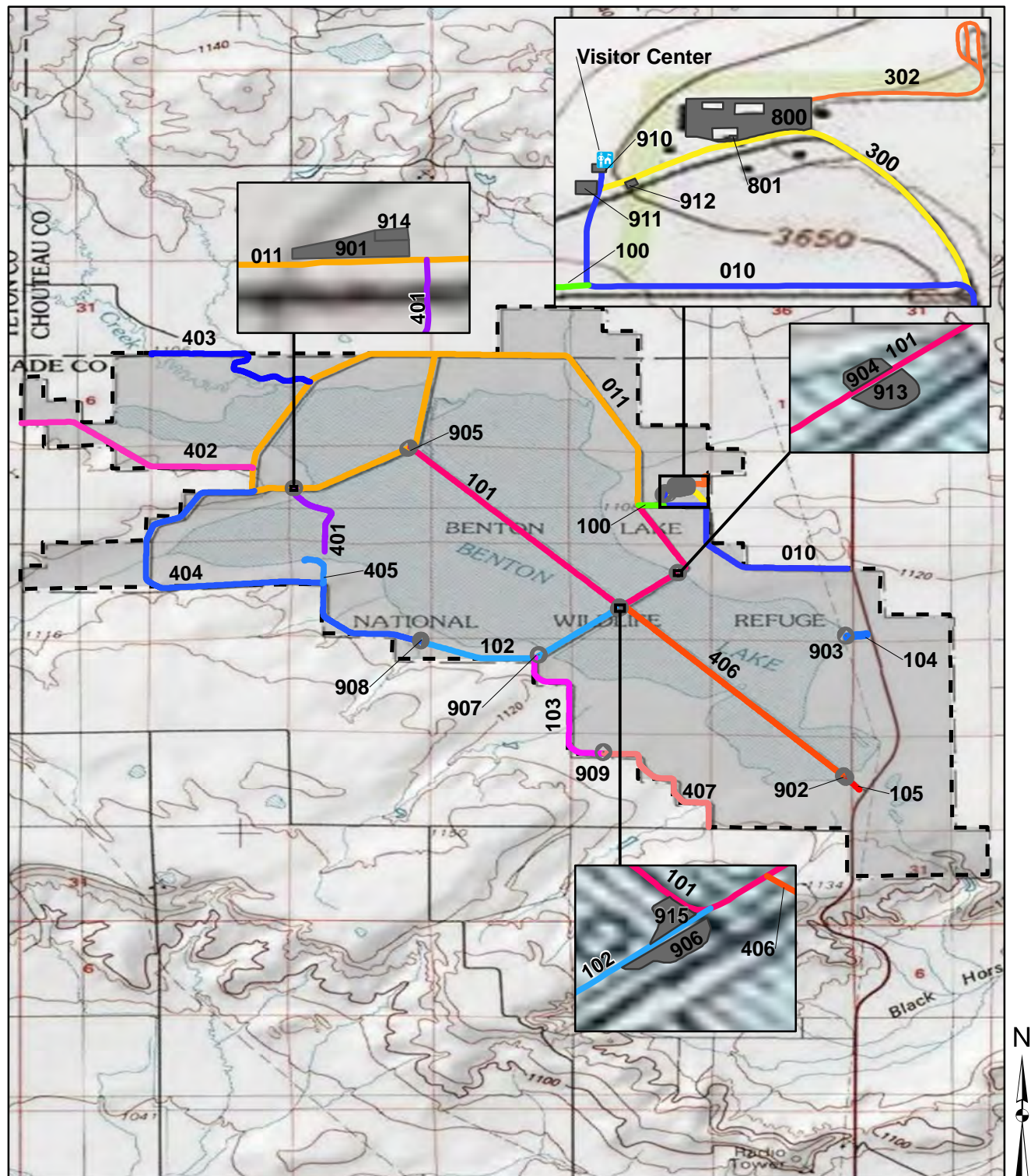
USE TYPE	Parking Condition Rating										Total Square Feet	PERCENT TOTAL SF
	Excellent		Good		Fair		Poor		Failed			
	Square Feet	%	Square Feet	%	Square Feet	%	Square Feet	%	Square Feet	%		
Public	10560	14.8%	8529	12.0%	52241	73.2%					71330	41%
Admin	776	0.8%	99837	99%							100613	59%
Totals	11336	6.6%	108366	63.0%	52241	30.4%					171943	

BENTON LAKE NATIONAL WILDLIFE REFUGE ROUTE LOCATION MAP



10 5 0 10
Miles

BENTON LAKE NATIONAL WILDLIFE REFUGE ROUTE LOCATION MAP 2



2 1 0 2 4 Miles

Benton Lake NWR - 61510 - ROUTE IDENTIFICATION LIST (NUMERIC)

Shading Color Key:

White = Paved Routes
Yellow = Unpaved Routes

RTE #	Asset Number	ROUTE NAME	RTE MI	ROUTE DESCRIPTION	PAVED MI	UN-PAVED MI	LANES	FC
010	10024936	HQ/VC Entrance Road	1.95	From Bootlegger Trail (County Highway 225) to New HQ/VC Parking (Route 910)	1.95	-	2	1
011	10024935	Prairie Marsh Wildlife Drive	7.16	From Access Road (Route 100) to end of tour loop	-	7.16	1	1
100	10024936	Access Road	0.18	From HQ/VC Entrance Road (Route 010) to Prairie Marsh Wildlife Drive (Route 011)	-	0.18	1	2
101	10024935	Lower Marsh Road	3.63	From Prairie Marsh Wildlife Drive (Route 011) section 001 to Prairie Marsh Wildlife Drive (Route 011) section 004	-	3.63	1	2
102	10050389	4C Access Road	1.68	From Lower Marsh Road (Route 101) to South Boundary Road (Route 404)	-	1.68	1	2
103	10050410	Unit 6 Access Road	1.40	From 4C Access Road (Route 102) to Southeast Boundary Road (Route 407)	-	1.40	1	2
104	10050462	Bootlegger 5 Access Road	0.14	From Bootlegger Trail (County Highway 225) to Bootlegger 5 Parking (Route 903)	-	0.14	1	2
105	10050462	Outlet Canal Access Road	0.16	From Bootlegger Trail (County Highway 225) to Outlet Canal Parking (Route 902)	-	0.16	1	2
300	10024889	Shop Access Road	0.41	From HQ/VC Entrance Road (Rte 010) to HQ/VC Entrance Road (Rte 010)	-	0.41	1	4
301	10024889	Pumphouse Access Road	0.28	From 13 Lane NE to end of distinguishable route	-	0.28	1	4
302	10024889	Boneyard Road	0.33	From Shop Parking (Route 800) to end of loop	-	0.33	1	4
401	10024889	North Levee Road	0.82	From Prairie Marsh Wildlife Drive (Route 011) to end of route at turnaround	-	0.82	1	5
402	10024889	West Boundary Road	1.83	From Prairie Marsh Wildlife Drive (Route 011) to North Wilson Road at west refuge boundary	-	1.83	1	5
403	10024889	North Boundary Road	1.54	From Prairie Marsh Wildlife Drive (Route 011) to end of loop	-	1.54	1	5
404	10024889	South Boundary Road	3.88	From Prairie Marsh Wildlife Drive (Route 011) to 4C Access Road (Route 102)	-	3.88	1	5
405	10024889	South Levee Road	0.39	From South Boundary Road (Route 404) to end of route at gravel pad	-	0.39	1	5
406	10024889	5-6 Dike Road	2.39	From Lower Marsh Road (Route 101) to Outlet Canal Access Road (Route 105)	-	2.39	1	5
407	10024889	Southeast Boundary Road	1.34	From Wilson Road at south refuge boundary to Unit 6 Access Road (Route 103)	-	1.34	1	5

Benton Lake NWR - 61510 - ROUTE IDENTIFICATION LIST (PARKING)

Shading Color Key:

Green = Unpaved Parking Lots

Blue = Paved Parking Lots

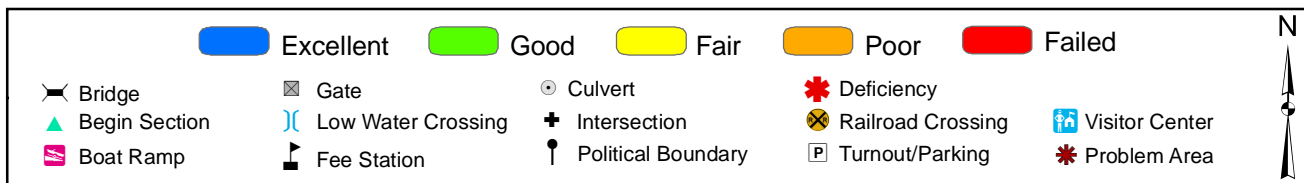
RTE #	ASSET NUMBER	ROUTE NAME	RTE SQFT	ROUTE DESCRIPTION	PAVED SQFT	UN-PAVED SQFT
800		Shop Parking	273		-	99837
801		Old HQ/VC Handicapped Parking	776		776	-
901	10024937	Prairie Trail Marsh Parking	2923		-	2923
902	10024937	Outlet Canal Parking	8804		-	8804
903	10024937	Bootlegger 5 Parking	9172		-	9172
904	10024937	Lower Marsh Road Parking A	2469		-	2469
905	10024937	Parking A	3775		-	3775
906	10024937	Parking B	4975		-	4975
907	10024937	Parking C	6260		-	6260
908	10024937	Parking D	6648		-	6648
909	10024937	Parking E	6191		-	6191
910		New HQ/VC Parking	2816		2816	-
911		HQ/VC South Lot	7201		7201	-
912		HQ/VC Outdoor Restroom Parking	1831		-	1831
913		Lower Marsh Road Parking B	4692		-	4692
914		Prairie Trail Marsh Handicapped Parking	543		543	-
915		Parking F	3030		-	3030

CHANGES TO THE FISH AND WILDLIFE SERVICE ROAD INVENTORY REPORT
Benton Lake NWR

Routes added to previous inventory*:			
	Rte #	Rte Name	Reason for Addition
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			

Routes removed from previous inventory:			
	Rte #	Rte Name	Reason for Removal
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			

Routes modified from previous inventory:				
	Rte #	Rte Name	Type of Modification	Description of Modification
1.	010	HQ/VC Entrance Road	Geometry/Length change	Now Asphalt and Geometry Changed
2.	010	HQ/VC Entrance Road	Surface change	Now Asphalt and Geometry Changed
3.	300	Shop Access Road	Geometry/Length change	no longer part of the entrance road and now closed to the public
4.	300	Shop Access Road	Rte number/Functional Class change	no longer part of the entrance road and now closed to the public
5.	100	Access Road	Geometry/Length change	no longer part of the entrance road
6.	801	Old HQ/VC Handicap Parking	Rte number/Functional Class change	Was route 900 but no longer open to the public
7.	914	Prairie Trail Marsh Handicap Parking	Other	This parking lot is its own parking lot and not the second section of a different parking lot
8.	915	Parking F	Other	This parking lot is its own parking lot and not the second section of a different parking lot and Changed the name
9.	11	Prairie Trail Marsh Wildlife Drive	Other	Removed Sections 004 and 009 because they were low water crossings
10.				



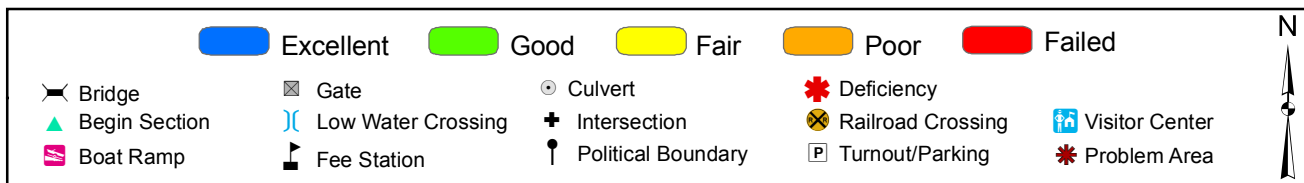
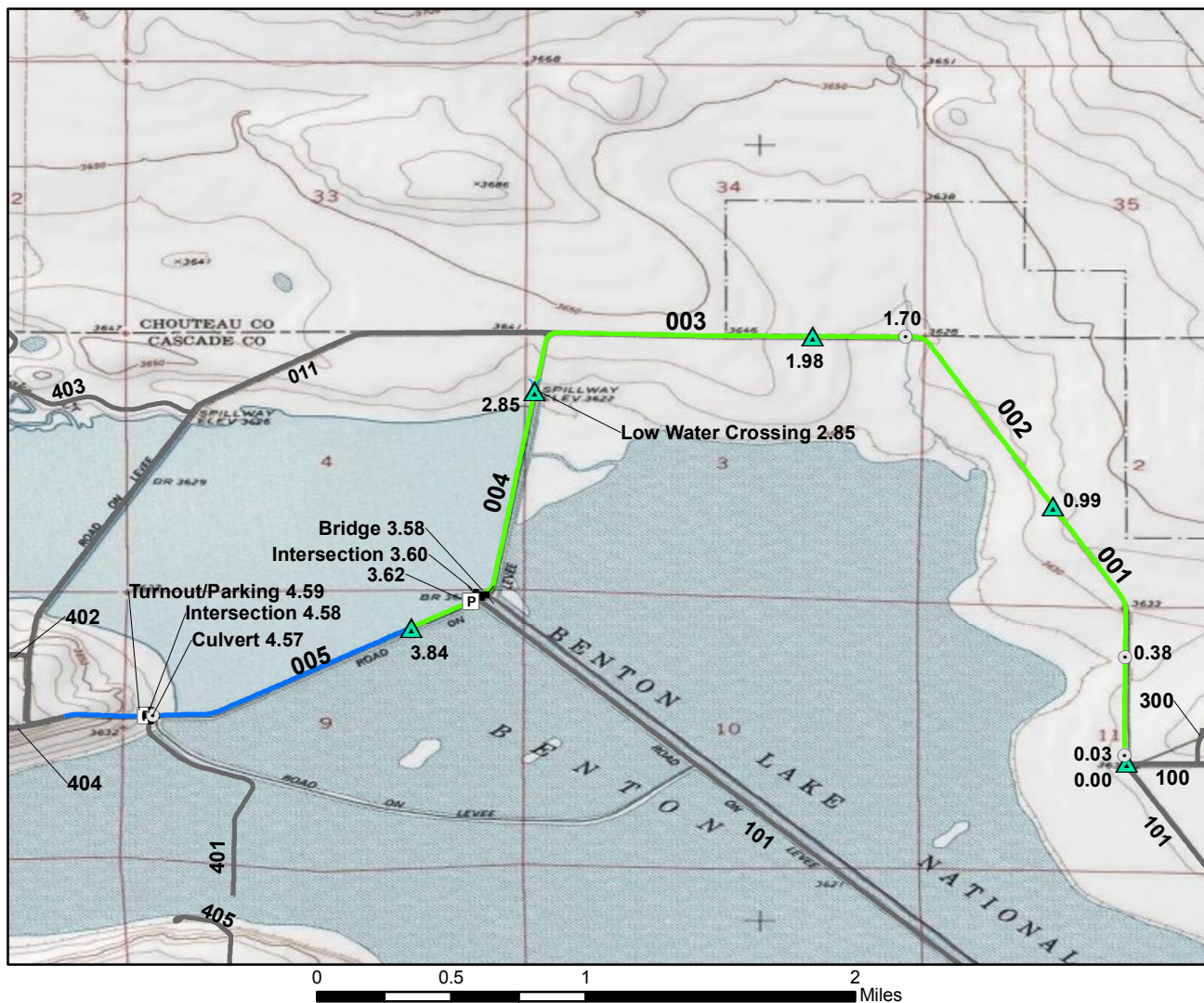
ROUTE: 010 HQ/VC Entrance Road

TOTAL LENGTH: 1.95 Miles

ASSET: 10024936

RTE DESCRIPTION: From Bootlegger Trail (County Highway 225) to New HQ/VC Parking (Route 910)

Section Number	001	002			
Section Length (miles)	1.00	0.95			
Inspection Date	8/20/2008	8/20/2008			
Section Information					
Surface Type	Asphalt	Asphalt			
Number of Lanes	2	2			
Roadway Width (feet)	24	24			
Roadway Condition Information					
Condition	Excellent	Excellent			
Remaining Service Life (years)	20	20			
Cost Estimate	\$0	\$0			
CRV	\$1232000	\$1169100			



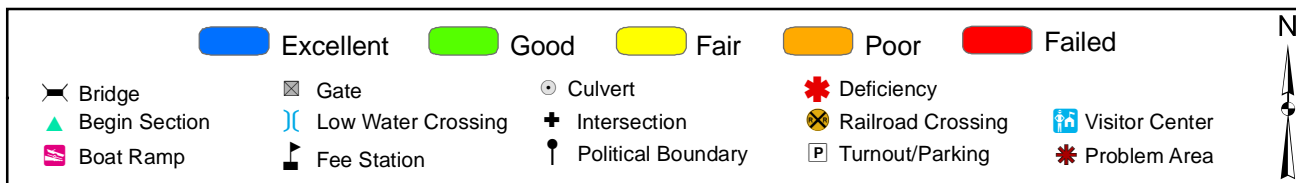
ROUTE: 011 Prairie Marsh Wildlife Drive

TOTAL LENGTH: 7.16 Miles

ASSET: 10024935

RTE DESCRIPTION: From Access Road (Route 100) to end of tour loop

Section Number	001	002	003	004	005
Section Length (miles)	1.00	0.98	0.87	0.99	0.97
Inspection Date	8/20/2008	8/20/2008	8/20/2008	8/20/2008	8/20/2008
Section Information					
Surface Type	Gravel	Gravel	Gravel	Gravel	Gravel
Number of Lanes	1	1	1	1	1
Roadway Width (feet)	12	12	12	12	12
Roadway Condition Information					
Condition	Good	Good	Good	Good	Excellent
Remaining Service Life (years)	7	7	7	7	9
Cost Estimate	\$1700	\$1600	\$1500	\$1700	\$0
CRV	\$709400	\$697800	\$622000	\$704300	\$687200



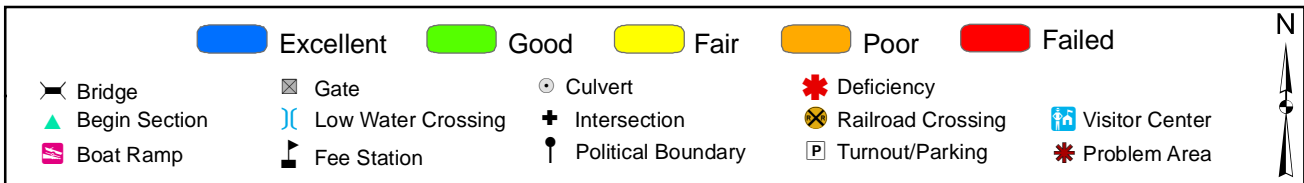
ROUTE: 011 Prairie Marsh Wildlife Drive

TOTAL LENGTH: 7.16 Miles

ASSET: 10024935

RTE DESCRIPTION: From Access Road (Route 100) to end of tour loop

Section Number	006	007	008		
Section Length (miles)	1.00	0.34	1.01		
Inspection Date	8/20/2008	8/20/2008	8/20/2008		
Section Information					
Surface Type	Gravel	Gravel	Gravel		
Number of Lanes	1	1	1		
Roadway Width (feet)	12	12	12		
Roadway Condition Information					
Condition	Excellent	Excellent	Good		
Remaining Service Life (years)	9	9	7		
Cost Estimate	\$0	\$0	\$1700		
CRV	\$710700	\$239300	\$721600		

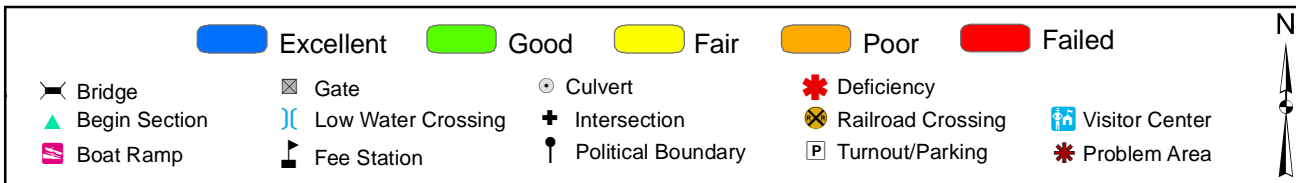
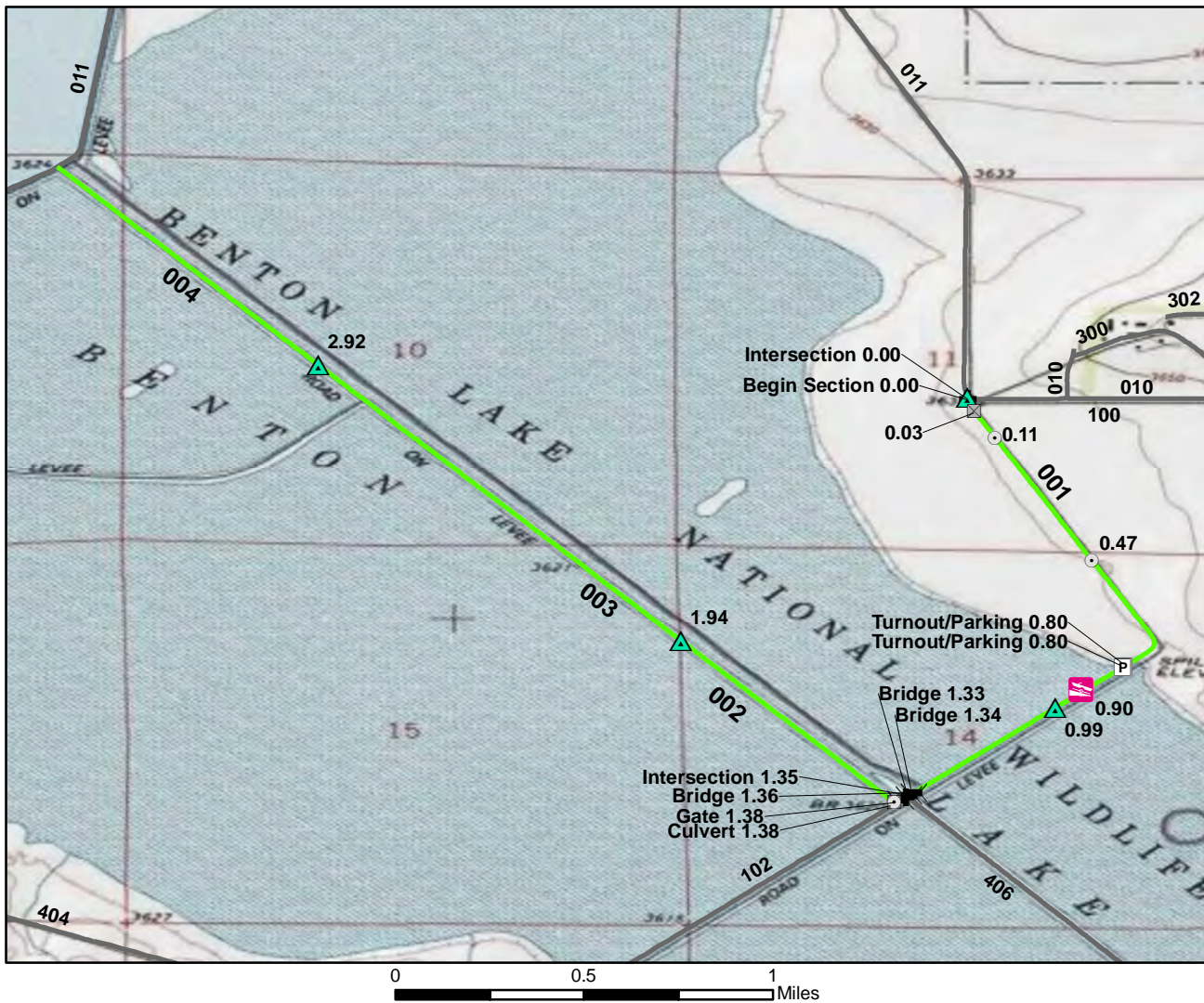


ROUTE: 100 Access Road TOTAL LENGTH: 0.18 Miles

ASSET: 10024936

RTE DESCRIPTION: From HQ/VC Entrance Road (Route 010) to Prairie Marsh Wildlife Drive (Route 011)

Section Number	001				
Section Length (miles)	0.18				
Inspection Date	8/20/2008				
Section Information					
Surface Type	Gravel				
Number of Lanes	1				
Roadway Width (feet)	14				
Roadway Condition Information					
Condition	Good				
Remaining Service Life (years)	7				
Cost Estimate	\$300				
CRV	\$127800				

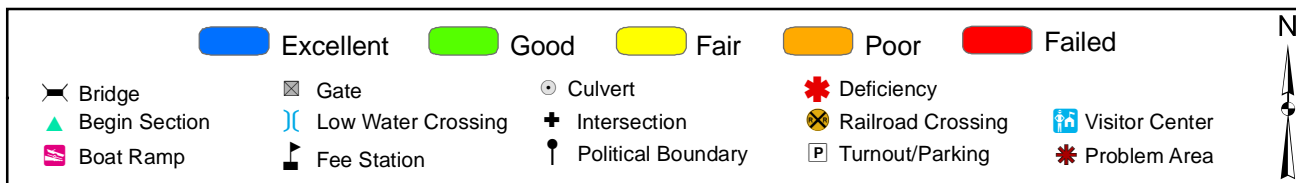
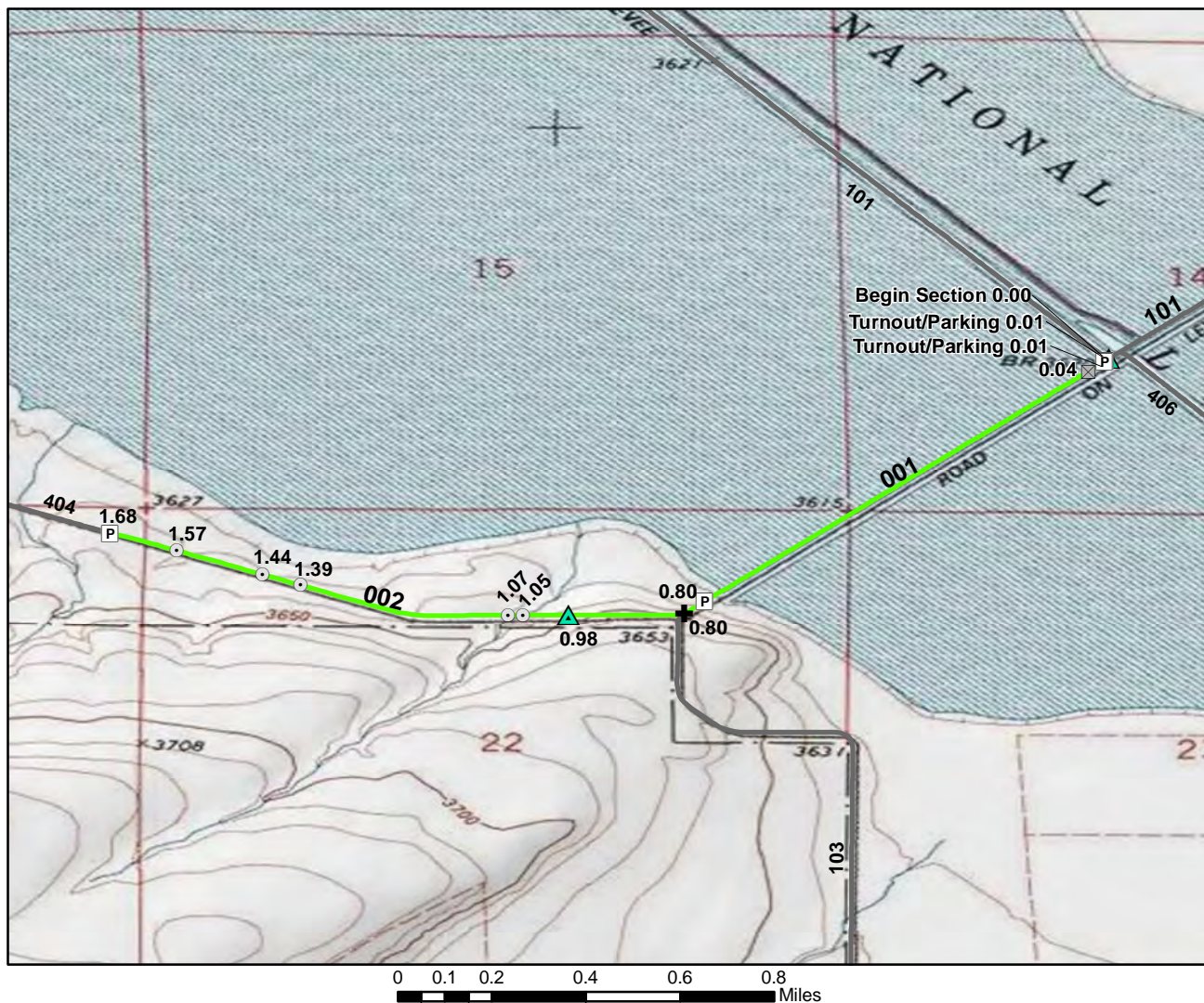


ROUTE: 101 Lower Marsh Road TOTAL LENGTH: 3.63 Miles

ASSET: 10024935

RTE DESCRIPTION: From Prairie Marsh Wildlife Drive (Route 011) section 001 to Prairie Marsh Wildlife Drive (Route 011) section 004

Section Number	001	002	003	004	
Section Length (miles)	0.98	0.96	0.98	0.70	
Inspection Date	8/20/2008	8/20/2008	8/20/2008	8/20/2008	
Section Information					
Surface Type	Gravel	Gravel	Gravel	Gravel	
Number of Lanes	1	1	1	1	
Roadway Width (feet)	12	12	12	12	
Roadway Condition Information					
Condition	Good	Good	Good	Good	
Remaining Service Life (years)	7	7	5	7	
Cost Estimate	\$1600	\$1600	\$1600	\$1200	
CRV	\$700300	\$682200	\$696600	\$500200	

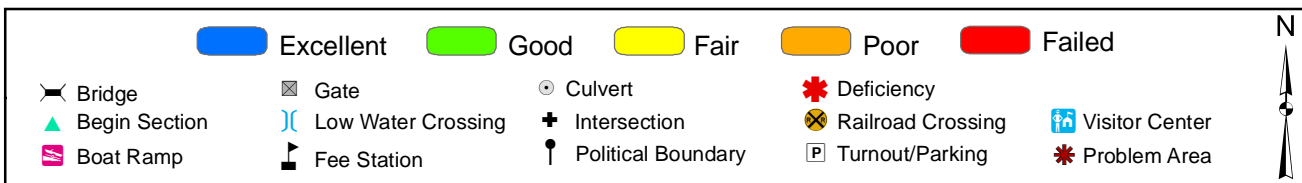
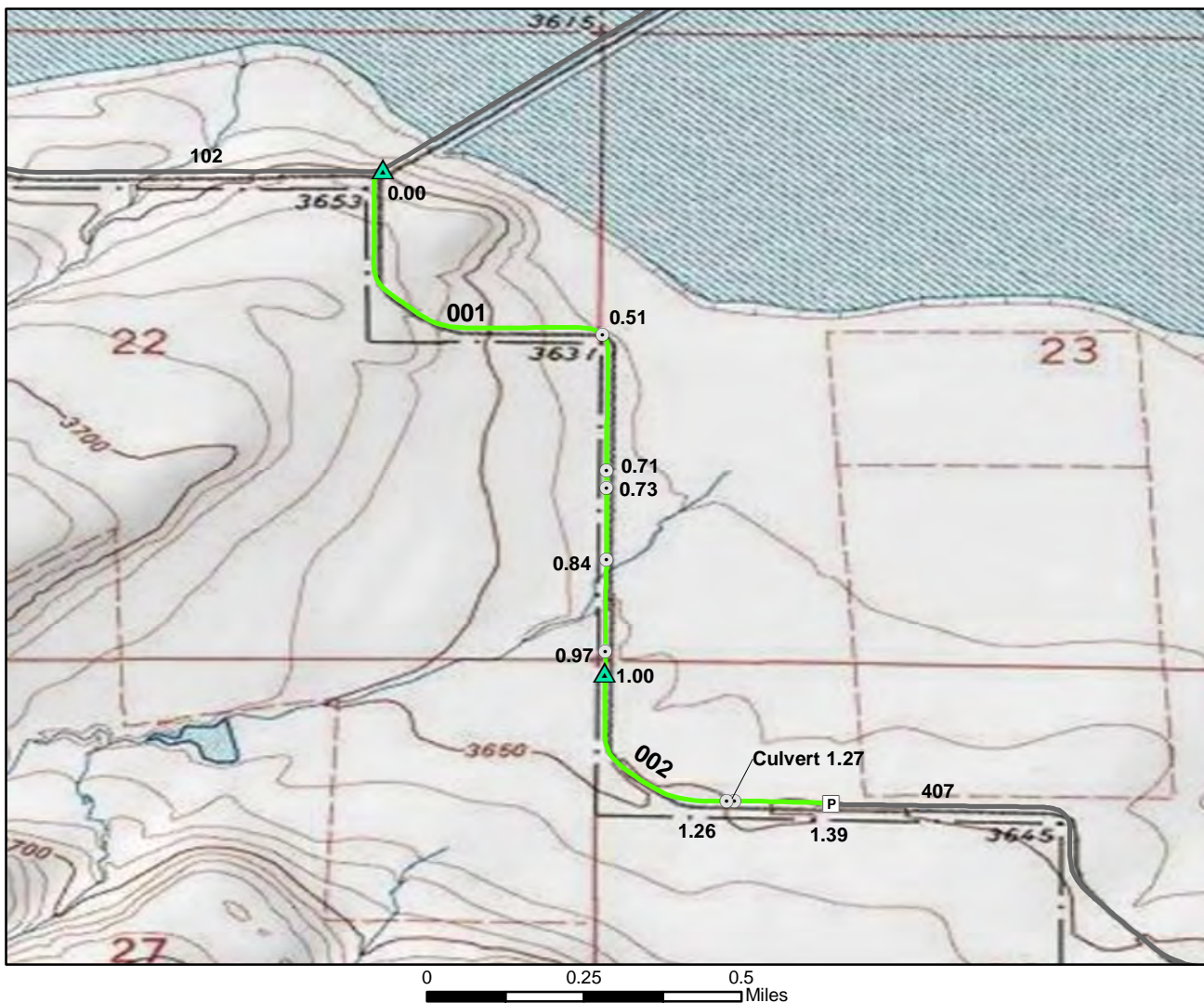


ROUTE: 102 4C Access Road TOTAL LENGTH: 1.68 Miles

ASSET: 10050389

RTE DESCRIPTION: From Lower Marsh Road (Route 101) to South Boundary Road (Route 404)

Section Number	001	002			
Section Length (miles)	0.98	0.70			
Inspection Date	8/20/2008	8/20/2008			
Section Information					
Surface Type	Gravel	Gravel			
Number of Lanes	1	1			
Roadway Width (feet)	10	10			
Roadway Condition Information					
Condition	Good	Good			
Remaining Service Life (years)	7	7			
Cost Estimate	\$1600	\$1200			
CRV	\$699300	\$497300			

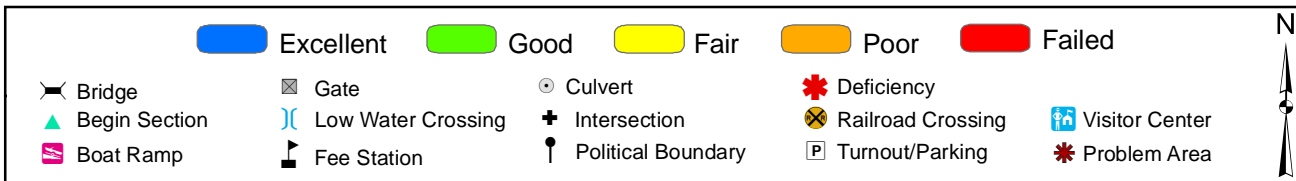


ROUTE: 103 Unit 6 Access Road TOTAL LENGTH: 1.40 Miles

ASSET: 10050410

RTE DESCRIPTION: From 4C Access Road (Route 102) to Southeast Boundary Road (Route 407)

Section Number	001	002			
Section Length (miles)	1.00	0.41			
Inspection Date	8/20/2008	8/20/2008			
Section Information					
Surface Type	Gravel	Gravel			
Number of Lanes	1	1			
Roadway Width (feet)	10	10			
Roadway Condition Information					
Condition	Good	Good			
Remaining Service Life (years)	5	7			
Cost Estimate	\$1700	\$700			
CRV	\$709300	\$289100			

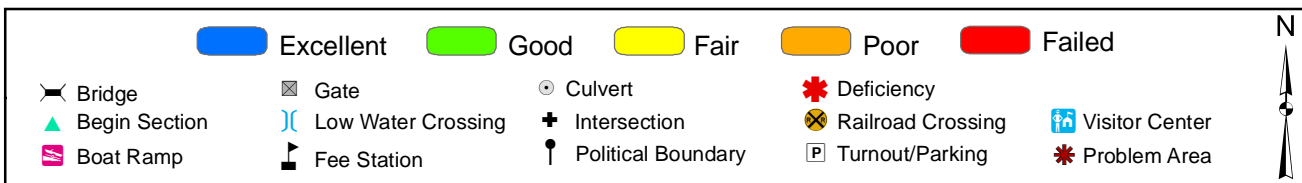


ROUTE: 104 Bootlegger 5 Access Road TOTAL LENGTH: 0.14 Miles

ASSET: 10050462

RTE DESCRIPTION: From Bootlegger Trail (County Highway 225) to Bootlegger 5 Parking (Route 903)

Section Number	001				
Section Length (miles)	0.14				
Inspection Date	8/20/2008				
Section Information					
Surface Type	Gravel				
Number of Lanes	1				
Roadway Width (feet)	12				
Roadway Condition Information					
Condition	Good				
Remaining Service Life (years)	7				
Cost Estimate	\$200				
CRV	\$99300				

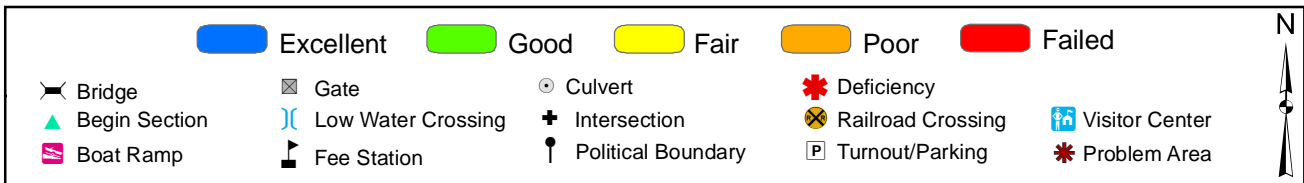


ROUTE: 105 Outlet Canal Access Road TOTAL LENGTH: 0.16 Miles

ASSET: 10050462

RTE DESCRIPTION: From Bootlegger Trail (County Highway 225) to Outlet Canal Parking (Route 902)

Section Number	001				
Section Length (miles)	0.16				
Inspection Date	8/20/2008				
Section Information					
Surface Type	Gravel				
Number of Lanes	1				
Roadway Width (feet)	10				
Roadway Condition Information					
Condition	Good				
Remaining Service Life (years)	7				
Cost Estimate	\$300				
CRV	\$114600				

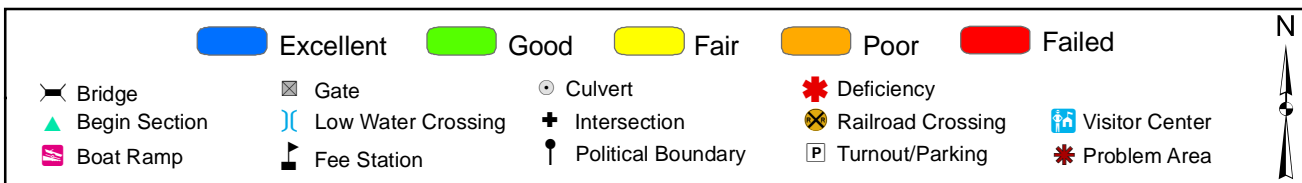
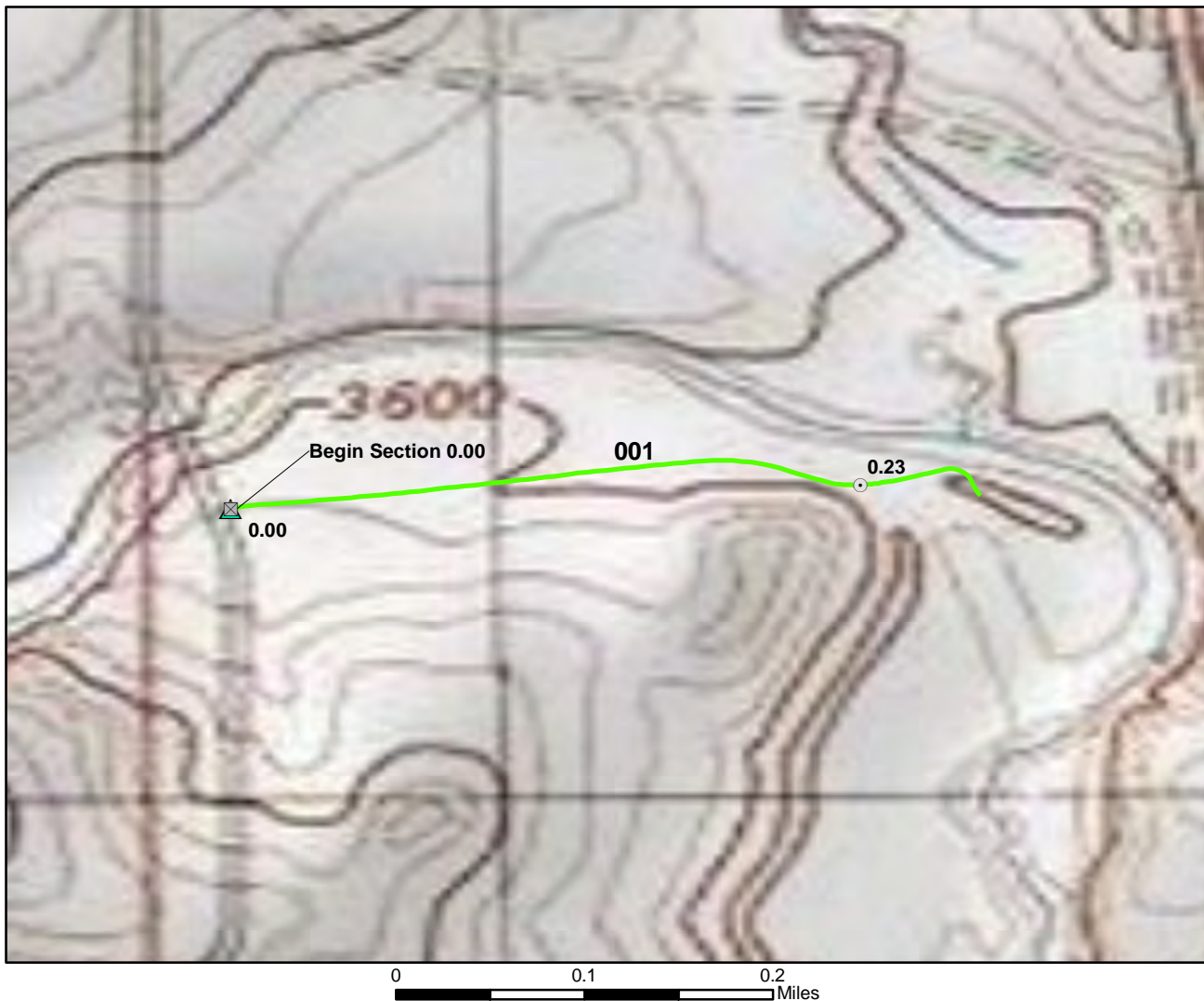


ROUTE: 300 Shop Access Road TOTAL LENGTH: 0.41 Miles

ASSET: 10024889

RTE DESCRIPTION: From HQ/VC Entrance Road (Rte 010) to HQ/VC Entrance Road (Rte 010)

Section Number	001				
Section Length (miles)	0.41				
Inspection Date	8/20/2008				
Section Information					
Surface Type	Gravel				
Number of Lanes	1				
Roadway Width (feet)	14				
Roadway Condition Information					
Condition	Good				
Remaining Service Life (years)	7				
Cost Estimate	\$700				
CRV	\$289800				



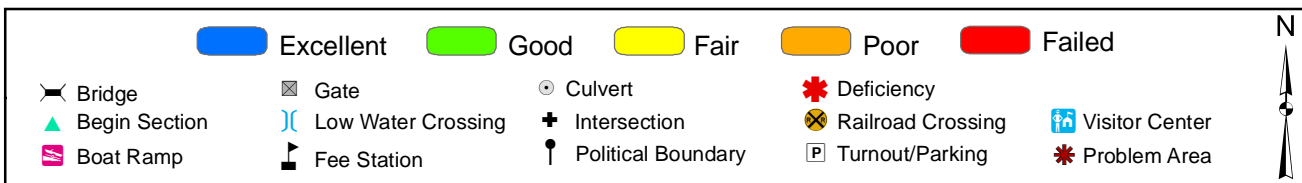
ROUTE: 301 Pumphouse Access Road

TOTAL LENGTH: 0.28 Miles

ASSET: 10024889

RTE DESCRIPTION: From 13 Lane NE to end of distinguishable route

Section Number	001				
Section Length (miles)	0.28				
Inspection Date	8/20/2008				
Section Information					
Surface Type	Primitive				
Number of Lanes	1				
Roadway Width (feet)	8				
Roadway Condition Information					
Condition	Good				
Remaining Service Life (years)	7				
Cost Estimate	\$100				
CRV	\$0				



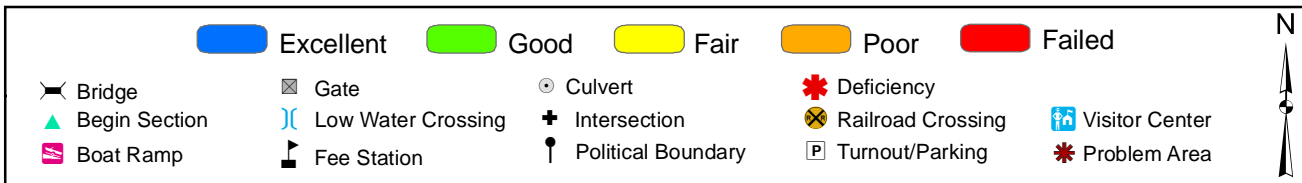
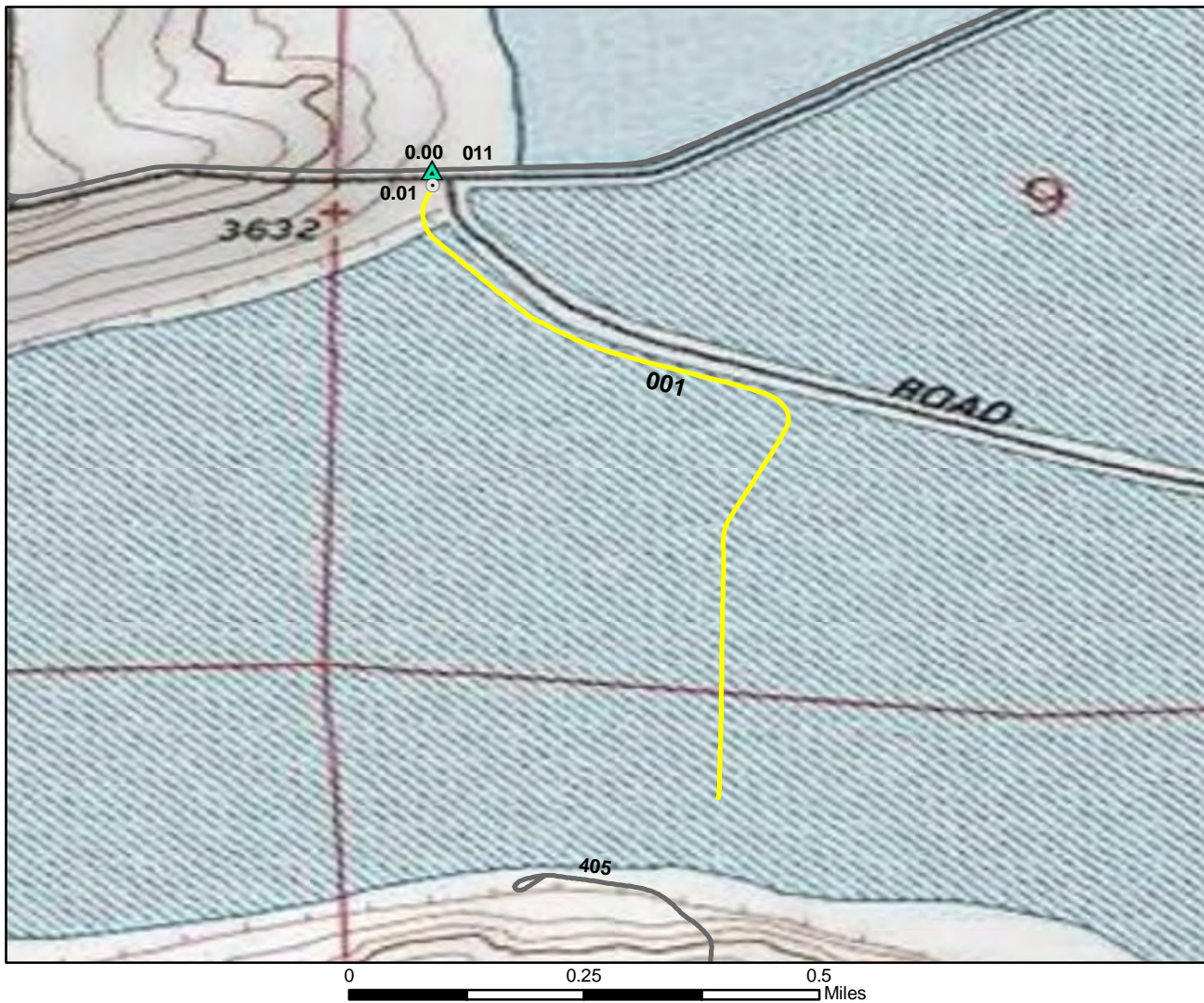
ROUTE: 302 Boneyard Road

TOTAL LENGTH: 0.33 Miles

ASSET: 10024889

RTE DESCRIPTION: From Shop Parking (Route 800) to end of loop

Section Number	001	002			
Section Length (miles)	0.28	0.04			
Inspection Date	8/20/2008	8/20/2008			
Section Information					
Surface Type	Gravel	Gravel			
Number of Lanes	1	1			
Roadway Width (feet)	10	8			
Roadway Condition Information					
Condition	Excellent	Excellent			
Remaining Service Life (years)	9	10			
Cost Estimate	\$0	\$0			
CRV	\$200500	\$30900			

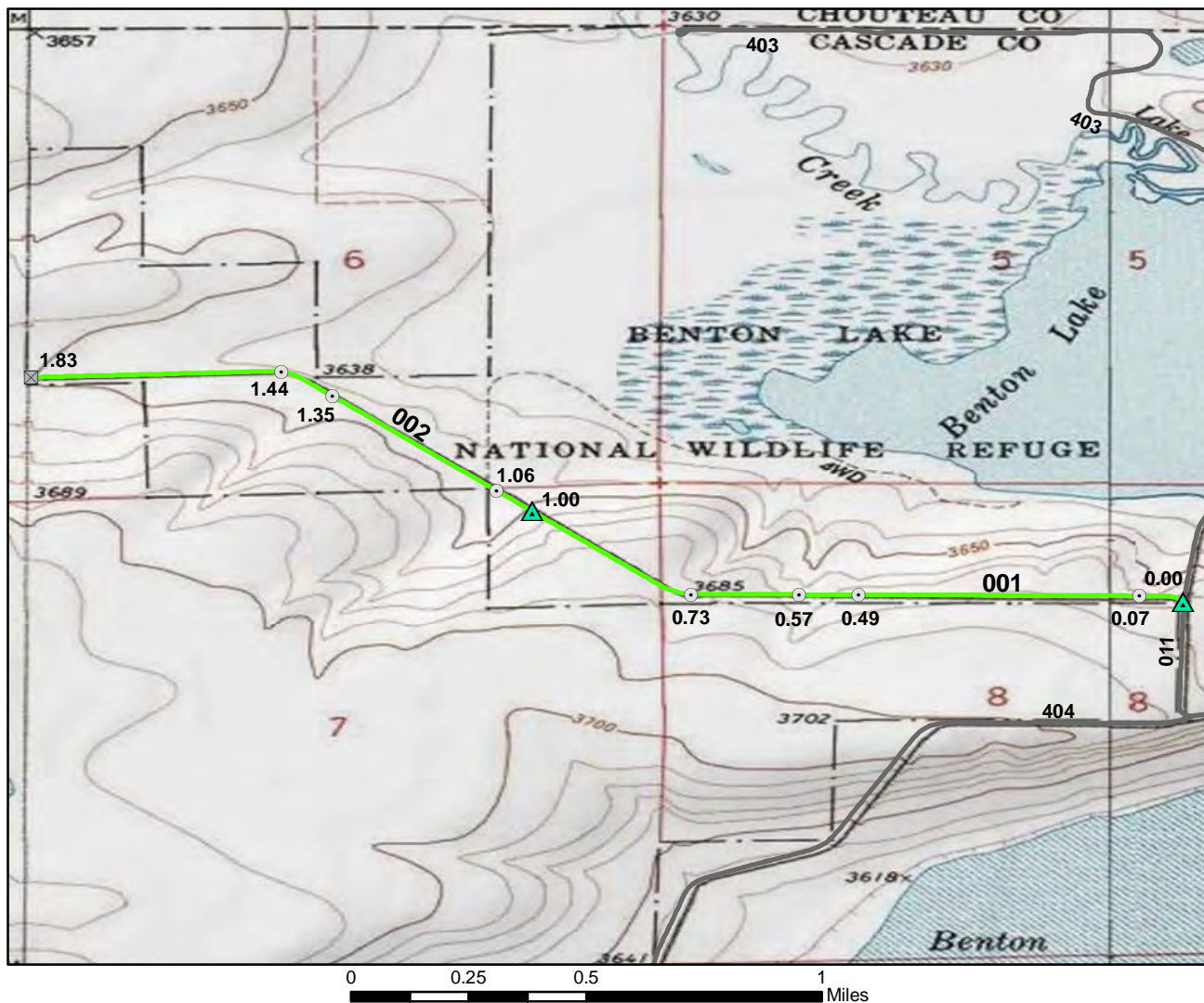


ROUTE: 401 North Levee Road TOTAL LENGTH: 0.82 Miles

ASSET: 10024889

RTE DESCRIPTION: From Prairie Marsh Wildlife Drive (Route 011) to end of route at turnaround

Section Number	001				
Section Length (miles)	0.82				
Inspection Date	8/20/2008				
Section Information					
Surface Type	Primitive				
Number of Lanes	1				
Roadway Width (feet)	8				
Roadway Condition Information					
Condition	Fair				
Remaining Service Life (years)	4				
Cost Estimate	\$600				
CRV	\$0				



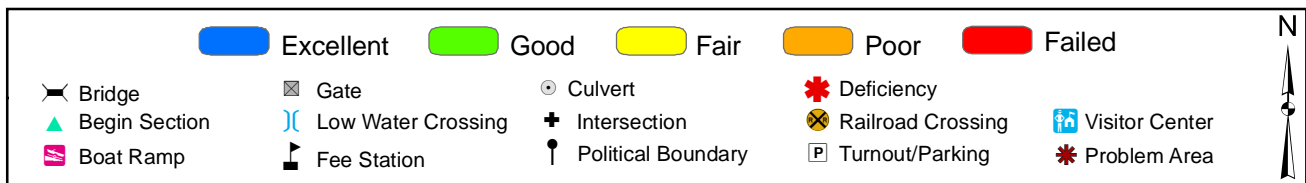
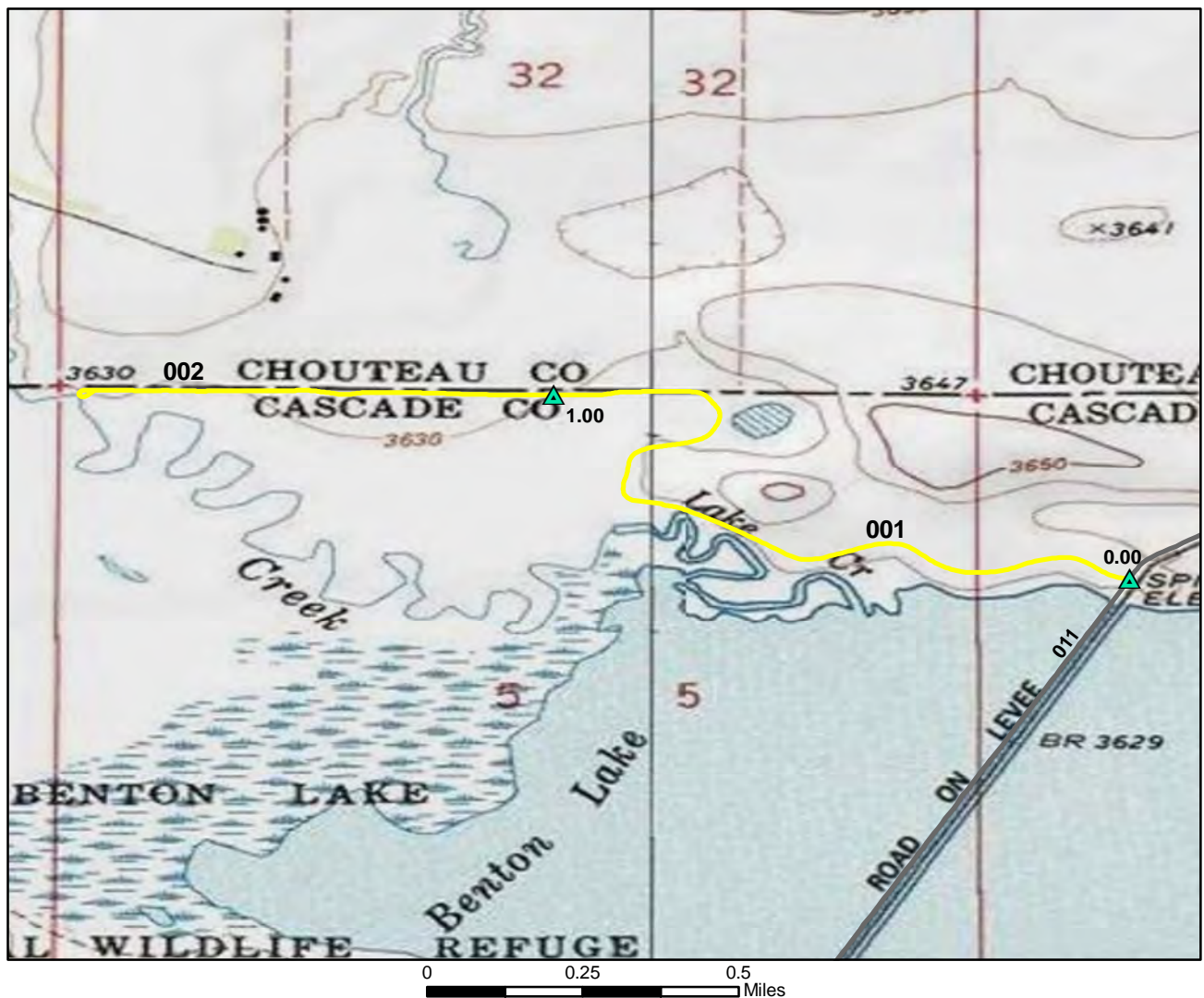
ROUTE: 402 West Boundary Road

TOTAL LENGTH: 1.83 Miles

ASSET: 10024889

RTE DESCRIPTION: From Prairie Marsh Wildlife Drive (Route 011) to North Wilson Road at west refuge boundary

Section Number	001	002			
Section Length (miles)	1.00	0.83			
Inspection Date	8/20/2008	8/20/2008			
Section Information					
Surface Type	Gravel	Gravel			
Number of Lanes	1	1			
Roadway Width (feet)	10	10			
Roadway Condition Information					
Condition	Good	Good			
Remaining Service Life (years)	7	7			
Cost Estimate	\$1700	\$1400			
CRV	\$711300	\$587100			



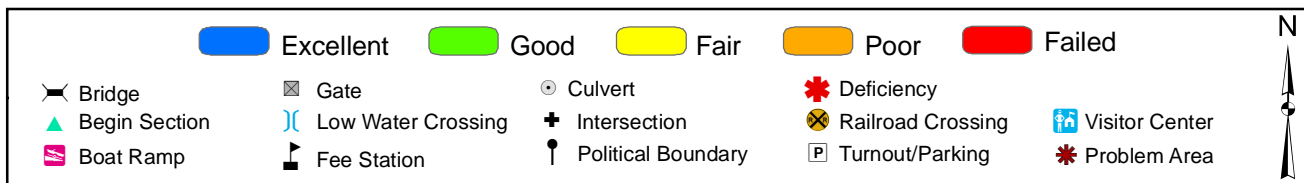
ROUTE: 403 North Boundary Road

TOTAL LENGTH: 1.54 Miles

ASSET: 10024889

RTE DESCRIPTION: From Prairie Marsh Wildlife Drive (Route 011) to end of loop

Section Number	001	002			
Section Length (miles)	1.00	0.54			
Inspection Date	8/20/2008	8/20/2008			
Section Information					
Surface Type	Native	Primitive			
Number of Lanes	1	1			
Roadway Width (feet)	8	8			
Roadway Condition Information					
Condition	Fair	Fair			
Remaining Service Life (years)	3	3			
Cost Estimate	\$2200	\$400			
CRV	\$367700	\$0			



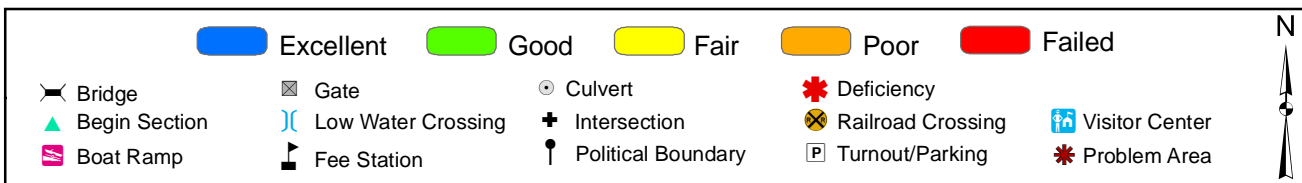
ROUTE: 404 South Boundary Road

TOTAL LENGTH: 3.88 Miles

ASSET: 10024889

RTE DESCRIPTION: From Prairie Marsh Wildlife Drive (Route 011) to 4C Access Road (Route 102)

Section Number	001	002	003	004	
Section Length (miles)	1.00	0.99	0.97	0.91	
Inspection Date	8/20/2008	8/20/2008	8/20/2008	8/20/2008	
Section Information					
Surface Type	Gravel	Gravel	Gravel	Gravel	
Number of Lanes	1	1	1	1	
Roadway Width (feet)	10	10	10	10	
Roadway Condition Information					
Condition	Good	Good	Good	Good	
Remaining Service Life (years)	5	5	5	5	
Cost Estimate	\$1700	\$1700	\$1600	\$1500	
CRV	\$713900	\$707300	\$692200	\$647000	



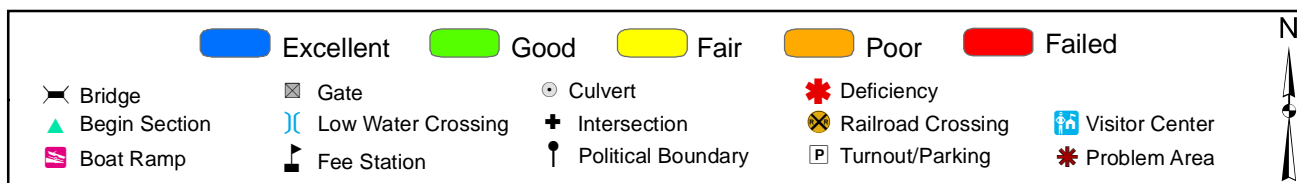
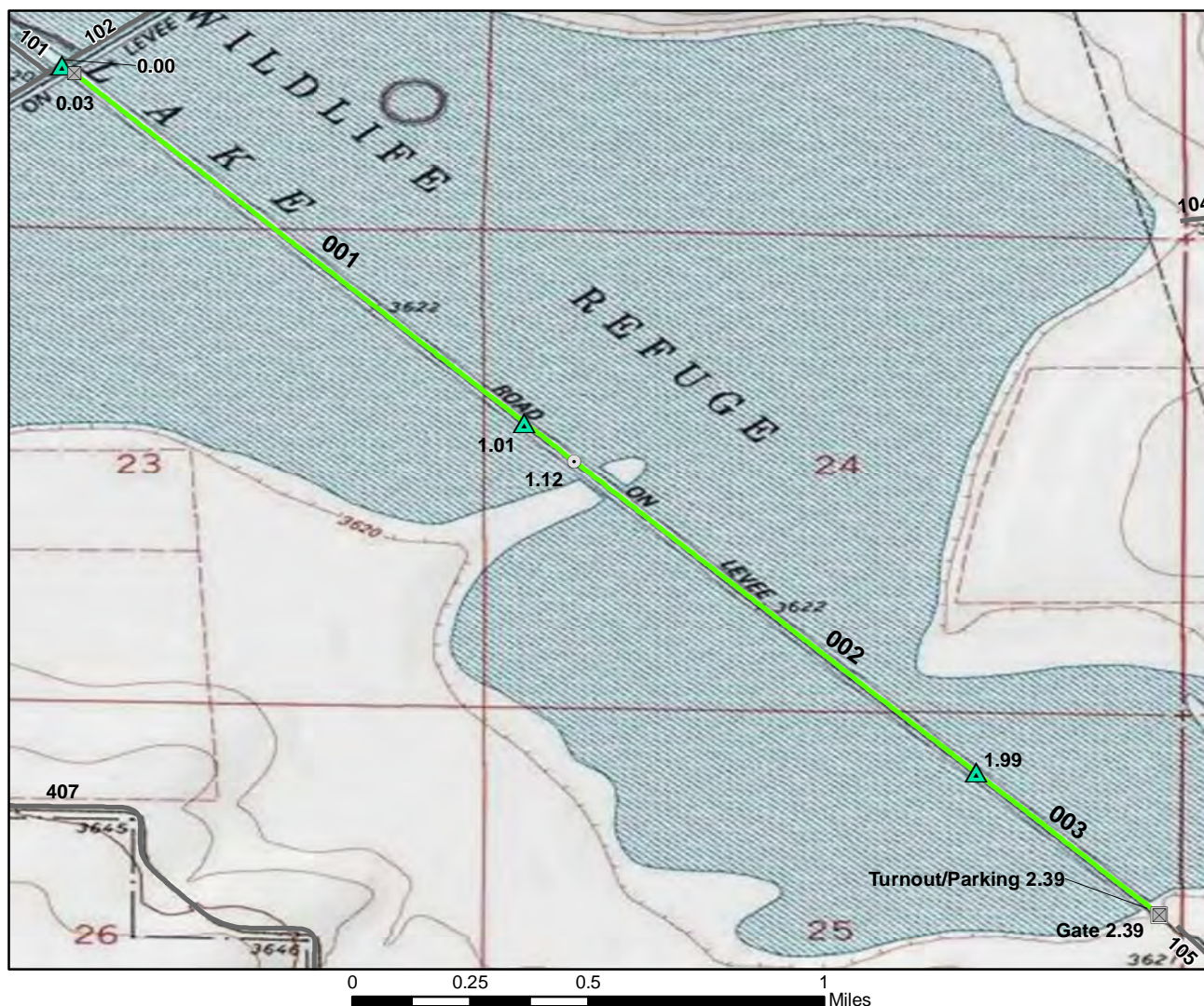
ROUTE: 405 South Levee Road

TOTAL LENGTH: 0.39 Miles

ASSET: 10024889

RTE DESCRIPTION: From South Boundary Road (Route 404) to end of route at gravel pad

Section Number	001				
Section Length (miles)	0.39				
Inspection Date	8/20/2008				
Section Information					
Surface Type	Native				
Number of Lanes	1				
Roadway Width (feet)	8				
Roadway Condition Information					
Condition	Good				
Remaining Service Life (years)	5				
Cost Estimate	\$700				
CRV	\$144300				



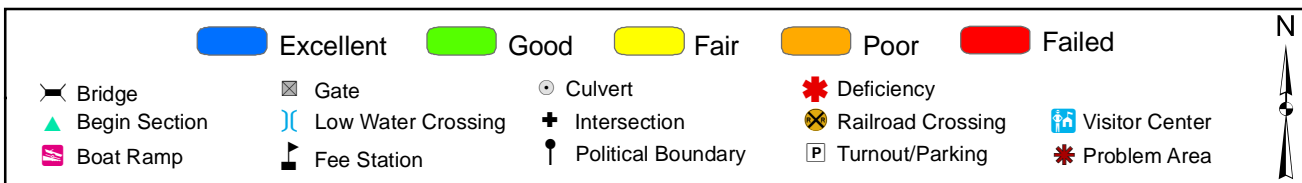
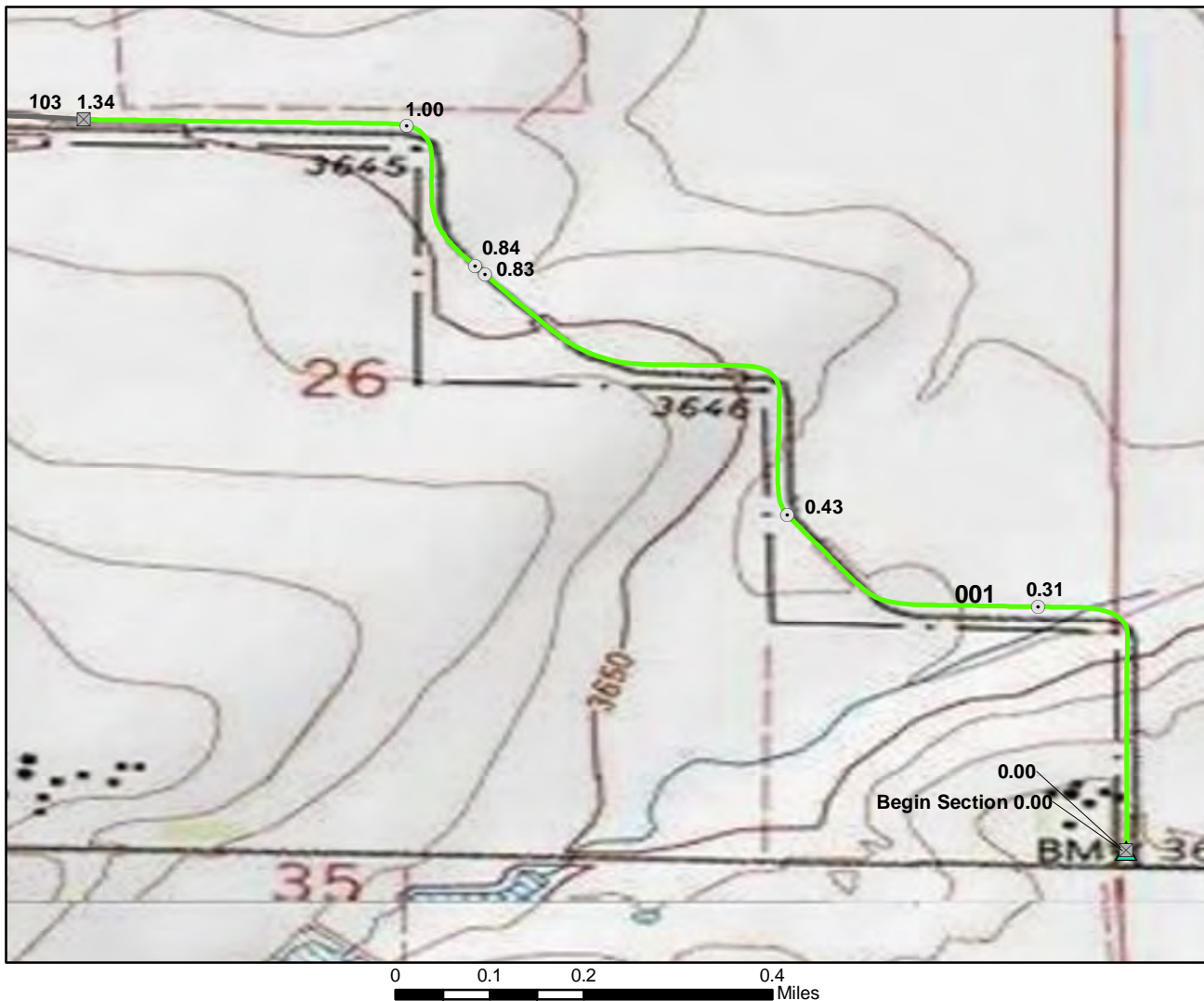
ROUTE: 406 5-6 Dike Road

TOTAL LENGTH: 2.39 Miles

ASSET: 10024889

RTE DESCRIPTION: From Lower Marsh Road (Route 101) to Outlet Canal Access Road (Route 105)

Section Number	001	002	003		
Section Length (miles)	1.01	0.98	0.40		
Inspection Date	8/20/2008	8/20/2008	8/20/2008		
Section Information					
Surface Type	Gravel	Gravel	Gravel		
Number of Lanes	1	1	1		
Roadway Width (feet)	10	10	10		
Roadway Condition Information					
Condition	Good	Good	Good		
Remaining Service Life (years)	5	5	5		
Cost Estimate	\$1700	\$1600	\$700		
CRV	\$715400	\$699900	\$284200		



ROUTE: 407 Southeast Boundary Road

TOTAL LENGTH: 1.34 Miles

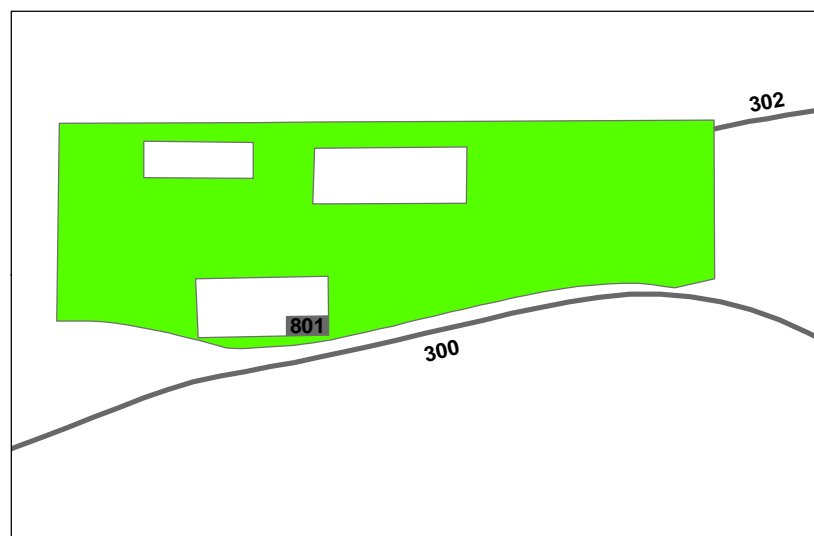
ASSET: 10024889

RTE DESCRIPTION: From Wilson Road at south refuge boundary to Unit 6 Access Road (Route 103)

Section Number	001				
Section Length (miles)	1.34				
Inspection Date	8/20/2008				
Section Information					
Surface Type	Gravel				
Number of Lanes	1				
Roadway Width (feet)	10				
Roadway Condition Information					
Condition	Good				
Remaining Service Life (years)	7				
Cost Estimate	\$2200				
CRV	\$955600				

Route 800: Shop Parking

Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
	8/20/2008	Gravel	99837	Good	\$15400

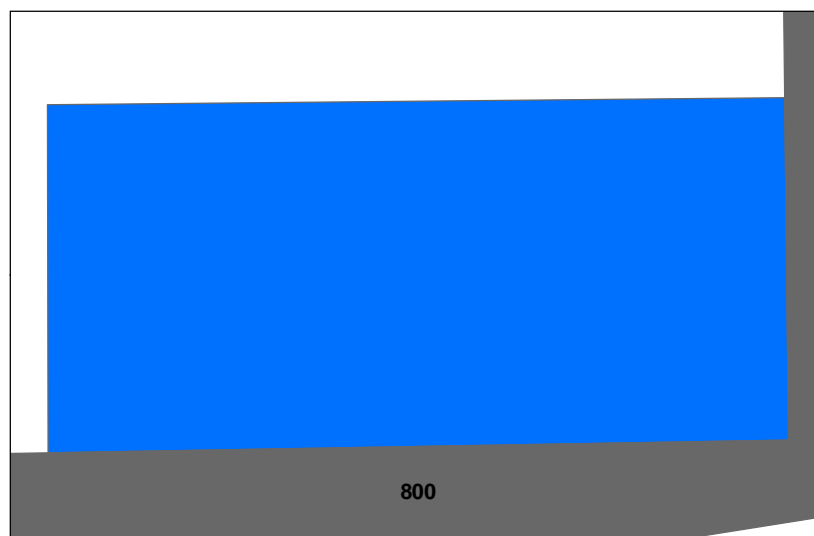


120 60 0 120 240 Feet

A scale bar with markings for 120, 60, 0, 120, and 240 feet.

Route 801: Old HQ/VC Handicapped Parking

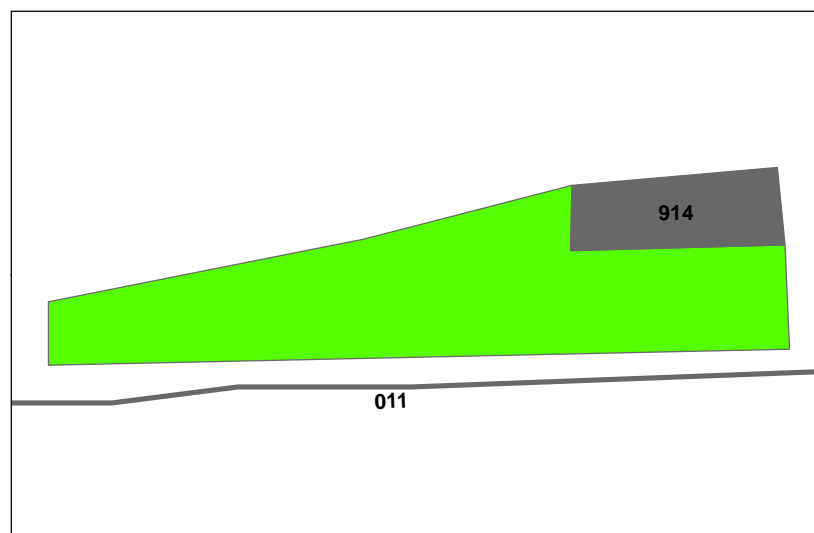
Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
	8/20/2008	Concrete	776	Excellent	\$0



10 5 0 10 Feet

Route 901: Prairie Trail Marsh Parking

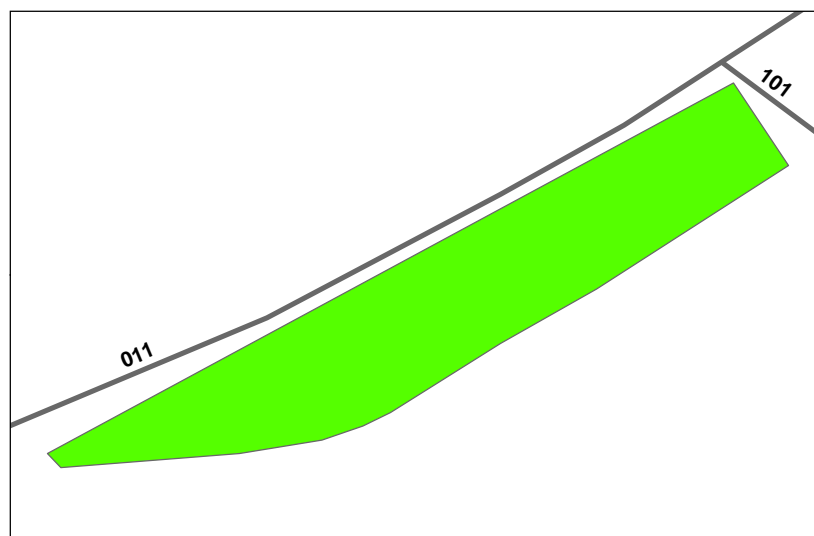
Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
10024937	8/20/2008	Gravel	2923	Good	\$500



20 10 0 20 40 Feet

Route 905: Parking A

Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
10024937	8/20/2008	Gravel	3775	Good	\$600

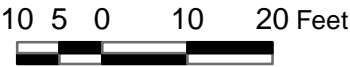
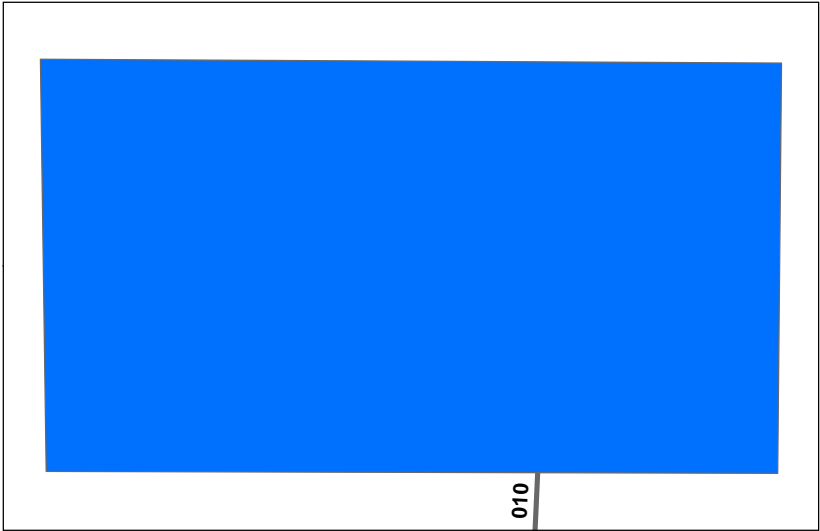


30 15 0 30 Feet



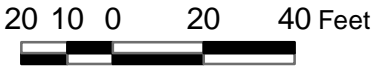
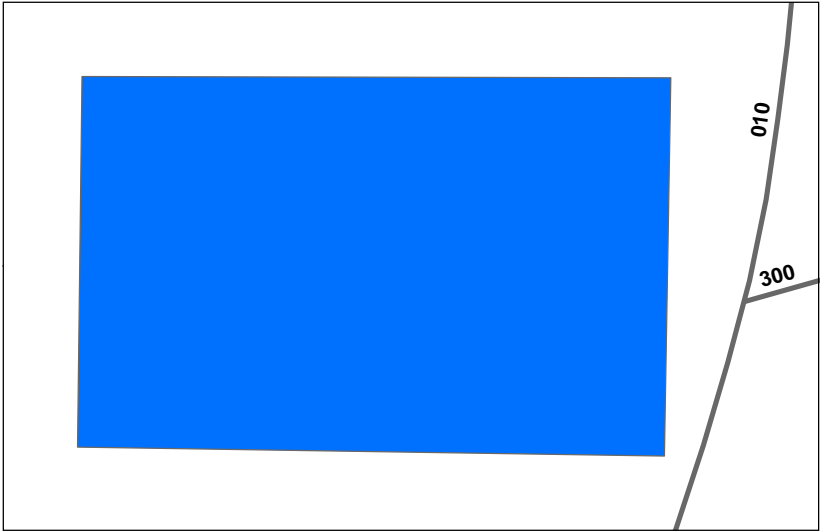
Route 910: New HQ/VC Parking

Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
	8/20/2008	Asphalt	2816	Excellent	\$0



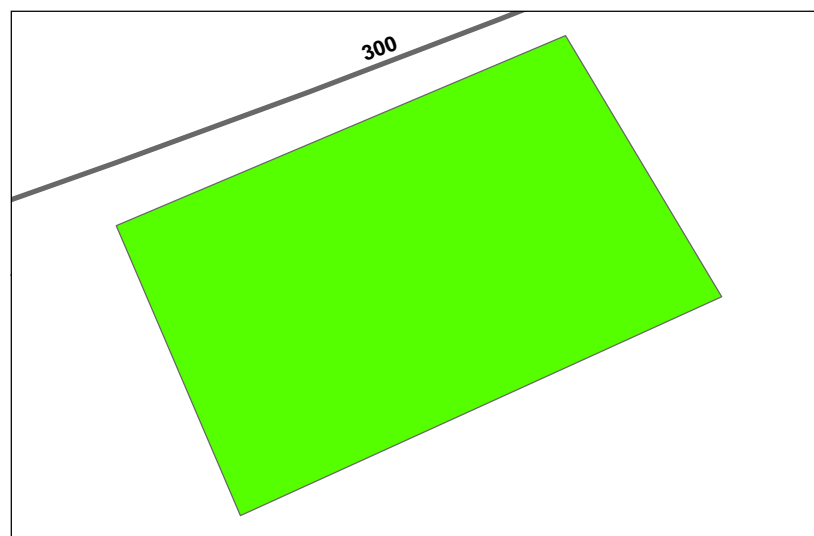
Route 911: HQ/VC South Lot

Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
	8/20/2008	Asphalt	7201	Excellent	\$0




Route 912: HQ/VC Outdoor Restroom Parking

Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
	8/20/2008	Gravel	1831	Good	\$300

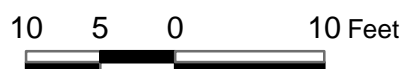
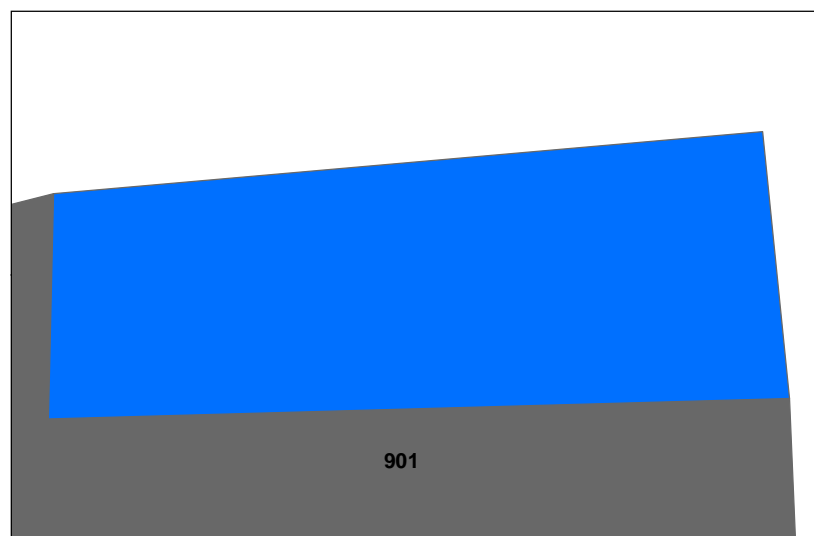


10 5 0 10 20 Feet



Route 914: Prairie Trail Marsh Handicapped Parking

Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
	8/20/2008	Concrete	543	Excellent	\$0



Benton Lake NWR Bridge Inventory					
Rte #	Milepost	NBIS #	Sufficiency Rating	Functionally Obsolete	Structurally Deficient
011	3.58	61510-00057	N/A	N/A	N/A
011	5.87	61510-00051	N/A	N/A	N/A
101	1.36	61510-00068	N/A	N/A	N/A
101	1.33	61510-00065	N/A	N/A	N/A
101	1.34	61510-00060	N/A	N/A	N/A

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 010 ROUTE NAME: HQ/VC Entrance Road



Photo # 1870 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 010 ROUTE NAME: HQ/VC Entrance Road



Photo # 1871 - MP 1.00 - Begin Section 002

ROUTE NUMBER: 011 ROUTE NAME: Prairie Marsh Wildlife Drive



Photo # 1882 - MP 0.00 - Begin Route at Begin Section

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 011 ROUTE NAME: Prairie Marsh Wildlife Drive



Photo # 1887 - MP 0.99 - Begin Section 002

ROUTE NUMBER: 011 ROUTE NAME: Prairie Marsh Wildlife Drive



Photo # 1890 - MP 1.98 - Begin Section 003

ROUTE NUMBER: 011 ROUTE NAME: Prairie Marsh Wildlife Drive



Photo # 1892 - MP 2.85 - Begin Section 004

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 011 ROUTE NAME: Prairie Marsh Wildlife Drive



Photo # 1893 - MP 3.58 - Bridge

ROUTE NUMBER: 011 ROUTE NAME: Prairie Marsh Wildlife Drive



Photo # 1895 - MP 3.84 - Begin Section 005

ROUTE NUMBER: 011 ROUTE NAME: Prairie Marsh Wildlife Drive



Photo # 1896 - MP 4.81 - Begin Section 006

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 011 ROUTE NAME: Prairie Marsh Wildlife Drive



Photo # 1919 - MP 5.81 - Begin Section 007

ROUTE NUMBER: 011 ROUTE NAME: Prairie Marsh Wildlife Drive



Photo # 1919 - MP 5.87 - Bridge

ROUTE NUMBER: 011 ROUTE NAME: Prairie Marsh Wildlife Drive



Photo # 1921 - MP 6.14 - Begin Section 008

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 100 ROUTE NAME: Access Road



Photo # 1880 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 101 ROUTE NAME: Lower Marsh Road



Photo # 1926 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 101 ROUTE NAME: Lower Marsh Road



Photo # 1932 - MP 0.99 - Begin Section 002

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 101 ROUTE NAME: Lower Marsh Road



Photo # 1933 - MP 1.33 - Bridge

ROUTE NUMBER: 101 ROUTE NAME: Lower Marsh Road



Photo # 1935 - MP 1.34 - Bridge

ROUTE NUMBER: 101 ROUTE NAME: Lower Marsh Road



Photo # 1934 - MP 1.36 - Bridge

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 101 ROUTE NAME: Lower Marsh Road



Photo # 1938 - MP 1.94 - Begin Section 003

ROUTE NUMBER: 101 ROUTE NAME: Lower Marsh Road



Photo # 1939 - MP 2.92 - Begin Section 004

ROUTE NUMBER: 102 ROUTE NAME: 4C Access Road



Photo # 1979 - MP 0.00 - Begin Route at Begin Section

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 102 ROUTE NAME: 4C Access Road



Photo # 1977 - MP 0.98 - Begin Section 002

ROUTE NUMBER: 103 ROUTE NAME: Unit 6 Access Road



Photo # 2014 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 103 ROUTE NAME: Unit 6 Access Road



Photo # 2003 - MP 1.00 - Begin Section 002

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 104 ROUTE NAME: Bootlegger 5 Access Road



Photo # 1869 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 105 ROUTE NAME: Outlet Canal Access Road



Photo # 1986 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 300 ROUTE NAME: Shop Access Road



Photo # 1867 - MP 0.00 - Begin Route at Begin Section

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 301 ROUTE NAME: Pumphouse Access Road



Photo # 2015 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 302 ROUTE NAME: Boneyard Road



Photo # 1865 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 302 ROUTE NAME: Boneyard Road



Photo # 1866 - MP 0.27 - Begin Section 002

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 401 ROUTE NAME: North Levee Road



Photo # 1899 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 402 ROUTE NAME: West Boundary Road



Photo # 1902 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 402 ROUTE NAME: West Boundary Road



Photo # 1903 - MP 1.00 - Begin Section 002

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 403 ROUTE NAME: North Boundary Road



Photo # 1922 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 403 ROUTE NAME: North Boundary Road



Photo # 1923 - MP 1.00 - Begin Section 002

ROUTE NUMBER: 404 ROUTE NAME: South Boundary Road



Photo # 1942 - MP 0.00 - Begin Route at Begin Section

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 404 ROUTE NAME: South Boundary Road



Photo # 1946 - MP 1.00 - Begin Section 002

ROUTE NUMBER: 404 ROUTE NAME: South Boundary Road



Photo # 1953 - MP 2.00 - Begin Section 003

ROUTE NUMBER: 404 ROUTE NAME: South Boundary Road



Photo # 1958 - MP 2.97 - Begin Section 004

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 405 ROUTE NAME: South Levee Road



Photo # 1959 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 406 ROUTE NAME: 5-6 Dike Road



Photo # 1980 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 406 ROUTE NAME: 5-6 Dike Road



Photo # 1981 - MP 1.01 - Begin Section 002

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 406 ROUTE NAME: 5-6 Dike Road



Photo # 1984 - MP 1.99 - Begin Section 003

ROUTE NUMBER: 407 ROUTE NAME: Southeast Boundary Road



Photo # 1987 - MP 0.00 - Begin Route at Begin Section

**Benton Lake NWR
Accident Summary**

Number of Accidents Reported	Timespan of Accidents	Injuries	Fatalities
1	12/27/2002 - 12/27/2002	0	0

APPENDIX

FWS ROAD FUNCTIONAL CLASSIFICATION	
Class I	Principal Refuge Road (Public Roads) - Routes that constitute the main access route, main auto tour route, or thoroughfare for refuge visitors. These routes are accessible by 2WD vehicles. Routes are numbered from 10 to 99.
Class II	Connector Refuge Road (Public Roads) - Routes that provide circulation within the refuge. These routes can also provide access to areas of scenic, scientific, recreational or cultural interest, such as overlooks, campgrounds, education centers, etc. These routes are accessible by 2WD vehicles. Routes are numbered from 100 to 199.
Class III	Special Purpose Refuge Road (Public Roads) - Roads that provide circulation within special use areas such as campgrounds or public concessionaire facilities or access to remote areas of the refuge. These routes may not be 2WD accessible. Routes are numbered from 200 to 299
Class IV	Administrative Access Road (Administrative Roads) - Routes intended for access to administrative developments or structures such as maintenance offices, employee quarters, or utility areas. These routes are accessible by 2WD vehicles. These routes may restrict access to the general public. Routes are numbered from 300 to 399.
Class V	Restricted Road (Administrative Roads) - Routes normally closed to the public, such as maintenance roads, service roads, patrol roads, and fire breaks. These routes may be open to the public for a short period of time for a special use, such as hunting access. These routes may not be 2WD accessible. Routes are numbered from 400 to 499.

A refuge road system contains those routes within or giving access to a refuge or other unit of the FWS that are administered by the FWS, or by the Service in cooperation with other agencies. The assignment of a functional classification (FC) to a refuge road is not based on traffic volumes or design speed, but on the intended use or function of that route.

DESCRIPTION OF RATING SYSTEM

Rating Data is collected on five different surface types: Asphalt, Concrete, Gravel, Native Improved and Native Primitive. The Utah LTAP Center's Remaining Service Life (RSL) system is used for all surface types. The RSL system is based on the Strategic Highway Research Program's (SHRP) Distress Identification Manual.

Asphalt Rating System

Data is collected on the following distresses and conditions:

- **Fatigue Cracking** - Interconnected cracks forming small irregular shapes.
- **Longitudinal Cracking** - Cracks running parallel with the roadway, in the direction of traffic.
- **Transverse Cracking** - Cracks perpendicular to the roadway, going across the lane or lanes.
- **Block Cracking** - Interconnected cracks forming large blocks.
- **Edge Cracking** - Cracks running along the edge of the pavement surface.
- **Patches** - Original surface repaired with new asphalt patch material.
- **Potholes** - Holes or depressions in the pavement.
- **Rutting** - surface depressions in the wheel paths.
- **Roughness** - Evenness of pavement for serviceability.
- **Drainage** - Ability of the road surface to drain water based on proper slope.

A Condition Rating value is calculated for each homogenous pavement section, and can be up to 1 mile in length.

Rating Index Formula

Fatigue, longitudinal, transverse, block, and edge cracking, along with patching and potholes are rated on a 0 - 9 scale (0 = no distress, 9 = maximum distress). The rating given is based on the extent and the severity of the distress. Rutting, roughness, and drainage are rated on a 0 - 3 scale (0 = excellent, 3 = poor). Each distress type has a given Remaining Service Life (RSL) value (in years) based on the rating for that distress. The distress rating resulting in the lowest RSL value is considered to be the governing distress. That value is assigned as the RSL of the road segment.

Concrete Rating System

Data is collected on the following distresses and conditions:

- **Spalling of Joints** - Chipping, breaking, or cracking of slab edges
- **Joint Seal Damage** - Any damage or condition that enables materials or water to infiltrate into the joint from the surface.
- **Corner Breaks** - A portion of the slab separated by a crack that intersects the adjacent transverse and longitudinal joints, forming approximately a 45° angle to the direction.
- **Broken Slabs** - Faulting and/or cracking localized to individual slabs.
- **Faulting** - Difference in elevation across a crack or joint.
- **Longitudinal Cracking** - Cracks in the pavement running parallel to road.

- **Transverse Cracking** - Cracks in the pavement running perpendicular to the direction of traffic.
- **Patch Deterioration** – Faulting, settling, or cracking of previously placed patch
- **Map Cracking** – A series of cracks that extend only into the upper surface of the Slab

A Condition Rating value is calculated for each homogenous pavement section, and can be up to 1 mile in length.

Rating Index Formula

The rating procedure for concrete pavement is the same as that for asphalt pavement described previously. Each of the distresses described above are rated on the same 0 – 9 scale. The governing distress is then determined and the RSL associated with that distress is assigned to the road segment.

Gravel and Native Improved Rating System

Data is collected on the following distresses and conditions:

- **Cross Section (Gravel, Native Improved only)** - Roadway built so that the center is higher than the shoulder, to prevent water from pooling on roadway.
- **Roadside Drainage (Gravel, Native Improved only)** - Roadside ditches and culverts to handle water flow and prevent pooling on the roadside.
- **Corrugations (Washboarding)** - Small trenches or holes developing perpendicular to the roadway.
- **Potholes** - Holes or depressions in the roadway.
- **Rutting** - Depressions running parallel with the roadway, in the wheelpaths.
- **Dust** - Amount of dust caused by traffic.
- **Loose Aggregate (Gravel Only)** - Loose gravel, typically piled up on the roadway edges or centerline.

A Condition Rating value is calculated for each homogenous pavement section, and can be up to 1 mile in length.

Rating Index Formula

The rating procedure for unpaved roads is the same as that for asphalt and concrete pavements described previously. Of the distresses described above, corrugations, potholes, rutting, and loose aggregate are rated on the same 0 – 9 scale previously mentioned. Cross section, roadside drainage, and dust are rated on the same 0 – 3 scale described for asphalt pavement. The governing distress is then determined and the RSL associated with that distress is assigned to the road segment.

Condition Descriptions by Surface Type

The following definitions are used to describe pavement condition for the various surface types. These are general guidelines for condition indications.

Asphalt

Excellent – Recently constructed or overlaid road where construction or overlay was performed correctly- No maintenance required. RSL = 19-20 years.

Good – Low extent longitudinal and transverse cracks. All cracks are 1/4" or less with little or no crack erosion. Patches are in good condition and applied correctly. Routine Maintenance recommended. RSL = 13-18 years.

Fair - Roads are in good structural condition with little or no fatigue cracking. Longitudinal, transverse, and edge cracking is at medium extent and severity. Block cracking is not extensive. Any patches are in good condition. Preventative maintenance recommended. RSL = 7-12 years.

Poor - Road beginning to show signs of structural distress. Fatigue cracking is medium to high extent and medium severity. Cracking will be severe. Surface may have severe block cracking and show. Patches are in fair to poor condition. There is moderate distortion or rutting and occasional potholes. Rehabilitation recommended. RSL = 1-6 years.

Failed - Road is severely deteriorated. Signs of structural failure appear along with severe and extensive fatigue cracking, distortion, potholes, or extensive patches in poor condition. Reconstruction recommended. RSL = 0 years.

Concrete

Excellent - New pavement. No maintenance required. RSL = 19-20 years

Good - First signs of transverse cracking, patch or repair, more extensive pop-outs, or scaling. Sealing or routine maintenance recommended. RSL = 13-18 years.

Fair – Pavement has joint or crack spalling, and/or faulting, along with cracking at corners with broken pieces. Any Patches are in fair condition and faulting is at a minimum. Preventative maintenance recommended. RSL = 7-12 years.

Poor - Joints and cracks are open 1 inch, spalled, or patched. Faulting is more severe. Rehabilitation recommended. RSL = 1-6 years.

Failed - Most slabs have failed structurally, and faulting is severe. Reconstruction recommended. RSL = 0 years.11-9

The following table shows the relationship between RSL and condition.

SUBJECTIVE CONDITION RATING FOR REMAINING SERVICE LIFE (Asphalt and Concrete Pavements)								
	FAILED	POOR		FAIR		GOOD		EXCELLENT
RSL Years	0	1-3	4-6	7-9	10-12	13-15	16-18	19-20

Gravel and Native

Excellent - Newly constructed road that has been constructed properly with proper crown, drainage and gravel layer. Little or no distress. No maintenance recommended. RSL = 8-10 years.

Good - Crown, drainage provisions, and gravel layer are in good condition. Distress limited to traffic effects such as dust, loose aggregate, and low severity corrugations (wash boarding). RSL = 5-7 years.

Fair - Adequate drainage and crown through majority of roadway. Crown repair, ditch improvement may be necessary. Road has more severe corrugations and potholes. Preventative maintenance recommended. RSL = 3-4 years.

Poor - Travel at slow speeds is necessary. Additional gravel layer needed to carry traffic. Poor crown. Ditching is inadequate and rutting is extensive and severe. Rehabilitation recommended. RSL = 1-2 years.

Failed - Travel is difficult, and road may be closed at times. Rutting and Corrugations are very severe. Total Reconstruction of road is recommended. RSL = 0 years.

The following table shows the RSL values for gravel and native roads in terms of excellent, good, fair, poor, and failed condition.

SUBJECTIVE CONDITION RATING FOR REMAINING SERVICE LIFE (Gravel and Native Surfaces)					
	FAILED	POOR	FAIR	GOOD	EXCELLENT
RSL Years	0	1-2	3-4	5-7	8-10