Village of Newberry
Phase I – Wastewater Improvements

Michigan Clean Water State Revolving Fund Project Plan
Volume 2 – Appendix (DRAFT)

21-0321

March 7, 2022

c2ae
architecture • engineering

1211 Ludington Street
Escanaba, MI 49829

APPENDIX A

BASIS OF COST

Appendix A

Part 1: Collection System Costing Basis

Village of Newberry Opinion of Cost: Sewer Rehabilitation (Lining) (21-0321)

Versions: ANH 3/7/2022

				A1		A2		A3		A4		A5		B1		B2		C1		C2		Totals	
				W Helen St from Sherman St to Newberry Ave and stretch of sewer going south on Robinson St		W Ave A from Washington Blvd to Phelps St		E Ave A from Newberry Ave to Parmelee St		W Ave B from Tahquamenon Blvd to Phelps St		W Ave C from Tahquamenon Blvd to Phelps St		W Victory Way from west of Washington Blvd to Robinson St, Robinson St going north to W Ave D		Alley north of E Ave D from Charles St to E Limits St, E limits St from E Ave C going south to County Rd 466		E McMillan Ave from Charles St to E Limits Rd		Broad St from E Ave B to C including to alley west of Broad St			
Item	Description	Price	Unit	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost
General																							
101	Mobilization, General Conditions, Bonds & Insurance (5% of Total Construction Cost)	5%			$ 6,696		$ 5,868		$ 2,859		$ 9,357		$ 10,153		$ 7,176		$ 7,860		$ 5,395		$ 3,977		$ 59,341
102	Environmental Mitigation, Traffic Control, Etc. (2.5% of Total Construction Cost)	2.5%			$ 3,348		$ 2,934		$ 1,429		$ 4,679		$ 5,076		$ 3,588		$ 3,930		$ 2,698		$ 1,988		$ 29,670
				Total	**$ 10,044**	**Total**	**$ 8,802**	**Total**	**$ 4,288**	**Total**	**$ 14,036**	**Total**	**$ 15,229**	**Total**	**$ 10,764**	**Total**	**$ 11,790**	**Total**	**$ 8,093**	**Total**	**$ 5,965**	**Total**	**$ 89,011**
Sanitary Sewer Items																							
201	12" Sanitary Sewer Lining	$79	LF	640	$ 50,442	380	$ 29,950	0	$ -	430	$ 33,890	800	$ 63,052	0	$ -	0	$ -	0	$ -	0	$ -	2,250	$ 177,334
202	10" Sanitary Sewer Lining	$79	LF	480	$ 37,831	950	$ 74,874	630	$ 49,653	860	$ 67,781	1,490	$ 117,434	1,630	$ 128,468	510	$ 40,196	1,210	$ 95,366	850	$ 66,993	8,610	$ 678,597
203	8" Sanitary Sewer Lining	$79	LF	420	$ 33,102	0	$ -	0	$ -	830	$ 65,416	0	$ -	0	$ -	1,230	$ 96,942	0	$ -	0	$ -	2,480	$ 195,461
204	6" Sanitary Sewer Lining	$79	LF	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -
205	48" Pre-Cast Manhole Lining (7' of vf per manhole)	$2,508	EA	5	$ 12,539	5	$ 12,539	3	$ 7,523	8	$ 20,062	9	$ 22,570	6	$ 15,047	8	$ 20,062	5	$ 12,539	5	$ 12,539	54	$ 135,419
				Total	**$ 133,914**	**Total**	**$ 117,363**	**Total**	**$ 57,177**	**Total**	**$ 187,150**	**Total**	**$ 203,056**	**Total**	**$ 143,515**	**Total**	**$ 157,200**	**Total**	**$ 107,905**	**Total**	**$ 79,532**	**Total**	**$ 1,186,811**
Total Construction Costs																							
General					$ 10,044		$ 8,802		$ 4,288		$ 14,036		$ 15,229		$ 10,764		$ 11,790		$ 8,093		$ 5,965		$ 89,011
Sanitary					$ 133,914		$ 117,363		$ 57,177		$ 187,150		$ 203,056		$ 143,515		$ 157,200		$ 107,905		$ 79,532		$ 1,186,811
Total					**$ 144,000**		**$ 127,000**		**$ 62,000**		**$ 202,000**		**$ 219,000**		**$ 155,000**		**$ 169,000**		**$ 116,000**		**$ 86,000**		**$ 1,276,000**

Village of Newberry Opinion of Cost: Sewer Replacement (21-0321)

Versions: ANH 3/7/2022

				A1		A2		A3		A4		A5		B1		B2		C1		C2		Totals	
				W Helen St from Sherman St to Newberry Ave and stretch of sewer going south on Robinson St		W Ave A from Washington Blvd to Phelps St		E Ave A from Newberry Ave to Parmelee St		W Ave B from Tahquamenon Blvd to Phelps St		W Ave C from Tahquamenon Blvd to Phelps St		W Victory Way from west of Washington Blvd to Robinson St, Robinson St going north to W Ave D		Alley north of E Ave D from Charles St to E Limits St, E limits St from E Ave C going south to County Rd 466		E McMillan Ave from Charles St to E Limits Rd		Broad St from E Ave B to C including to alley west of Broad St			
Item	Description	Price	Unit	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	No. of Units	Cost
General																							
101	Mobilization, General Conditions, Bonds & Insurance (5% of Total Construction Cost)	5%			$ 24,426		$ 21,302		$ 10,292		$ 33,873		$ 36,828		$ 7,176		$ 18,291		$ 19,489		$ 10,517		$ 152,188
102	Environmental Mitigation, Traffic Control, Etc. (2.5% of Total Construction Cost)	2.5%			$ 12,213		$ 10,651		$ 5,146		$ 16,937		$ 18,414		$ 3,588		$ 9,145		$ 9,745		$ 5,259		$ 76,094
				Total	**$ 36,640**	**Total**	**$ 31,953**	**Total**	**$ 15,438**	**Total**	**$ 50,810**	**Total**	**$ 55,242**	**Total**	**$ 10,764**	**Total**	**$ 27,436**	**Total**	**$ 29,234**	**Total**	**$ 15,776**	**Total**	**$ 228,283**
Restoration																							
201	3" Type 'E' HMA Pavement Replacement (Full Width of 24'w)	$14	SY	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -
202	12" Gravel Base in Type 'E' Pavement Areas (Full Width of 24'w)	$11	SY	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -
203	3" Type 'A' HMA Pavement Replacement (Half Width-Trench Only)	$30	LF	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -
204	12" Gravel Base in Type 'A' Pavement Areas (Half Width-Trench Only)	$22	LF	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -
205	3" Type 'B' HMA Pavement Replacement (3" Trench Plus 1.5" Full Width Cap)	$27	LF	1,540	$ 41,580	1,330	$ 35,910	630	$ 17,010	2,120	$ 57,240	2,290	$ 61,830	0	$ -	700	$ 18,900	1,210	$ 32,670	850	$ 22,950	10,670	$ 288,090
206	12" Gravel Base in Type 'B' Pavement Areas (Trench Only)	$22	LF	1,540	$ 33,880	1,330	$ 29,260	630	$ 13,860	2,120	$ 46,640	2,290	$ 50,380	0	$ -	700	$ 15,400	1,210	$ 26,620	850	$ 18,700	10,670	$ 234,740
207	6" Gravel Surface Replaement (15'w)	$13	SY	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -
208	Pavement Marking	$1	LF	1,540	$ 1,617	1,330	$ 1,397	630	$ 662	2,120	$ 2,226	2,290	$ 2,405	0	$ -	1,200	$ 1,260	1,210	$ 1,271	850	$ 893	11,170	$ 11,729
209	Curb and Gutter Replacement (single side)	$28	LF	1,540	$ 43,659	1,330	$ 37,706	630	$ 17,861	2,120	$ 60,102	2,290	$ 64,922	0	$ -	0	$ -	1,210	$ 34,304	0	$ -	9,120	$ 258,552
210	Curb and Gutter Removal (single side)	$4	LF	1,540	$ 6,468	1,330	$ 5,586	630	$ 2,646	2,120	$ 8,904	2,290	$ 9,618	0	$ -	0	$ -	1,210	$ 5,082	0	$ -	9,120	$ 38,304
211	Storm Repair (1-48" Manhole with 15' of Storm Pipe & 2-36" Catch Basins with 30' Lead every 400')	$9,044	EA	4	$ 34,819	3	$ 30,071	2	$ 14,244	5	$ 47,933	6	$ 51,777	0	$ -	3	$ 27,132	3	$ 27,358	1	$ 9,044	27	$ 242,379
212	6" Concrete Driveway Replacement (every 800', 10sy)	$53	SY	19	$ 1,011	17	$ 873	8	$ 413	27	$ 1,391	29	$ 1,503	0	$ -	15	$ 788	15	$ 794	11	$ 558	140	$ 7,330
213	3" Bituminous Driveway Replacement (every 300', 10sy)	$37	SY	51	$ 1,887	44	$ 1,629	21	$ 772	71	$ 2,597	76	$ 2,805	0	$ -	40	$ 1,470	40	$ 1,482	28	$ 1,041	372	$ 13,683
214	4" Concrete Sidewalk (5'w, Single Side)	$7	SF	7,700	$ 56,595	6,650	$ 48,878	3,150	$ 23,153	10,600	$ 77,910	11,450	$ 84,158	0	$ -	0	$ -	6,050	$ 44,468	0	$ -	45,600	$ 335,160
215	6" Concrete Sidewalk at Drive Crossings (every 200' @ 5'x15')	$9	SF	578	$ 5,457	499	$ 4,713	236	$ 2,233	795	$ 7,513	859	$ 8,115	0	$ -	0	$ -	454	$ 4,288	0	$ -	3,420	$ 32,319
216	6" Concrete ADA Ramps w/ Iron Warning Plate (every 400' @100sf)	$17	SF	385	$ 6,468	333	$ 5,586	158	$ 2,646	530	$ 8,904	573	$ 9,618	0	$ -	0	$ -	303	$ 5,082	0	$ -	2,280	$ 38,304
217	Adjust Existing Casting before Final Paving (2 ea @ 400')	$383	EA	8	$ 2,951	7	$ 2,549	3	$ 1,207	11	$ 4,062	11	$ 4,388	0	$ -	6	$ 2,300	6	$ 2,319	4	$ 1,629	56	$ 21,405
218	Miscellaneous Topsoil, Seed & Mulch / Sod Restoration	$2	LF	1,540	$ 3,234	1,330	$ 2,793	630	$ 1,323	2,120	$ 4,452	2,290	$ 4,809	0	$ -	1,200	$ 2,520	1,210	$ 2,541	850	$ 1,785	11,170	$ 23,457
219	Gravel Shoulder Replacement (6" d, 2` w)	$3	LF	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	1,200	$ 3,600	0	$ -	850	$ 2,550	2,050	$ 6,150
220	Excess Cut, (15% of Pipe LF)	$3	LF	231	$ 728	200	$ 628	95	$ 298	318	$ 1,002	344	$ 1,082	0	$ -	180	$ 567	182	$ 572	128	$ 402	1,676	$ 5,278
				Total	**$ 240,354**	**Total**	**$ 207,578**	**Total**	**$ 98,326**	**Total**	**$ 330,876**	**Total**	**$ 357,409**	**Total**	**$ -**	**Total**	**$ 73,936**	**Total**	**$ 188,849**	**Total**	**$ 59,551**	**Total**	**$ 1,556,880**
Sanitary Sewer Items																							
401	Granular Fill Over Sewer (5% of Trench Length)	$26	LF	77	$ 2,021	67	$ 1,746	32	$ 827	106	$ 2,783	115	$ 3,006	0	$ -	87	$ 2,284	61	$ 1,588	43	$ 1,116	586	$ 15,369
402	12" Trench Undercut and Stone Refill for Sewer (25% of Trench)	$13	LF	385	$ 4,847	333	$ 4,186	158	$ 1,983	530	$ 6,672	573	$ 7,207	0	$ -	435	$ 5,476	303	$ 3,808	213	$ 2,675	2,928	$ 36,856
403	27" Sanitary Sewer	$175	LF	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -
404	24" Sanitary Sewer	$160	LF	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -
405	21" Sanitary Sewer	$144	LF	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -
406	18" Sanitary Sewer	$113	LF	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -
407	15" Sanitary Sewer	$86	LF	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -
408	12" Sanitary Sewer	$75	LF	640	$ 48,064	380	$ 28,538	0	$ -	430	$ 32,293	800	$ 60,080	0	$ -	0	$ -	0	$ -	0	$ -	2,250	$ 168,975
409	10" Sanitary Sewer	$73	LF	480	$ 35,040	950	$ 69,350	630	$ 45,990	860	$ 62,780	1,490	$ 108,770	0	$ -	510	$ 37,230	1,210	$ 88,330	850	$ 62,050	6,980	$ 509,540
410	8" Sanitary Sewer	$71	LF	420	$ 29,778	0	$ -	0	$ -	830	$ 58,847	0	$ -	0	$ -	1,230	$ 87,207	0	$ -	0	$ -	2,480	$ 175,832
411	6" Sanitary Sewer	$59	LF	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -
412	4" To 6" Sanitary Lateral Replacement (35 LF Ea. Every 100' Ea. Side)	$48	LF	924	$ 43,999	798	$ 37,999	378	$ 17,999	1,272	$ 60,569	1,374	$ 65,426	0	$ -	1,044	$ 49,713	726	$ 34,570	510	$ 24,285	7,026	$ 334,561
413	Connection to Ex. 4" to 6" Sanitary Lateral (Every 100' Ea. Side)	$200	EA	31	$ 6,160	27	$ 5,320	13	$ 2,520	42	$ 8,480	46	$ 9,160	0	$ -	35	$ 6,960	24	$ 4,840	17	$ 3,400	234	$ 46,840
414	Wye Branch (1 Every 100' Ea. Side)	$263	EA	31	$ 8,085	27	$ 6,983	13	$ 3,308	42	$ 11,130	46	$ 12,023	0	$ -	35	$ 9,135	24	$ 6,353	17	$ 4,463	234	$ 61,478
415	By-pass Pumping Around Sewer Section Being Replaced	$11	LF	1,540	$ 16,170	1,330	$ 13,965	630	$ 6,615	2,120	$ 22,260	2,290	$ 24,045	0	$ -	1,740	$ 18,270	1,210	$ 12,705	850	$ 8,925	11,710	$ 122,955
416	Dewatering	$5	LF	1,540	$ 7,700	1,330	$ 6,650	630	$ 3,150	2,120	$ 10,600	2,290	$ 11,450	0	$ -	1,740	$ 8,700	1,210	$ 6,050	850	$ 4,250	11,710	$ 58,550
417	48" Pre-Cast Manhole Replacement	$6,195	EA	5	$ 30,975	5	$ 30,975	3	$ 18,585	8	$ 49,560	9	$ 55,755	0	$ -	8	$ 49,560	5	$ 30,975	5	$ 30,975	48	$ 297,360
418	60" Pre-Cast Manhole Replacement	$8,849	EA	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -
419	96" Pre-Cast ManholeReplacement	$16,350	EA	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -
420	Connect to Existing Sanitary Sewer (2 Ea. @ 400')	$1,155	EA	8	$ 8,894	7	$ 7,681	3	$ 3,638	11	$ 12,243	11	$ 13,225	0	$ -	9	$ 10,049	6	$ 6,988	4	$ 4,909	59	$ 67,625
421	Utility Location Investigation (1 Ea. @ 1,000')	$788	EA	2	$ 1,575	1	$ 788	1	$ 788	2	$ 1,575	2	$ 1,575	0	$ -	2	$ 1,575	1	$ 788	1	$ 788	12	$ 9,450
422	Rock or Boulder Excavation (2% of Total Sanitary Cost)	2.0%			$ 4,866		$ 4,284		$ 2,108		$ 6,796		$ 7,434		$ -		$ 5,723		$ 3,940		$ 2,957	0	$ 38,108
423	10" Sanitary Sewer Lining	$79	LF	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	1,630	$ 128,468	0	$ -	0	$ -	0	$ -	1,630	$ 128,468
424	48" Pre-Cast Manhole Lining (7' of vf per manhole)	$2,508	EA	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	6	$ 15,047	0	$ -	0	$ -	0	$ -	6	$ 15,047
				Total	**$ 248,173**	**Total**	**$ 218,463**	**Total**	**$ 107,510**	**Total**	**$ 346,588**	**Total**	**$ 379,156**	**Total**	**$ 143,515**	**Total**	**$ 291,882**	**Total**	**$ 200,934**	**Total**	**$ 150,791**	**Total**	**$ 2,087,013**
Total Construction Costs																							
General					$ 36,640		$ 31,953		$ 15,438		$ 50,810		$ 55,242		$ 10,764		$ 27,436		$ 29,234		$ 15,776		$ 228,283
Restoration					$ 240,354		$ 207,578		$ 98,326		$ 330,876		$ 357,409		$ -		$ 73,936		$ 188,849		$ 59,551		$ 1,556,880
Sanitary					$ 248,173		$ 218,463		$ 107,510		$ 346,588		$ 379,156		$ 143,515		$ 291,882		$ 200,934		$ 150,791		$ 2,087,013
Total					**$ 526,000**		**$ 458,000**		**$ 222,000**		**$ 729,000**		**$ 792,000**		**$ 155,000**		**$ 394,000**		**$ 420,000**		**$ 227,000**		**$ 3,873,000**

Appendix A

Part 2: Bond Schedule

Bond Schedule - Year 1

Date: ***01/28/22***

Type of Bond: **30 Yr. Loan**

Borrower Name:	**Village of Newberry**	
Interest Rate:	2.125%	
Yrs Deferred Principle	0	
Principal:	**$1,500,000**	(round to nearest $1000)
Ammort. Factor	0.0454	
Ammortized Payment:	$68,131	
Monthly Debt Service:	$5,678	
Estimated System EDUs	2,337	
User Rate Impact	$2.43	

Year	1st Interest	2nd Interest	Principal Paid	Total Year Payment	Loan Balance
					1,500,000
1	15,938	15,938	36,000	67,875	1,464,000
2	15,555	15,555	37,000	68,110	1,427,000
3	15,162	15,162	38,000	68,324	1,389,000
4	14,758	14,758	39,000	68,516	1,350,000
5	14,344	14,344	39,000	67,688	1,311,000
6	13,929	13,929	40,000	67,859	1,271,000
7	13,504	13,504	41,000	68,009	1,230,000
8	13,069	13,069	42,000	68,138	1,188,000
9	12,623	12,623	43,000	68,245	1,145,000
10	12,166	12,166	44,000	68,331	1,101,000
11	11,698	11,698	45,000	68,396	1,056,000
12	11,220	11,220	46,000	68,440	1,010,000
13	10,731	10,731	47,000	68,463	963,000
14	10,232	10,232	48,000	68,464	915,000
15	9,722	9,722	49,000	68,444	866,000
16	9,201	9,201	50,000	68,403	816,000
17	8,670	8,670	51,000	68,340	765,000
18	8,128	8,128	52,000	68,256	713,000
19	7,576	7,576	53,000	68,151	660,000
20	7,013	7,013	54,000	68,025	606,000
21	6,439	6,439	55,000	67,878	551,000
22	5,854	5,854	56,000	67,709	495,000
23	5,259	5,259	58,000	68,519	437,000
24	4,643	4,643	59,000	68,286	378,000
25	4,016	4,016	60,000	68,033	318,000
26	3,379	3,379	61,000	67,758	257,000
27	2,731	2,731	63,000	68,461	194,000
28	2,061	2,061	64,000	68,123	130,000
29	1,381	1,381	65,000	67,763	65,000
30	691	691	67,000	68,381	-2,000

Bond Schedule - Future Years

Date: ***01/28/22***

Type of Bond: **30 Yr. Loan**

Borrower Name:	**Village of Newberry**
Interest Rate:	2.125%
Yrs Deferred Principle	0
Principal:	**$12,200,000** (round to nearest $1000)
Ammort. Factor	0.0454
Ammortized Payment:	$554,136
Monthly Debt Service:	$46,178
Estimated System EDUs	2,337
User Rate Impact	$19.76

Year	1st Interest	2nd Interest	Principal Paid	Total Year Payment	Loan Balance
					12,200,000
1	129,625	129,625	295,000	554,250	11,905,000
2	126,491	126,491	301,000	553,981	11,604,000
3	123,293	123,293	308,000	554,585	11,296,000
4	120,020	120,020	314,000	554,040	10,982,000
5	116,684	116,684	321,000	554,368	10,661,000
6	113,273	113,273	328,000	554,546	10,333,000
7	109,788	109,788	335,000	554,576	9,998,000
8	106,229	106,229	342,000	554,458	9,656,000
9	102,595	102,595	349,000	554,190	9,307,000
10	98,887	98,887	356,000	553,774	8,951,000
11	95,104	95,104	364,000	554,209	8,587,000
12	91,237	91,237	372,000	554,474	8,215,000
13	87,284	87,284	380,000	554,569	7,835,000
14	83,247	83,247	388,000	554,494	7,447,000
15	79,124	79,124	396,000	554,249	7,051,000
16	74,917	74,917	404,000	553,834	6,647,000
17	70,624	70,624	413,000	554,249	6,234,000
18	66,236	66,236	422,000	554,473	5,812,000
19	61,753	61,753	431,000	554,505	5,381,000
20	57,173	57,173	440,000	554,346	4,941,000
21	52,498	52,498	449,000	553,996	4,492,000
22	47,728	47,728	459,000	554,455	4,033,000
23	42,851	42,851	468,000	553,701	3,565,000
24	37,878	37,878	478,000	553,756	3,087,000
25	32,799	32,799	489,000	554,599	2,598,000
26	27,604	27,604	499,000	554,208	2,099,000
27	22,302	22,302	510,000	554,604	1,589,000
28	16,883	16,883	520,000	553,766	1,069,000
29	11,358	11,358	531,000	553,716	538,000
30	5,716	5,716	543,000	554,433	-5,000

Appendix A

Part 3: Operating Budget

VILLAGE OF NEWBERRY (MICHIGAN) SEWER FUND

SCHEDULE OF 2020 BUDGETED OPERATING EXPENSES AND ADJUSTMENTS

Fiscal Year Ended December 31		**2020 Budget**
Operating Expenses		
Dept: 537 Sewer System		
590-537-702.000	Wages	$122,000
590-537-703.000	Salaries	112,000
590-537-705.000	Vacation	20,000
590-537-706.000	Holiday	8,000
590-537-709.000	Employer's FICA	19,000
590-537-710.000	Unemployment	500
590-537-712.000	Insurance Buyout	1,500
590-537-713.000	Wages - Overtime	6,000
590-537-716.000	Funeral Allowance	2,000
590-537-717.000	Retirement - MERS - Employer	44,000
590-537-719.000	Hospitalization	95,000
590-537-721.000	HAS	14,100
590-537-724.000	Sick Pay	9,500
590-537-725.000	Workmans' Compensation	3,400
590-537-726.000	Life Insurance	1,800
590-537-730.000	Settlement	750
590-537-751.000	License Fees	100
590-537-752.000	Office Supplies	700
590-537-752.100	Operating Supplies	10,000
590-537-752.200	IT Software	10,000
590-537-753.000	Tools & Equip (Under Thres)	13,000
590-537-759.000	Gas, Oil & Grease	600
590-537-767.000	Uniforms	600
590-537-776.000	Supplies - Building Maintenance	9,000
590-537-801.000	Professional & Contractual	70,000
590-537-801.200	Legal	15,000
590-537-802.000	Collection Expense	100
590-537-804.000	Lease Expense	1,200
590-537-850.000	Telephone	3,500
590-537-851.000	Postage	2,000
590-537-900.000	Publishing & Printing	1,800
590-537-910.000	Professional Development	2,000
590-537-913.000	Travel	1,200
590-537-915.000	Memberships & Subscriptions	1,000
590-537-917.000	Treatment Costs	20,000
590-537-917.100	Lab Supplies	6,000
590-537-918.000	Water	8,000
590-537-920.000	Electricity	45,000

VILLAGE OF NEWBERRY (MICHIGAN) SEWER FUND

SCHEDULE OF 2020 BUDGETED OPERATING EXPENSES AND ADJUSTMENTS

Fiscal Year Ended December 31		**2020 Budget**
Operating Expenses (Continued)		
Dept: 537 Sewer System (Continued)		
590-537-921.000	Heat	8,500
590-537-929.000	Repairs & Maintenance	15,000
590-537-929.100	Preventative Maintenance	3,000
590-537-932.000	Vehicle Repairs & Maintenance	3,000
590-537-935.000	L&P Insurance	19,000
590-537-940.000	Equipment Rental	6,000
590-537-968.100	Bond Reserve	54,625
590-537-973.000	Capital Outlay	-
590-537-974.000	Construction - SRF Bond	-
590-537-975.000	Construction - SAW Grant	-
590-537-991.000	Principal	-
590-537-992.200	Interest Bond #2	-
	Total Sewer Operating Expenses	789,475
	Current Year Debt Service	245,000
	Net Expenses Supported by Rates	$1,034,475
Rate Revenue		
Residential Customers Flat Fee		
	Residential customers number	735
	Flat rate	$35.00
	Times: 12 months	12
	Total Residential Flat Rate Revenue	$308,700
Seasonal Residential Monthly Sewer Service Fee		
	Seasonal residential customers number	33
	Flat rate	$10.30
	Times: 5 months	5
	Total Residential Flat Rate Revenue	$1,700
Commercial Sewer REU Charge		
	Commercial REU number	424
	REU rate	$35.00
	Times: 12 months	12
	Total Residential Commodity Revenue	$178,244

VILLAGE OF NEWBERRY (MICHIGAN) SEWER FUND

SCHEDULE OF 2020 BUDGETED OPERATING EXPENSES AND ADJUSTMENTS

Fiscal Year Ended December 31	**2020 Budget**
Rate Revenue	
Correction Facility	
REU number	1,178
REU rate	$35.00
Times: 12 months	12
Total Correction Facility Revenue	$494,651
Pentland Charge	
11.4% of all the other rates revenue	11.4%
All the other rates revenue	$983,294
Total Pentland Charge	$112,096
Total Rate Revenue	$1,095,390
GAP	$0

APPENDIX B

DISADVANTAGED COMMUNITY

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

DISADVANTAGED COMMUNITY STATUS DETERMINATION WORKSHEET

The following data is required from each municipality to assess the disadvantaged community status. Please provide the necessary information and return to:

Mark Conradi
Water Infrastructure Financing Section
Finance Division
conradim@michigan.gov

Please contact Mark Conradi (conradim@michigan.gov) with any questions on the completion of the form.

Please check the box this determination is for:

DWSRF ☐

CWSRF ☑

Total amount of anticipated debt for the proposed project, if applicable.

$1,500,000

Annual payments on the existing debt for the system.

$246,625.00

Total operation, maintenance, and replacement expenses for the system on an annual basis.

$1,018,000

Number of residential equivalent users (REUs) in the system.

2,337

For determinations made using anticipated debt, a final determination will be made based upon the awarded loan amount.

If you need this information in an alternate format, contact EGLE-Accessibility@Michigan.gov or call 800-662-9278.

EGLE does not discriminate on the basis of race, sex, religion, age, national origin, color, marital status, disability, political beliefs, height, weight, genetic information, or sexual orientation in the administration of any of its programs or activities, and prohibits intimidation and retaliation, as required by applicable laws and regulations. Questions or concerns should be directed to the Nondiscrimination Compliance Coordinator at EGLE-NondiscriminationCC@Michigan.gov or 517-249-0906.

This form and its contents are subject to the Freedom of Information Act and may be released to the public.

APPENDIX C

EVIRONMENTAL INFORMATION

ENVIRONMENTAL INFORMATION AND GUIDANCE
TABLE OF CONTENTS

Appendix C

Typical Review Package as Distributed

PROJECT SUMMARY FOR ENVIRONMENTAL REVIEWS

VILLAGE OF NEWBERRY, MICHIGAN
PHASE 1 - WASTEWATER SYSTEM IMPROVEMENTS (CWSRF PROJECT PLAN)

February 2022

ADMINISTRATIVE

The Village of Newberry, Michigan has contracted with C2AE to prepare an EGLE CWSRF Program Project Plan. The purpose of the Project Plan is to evaluate needs and recommend alternatives for improvements to the wastewater system.

PROJECT PLANNING AREA

Project planning concentrates on the existing Newberry wastewater system (T46N, R10W, Sections 23, 24, 25 and 26). The Village is located in Luce County near the east end of Michigan's Upper Peninsula.

EXISTING FACILITIES

The Newberry WWTP serves the Village of Newberry, MI; McMillian Township, MI along State Highway M-123; and Pentland Township, MI along State Highway M-123 and M28.

Wastewater is collected via a system of gravity collector and interceptor sewers along with pump stations, where dictated by terrain, than pumped to the treatment plant where the treated effluent is discharged to the Tahquamenon River under a general NPDES Permit. The treatment plant is approximately 1 mile north of the Village of Newberry and is currently owned by Luce County and is operated and maintained by the Village of Newberry.

The Village collection system is between 50 and 120 years old while the Township components are approximately 10 and 35 years old. The WWTP was constructed in 1964 with major improvements in 1976 and 2012; upgrade of the raw sewage pumping added in 1998.

NEED FOR THE PROJECT

Reliable operation of the wastewater collection system within the Village of Newberry's utility systems are imperative to protect the health and safety of the Village's citizens and visitors. The Village has been operating and maintaining the wastewater treatment plant and collection system effectively, but there are areas of escalating deterioration and obsolescence that require a larger, preventative replacement, and rehabilitation effort. Operators, consultants, and regulators have collaborated on the proposed solutions for these areas of work.

ALTERNATIVES CONSIDERED

The principal and recommended alternatives are the rehabilitation of the existing collection system with improvements to the wastewater treatment plant. Other alternatives considered are No Action and Replacement of the Collection System.

RECOMMENDED ALTERNATIVE

The current recommended alternative, pending environmental and other evaluations, is to Upgrade Existing Facilities and Improvements of the Collection System. Year One improvements will include rehabilitation of sewers shown in the attached figure. Future Year(s) collection improvements will focus on the sewers with the most severe quick ratings.

The following is a summary of WWTP improvements to be include:

- Sludge Storage Expansion
- Headworks Improvements (Fine Screening and Septage Receiving Station)
- Final Tank Dome Replacements
- Primary Settling Tank Expansion
- Raw Sewage Pump Station Rehabilitation
- Return Activated Sludge (RAS) No. 3 Pump Replacement
- Miscellaneous Building and Site Improvements (i.e. painting, SCADA, driveway replacement, service building improvements)
- Upgrade Existing Generator

ANTICIPATED SCHEDULE

The initial project is scheduled for submission of a EGLE Project Plan in 2022 with construction in 2022 through 2027.

Figure 1: Location Map

PROPOSED WASTERWATER IMPROVEMENT PRIORITIES

VILLAGE OF NEWBERRY
PROJECT: 21-0321
LUCE COUNTY, MICHIGAN

c2ae architecture • engineering

Legend

- All Sanitary Pipes
- Priority 1
- Priority 2
- Priority 3
- Priority 4

Railroad St
Sherman St
W Helen St
E Helen St
W John St
Robinson St
E John St
W Truman St
E Truman St
Phelps St
Handy St
Parmelee St
Vulcan St
W Harrie St
E Harrie St
W Court St
E Court St
Newberry Ave
H St
W McMillan Ave
E McMillan Ave
Charles St
W Avenue A
E Avenue A
Tahquamenon Blvd
W Avenue B
E Avenue B
Washington Blvd
Sherman St
W Avenue C
E Avenue C
Broad St
East Limits St
W Avenue D
E Avenue D
W Victory Way
Autumn Ln
W 123
County Road 456

A1 A1 A1 A1 A1
A2 A2 A2 A2 A2
A3 A3
A4 A4 A4 A4 A4 A4
A5 A5 A5 A5 A5 A5
B1 B1 B1 B1
B2 B2 B2 B2 B2 B2
C1 C1 C1 C1 C1
C2 C2 C2 C2

N

0 250 500 1,000 1,500 2,000 Feet

PLOTTED BY: ASHLEY.HENDRICKS 10/25/2021 04:14 PM N:\2021\210321_Newberry_WW_Ph1\Drawings_GIS\Newberry_SAW_Map.mxd

c2ae architecture · engineering
www.c2ae.com

VILLAGE OF NEWBERRY, MICHIGAN CWSRF PROJECT PLAN

LUCE COUNTY, MICHIGAN

FIGURE 9. PROPOSED WASTEWATER TREATMENT PLANT SITE IMPROVEMENTS

REVISIONS

REV	DESCRIPTION	DATE

PROJ. #: 210321

DATE: FEBRUARY 2022

SHEET 2

PRELIMINARY SUBMITTAL

Appendix C

Part 1: Air Quality

1211 Ludington St.
Escanaba, MI 49829
O: 906.233.9360
www.c2ae.com

1. Air Quality

Fugitive dust emissions on the worksite are a potential during construction. If this would become an issue, dust suppressants will be used to control the fugitive dust to prevent violations of Rule 901.

Appendix C

Part 2: Archeological and Historic Resources

1211 Ludington St.
Escanaba, MI 49829
O: 906.233.9360
www.c2ae.com

2. Archeological and Historic Resources

Based on the ITA Meeting for this project, the project has been classified as an equivalency project, therefore SHPO was not contacted for review. It is anticipated that there will be no impact to any historic properties. However, Correspondence from the 2012 Newberry Project Plan with SHPO is attached which summarized that there are no historic properties within the area of potential affects.

c2ae
1211 Ludington Street
Escanaba, MI 49829
P: 906.233.9360
F: 906.233.9389
info@c2ae.com
www.c2ae.com

Transmittal

Project #:	**12-0010**	**Date:**	May 7, 2012
		Submittal #:	
Project:	Village of Newberry WWTP Improvements	**Specification #:** **Specification Title:**	
To:	State Historic Preservation Office Environmental Review Office Michigan Historical Center 702 W Kalamazoo Street P.O. Box 30740 Lansing, MI 48909-824	**Project Manager** **Distribution:**	David Holmgren 120013 file B-10

Enclosures:

■ Attached ☐ Change Order ☐ Specifications

☐ Report ☐ Shop Drawings ☐ Under Separate Cover ☐ Other _____

☐ Letter ☐ Submittal Review ☐ Plans

Quantity	Description/Document Title
1	Section 106 review package including application, route photos & USGS map

Action Requested:

☐ For Review ☐ No Exception Taken ☐ See Comment Sheet for Notations

■ For Your Use ☐ Exception As Noted ☐ Resubmit _____ Copies for Review

☐ As Requested ☐ Rejected ☐ Submit _____ Copies for Distribution

☐ Revise and Resubmit ☐ Return _____ Corrected Prints

☐ For Bids Due _____ ☐ Other _____

Notes:

Kristen M. Farrell, P.E.
C2AE

(If enclosures are not as noted, kindly notify us at once)

STATE HISTORIC PRESERVATION OFFICE

Application for Section 106 Review

SHPO Use Only					
☐ IN	Received Date ____ / ____ / ____	Log In Date	____ / ____ / ____		
☐ OUT	Response Date ____ / ____ / ____	Log Out Date	____ / ____ / ____		
	Sent Date ____ / ____ / ____				

Submit one copy for each project for which review is requested. This application is required. Please type. Applications must be complete for review to begin. Incomplete applications will be sent back to the applicant without comment. Send only the information and attachments requested on this application. Materials submitted for review cannot be returned. Due to limited resources we are unable to accept this application electronically.

I. GENERAL INFORMATION

☒ THIS IS A NEW SUBMITTAL ☐ THIS IS MORE INFORMATION RELATING TO ER#

- ☐ Funding Notice
- ☐ Survey
- ☐ MOA or PA
- ☒ Other: **MDEQ SRF Program Project Plan**

a. Project Name: **Village of Newberry Wastewater Treatment Plan Improvements**
b. Project Address (if available): **Multiple Locations; See figures**
c. Municipal Unit: **Village of Newberry** County: **Luce**
d. Federal Agency and Contact (*If you do not know the federal agency involved in your project please contact the party requiring you to apply for Section 106 review, not the SHPO, for this information.*): **EPA/MDEQ SRF Program, Administrative Supervisor, Sonya Butler, 517-373-4737**
e. State Agency and Contact (if applicable): **MDEQ SRF Program, Jaclyn Merchant, Project Manager, 517-373-3506**
f. Consultant or Applicant Contact Information (if applicable): **CONSULTANT: C2AE, Attn. Kristen Farrell, 1211 Ludington Street, Escanaba, MI 49829, Kristen.farrell@c2ae.com, 906-233-9360 APPLICANT: Village of Newberry, Attn: Beverly Holmes, Village Manager, 307 E McMillan Avenue, Newberry, MI 49868, vilnby@sbcglobal.net, 906-293-3433**

II. GROUND DISTURBING ACTIVITY (INCLUDING EXCAVATION, GRADING, TREE REMOVALS, UTILITY INSTALLATION, ETC.)

DOES THIS PROJECT INVOLVE GROUND-DISTURBING ACTIVITY? ☒ YES ☐ NO (If no, proceed to section III.)

Exact project location must be submitted on a USGS Quad map (portions, photocopies of portions, and electronic USGS maps are acceptable as long as the location is clearly marked).

a. USGS Quad Map Name: **Roberts Corner (See Figure 4)**
b. Township: **46N** Range: **10W** Section: **23-26**
c. Description of width, length and depth of proposed ground disturbing activity:
    a. **The main project, at the wastewater treatment plant, will involve small pipe replacement and possibly some minor structure excavations with minimal ground disturbances. The possible wastewater collections system improvements will most likely involve open cut installation of sanitary sewer and improvements to pump stations. The open cut excavations will likely be 20'x20'x20' deep. Work will be on existing road rights of ways.**

d. Previous land use and disturbances: **Developed road rights-of-ways. Previous disturbance to the land has been for the installation of the existing utilities to the residences. The Treatment Plant was constructed in 1964.**
e. Current land use and conditions: **Same as above.**
f. Does the landowner know of any archaeological resources found on the property? NO
Please describe:

III. PROJECT WORK DESCRIPTION AND AREA OF POTENTIAL EFFECTS (APE)

Note: Every project has an APE.

a. Provide a detailed written description of the project (plans, specifications, Environmental Impact Statements (EIS), Environmental Assessments (EA), etc. **cannot** be substituted for the written description): **See attached project summary.**
b. Provide a localized map indicating the location of the project; road names must be included and legible. **See attached figure 3**
c. On the above-mentioned map, identify the APE.
d. Provide a written description of the APE (physical, visual, auditory, and sociocultural), the steps taken to identify the APE, and the justification for the boundaries chosen. **The APE is outlined based on the areas that could be potentially affected by improvements of the treatment plant and improvements to the wastewater system. This includes most of the Village limits and north of the Village, along M-123, to the Wastewater Treatment plant and the area surrounding the treatment plant itself. During construction, local traffic will be disrupted somewhat and noise levels will increase. The construction contract documents will contain language for steps to be taken should historically significant items be discovered during the excavation work (stop excavating & contact authorities).**

IV. IDENTIFICATION OF HISTORIC PROPERTIES

a. List and date **all** properties 50 years of age or older located in the APE. If the property is located within a National Register eligible, listed or local district it is only necessary to identify the district: **Most of the buildings in the Village are over 50 years old but the only impact on them will be that they will be within visual distance of construction.**
b. Describe the steps taken to identify whether or not any **historic** properties exist in the APE and include the level of effort made to carry out such steps: **Reviewed SHPO website for listed historic properties and visually inspected proposed routes.**
c. Based on the information contained in "b", please choose one:
☒ Historic Properties Present in the APE
☐ No Historic Properties Present in the APE
d. Describe the condition, previous disturbance to, and history of any historic properties located in the APE: **The older buildings fall within water and sanitary distribution areas with most street right-of-ways previously disturbed for those installations.**

V. PHOTOGRAPHS

Note: All photographs must be keyed to a localized map, and should be included as an attachment to this application.

a. Provide photographs of the site itself.
b. Provide photographs of all properties 50 years of age or older located in the APE (faxed or photocopied photographs are not acceptable).

VI. DETERMINATION OF EFFECT

☒ No historic properties affected based on [36 CFR § 800.4(d)(1)], please provide the basis for this determination.

After the improvements to the wastewater collection system, the only noticeable differences to the areas will be improved roadways due to the restoration.

☐ No Adverse Effect [36 CFR § 800.5(b)] on historic properties, explain why the criteria of adverse effect, 36 CFR Part 800.5(a)(1), were found not applicable.

☐ Adverse Effect [36 CFR § 800.5(d)(2)] on historic properties, explain why the criteria of adverse effect, [36 CFR Part 800.5(a)(1)], were found applicable.

Please print and mail completed form and required information to:

State Historic Preservation Office, Environmental Review Office, Michigan Historical Center, 702 W. Kalamazoo Street, P.O. Box 30740, Lansing, MI 48909-824

PROJECT SUMMARY
For Environmental Reviews

VILLAGE OF NEWBERRY, MICHIGAN
WASTEWATER TREATMENT PLANT IMPROVEMENTS

April 2012

Administrative

The Village of Newberry, Michigan has contracted with C2AE Engineers of Escanaba to prepare a MDEQ SRF Program Project Plan. The purpose of the Project Plan is to evaluate needs and recommend alternatives for improvements to the Newberry Wastewater Treatment Plant (WWTP) and sanitary collection system.

Project Planning Area

Project planning concentrates on the existing WWTP and the wastewater service district within the Village Limits (T46N, R10W, Sections 23, 24, 25 and 26). The Village is located in the southern portion of Luce County near the eastern end of Michigan's Upper Peninsula.

Existing Facilities

The Newberry WWTP serves the Village of Newberry, MI; McMillian Township, MI along State Highway M-123; and Pentland Township, MI along State Highway M-123 and M28.

Wastewater is collected via a system of gravity collector and interceptor sewers along with pump stations, where dictated by terrain, than pumped to the treatment plant where the treated effluent is discharged to the Tahquamenon River under a general NPDES Permit. The treatment plant is approximately 1 mile north of the Village of Newberry and is currently owned by Luce County and is operated and maintained by the Village of Newberry.

The Village collection system is between 50 and 120 years old while the Township components are approximately 10 and 35 years old. The WWTP was constructed in 1964 and 1979 with upgrade of the raw sewage pumping added in 1998.

Need for the Project

The Newberry WWTP generally operates in compliance with the NPDES permit, and does not have any active consent orders or legal actions requiring improvements to the wastewater system. MDEQ has issued a letter dated February 29, 2012 citing concerns related to Infiltration/Inflow (I/I), pump station reliability, and other miscellaneous issues.

On the other hand; the WWTP strongly needs physical improvements to preserve the reliability of the effluent quality, reduce energy use, protect the integrity of the existing physical facility and incorporate modern cost effective technologies.

Some facilities are at the point that maintenance cost will be much higher if delayed any longer. The primary premise of asset management is that monies spent at the appropriate time and location can dramatically reduce overall use of resources.

Alternatives Considered

Both treatment and collection alternatives are being evaluated as part of the SRF Project Plan preparation and are summarized below:

- No Action – continued use of existing system as is.
- Optimize Performance of Existing Facilities – Improvements to existing pump stations and gravity system.
- Regional Alternatives –Reroute the flow to a neighboring facility.
- Upgrade Current WWTP Process to an Oxidation Ditch – a screening of several alternatives it recommended that the oxidation ditch has the greatest potential to compete for cost effective, reliable, and high quality treatment of wastewater for Newberry.

Recommended Alternative

The current anticipated recommended alternative pending environmental and other evaluations is to upgrade the current WWTP. This alternative is assumed to be the most cost effective approach to accomplish the scope of improvements recommended for Newberry. As funding becomes available the collection system, including the gravity sewer and pump stations, will be improved to help in decreasing the I/I issues.

Anticipated Schedule

The project will likely be under taken in phases as affordable funding can be arranged. The first phase is planned to be under construction in 1 to 3 years with subsequent phases following as the Village counsel determines funding is available.

Figure 1: Location Map

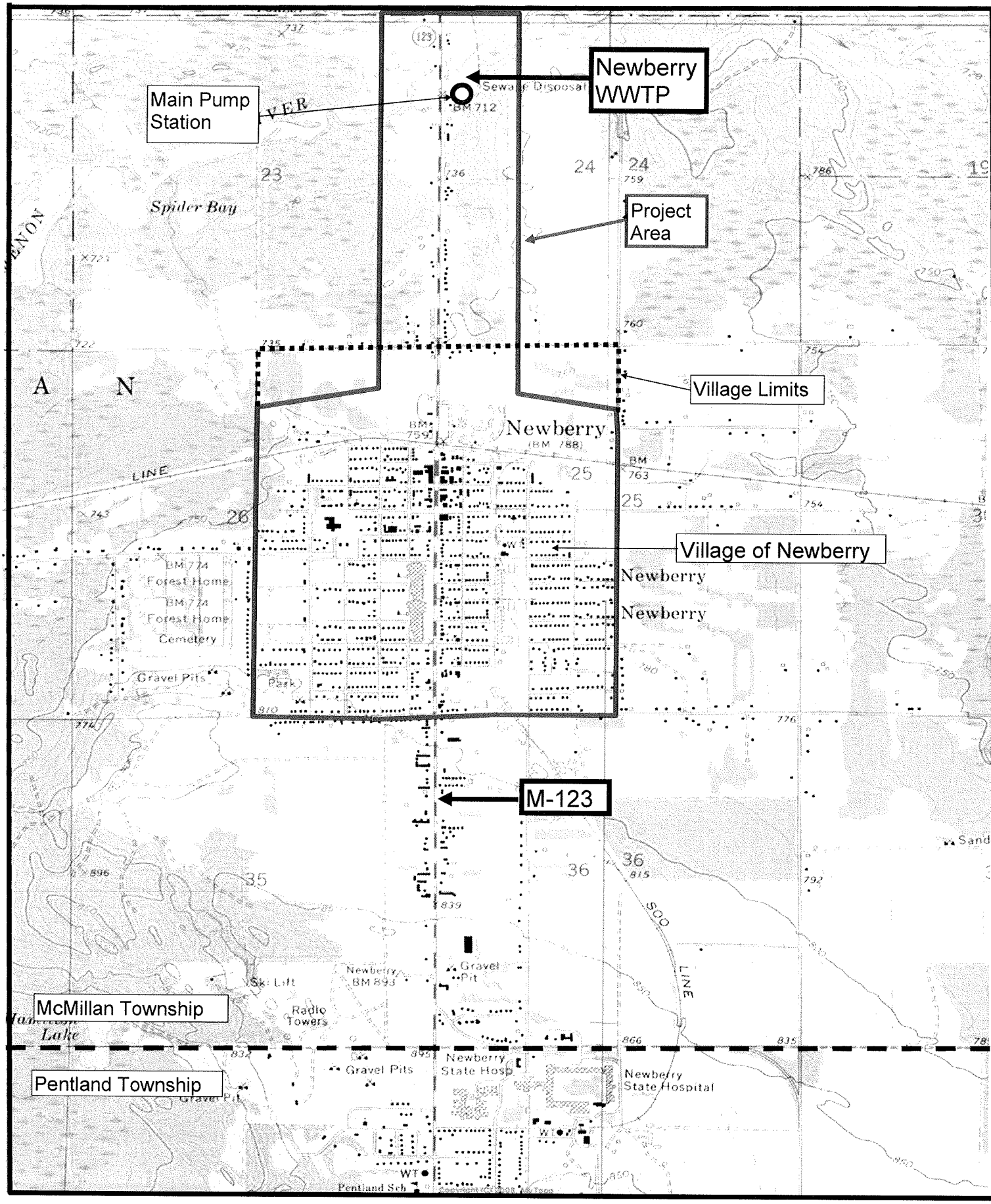


Figure 2 - Project Area Map

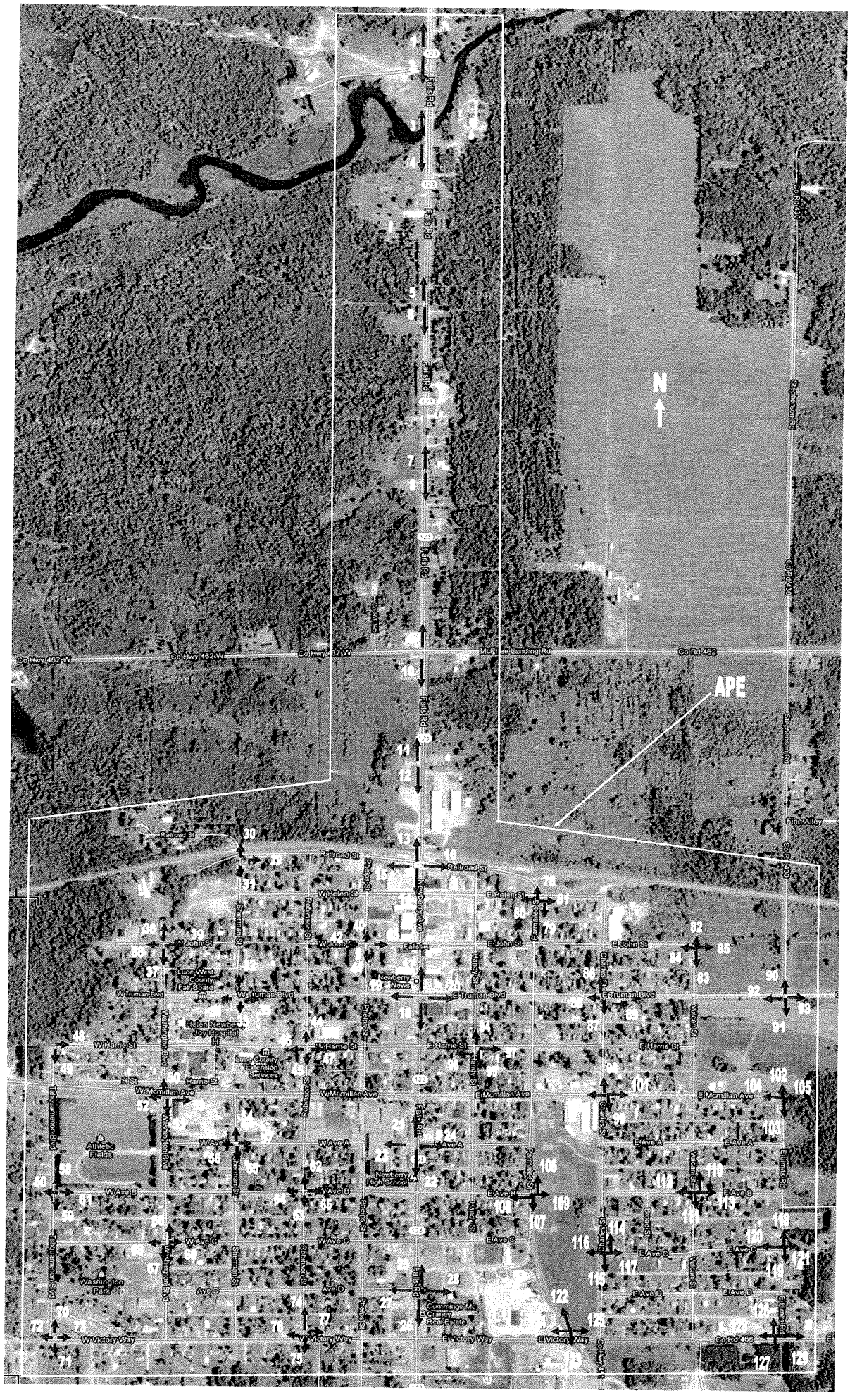
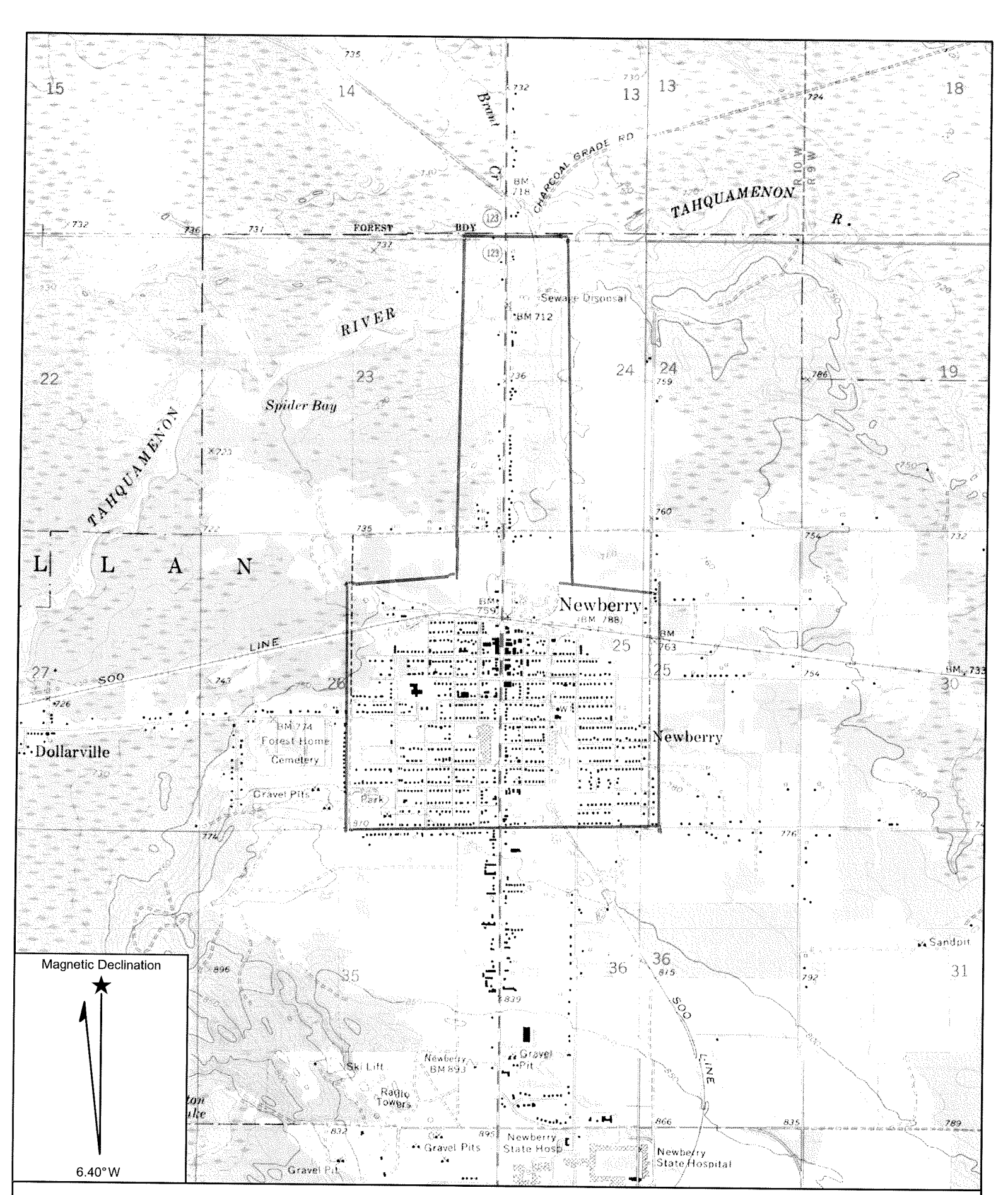


Figure 3: Localized Map, APE and Photo Locations


Magnetic Declination
6.40°W
Name: ROBERTS CORNER
Date: 5/7/2012
Scale: 1 inch equals 2000 feet
Location: 046°21' 25.57" N 085°30' 34.62" W NAD27
Caption: Figure 4: USGS Map
Village of Newberry, MI
1:24000 Scale
Copyright (C) 2009 MyTopo

Village of Newberry
Wastewater Treatment Plant Improvements
SRF Project Plan
SHPO Application; Photos

1. M-123 (Falls Road) north of Tahquamenon River looking north.

2. M-123 (Falls Road) north of Tahquamenon River looking south.

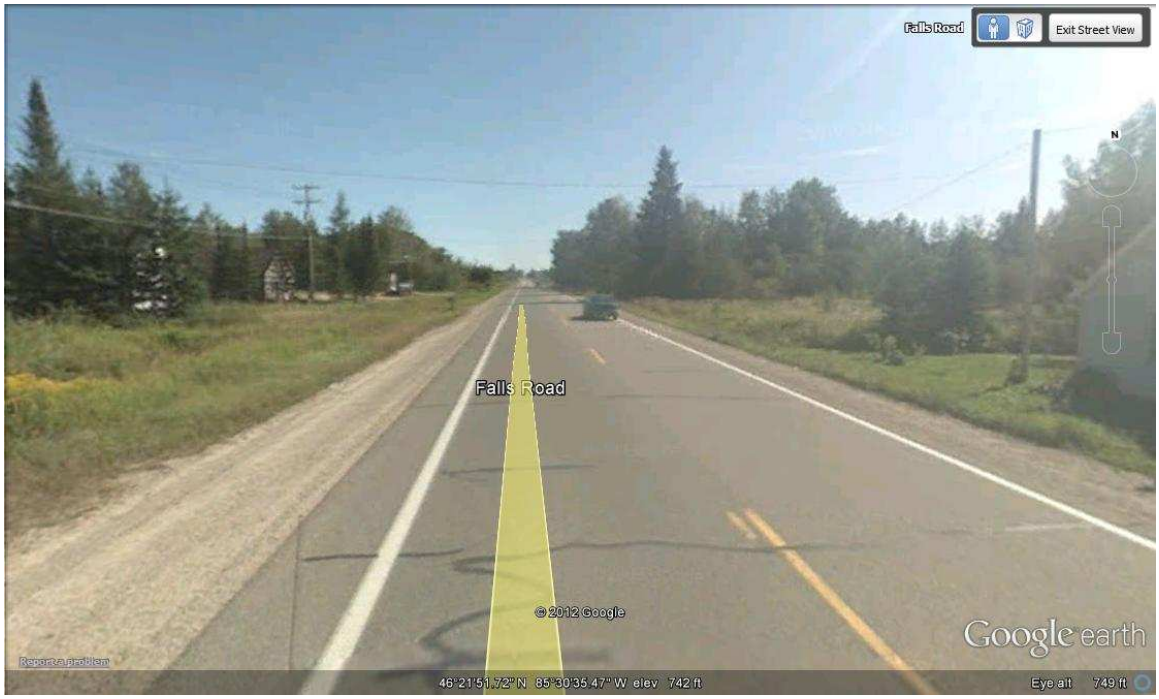
3. M-123 (Falls Road) at the Tahquamenon River bridge looking north.

4. M-123 (Falls Road) at the Tahquamenon River looking south.

5. M-123 (Falls Road) looking north.

6. M-123 (Falls Road) looking south.

7. M-123 (Falls Road) looking north.



8. M-123 (Falls Road) looking south.

9. M-123 (Falls Road) at McPhee Landing Road (CR462) looking north.

10. M-123 (Falls Road) at McPhee Landing Road (CR462) looking south.

11. M-123 (Falls Road) looking north.

12. M-123 (Falls Road) looking south.

13. M-123 (Falls Road) at Railroad Street looking north.

14. M-123 (Falls Road) at Railroad Street looking south.

15. M-123 (Falls Road) at Railroad Street looking west.

16. M-123 (Falls Road) at Railroad Street looking east.

17. M-123 (Falls Road) at Truman Blvd. looking north.

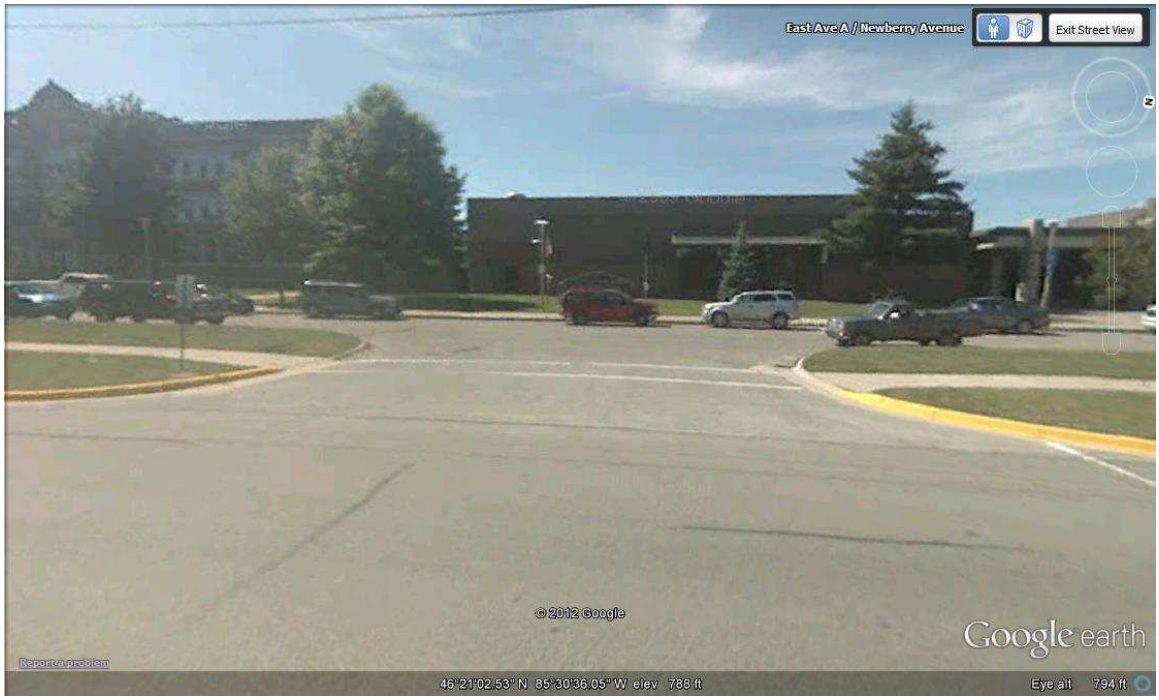
18. M-123 (Falls Road) at Truman Blvd. looking south.

19. M-123 (Falls Road) at Truman Blvd. looking west.

20. M-123 (Falls Road) at Truman Bldvd. looking east.

21. M-123 (Falls Road) at Avenue A looking north.

22. M-123 (Falls Road) at Avenue A looking south.



23. M-123 (Falls Road) at Avenue A looking west.

24. M-123 (Falls Road) at Avenue A looking east.

25. M-123 (Falls Road) at Avenue D looking north.

26. M-123 (Falls Road) at Avenue D looking south.

27. M-123 (Falls Road) at Avenue D looking west.

28. M-123 (Falls Road) at Avenue D looking east.

29. Sherman Street at Railroad Street looking east.

30. Sherman Street at Railroad Street looking north.

31. Sherman Street at Railroad Street looking south.

32. Sherman Street at Truman Blvd. looking north.

33. Sherman Street at Truman Blvd. looking south.

34. Sherman Street at Truman Blvd. looking west.

35. Sherman Street at Sherman Blvd. looking east.

36. Washington Blvd. at John Street looking north.

37. Washington Blvd. at John Street looking south.

38. Washington Blvd. at John Street looking west.

39. Washington Blvd. at John Street looking east.

40. Phelps Street at John Street looking north.

41. Phelps Street at John Street looking south.

42. Phelps Street at John Street looking west.

43. Phelps Street at John Street looking east.

44. Robinson Street at Harrie Street looking north.

45. Robinson Street at Harrie Street looking south.

46. Robinson Street at Harrie Street looking west.

47. Robinson Street at Harrie Street looking east.

48. Tahquamenon Blvd. at Harrie Street looking east.

49. Tahquamenon Blvd. at Harrie Street looking south.

50. Washington Blvd. at McMillan Avenue looking north.

51. Washington Blvd. at McMillan Avenue looking south.

52. Washington Blvd. at McMillan Avenue looking west.

53. Washington Blvd. at McMillan Avenue looking east.

54. Sherman Street at Avenue A looking north.

55. Sherman Street at Avenue A looking south.

56. Sherman Street at Avenue A looking west.

57. Sherman Street at Avenue A looking east.

58. Tahquamenon Blvd. at Avenue B looking north.

59. Tahquamenon Blvd. at Avenue B looking south.

60. Tahquamenon Blvd. at Avenue B looking west.

61. Tahquamenon Blvd. at Avenue B looking east.

62. Robinson Street at Avenue B looking north.

63. Robinson Street at Avenue B looking south.

64. Robinson Street at Avenue B looking west.

65. Robinson Street at Avenue B looking east.

66. Washington Blvd. at Avenue C looking north.

67. Washington Blvd. at Avenue C looking south.

68. Washington Blvd. at Avenue C looking west.

69. Washington Blvd. at Avenue C looking east.

70. Tahquamenon Blvd. at Victory Way looking north.

71. Tahquamenon Blvd. at Victory Way looking south.

72. Tahquamenon Blvd. at Victory Way looking west.

73. Tahquamenon Blvd. at Victory Way looking east.

74. Robinson Street at Victory Way looking north.

75. Robinson Street at Victory Way looking south.

76. Robinson Street at Victory Way looking west.

77. Robinson Street at Victory Way looking east.

78. Helen Street at Parmalee Street looking north.

79. Helen Street at Parmalee Street looking south.

80. Helen Street at Parmalee Street looking west.

81. Helen Street at Parmalee Street looking east.

82. John Street at Vulcan Street looking north.

83. John Street at Vulcan Street looking south.

84. John Street at Vulcan Street looking west.

85. John Street at Vulcan Street looking east.

86. Charles Street at Truman Blvd. looking north.

87. Charles Street at Truman Blvd. looking south.

88. Charles Street at Truman Blvd. looking west.

89. Charles Street at Truman Blvd. looking east.

90. County Road 430 at Truman Blvd. looking north.

91. County Road 430 at Truman Blvd. looking south.

92. County Road 430 at Truman Blvd. looking west.

93. County Road 430 at Truman Blvd. looking east.

94. Handy Street at Harrie Street looking north.

95. Handy Street at Harrie Street looking south.

96. Handy Street at Harrie Street looking west.

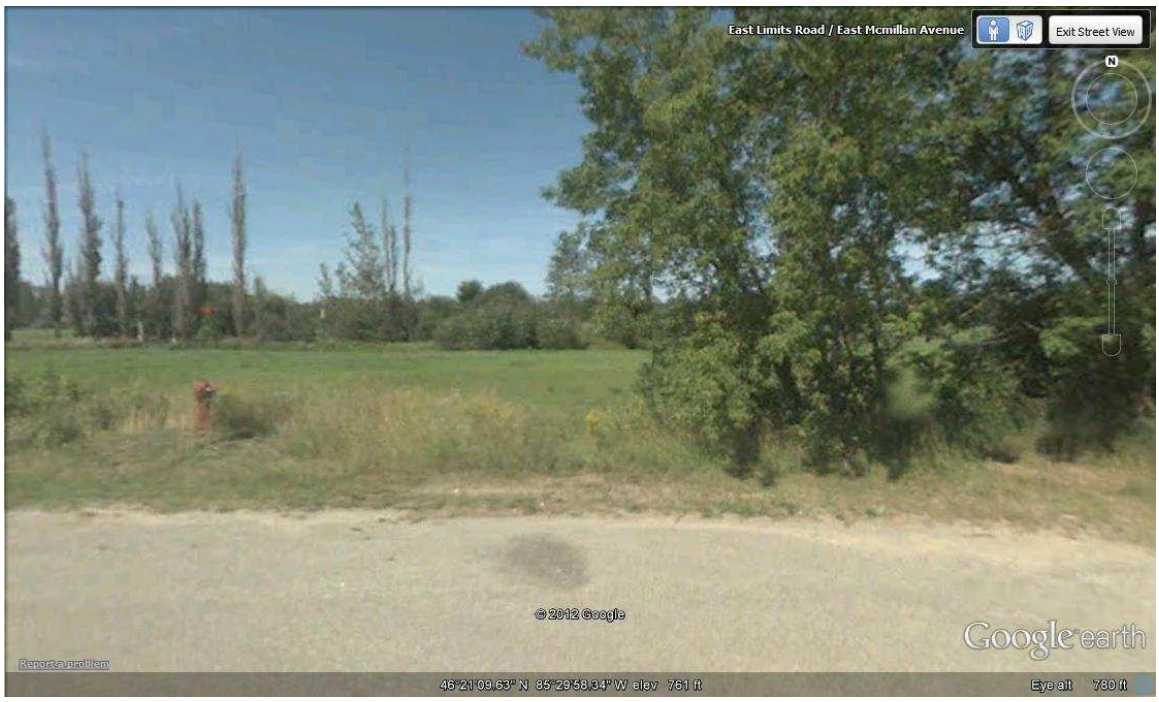
97. Handy Street at Harrie Street looking east.

98. Charles Street at McMillan Avenue looking north.

99. Charles Street at McMillan Avenue looking south.

100. Charles Street at McMillan Avenue looking west.

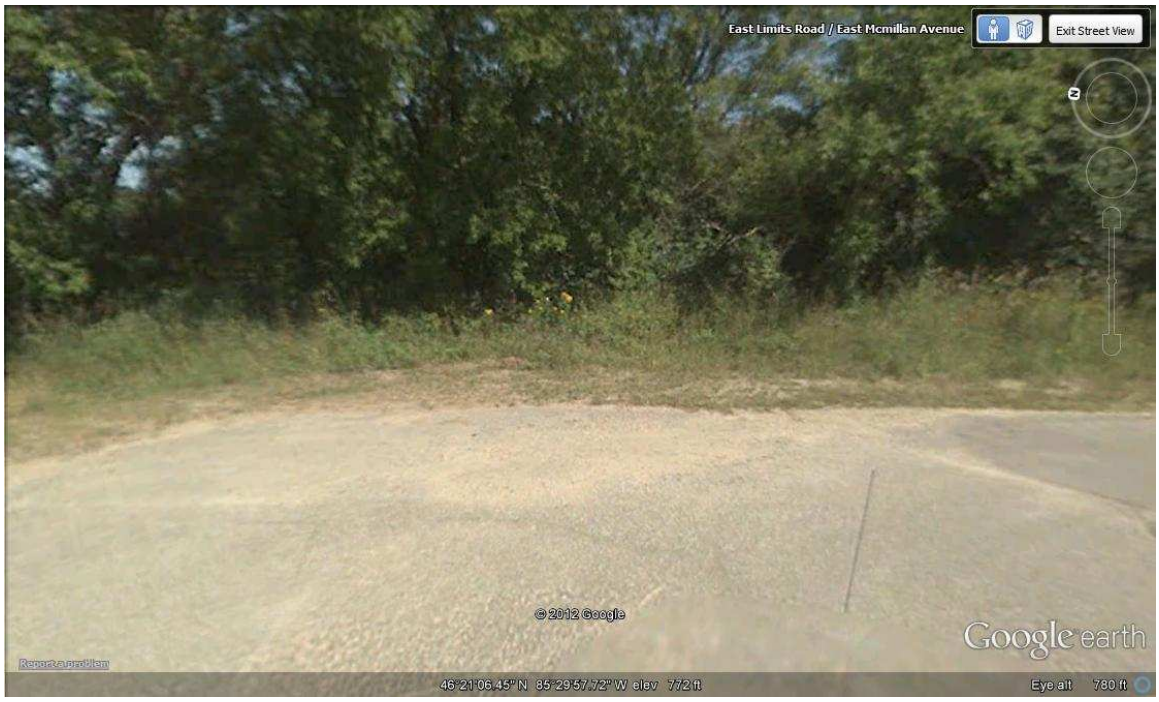
101. Charles Street at McMillan Avenue looking east.



102. East Limits Road at McMillan Avenue looking north.

103. East Limits Road at McMillan Avenue looking south.

104. East Limits Road at McMillan Avenue looking west.



105. East Limits Road at McMillan Avenue looking east.

106. Parmalee Street at Avenue B looking north.

107. Parmalee Street at Avenue B looking south.

108. Parmalee Street at Avenue B looking west.

109. Parmalee Street at Avenue B looking east.

110. Vulcan Street at Avenue B looking north.

111. Vulcan Street at Avenue B looking south.

112. Vulcan Street at Avenue B looking west.

113. Vulcan Street at Avenue B looking east.

114. Charles Street at Avenue C looking north.

115. Charles Street at Avenue C looking south.

116. Charles Street at Avenue C looking west.

117. Charles Street at Avenue C looking east.

118. East Limits Road at Avenue C looking north.

119. East Limits Road at Avenue C looking south.

120. East Limits Road at Avenue C looking west.

121. East Limits Road at Avenue C looking east.

122. Railroad tracks at Victory Way looking north.

123. Railroad tracks at Victory Way looking south.

124. Railroad tracks at Victory Way looking west.

125. Railroad tracks at Victory Way looking east.

126. East Limits Road at Victory Way looking north.

127. East Limits Road at Victory Way looking south.

128. East Limits Road at Victory Way looking west.

129. East Limits Road at Victory Way looking east.

RICK SNYDER
GOVERNOR

STATE OF MICHIGAN
MICHIGAN STATE HOUSING DEVELOPMENT AUTHORITY
STATE HISTORIC PRESERVATION OFFICE

GARY HEIDEL
EXECUTIVE DIRECTOR

May 25, 2012

SONYA T BUTLER
SECTION CHIEF RLOCS
MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
P O BOX 30273
LANSING MI 48909

RE: ER-950346 Newberry Wastewater Treatment Plant Improvements, T46N, R10W, S23-26, Village of Newberry, Luce County (EPA)

Dear Ms. Butler:

Under the authority of Section 106 of the National Historic Preservation Act of 1966, as amended, we have reviewed the above-cited undertaking at the location noted above. Based on the information provided for our review, it is the opinion of the State Historic Preservation Officer (SHPO) that **no historic properties are affected** within the area of potential effects of this undertaking.

The views of the public are essential to informed decision making in the Section 106 process. Federal Agency Officials or their delegated authorities must plan to involve the public in a manner that reflects the nature and complexity of the undertaking, its effects on historic properties and other provisions per 36 CFR § 800.2(d). We remind you that Federal Agency Officials or their delegated authorities are required to consult with the appropriate Indian tribe and/or Tribal Historic Preservation Officer (THPO) when the undertaking may occur on or affect any historic properties on tribal lands. **In all cases**, whether the project occurs on tribal lands or not, Federal Agency Officials or their delegated authorities are also required to make a reasonable and good faith effort to identify any Indian tribes or Native Hawaiian organizations that might attach religious and cultural significance to historic properties in the area of potential effects and invite them to be consulting parties per 36 CFR § 800.2(c-f).

This letter evidences the EPA's compliance with 36 CFR § 800.4 "Identification of historic properties", and the fulfillment of the EPA's responsibility to notify the SHPO, as a consulting party in the Section 106 process, under 36 CFR § 800.4(d)(1) "No historic properties affected."

The State Historic Preservation Office is not the office of record for this undertaking. You are therefore asked to maintain a copy of this letter with your environmental review record for this undertaking. If the scope of work changes in any way, or if artifacts or bones are discovered, please notify this office immediately.

If you have any questions, please contact Brian Grennell, Cultural Resource Management Specialist, at (517) 335-2721 or by email at grennellb@michigan.gov. **Please reference our project number in all communication with this office regarding this undertaking.** Thank you for this opportunity to review and comment, and for your cooperation.

Sincerely,

Brian G. Grennell
Cultural Resource Management Specialist

for Brian D. Conway
State Historic Preservation Officer

SAT:BGG:kam

Copy: Kristen Farrell, C2AE
Beverly Holmes, Village of Newberry

Appendix C

Part 3: Archeological and Historic Resources
(Tribal Historic Preservation Officers and Federally Recognized Tribes)

1211 Ludington St.
Escanaba, MI 49829
O: 906.233.9360
www.c2ae.com

3. Archeological and Historic Resources (Tribal Historic Preservation Officers and Federally Recognized Tribes)

Based on the ITA Meeting for this project, the project has been classified as an equivalency project, therefore THPO was not contacted for review. It is anticipated that there will be no impact to any tribal lands.

Appendix C

Part 4: Facility Discharge Permits

1211 Ludington St.
Escanaba, MI 49829
O: 906.233.9360
www.c2ae.com

4. Facility Discharge Permit

The proposed project does not require a change in NPDES Permit. The current NPDES permit follows.

PERMIT NO. MIG570000

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
WASTEWATER DISCHARGE GENERAL PERMIT

SECONDARY TREATMENT WASTEWATER

In compliance with the provisions of the Federal Water Pollution Control Act (33 U.S.C. 1251 et seq., as amended; the "Federal Act"); Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); Part 41, Sewerage Systems, of the NREPA; and Michigan Executive Order 2011-1, secondary treatment wastewater is authorized to be discharged from facilities specified in individual "Certificates of Coverage" (COC) in accordance with effluent limitations, monitoring requirements, and other conditions set forth in this general National Pollutant Discharge Elimination System (NPDES) permit (the "permit").

The applicability of this permit shall be limited to discharges of treated sanitary wastewater that a) have been treated using secondary treatment processes that meet generally accepted design standards, as determined by the Michigan Department of Environmental Quality (the "Department"); b) comply with applicable secondary treatment regulations at 40 CFR 133.102; and c) have been determined by the Department not to need an individual NPDES permit. Discharges that may cause or contribute to a violation of a water quality standard are not authorized by this permit.

In order to constitute a valid authorization to discharge, this permit must be complemented by a COC issued by the Department.

Unless specified otherwise, all contact with the Department required by this permit shall be to the position indicated in the COC.

This general permit shall take effect **July 1, 2015**. The provisions of this permit are severable. After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term in accordance with applicable laws and rules.

This general permit shall expire at midnight, **April 1, 2020**.

Issued: June 16, 2015. This permit was modified (minor) on February 23, 2017.

Original signed by Christine Alexander
Christine Alexander, Acting Manager
Permits Section
Water Resources Division

PERMIT FEE REQUIREMENTS

In accordance with Section 324.3120 of the NREPA, the permittee shall make payment of an annual permit fee to the Department for each October 1 the permit is in effect regardless of occurrence of discharge. The permittee shall submit the fee in response to the Department's annual notice. The fee shall be postmarked by January 15 for notices mailed by December 1. The fee is due no later than 45 days after receiving the notice for notices mailed after December 1.

In accordance with Section 324.3132 of the NREPA, the permittee shall make payment of an annual biosolids land application fee to the Department. In response to the Department's annual notice, the permittee shall submit the fee, which shall be postmarked no later than January 31 of each year.

CONTESTED CASE INFORMATION

The terms and conditions of this general permit shall apply to an individual facility on the effective date of a COC for the facility. The Department of Licensing and Regulatory Affairs may grant a contested case hearing on this general permit in accordance with the NREPA. Any person who is aggrieved by this permit may file a sworn petition with the Michigan Administrative Hearing System within the Michigan Department of Licensing and Regulatory Affairs, c/o the Michigan Department of Environmental Quality, setting forth the conditions of the permit which are being challenged and specifying the grounds for the challenge. The Department of Licensing and Regulatory Affairs may reject any petition filed more than 60 days after issuance as being untimely.

PART I

Section A. Effluent Limitations And Monitoring Requirements

1. Final Effluent Limitations

During the period beginning on the effective date of this permit and the effective date of an individual COC, and lasting until the expiration of this permit or termination of the individual COC, the permittee is authorized to discharge treated sanitary wastewater to the surface waters of the state of Michigan. Such discharge shall be limited and monitored by the permittee as specified below.

	Maximum Limits for Quantity or Loading				Maximum Limits for Quality or Concentration				Monitoring	Sample
Parameter	**Monthly**	**7-Day**	**Daily**	**Units**	**Monthly**	**7-Day**	**Daily**	**Units**	**Frequency**	**Type**
Flow	(report)	(report)	---	MGD	---	---	---	---	Daily	Report Total Daily Flow
Carbonaceous Biochemical Oxygen Demand ($CBOD_5$) (See I.A.1.d.)										
	(COC limit)	(COC limit)	---	lbs/day	25	40	---	mg/l	3 × Weekly	24-Hr Composite
Biochemical Oxygen Demand (BOD_5) (See I.A.1.d.)										
	(COC limit)	(COC limit)	---	lbs/day	30	45	---	mg/l	3 × Weekly	24-Hr Composite
Total Suspended Solids (TSS)										
	(COC limit)	(COC limit)	---	lbs/day	30	45	---	mg/l	3 × Weekly	24-Hr Composite
Ammonia Nitrogen (as N)										
May1 - September 30	---	---	(report)	lbs/day	---	---	(report)	mg/l	Monthly	24-Hr Composite
Total Phosphorus (as P)	---	---	---	---	1.0	---	---	mg/l	3 × Weekly	24-Hr Composite
Fecal Coliform Bacteria	---	---	---	---	200	400	---	cts/100 ml	3 × Weekly	Grab
Total Residual Chlorine (See I.A.1.e.)										
	---	---	---	---	---	---	0.038	mg/l	3 × Weekly	Grab
					Minimum Monthly					
$CBOD_5$ or BOD_5 Minimum % Removal (See I.A.1.g.)										
	---	---	---	---	85	---	---	%	Monthly	Calculation
Total Suspended Solids Minimum % Removal (See I.A.1.g.)										
	---	---	---	---	85	---	---	%	Monthly	Calculation
					Minimum Daily					
pH	---	---	---	---	6.5	---	9.0	S.U.	3 × Weekly	Grab
Dissolved Oxygen	---	---	---	---	4.0	---	---	mg/l	3 × Weekly	Grab
Outfall Observation	---	(report)	---	---	---	---	---	---	3 × Weekly	Visual

a. Narrative Standard
The receiving water shall contain no turbidity, color, oil films, floating solids, foams, settleable solids, or deposits as a result of this discharge in unnatural quantities that are or may become injurious to any designated use.

PART I

Section A. Effluent Limitations And Monitoring Requirements

b. Monitoring Location
If using gaseous chlorine or hypochlorite for disinfection, the samples for $CBOD_5$, (BOD_5 if applicable), Total Suspended Solids, Ammonia Nitrogen, and Total Phosphorus shall be taken prior to disinfection, and the samples for Dissolved Oxygen, Fecal Coliform Bacteria, Total Residual Chlorine, and pH shall be taken after disinfection. The Department may approve alternate sampling locations that are demonstrated by the permittee to be representative of the effluent.

c. Monitoring Frequency
Monitoring for all parameters except flow and percent removal shall be three times weekly.
Refer to the individual COC for the $CBOD_5$ and TSS final effluent maximum loading limitations that are applicable to this discharge. The permittee may request a reduction in monitoring frequency. This request shall be submitted to the Department. The request shall include a demonstration or explanation for why reduced monitoring is appropriate. Upon receipt of written approval and consistent with such approval, the permittee may reduce the monitoring frequency indicated in this permit. The Department may revoke its approval for reduced monitoring at any time upon notification to the permittee.

d. Alternate Monitoring
Monitoring and reporting of BOD_5 may be substituted for $CBOD_5$ upon approval by the Department as specified in the COC.

e. Total Residual Chlorine
Compliance with the Total Residual Chlorine limit shall be determined on the basis of one or more grab samples. If more than one (1) sample per day is taken, the additional samples shall be collected in near equal intervals over at least eight (8) hours. The samples shall be analyzed immediately upon collection and the average reported as the daily concentration. Samples shall be analyzed in accordance with Part II.B.2. of this permit.

f. Ultraviolet Disinfection
If ultraviolet light will be used to achieve compliance with the fecal coliform limitations, reporting of Total Residual Chlorine is not required, and the permittee shall notify the Department in accordance with Part II.C.12. - Changes in Facility Operations.

g. Percent Removal Requirements
Unless indicated in the COC, these requirements shall be calculated based on the monthly (30-day) effluent $CBOD_5$ (or BOD_5, if appropriate) and Total Suspended Solids concentrations and the monthly influent concentrations for approximately the same frequency and time period. This requirement is applicable unless a demonstration under 40 CFR 133.103(d) has been approved by the Department.

2. Additional Monitoring Requirements

This section applies to publicly-owned treatment works (POTWs) that are required to conduct Additional Monitoring as specified in the COC. The permittee shall monitor the discharge from the monitoring point identified in the COC for the constituents identified below, in accordance with 40 CFR 122.21(j), effective December 2, 1999. Testing shall be conducted in February 2016, April 2017, October 2018, and July 2019. Grab samples shall be taken for total mercury, available cyanide, total phenols, and the Volatile Organic Compounds listed below. For all other parameters, 24-hour composite samples shall be taken.

Chronic toxicity testing as described in this paragraph is required of all permittees with an annual average design flow equal to or greater than 1 MGD where the instream mix is less than 80 to 1. Test species for whole effluent toxicity monitoring shall include fathead minnow **and** *Ceriodaphnia dubia*. If the permittee has received Department approval to conduct chronic toxicity testing using the more sensitive species identified in the toxicity database, the first three (3) tests required above may be performed using the more sensitive species. The last (4^{th}) test shall be conducted using both species. Testing and reporting procedures shall follow procedures contained in EPA600/4-91/002, “Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms (Fourth Edition).” When the effluent ammonia nitrogen (as N) concentration is greater than 3 mg/l, the pH of the toxicity test shall be maintained at a pH of 8 Standard Units.

PART I

Section A. Effluent Limitations And Monitoring Requirements

Acute and chronic toxicity data shall be included in the reporting for the toxicity test results. Toxicity test data acceptability is contingent upon the validation of the test method by the testing laboratory. Such validation shall be submitted to the Department upon request.

Acute toxicity testing as described in this paragraph is required of all permittees with an annual average design flow equal to or greater than 1 MGD where the instream mix is greater than 80 to 1. Test species for whole effluent toxicity monitoring shall include fathead minnow **and** either *Daphnia magna, Daphnia pulex* or *Ceriodaphnia dubia*. If the permittee has received Department approval to conduct acute toxicity testing using the more sensitive species identified in the toxicity database, the first three (3) tests required above may be performed using the more sensitive species. The last (4^{th}) test shall be conducted using two (2) test species. Testing and reporting procedures shall follow procedures contained in EPA/600/4-90/027/F, "Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms (Fifth Edition)." When the effluent ammonia nitrogen (as N) concentration is greater than 5 mg/l, the pH of the toxicity test shall be maintained at the pH of the effluent at the time of sample collection. Toxicity test data acceptability is contingent upon the validation of the test method by the testing laboratory. Such validation shall be submitted to the Department upon request.

The analytical protocol for total mercury shall be in accordance with EPA Method 1631, Revision E, "Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Atomic Fluorescence Spectrometry," EPA-821-R-02-019, August 2002. The quantification level for total mercury shall be 0.5 ng/l, unless a higher level is appropriate because of sample matrix interference. Justification for higher quantification levels shall be submitted to the Department within 30 days of such determination. The use of clean technique sampling procedures is required unless the permittee can demonstrate to the Department that an alternative sampling procedure is representative of the discharge. Guidance for clean technique sampling is contained in EPA Method 1669, "Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels," EPA-821-R96-001, July 1996. Information and data documenting the permittee's sampling and analytical protocols and data acceptability shall be submitted to the Department upon request.

The results of monitoring required in this section shall be submitted with the application for reissuance (see the cover page of this permit for the application due date). The permittee shall notify the Department within 14 days of completing the monitoring for each month specified above in accordance with Part II.C.5. Additional reporting requirements are specified in Part II.C.11. The permittee shall report to the Department any whole effluent toxicity test results greater than 1.0 TU_A or 1.0 TU_C within five (5) days of becoming aware of the result. If, upon review of the analysis, it is determined that additional requirements are needed to protect the receiving waters in accordance with applicable water quality standards, the permit may then be modified by the Department in accordance with applicable laws and rules.

Whole Effluent Toxicity

acute toxicity	chronic toxicity (if required in the COC)

Hardness

calcium carbonate

Metals (Total Recoverable), Cyanide and Total Phenols (Quantification levels in parentheses)

antimony (1 µg/l)	arsenic (1 µg/l)	available cyanide (2 µg/l) using Method OIA – 1677	
barium (5 µg/l)	beryllium (1 µg/l)	boron (20 µg/l)	cadmium (0.2 µg/l)
chromium (5 µg/l)	copper (1 µg/l)	lead (1 µg/l)	nickel (5 µg/l)
selenium (1 µg/l)	silver (0.5 µg/l)	thallium (1 µg/l)	zinc (5 µg/l)
mercury (0.5 ng/l) using Method 1631 Revision E		total phenolic compounds	

Volatile Organic Compounds

acrolein	acrylonitrile	benzene	bromoform
carbon tetrachloride	chlorobenzene	chlorodibromomethane	chloroethane
2-chloroethylvinyl ether	chloroform	dichlorobromomethane	1,1-dichloroethane
1,2-dichloroethane	trans-1,2-dichloroethylene	1,1-dichloroethylene	1,2-dichloropropane
1,3-dichloropropylene	ethylbenzene	methyl bromide	methyl chloride
methylene chloride	1,1,2,2,-tetrachloroethane	tetrachloroethylene	toluene
1,1,1-trichloroethane	1,1,2-trichloroethane	trichloroethylene	vinyl chloride

PART I

Section A. Effluent Limitations And Monitoring Requirements

Acid-Extractable Compounds

p-chloro-m-cresol	2-chlorophenol	2,4-dichlorophenol	2,4-dimethylphenol
4,6-dinitro-o-cresol	2,4-dinitrophenol	2-nitrophenol	4-nitrophenol
Pentachlorophenol	phenol	2,4,6-trichlorophenol	

Base/Neutral Compounds

acenaphthene	acenaphthylene	anthracene	benzidine
benzo(a)anthracene	benzo(a)pyrene	3,4-benzofluoranthene	benzo(ghi)perylene
benzo(k)fluoranthene	bis(2-chloroethoxy)methane	bis(2-chloroethyl)ether	bis(2-chloroisopropyl)ether
bis(2-ethylhexyl)phthalate	4-bromophenyl phenyl ether	butyl benzyl phthalate	2-chloronaphthalene
4-chlorophenyl phenyl ether	chrysene	di-n-butyl phthalate	di-n-octyl phthalate
dibenzo(a,h)anthracene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
3,3'-dichlorobenzidine	diethyl phthalate	dimethyl phthalate	2,4-dinitrotoluene
2,6-dinitrotoluene	1,2-diphenylhydrazine	fluoranthene	fluorene
Hexachlorobenzene	hexachlorobutadiene	hexachlorocyclo-pentadiene	hexachloroethane
indeno(1,2,3-cd)pyrene	isophorone	naphthalene	nitrobenzene
n-nitrosodi-n-propylamine	n-nitrosodimethylamine	n-nitrosodiphenylamine	phenanthrene
pyrene	1,2,4-trichlorobenzene		

3. Michigan Industrial Pretreatment Program

This section applies to POTWs required to implement the Michigan Industrial Pretreatment Program as specified in the COC. All individual Program modifications approved by the Department become enforceable requirements of this permit.

a. The permittee shall comply with R 323.2301 through R 323.2317 of the Michigan Administrative Code (Part 23 Rules) and the approved Michigan Industrial Pretreatment Program.

b. The permittee shall have the legal authority and necessary interjurisdictional agreements that provide the basis for the implementation and enforcement of the approved Michigan Industrial Pretreatment Program throughout the service area. The legal authority and necessary interjurisdictional agreements shall include, at a minimum, the authority to carry out the activities specified in R 323.2306(a).

c. The permittee shall develop procedures which describe, in sufficient detail, program commitments which enable implementation of the approved Michigan Industrial Pretreatment Program and the Part 23 Rules in accordance with R 323.2306(c).

d. The permittee shall establish an interjurisdictional agreement (or comparable document) with all tributary governmental jurisdictions. Each interjurisdictional agreement shall contain, at a minimum, the following:

1) identification of the agency responsible for the implementation and enforcement of the approved Michigan Industrial Pretreatment Program within the tributary governmental jurisdiction's boundaries; and

2) the provision of the legal authority which provides the basis for the implementation and enforcement of the approved Michigan Industrial Pretreatment Program within the tributary governmental jurisdiction's boundaries.

e. The permittee shall prohibit discharges that:

1) cause, in whole or in part, the permittee's failure to comply with any condition of this permit or the NREPA
2) restrict, in whole or in part, the permittee's management of biosolids;

PART I

Section A. Effluent Limitations And Monitoring Requirements

3) cause, in whole or in part, operational problems at the treatment facility or in its collection system;

4) violate any of the general or specific prohibitions identified in R 323.2303(1) and (2);

5) violate categorical standards identified in R 323.2311; and

6) violate local limits established in accordance with R 323.2303(4).

f. The permittee shall maintain a list of its nondomestic users that meet the criteria of a significant industrial user as identified in R 323.2302(cc).

g. The permittee shall develop an enforcement response plan which describes, in sufficient detail, program commitments which will enable the enforcement of the approved Michigan Industrial Pretreatment Program and the Part 23 Rules in accordance with R 323.2306(g).

h. The Department may require modifications to the approved Michigan Industrial Pretreatment Program which are necessary to ensure compliance with the Part 23 Rules in accordance with R 323.2309.

i. The permittee shall not implement changes or modifications to the approved Michigan Industrial Pretreatment Program without notification to the Department.

j. The permittee shall maintain an adequate revenue structure and staffing level for effective implementation of the approved Michigan Industrial Pretreatment Program.

k. The permittee shall develop and maintain, for a minimum of three (3) years, all records and information necessary to determine nondomestic user compliance with the Part 23 Rules and the approved Michigan Industrial Pretreatment Program. This period of retention shall be extended during the course of any unresolved enforcement action or litigation regarding a nondomestic user or when requested by the Department or the United States Environmental Protection Agency. All of the aforementioned records and information shall be made available upon request for inspection and copying by the Department and the United States Environmental Protection Agency.

l. The permittee shall evaluate the approved Michigan Industrial Pretreatment Program for compliance with the Part 23 Rules and the prohibitions stated in item e., above. Based upon this evaluation, the permittee shall propose to the Department all necessary changes or modifications to the approved Michigan Industrial Pretreatment Program no later than the next Industrial Pretreatment Program Annual Report due date (see item n., below).

m. The permittee shall develop and enforce local limits to implement the prohibitions listed in item e. above. Local limits shall be based upon data representative of actual conditions demonstrated in a maximum allowable headworks loading analysis.

n. On or before April 1 of each year, the permittee shall submit to the Department, as required by R 323.2310(8), an Industrial Pretreatment Program Annual Report on the status of program implementation and enforcement activities. The reporting period shall begin on January 1 and end on December 31. At a minimum, the Industrial Pretreatment Program Annual Report shall contain the following items:

1) additions, deletions, and any other modifications to the permittee's previously submitted nondomestic user inventory (R 323.2306(c)(i));

2) additions, deletions, and any other modifications to the permittee's approved Significant Industrial User List (R 323.2306(h));

PART I

Section A. Effluent Limitations And Monitoring Requirements

3) a listing of the names of Significant Industrial Users not inspected by the permittee at least once during the reporting period or at the frequency committed to in the approved Michigan Industrial Pretreatment Program;

4) a listing of the names of Significant Industrial Users not sampled for all required pollutants by the permittee at least once during the reporting period or at the frequency committed to in the approved Michigan Industrial Pretreatment Program;

5) a listing of the names of Significant Industrial Users without a permit at any time during the reporting period;

6) a listing of the names of categorical industrial users in significant noncompliance for each of the criteria defined in R 323.2302(dd)(i)-(viii);

7) proof of publication of all categorical industrial users in significant noncompliance in the largest daily newspaper in the municipality in which the permittee is located;

8) a summary of the enforcement activities by the permittee during the report period. This Summary shall include:

a) a listing of the names of nondomestic users which were the subject of an enforcement action;

b) the enforcement action taken and the date the action was taken; and

c) whether the nondomestic user returned to compliance by the end of the reporting period (include date nondomestic user returned to compliance).

9) a listing of the names of Significant Industrial Users who did not submit pretreatment reports in accordance with requirements specified in their permit during the reporting period;

10) a listing of the names of Significant Industrial Users who did not self-monitor in accordance with requirements specified in their permit during the reporting period;

11) a summary of results of all the sampling and analyses performed of the wastewater treatment plant's influent, effluent, and biosolids conducted in accordance with approved methods during the reporting period. The summary shall include the monthly average, daily maximum, quantification level, and number of samples analyzed for each pollutant. At a minimum, the results of analyses for all locally limited parameters for at least one monitoring event that tests influent, effluent and biosolids during the reporting period shall be submitted with each report, unless otherwise required by the Department. Sample collection shall be at intervals sufficient to provide pollutant removal rates, unless the pollutant is not measurable; and

12) any other relevant information as requested by the Department.

4. Industrial Waste

Under no circumstances shall the permittee allow introduction of waste into the sewerage system other than domestic sewage generated by mobile home park / campground / nursing home / marinas.

5. Untreated or Partially Treated Sewage Discharge Reporting and Testing Requirements

In accordance with Section 324.3112a of the NREPA, if untreated sewage, including sanitary sewer overflows (SSO) and combined sewer overflows (CSO), or partially treated sewage is directly or indirectly discharged from a sewer system onto land or into the waters of the state, the entity responsible for the sewer system shall

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immediately, but not more than 24 hours after the discharge begins, notify, by telephone, the Department, local health departments, a daily newspaper of general circulation in the county in which the permittee is located, and a daily newspaper of general circulation in the county or counties in which the municipalities whose waters may be affected by the discharge are located that the discharge is occurring.

The permittee shall also annually contact municipalities, including the superintendent of a public drinking water supply with potentially affected intakes, whose waters may be affected by the permittee's discharge of combined sewage, and if those municipalities wish to be notified in the same manner as specified above, the permittee shall provide such notification. Such notification shall also include a daily newspaper in the county of the affected municipality.

At the conclusion of the discharge, written notification shall be submitted in accordance with and on the "Report of Discharge Form" available via the internet at: http://www.deq.state.mi.us/csosso/, or, alternatively for combined sewer overflow discharges, in accordance with notification procedures approved by the Department.

In addition, in accordance with Section 324.3112a of the NREPA, each time a discharge of untreated sewage or partially treated sewage occurs, the permittee shall test the affected waters for *Escherichia coli* to assess the risk to the public health as a result of the discharge and shall provide the test results to the affected local county health departments and to the Department. The testing shall be done at locations specified by each affected local county health department but shall not exceed 10 tests for each separate discharge event. The affected local county health department may waive this testing requirement, if it determines that such testing is not needed to assess the risk to the public health as a result of the discharge event. The results of this testing shall be submitted with the written notification required above, or, if the results are not yet available, submit them as soon as they become available. This testing is not required, if the testing has been waived by the local health department, or if the discharge(s) did not affect surface waters.

Permittees accepting sanitary or municipal sewage from other sewage collection systems are encouraged to notify the owners of those systems of the above reporting and testing requirements.

6. Facility Contact

The "Facility Contact" was specified in the application. The permittee may replace the facility contact at any time, and shall notify the Department in writing within 10 days after replacement (including the name, address, and telephone number of the new facility contact).

a. The facility contact shall be (or a duly authorized representative of this person):
- for a corporation, a principal executive officer of at least the level of vice president, or a designated representative, if the representative is responsible for the overall operation of the facility from which the discharge described in the permit application or other NPDES form originates,
- for a partnership, a general partner,
- for a sole proprietorship, the proprietor, or
- for a municipal, state, or other public facility, either a principal executive officer, the mayor, village president, city or village manager, or other duly authorized employee.

b. A person is a duly authorized representative only if:
- the authorization is made in writing to the Department by a person described in paragraph a. of this section; and
- the authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the facility (a duly authorized representative may thus be either a named individual or any individual occupying a named position).

Nothing in this section obviates the permittee from properly submitting reports and forms as required by law.

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7. Monthly Operating Reports

For wastewater treatment facilities that serve the public, Part 41 of Act 451 of 1994 as amended, specifically Section 324.4106 and associated R 299.2953, requires that the permittee file with the Department, on forms prescribed by the Department, reports showing the effectiveness of the treatment facility operation and the quantity and quality of liquid wastes discharged into waters of the state. If the Department has determined that this provision is applicable, it will be indicated in the COC.

FOR ALL **NEW** DISCHARGERS:
For new facilities: Sixty days prior to start-up of the treatment facility the permittee shall submit to the Department a treatment facility monitoring program to meet this requirement. Upon approval by the Department the permittee shall implement the treatment facility monitoring program. The report forms and guidance are available on the Department website at http://www.michigan.gov/deq/0,1607,7-135-3313_44117---,00.html. These forms shall be maintained on-site and shall be provided to the Department for review upon request. These treatment facility monitoring records shall be maintained for a minimum of three years.

FOR ALL **EXISTING** DISCHARGERS**:**
Within 30 days of the effective date of the COC the permittee shall submit to the Department a treatment facility monitoring program to meet this requirement. Upon approval by the Department the permittee shall implement the treatment facility monitoring program. The reporting forms and guidance are available on the Department website at http://www.michigan.gov/deq/0,1607,7-135-3313_44117---,00.html. These forms shall be maintained on-site and shall be provided to the Department for review upon request. These treatment facility monitoring records shall be maintained for a minimum of three years.

8. Residuals Management Program (RMP) for Land Application of Biosolids: First RMP, including new uses (The individual COC indicates if applicable.)

A permittee seeking authorization to land apply bulk biosolids or prepare bulk biosolids for land application shall develop and submit a Residuals Management Program (RMP) to the Department (see Part I.A.9.e. of this General Permit) for approval. Effective upon Department approval of the permittee's RMP, the permittee is authorized to land apply bulk biosolids or prepare bulk biosolids for land application in accordance with the requirements established in R 323.2401 through R 323.2418 of the Michigan Administrative Code (Part 24 Rules), which can be obtained via the internet (http://www.michigan.gov/deq/ and on the left side of the screen click on Water, Biosolids & Industrial Pretreatment, Biosolids, then click on Biosolids Laws and Rules Information, which is under the Laws & Rules banner in the center of the screen). The permittee's approved RMP, and any approved modifications thereto, are enforceable requirements of this General Permit. Incineration, landfilling, and other residual disposal activities shall be conducted in accordance with Part II.D.7. of this General Permit.

a. RMP Approval and Implementation
A permittee seeking approval of an RMP shall submit the RMP to the Department (see Part I.A.9.e. of this General Permit) at least 180 days prior to the land application of biosolids. The permittee may utilize the RMP Electronic Form that can be obtained via the internet (http://www.michigan.gov/deq/, and on the left side of the screen click on Water, Biosolids & Industrial Pretreatment, Biosolids; then click on RMP Electronic Form, which is under the Downloads banner in the center of the screen) or obtain detailed requirements from the Department. The RMP shall become effective and shall be implemented by the permittee upon written approval by the Department.

b. Annual Report
On or before October 30 of each year, the permittee shall submit an annual report to the Biosolids Program, Water Resources Division, Department of Environmental Quality, P.O. Box 30458, Lansing, Michigan 48909-7958, for the previous fiscal year of October 1 through September 30. At a minimum, the report shall contain:

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1) a certification that current residuals management practices are in accordance with the approved RMP, or a proposal for modification to the approved RMP; and

2) a completed Biosolids Annual Report Form, which can be obtained via the internet (http:/www.michigan.gov/deq/, and on the left side of the screen click on Water, Biosolids & Industrial Pretreatment, Biosolids; then click on Biosolids Annual Report Form, which is under the Downloads banner in the center of the screen) or from the Department.

c. Modifications to the Approved RMP
Prior to implementation of modifications to the RMP, the permittee shall submit proposed modifications to the Department (see Part I.A.9.e. of this General Permit) for approval. The approved modification shall become effective upon the date of approval. Upon written notification, the Department may impose additional requirements and/or limitations to the approved RMP as necessary to protect public health and the environment from any adverse effect of a pollutant in the biosolids.

d. Recordkeeping
Records required by the Part 24 Rules shall be kept for a minimum of five years. However, the records documenting cumulative loading for sites subject to cumulative pollutant loading rates shall be kept as long as the site receives biosolids.

e. Contact Information
RMP related submittals to the Department shall be to the address and telephone number listed in the COC.

9. Residuals Management Program for Land Application of Biosolids: APPROVED RMPs (The individual COC indicates if applicable.)

The permittee is authorized to land apply bulk biosolids or prepare bulk biosolids for land application in accordance with the permittee's approved RMP approved on the date specified in the COC and approved modifications thereto, in accordance with the requirements established in R 323.2401 through R 323.2418 of the Michigan Administrative Code (Part 24 Rules). The approved RMP, and any approved modifications thereto, are enforceable requirements of this General Permit. Incineration, landfilling, and other residual disposal activities shall be conducted in accordance with Part II.D.7. of this General Permit. The Part 24 Rules can be obtained via the internet (http://www.michigan.gov/deq/, and on the left side of the screen click on Water, Biosolids & Industrial Pretreatment, Biosolids; then click on Biosolids laws and Rules Information, which is under the Laws & Rules banner in the center of the screen).

a. Annual Report
On or before October 30 of each year, the permittee shall submit to the Biosolids Program, Water Resources Division, Department of Environmental Quality, P.O. Box 30458, Lansing, Michigan 48909-7958, for the previous fiscal year of October 1 through September 30. At a minimum, the report shall contain:

1) a certification that current residuals management practices are in accordance with the approved RMP, or a proposal for modification to the approved RMP; and

2) a completed Biosolids Annual Report Form, which can be obtained via the internet (http://www.michigan.gov/deq/ and on the left side of the screen click on Water, Biosolids & Industrial Pretreatment, Biosolids; then click on Biosolids Annual Report Form, which is under the Downloads banner in the center of the screen) or from the Department.

b. Modifications to the Approved RMP
Prior to implementation of modifications to the RMP, the permittee shall submit proposed modifications to the Department (see Part I.A.9.e. for this General Permit) for approval. The approved modification shall become effective upon the date of approval. Upon written notification, the Department may impose

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additional requirements and/or limitations to the approved RMP as necessary to protect public health and the environment from any adverse effect of a pollutant in the biosolids.

c. Record Retention
Records required by the Part 24 Rules shall be kept for a minimum of five years. However, the records documenting cumulative loading for sites subject to cumulative pollutant loading rates shall be kept as long as the site receives biosolids.

d. Contact Information
RMP related submittals to the Department shall be to the address and telephone number listed in the COC.

10. Expiration and Reissuance

On or before October 1, 2019, a permittee seeking continued authorization to discharge under this permit beyond the permit's expiration date shall submit to the Department a written request containing such information, forms and fees as required by the Department. Without an adequate request, a permittee's authorization to discharge will expire on April 1, 2020. With an adequate request, a permittee shall continue to be subject to the terms and conditions of the expired permit until the Department takes action on the request unless this permit is terminated or revoked.

If this permit is terminated or revoked, all authorizations to discharge under the permit shall expire on the date of termination or revocation.

If this permit is modified, the Department will notify the permittee of any required action. Without an adequate response, a permittee's authorization to discharge will terminate on the effective date of the modified permit. With an adequate response, a permittee shall be subject to the terms and conditions of the modified permit on the effective date of the modified permit unless the Department notifies the permittee otherwise.

If a discharge is terminated, the permittee shall request termination of discharge authorization.

11. Requirement to Obtain Individual Permit

The Department may require any person who is authorized to discharge by a certificate of coverage and this permit, to apply for and obtain an individual NPDES permit if any of the following circumstances apply:

a. the discharge is a significant contributor to pollution as determined by the Department on a case-by-case basis;

b. the discharger is not complying or has not complied with the conditions of the permit;

c. a change has occurred in the availability of demonstrated technology or practices for the control or abatement of waste applicable to the point source discharge;

d. effluent standards and limitations are promulgated for point source discharges subject to this permit; and

e. the Department determines that the criteria under which the permit was issued no longer apply.

Any person may request the Department to take action pursuant to the provisions of Rule 2191 (R 323.2191 of the Michigan Administrative Code).

PART II

Part II may include terms and /or conditions not applicable to discharges covered under this permit.

Section A. Definitions

Acute toxic unit (TU_A) means $100/LC_{50}$ where the LC_{50} is determined from a whole effluent toxicity (WET) test which produces a result that is statistically or graphically estimated to be lethal to 50% of the test organisms.

Annual monitoring frequency refers to a calendar year beginning on January 1 and ending on December 31. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Authorized public agency means a state, local, or county agency that is designated pursuant to the provisions of section 9110 of Part 91 of the NREPA to implement soil erosion and sedimentation control requirements with regard to construction activities undertaken by that agency.

Best management practices (BMPs) means structural devices or nonstructural practices that are designed to prevent pollutants from entering into storm water, to direct the flow of storm water, or to treat polluted storm water.

Bioaccumulative chemical of concern (BCC) means a chemical which, upon entering the surface waters, by itself or as its toxic transformation product, accumulates in aquatic organisms by a human health bioaccumulation factor of more than 1000 after considering metabolism and other physiochemical properties that might enhance or inhibit bioaccumulation. The human health bioaccumulation factor shall be derived according to R 323.1057(5). Chemicals with half-lives of less than 8 weeks in the water column, sediment, and biota are not BCCs. The minimum bioaccumulation concentration factor (BAF) information needed to define an organic chemical as a BCC is either a field-measured BAF or a BAF derived using the biota-sediment accumulation factor (BSAF) methodology. The minimum BAF information needed to define an inorganic chemical as a BCC, including an organometal, is either a field-measured BAF or a laboratory-measured bioconcentration factor (BCF). The BCCs to which these rules apply are identified in Table 5 of R 323.1057 of the Water Quality Standards.

Biosolids are the solid, semisolid, or liquid residues generated during the treatment of sanitary sewage or domestic sewage in a treatment works. This includes, but is not limited to, scum or solids removed in primary, secondary, or advanced wastewater treatment processes and a derivative of the removed scum or solids.

Bulk biosolids means biosolids that are not sold or given away in a bag or other container for application to a lawn or home garden.

Certificate of Coverage (COC) is a document, issued by the Department, which authorizes a discharge under a general permit.

Chronic toxic unit (TU_C) means $100/MATC$ or $100/IC_{25}$, where the maximum acceptable toxicant concentration (MATC) and IC_{25} are expressed as a percent effluent in the test medium.

Class B biosolids refers to material that has met the Class B pathogen reduction requirements or equivalent treatment by a Process to Significantly Reduce Pathogens (PSRP) in accordance with the Part 24 Rules. Processes include aerobic digestion, composting, anaerobic digestion, lime stabilization and air drying.

Combined sewer system is a sewer system in which storm water runoff is combined with sanitary wastes.

PART II

Section A. Definitions

Daily concentration is the sum of the concentrations of the individual samples of a parameter divided by the number of samples taken during any calendar day. If the parameter concentration in any sample is less than the quantification limit, regard that value as zero when calculating the daily concentration. The daily concentration will be used to determine compliance with any maximum and minimum daily concentration limitations (except for pH and dissolved oxygen). When required by the permit, report the maximum calculated daily concentration for the month in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the Discharge Monitoring Reports (DMRs).

For pH, report the maximum value of any *individual* sample taken during the month in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs and the minimum value of any *individual* sample taken during the month in the "MINIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs. For dissolved oxygen, report the minimum concentration of any *individual* sample in the "MINIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs.

Daily loading is the total discharge by weight of a parameter discharged during any calendar day. This value is calculated by multiplying the daily concentration by the total daily flow and by the appropriate conversion factor. The daily loading will be used to determine compliance with any maximum daily loading limitations. When required by the permit, report the maximum calculated daily loading for the month in the "MAXIMUM" column under "QUANTITY OR LOADING" on the DMRs.

Daily monitoring frequency refers to a 24-hour day. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Department means the Michigan Department of Environmental Quality.

Detection level means the lowest concentration or amount of the target analyte that can be determined to be different from zero by a single measurement at a stated level of probability.

Discharge means the addition of any waste, waste effluent, wastewater, pollutant, or any combination thereof to any surface water of the state.

Discharge point is the location where the point source discharge is directed to surface waters of the state or to a separate storm sewer. It includes the location of all point source discharges where storm water exits the facility, including *outfalls* which discharge directly to surface waters of the state, and *points of discharge* which discharge directly into separate storm sewer systems.

EC_{50} means a statistically or graphically estimated concentration that is expected to cause 1 or more specified effects in 50% of a group of organisms under specified conditions.

Fecal coliform bacteria monthly
FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – Fecal coliform bacteria monthly is the geometric mean of all daily concentrations determined during a discharge event. Days on which no daily concentration is determined shall not be used to determine the calculated monthly value. The calculated monthly value will be used to determine compliance with the maximum monthly fecal coliform bacteria limitations. When required by the permit, report the calculated monthly value in the "AVERAGE" column under "QUALITY OR CONCENTRATION" on the DMR. If the period in which the discharge event occurred was partially in each of two months, the calculated monthly value shall be reported on the DMR of the month in which the last day of discharge occurred.

FOR ALL OTHER DISCHARGES – Fecal coliform bacteria monthly is the geometric mean of all daily concentrations determined during a reporting month. Days on which no daily concentration is determined shall not be used to determine the calculated monthly value. The calculated monthly value will be used to determine compliance with the maximum monthly fecal coliform bacteria limitations. When required by the permit, report the calculated monthly value in the "AVERAGE" column under "QUALITY OR CONCENTRATION" on the DMR.

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Section A. Definitions

Fecal coliform bacteria 7-day
FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – Fecal coliform bacteria 7-day is the geometric mean of the daily concentrations determined during any 7 consecutive days of discharge during a discharge event. If the number of daily concentrations determined during the discharge event is less than 7 days, the number of actual daily concentrations determined shall be used for the calculation. Days on which no daily concentration is determined shall not be used to determine the value. The calculated 7-day value will be used to determine compliance with the maximum 7-day fecal coliform bacteria limitations. When required by the permit, report the maximum calculated 7-day geometric mean value for the month in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs. If the 7-day period was partially in each of two months, the value shall be reported on the DMR of the month in which the last day of discharge occurred.

FOR ALL OTHER DISCHARGES – Fecal coliform bacteria 7-day is the geometric mean of the daily concentrations determined during any 7 consecutive days in a reporting month. If the number of daily concentrations determined is less than 7, the actual number of daily concentrations determined shall be used for the calculation. Days on which no daily concentration is determined shall not be used to determine the value. The calculated 7-day value will be used to determine compliance with the maximum 7-day fecal coliform bacteria limitations. When required by the permit, report the maximum calculated 7-day geometric mean for the month in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs. The first calculation shall be made on day 7 of the reporting month, and the last calculation shall be made on the last day of the reporting month.

Flow-proportioned sample is a composite sample with the sample volume proportional to the effluent flow.

General permit means a National Pollutant Discharge Elimination System permit issued authorizing a category of similar discharges.

Geometric mean is the average of the logarithmic values of a base 10 data set, converted back to a base 10 number.

Grab sample is a single sample taken at neither a set time nor flow.

IC_{25} means the toxicant concentration that would cause a 25% reduction in a nonquantal biological measurement for the test population.

Illicit connection means a physical connection to a municipal separate storm sewer system that primarily conveys non-storm water discharges other than uncontaminated groundwater into the storm sewer; or a physical connection not authorized or permitted by the local authority, where a local authority requires authorization or a permit for physical connections.

Illicit discharge means any discharge to, or seepage into, a municipal separate storm sewer system that is not composed entirely of storm water or uncontaminated groundwater. Illicit discharges include non-storm water discharges through pipes or other physical connections; dumping of motor vehicle fluids, household hazardous wastes, domestic animal wastes, or litter; collection and intentional dumping of grass clippings or leaf litter; or unauthorized discharges of sewage, industrial waste, restaurant wastes, or any other non-storm water waste directly into a separate storm sewer.

Individual permit means a site-specific NPDES permit.

Inlet means a catch basin, roof drain, conduit, drain tile, retention pond riser pipe, sump pump, or other point where storm water or wastewater enters into a closed conveyance system prior to discharge off site or into waters of the state.

PART II

Section A. Definitions

Interference is a discharge which, alone or in conjunction with a discharge or discharges from other sources, both: 1) inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and 2) therefore, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or, of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent state or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including Title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including state regulations contained in any state sludge management plan prepared pursuant to Subtitle D of the SWDA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act. [This definition does not apply to sample matrix interference].

Land application means spraying or spreading biosolids or a biosolids derivative onto the land surface, injecting below the land surface, or incorporating into the soil so that the biosolids or biosolids derivative can either condition the soil or fertilize crops or vegetation grown in the soil.

LC_{50} means a statistically or graphically estimated concentration that is expected to be lethal to 50% of a group of organisms under specified conditions.

Maximum acceptable toxicant concentration (MATC) means the concentration obtained by calculating the geometric mean of the lower and upper chronic limits from a chronic test. A lower chronic limit is the highest tested concentration that did not cause the occurrence of a specific adverse effect. An upper chronic limit is the lowest tested concentration which did cause the occurrence of a specific adverse effect and above which all tested concentrations caused such an occurrence.

Maximum extent practicable means implementation of best management practices by a public body to comply with an approved storm water management program as required by a national permit for a municipal separate storm sewer system, in a manner that is environmentally beneficial, technically feasible, and within the public body's legal authority.

MGD means million gallons per day.

Monthly concentration is the sum of the daily concentrations determined during a reporting period divided by the number of daily concentrations determined. The calculated monthly concentration will be used to determine compliance with any maximum monthly concentration limitations. Days with no discharge shall not be used to determine the value. When required by the permit, report the calculated monthly concentration in the "AVERAGE" column under "QUALITY OR CONCENTRATION" on the DMR. If the seven day period was partially in each of two months, the monthly average shall be reported on the DMR of the month in which the last day of discharge occurred.

For minimum percent removal requirements, the monthly influent concentration and the monthly effluent concentration shall be determined. The calculated monthly percent removal, which is equal to 100 times the quantity [1 minus the quantity (monthly effluent concentration divided by the monthly influent concentration)], shall be reported in the "MINIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs.

Monthly loading is the sum of the daily loadings of a parameter divided by the number of daily loadings determined during a reporting period. The calculated monthly loading will be used to determine compliance with any maximum monthly loading limitations. Days with no discharge shall not be used to determine the value. When required by the permit, report the calculated monthly loading in the "AVERAGE" column under "QUANTITY OR LOADING" on the DMR. If the seven day period was partially in each of two months, the monthly average shall be reported on the DMR of the month in which the last day of discharge occurred..

Monthly monitoring frequency refers to a calendar month. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Municipal separate storm sewer means a conveyance or system of conveyances designed or used for collecting or conveying storm water which is not a combined sewer and which is not part of a publicly-owned treatment works as defined in the Code of Federal Regulations at 40 CFR 122.2.

PART II

Section A. Definitions

Municipal separate storm sewer system (MS4) means all separate storm sewers that are owned or operated by the United States, a state, city, village, township, county, district, association, or other public body created by or pursuant to state law, having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under state law, such as a sewer district, flood control district, or drainage district, or similar entity, or a designated or approved management agency under Section 208 of the Federal Act that discharges to the waters of the state. This term includes systems similar to separate storm sewer systems in municipalities, such as systems at military bases, large hospital or prison complexes, and highways and other thoroughfares. The term does not include separate storm sewers in very discrete areas, such as individual buildings.

National Pretreatment Standards are the regulations promulgated by or to be promulgated by the Federal Environmental Protection Agency pursuant to Section 307(b) and (c) of the Federal Act. The standards establish nationwide limits for specific industrial categories for discharge to a POTW.

No observed adverse effect level (NOAEL) means the highest tested dose or concentration of a substance which results in no observed adverse effect in exposed test organisms where higher doses or concentrations result in an adverse effect.

Noncontact cooling water is water used for cooling which does not come into direct contact with any raw material, intermediate product, by-product, waste product or finished product.

Nondomestic user is any discharger to a POTW that discharges wastes other than or in addition to water-carried wastes from toilet, kitchen, laundry, bathing or other facilities used for household purposes.

Outfall is the location at which a point source discharge enters the surface waters of the state.

Part 91 agency means an agency that is designated by a county board of commissioners pursuant to the provisions of section 9105 of Part 91 of the NREPA; an agency that is designated by a city, village, or township in accordance with the provisions of section 9106 of Part 91 of the NREPA; or the Department for soil erosion and sedimentation activities under Part 615, Part 631, or Part 632 pursuant to the provisions of section 9115 of Part 91 of the NREPA.

Part 91 permit means a soil erosion and sedimentation control permit issued by a Part 91 agency pursuant to the provisions of Part 91 of the NREPA.

Partially treated sewage is any sewage, sewage and storm water, or sewage and wastewater, from domestic or industrial sources that is treated to a level less than that required by the permittee's National Pollutant Discharge Elimination System permit, or that is not treated to national secondary treatment standards for wastewater, including discharges to surface waters from retention treatment facilities.

Point of discharge is the location of a point source discharge where storm water is discharged directly into a separate storm sewer system.

Point source discharge means a discharge from any discernible, confined, discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, or rolling stock. Changing the surface of land or establishing grading patterns on land will result in a point source discharge where the runoff from the site is ultimately discharged to waters of the state.

Polluting material means any material, in solid or liquid form, identified as a polluting material under the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code).

POTW is a publicly owned treatment work.

Pretreatment is reducing the amount of pollutants, eliminating pollutants, or altering the nature of pollutant properties to a less harmful state prior to discharge into a public sewer. The reduction or alteration can be by physical, chemical, or biological processes, process changes, or by other means. Dilution is not considered pretreatment unless expressly authorized by an applicable National Pretreatment Standard for a particular industrial category.

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Section A. Definitions

Public (as used in the MS4 individual permit) means all persons who potentially could affect the authorized storm water discharges, including, but not limited to, residents, visitors to the area, public employees, businesses, industries, and construction contractors and developers.

Public body means the United States; the state of Michigan; a city, village, township, county, school district, public college or university, or single-purpose governmental agency; or any other body which is created by federal or state statute or law.

Qualifying storm event means a storm event causing greater than 0.1 inch of rainfall and occurring at least 72 hours after the previous measurable storm event that also caused greater than 0.1 inch of rainfall.

Quantification level means the measurement of the concentration of a contaminant obtained by using a specified laboratory procedure calculated at a specified concentration above the detection level. It is considered the lowest concentration at which a particular contaminant can be quantitatively measured using a specified laboratory procedure for monitoring of the contaminant.

Quarterly monitoring frequency refers to a three month period, defined as January through March, April through June, July through September, and October through December. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Regional Administrator is the Region 5 Administrator, U.S. EPA, located at R-19J, 77 W. Jackson Blvd., Chicago, Illinois 60604.

Regulated area means the permittee's urbanized area, where urbanized area is defined as a place and its adjacent densely-populated territory that together have a minimum population of 50,000 people as defined by the United States Bureau of the Census and as determined by the latest available decennial census.

Secondary containment structure means a unit, other than the primary container, in which significant materials are packaged or held, which is required by State or Federal law to prevent the escape of significant materials by gravity into sewers, drains, or otherwise directly or indirectly into any sewer system or to the surface or ground waters of this state.

Separate storm sewer system means a system of drainage, including, but not limited to, roads, catch basins, curbs, gutters, parking lots, ditches, conduits, pumping devices, or man-made channels, which is not a combined sewer where storm water mixes with sanitary wastes, and is not part of a POTW.

Significant industrial user is a nondomestic user that: 1) is subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N; or 2) discharges an average of 25,000 gallons per day or more of process wastewater to a POTW (excluding sanitary, noncontact cooling and boiler blowdown wastewater); contributes a process waste stream which makes up five (5) percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the permittee as defined in 40 CFR 403.12(a) on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's treatment plant operation or violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

Significant materials Significant Materials means any material which could degrade or impair water quality, including but not limited to: raw materials; fuels; solvents, detergents, and plastic pellets; finished materials such as metallic products; hazardous substances designated under Section 101(14) of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (see 40 CFR 372.65); any chemical the facility is required to report pursuant to Section 313 of Emergency Planning and Community Right-to-Know Act (EPCRA); polluting materials as identified under the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code); Hazardous Wastes as defined in Part 111 of the NREPA; fertilizers; pesticides; and waste products such as ashes, slag, and sludge that have the potential to be released with storm water discharges.

Significant spills and significant leaks means any release of a polluting material reportable under the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code).

PART II

Section A. Definitions

Special-use area means secondary containment structures required by state or federal law; lands on Michigan's List of Sites of Environmental Contamination pursuant to Part 201, Environmental Remediation, of the NREPA; and/or areas with other activities that may contribute pollutants to the storm water for which the Department determines monitoring is needed.

Stoichiometric means the quantity of a reagent calculated to be necessary and sufficient for a given chemical reaction.

Storm water means storm water runoff, snow melt runoff, surface runoff and drainage, and non-storm water included under the conditions of this permit.

SWPPP means the Storm Water Pollution Prevention Plan prepared in accordance with this permit.

Tier I value means a value for aquatic life, human health or wildlife calculated under R 323.1057 of the Water Quality Standards using a tier I toxicity database.

Tier II value means a value for aquatic life, human health or wildlife calculated under R 323.1057 of the Water Quality Standards using a tier II toxicity database.

Total maximum daily loads (TMDLs) are required by the Federal Act for waterbodies that do not meet Water Quality Standards. TMDLs represent the maximum daily load of a pollutant that a waterbody can assimilate and meet Water Quality Standards, and an allocation of that load among point sources, nonpoint sources, and a margin of safety.

Toxicity reduction evaluation (TRE) means a site-specific study conducted in a stepwise process designed to identify the causative agents of effluent toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in effluent toxicity.

Water Quality Standards means the Part 4 Water Quality Standards promulgated pursuant to Part 31 of the NREPA, being R 323.1041 through R 323.1117 of the Michigan Administrative Code.

Weekly monitoring frequency refers to a calendar week which begins on Sunday and ends on Saturday. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

WWSL is a wastewater stabilization lagoon.

WWSL discharge event is a discrete occurrence during which effluent is discharged to the surface water up to 10 days of a consecutive 14 day period.

3-portion composite sample is a sample consisting of three equal-volume grab samples collected at equal intervals over an 8-hour period.

PART II

Section A. Definitions

7-day concentration
FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – The 7-day concentration is the sum of the daily concentrations determined during any 7 consecutive days of discharge during a WWSL discharge event divided by the number of daily concentrations determined. If the number of daily concentrations determined during the WWSL discharge event is less than 7 days, the number of actual daily concentrations determined shall be used for the calculation. The calculated 7-day concentration will be used to determine compliance with any maximum 7-day concentration limitations. When required by the permit, report the maximum calculated 7-day concentration for the WWSL discharge event in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the DMR. If the WWSL discharge event was partially in each of two months, the value shall be reported on the DMR of the month in which the last day of discharge occurred.

FOR ALL OTHER DISCHARGES – The 7-day concentration is the sum of the daily concentrations determined during any 7 consecutive days in a reporting month divided by the number of daily concentrations determined. If the number of daily concentrations determined is less than 7, the actual number of daily concentrations determined shall be used for the calculation. The calculated 7-day concentration will be used to determine compliance with any maximum 7-day concentration limitations in the reporting month. When required by the permit, report the maximum calculated 7-day concentration for the month in the "MAXIMUM" column under "QUALITY OR CONCENTRATION" on the DMR. The first 7-day calculation shall be made on day 7 of the reporting month, and the last calculation shall be made on the last day of the reporting month.

7-day loading
FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – The 7-day loading is the sum of the daily loadings determined during any 7 consecutive days of discharge during a WWSL discharge event divided by the number of daily loadings determined. If the number of daily loadings determined during the WWSL discharge event is less than 7 days, the number of actual daily loadings determined shall be used for the calculation. The calculated 7-day loading will be used to determine compliance with any maximum 7-day loading limitations. When required by the permit, report the maximum calculated 7-day loading for the WWSL discharge event in the "MAXIMUM" column under "QUANTITY OR LOADING" on the DMR. If the WWSL discharge event was partially in each of two months, the value shall be reported on the DMR of the month in which the last day of discharge occurred

FOR ALL OTHER DISCHARGES – The 7-day loading is the sum of the daily loadings determined during any 7 consecutive days in a reporting month divided by the number of daily loadings determined. If the number of daily loadings determined is less than 7, the actual number of daily loadings determined shall be used for the calculation. The calculated 7-day loading will be used to determine compliance with any maximum 7-day loading limitations in the reporting month. When required by the permit, report the maximum calculated 7-day loading for the month in the "MAXIMUM" column under "QUANTITY OR LOADING" on the DMR. The first 7-day calculation shall be made on day 7 of the reporting month, and the last calculation shall be made on the last day of the reporting month.

24-hour composite sample is a flow-proportioned composite sample consisting of hourly or more frequent portions that are taken over a 24-hour period. A time-proportioned composite sample may be used upon approval of the Department if the permittee demonstrates it is representative of the discharge.

PART II

Section B. Monitoring Procedures

1. Representative Samples

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

2. Test Procedures

Test procedures for the analysis of pollutants shall conform to regulations promulgated pursuant to Section 304(h) of the Federal Act (40 CFR Part 136 – Guidelines Establishing Test Procedures for the Analysis of Pollutants), unless specified otherwise in this permit. **Test procedures used shall be sufficiently sensitive to determine compliance with applicable effluent limitations**. Requests to use test procedures not promulgated under 40 CFR Part 136 for pollutant monitoring required by this permit shall be made in accordance with the Alternate Test Procedures regulations specified in 40 CFR 136.4. These requests shall be submitted to the Chief of the Permits Section, Water Resources Division, Michigan Department of Environmental Quality, P.O. Box 30458, Lansing, Michigan, 48909-7958. The permittee may use such procedures upon approval.

The permittee shall periodically calibrate and perform maintenance procedures on all analytical instrumentation at intervals to ensure accuracy of measurements. The calibration and maintenance shall be performed as part of the permittee's laboratory Quality Control/Quality Assurance program.

3. Instrumentation

The permittee shall periodically calibrate and perform maintenance procedures on all monitoring instrumentation at intervals to ensure accuracy of measurements.

4. Recording Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information: 1) the exact place, date, and time of measurement or sampling; 2) the person(s) who performed the measurement or sample collection; 3) the dates the analyses were performed; 4) the person(s) who performed the analyses; 5) the analytical techniques or methods used; 6) the date of and person responsible for equipment calibration; and 7) the results of all required analyses.

5. Records Retention

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed and calibration and maintenance of instrumentation and recordings from continuous monitoring instrumentation shall be retained for a minimum of three (3) years, or longer if requested by the Regional Administrator or the Department.

PART II

Section C. Reporting Requirements

1. Start-up Notification

If the permittee will not discharge during the first 60 days following the effective date of this permit, the permittee shall notify the Department within 14 days following the effective date of this permit, and then 60 days prior to the commencement of the discharge.

2. Submittal Requirements for Self-Monitoring Data

Part 31 of the NREPA, specifically Section 324.3110(3) and R 323.2155(2) of Part 21, allows the Department to specify the forms to be utilized for reporting the required self-monitoring data. Unless instructed on the effluent limitations page to conduct "Retained Self-Monitoring" the permittee shall submit self-monitoring data via the Department's Electronic Environmental Discharge Monitoring Reporting (e2-DMR) system.

The permittee shall utilize the information provided on the e2-Reporting website at https://secure1.state.mi.us/e2rs/ to access and submit the electronic forms. Both monthly summary and daily data shall be submitted to the Department no later than the 20th day of the month following each month of the authorized discharge period(s). The permittee may be allowed to submit the electronic forms after this date if the Department has granted an extension to the submittal date.

3. Retained Self-Monitoring Requirements

If instructed on the effluent limits page (or otherwise authorized by the Department in accordance with the provisions of this permit) to conduct retained self-monitoring, the permittee shall maintain a year-to-date log of retained self-monitoring results and, upon request, provide such log for inspection to the staff of the Department. Retained self-monitoring results are public information and shall be promptly provided to the public upon request.

The permittee shall certify, in writing, to the Department, on or before January 10th (April 1st for animal feeding operation facilities) of each year, that: 1) all retained self-monitoring requirements have been complied with and a year-to-date log has been maintained; and 2) the application on which this permit is based still accurately describes the discharge. With this annual certification, the permittee shall submit a summary of the previous year's monitoring data. The summary shall include maximum values for samples to be reported as daily maximums and/or monthly maximums and minimum values for any daily minimum samples.

Retained self-monitoring may be denied to a permittee by notification in writing from the Department. In such cases, the permittee shall submit self-monitoring data in accordance with Part II.C.2., above. Such a denial may be rescinded by the Department upon written notification to the permittee. Reissuance or modification of this permit or reissuance or modification of an individual permittee's authorization to discharge shall not affect previous approval or denial for retained self-monitoring unless the Department provides notification in writing to the permittee.

4. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report. Such increased frequency shall also be indicated.

Monitoring required pursuant to Part 41 of the NREPA or Rule 35 of the Mobile Home Park Commission Act (Act 96 of the Public Acts of 1987) for assurance of proper facility operation shall be submitted as required by the Department.

PART II

Section C. Reporting Requirements

5. Compliance Dates Notification

Within 14 days of every compliance date specified in this permit, the permittee shall submit a *written* notification to the Department indicating whether or not the particular requirement was accomplished. If the requirement was not accomplished, the notification shall include an explanation of the failure to accomplish the requirement, actions taken or planned by the permittee to correct the situation, and an estimate of when the requirement will be accomplished. If a written report is required to be submitted by a specified date and the permittee accomplishes this, a separate written notification is not required.

6. Noncompliance Notification

Compliance with all applicable requirements set forth in the Federal Act, Parts 31 and 41 of the NREPA, and related regulations and rules is required. All instances of noncompliance shall be reported as follows:

a. 24-Hour Reporting
Any noncompliance which may endanger health or the environment (including maximum and/or minimum daily concentration discharge limitation exceedances) shall be reported, verbally, within 24 hours from the time the permittee becomes aware of the noncompliance. A written submission shall also be provided within five (5) days.

b. Other Reporting
The permittee shall report, in writing, all other instances of noncompliance not described in a. above at the time monitoring reports are submitted; or, in the case of retained self-monitoring, within five (5) days from the time the permittee becomes aware of the noncompliance.

Written reporting shall include: 1) a description of the discharge and cause of noncompliance; and 2) the period of noncompliance, including exact dates and times, or, if not yet corrected, the anticipated time the noncompliance is expected to continue, and the steps taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.

7. Spill Notification

The permittee shall immediately report any release of any polluting material which occurs to the surface waters or groundwaters of the state, unless the permittee has determined that the release is not in excess of the threshold reporting quantities specified in the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code), by calling the Department at the number indicated on the second page of this permit (or, if this is a general permit, on the COC); or, if the notice is provided after regular working hours, call the Department's 24-hour Pollution Emergency Alerting System telephone number, 1-800-292-4706 (calls from **out-of-state** dial 1-517-373-7660).

Within ten (10) days of the release, the permittee shall submit to the Department a full written explanation as to the cause of the release, the discovery of the release, response (clean-up and/or recovery) measures taken, and preventative measures taken or a schedule for completion of measures to be taken to prevent reoccurrence of similar releases.

PART II

Section C. Reporting Requirements

8. Upset Noncompliance Notification

If a process "upset" (defined as an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee) has occurred, the permittee who wishes to establish the affirmative defense of upset, shall notify the Department by telephone within 24 hours of becoming aware of such conditions; and within five (5) days, provide in writing, the following information:

a. that an upset occurred and that the permittee can identify the specific cause(s) of the upset;

b. that the permitted wastewater treatment facility was, at the time, being properly operated and maintained (note that an upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation); and

c. that the permittee has specified and taken action on all responsible steps to minimize or correct any adverse impact in the environment resulting from noncompliance with this permit.

No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

In any enforcement proceedings, the permittee, seeking to establish the occurrence of an upset, has the burden of proof.

9. Bypass Prohibition and Notification

a. Bypass Prohibition
Bypass is prohibited, and the Department may take an enforcement action, unless:

1) bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

2) there were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass; and

3) the permittee submitted notices as required under 9.b. or 9.c. below.

b. Notice of Anticipated Bypass
If the permittee knows in advance of the need for a bypass, it shall submit prior notice to the Department, if possible at least ten (10) days before the date of the bypass, and provide information about the anticipated bypass as required by the Department. The Department may approve an anticipated bypass, after considering its adverse effects, if it will meet the three (3) conditions listed in 9.a. above.

c. Notice of Unanticipated Bypass
The permittee shall submit notice to the Department of an unanticipated bypass by calling the Department at the number indicated on the second page of this permit (if the notice is provided after regular working hours, use the following number: 1-800-292-4706) as soon as possible, but no later than 24 hours from the time the permittee becomes aware of the circumstances.

PART II

Section C. Reporting Requirements

d. Written Report of Bypass
A written submission shall be provided within five (5) working days of commencing any bypass to the Department, and at additional times as directed by the Department. The written submission shall contain a description of the bypass and its cause; the period of bypass, including exact dates and times, and if the bypass has not been corrected, the anticipated time it is expected to continue; steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass; and other information as required by the Department.

e. Bypass Not Exceeding Limitations
The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to ensure efficient operation. These bypasses are not subject to the provisions of 9.a., 9.b., 9.c., and 9.d., above. This provision does not relieve the permittee of any notification responsibilities under Part II.C.11. of this permit.

f. Definitions

1) Bypass means the intentional diversion of waste streams from any portion of a treatment facility.

2) Severe property damage means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

10. Bioaccumulative Chemicals of Concern (BCC)

Consistent with the requirements of R 323.1098 and R 323.1215 of the Michigan Administrative Code, the permittee is prohibited from undertaking any action that would result in a lowering of water quality from an increased loading of a BCC unless an increased use request and antidegradation demonstration have been submitted and approved by the Department.

11. Notification of Changes in Discharge

The permittee shall notify the Department, in writing, as soon as possible but no later than 10 days of knowing, or having reason to believe, that any activity or change has occurred or will occur which would result in the discharge of: 1) detectable levels of chemicals on the current Michigan Critical Materials Register, priority pollutants or hazardous substances set forth in 40 CFR 122.21, Appendix D, or the Pollutants of Initial Focus in the Great Lakes Water Quality Initiative specified in 40 CFR 132.6, Table 6, which were not acknowledged in the application or listed in the application at less than detectable levels; 2) detectable levels of any other chemical not listed in the application or listed at less than detection, for which the application specifically requested information; or 3) any chemical at levels greater than five times the average level reported in the complete application (see the first page of this permit, for the date(s) the complete application was submitted). Any other monitoring results obtained as a requirement of this permit shall be reported in accordance with the compliance schedules.

PART II

Section C. Reporting Requirements

12. Changes in Facility Operations

Any anticipated action or activity, including but not limited to facility expansion, production increases, or process modification, which will result in new or increased loadings of pollutants to the receiving waters must be reported to the Department by a) submission of an increased use request (application) and all information required under R 323.1098 (Antidegradation) of the Water Quality Standards or b) by notice if the following conditions are met: 1) the action or activity will not result in a change in the types of wastewater discharged or result in a greater quantity of wastewater than currently authorized by this permit; 2) the action or activity will not result in violations of the effluent limitations specified in this permit; 3) the action or activity is not prohibited by the requirements of Part II.C.10.; and 4) the action or activity will not require notification pursuant to Part II.C.11. Following such notice, the permit or, if applicable, the facility's COC may be modified according to applicable laws and rules to specify and limit any pollutant not previously limited.

13. Transfer of Ownership or Control

In the event of any change in control or ownership of facilities from which the authorized discharge emanates, the permittee shall submit to the Department 30 days prior to the actual transfer of ownership or control a written agreement between the current permittee and the new permittee containing: 1) the legal name and address of the new owner; 2) a specific date for the effective transfer of permit responsibility, coverage and liability; and 3) a certification of the continuity of or any changes in operations, wastewater discharge, or wastewater treatment.

If the new permittee is proposing changes in operations, wastewater discharge, or wastewater treatment, the Department may propose modification of this permit in accordance with applicable laws and rules.

14. Operations and Maintenance Manual

For wastewater treatment facilities that serve the public (and are thus subject to Part 41 of the NREPA), Section 4104 of Part 41 and associated Rule 2957 of the Michigan Administrative Code allow the Department to require an Operations and Maintenance (O&M) Manual from the facility. An up-to-date copy of the O&M Manual shall be kept at the facility and shall be provided to the Department upon request. The Department may review the O&M Manual in whole or in part at its discretion and require modifications to it if portions are determined to be inadequate.

At a minimum, the O&M Manual shall include the following information: permit standards; descriptions and operation information for all equipment; staffing information; laboratory requirements; record keeping requirements; a maintenance plan for equipment; an emergency operating plan; safety program information; and copies of all pertinent forms, as-built plans, and manufacturer's manuals.

Certification of the existence and accuracy of the O&M Manual shall be submitted to the Department at least sixty days prior to start-up of a new wastewater treatment facility. Recertification shall be submitted sixty days prior to start-up of any substantial improvements or modifications made to an existing wastewater treatment facility.

PART II

Section C. Reporting Requirements

15. Signatory Requirements

All applications, reports, or information submitted to the Department in accordance with the conditions of this permit and that require a signature shall be signed and certified as described in the Federal Act and the NREPA.

The Federal Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance, shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

The NREPA (Section 3115(2)) provides that a person who at the time of the violation knew or should have known that he or she discharged a substance contrary to this part, or contrary to a permit, COC, or order issued or rule promulgated under this part, or who intentionally makes a false statement, representation, or certification in an application for or form pertaining to a permit or COC or in a notice or report required by the terms and conditions of an issued permit or COC, or who intentionally renders inaccurate a monitoring device or record required to be maintained by the Department, is guilty of a felony and shall be fined not less than $2,500.00 or more than $25,000.00 for each violation. The court may impose an additional fine of not more than $25,000.00 for each day during which the unlawful discharge occurred. If the conviction is for a violation committed after a first conviction of the person under this subsection, the court shall impose a fine of not less than $25,000.00 per day and not more than $50,000.00 per day of violation. Upon conviction, in addition to a fine, the court in its discretion may sentence the defendant to imprisonment for not more than 2 years or impose probation upon a person for a violation of this part. With the exception of the issuance of criminal complaints, issuance of warrants, and the holding of an arraignment, the circuit court for the county in which the violation occurred has exclusive jurisdiction. However, the person shall not be subject to the penalties of this subsection if the discharge of the effluent is in conformance with and obedient to a rule, order, permit, or COC of the Department. In addition to a fine, the attorney general may file a civil suit in a court of competent jurisdiction to recover the full value of the injuries done to the natural resources of the state and the costs of surveillance and enforcement by the state resulting from the violation.

16. Electronic Reporting

Upon notice by the Department that electronic reporting tools are available for specific reports or notifications, the permittee shall submit electronically all such reports or notifications as required by this permit.

PART II

Section D. Management Responsibilities

1. Duty to Comply

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit, more frequently than, or at a level in excess of, that authorized, shall constitute a violation of the permit.

It is the duty of the permittee to comply with all the terms and conditions of this permit. Any noncompliance with the Effluent Limitations, Special Conditions, or terms of this permit constitutes a violation of the NREPA and/or the Federal Act and constitutes grounds for enforcement action; for permit or Certificate of Coverage (COC) termination, revocation and reissuance, or modification; or denial of an application for permit or COC renewal.

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

2. Operator Certification

The permittee shall have the waste treatment facilities under direct supervision of an operator certified at the appropriate level for the facility certification by the Department, as required by Sections 3110 and 4104 of the NREPA. Permittees authorized to discharge storm water shall have the storm water treatment and/or control measures under direct supervision of a storm water operator certified by the Department, as required by Section 3110 of the NREPA.

3. Facilities Operation

The permittee shall, at all times, properly operate and maintain all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes adequate laboratory controls and appropriate quality assurance procedures.

4. Power Failures

In order to maintain compliance with the effluent limitations of this permit and prevent unauthorized discharges, the permittee shall either:

a. provide an alternative power source sufficient to operate facilities utilized by the permittee to maintain compliance with the effluent limitations and conditions of this permit; or

b. upon the reduction, loss, or failure of one or more of the primary sources of power to facilities utilized by the permittee to maintain compliance with the effluent limitations and conditions of this permit, the permittee shall halt, reduce or otherwise control production and/or all discharge in order to maintain compliance with the effluent limitations and conditions of this permit.

5. Adverse Impact

The permittee shall take all reasonable steps to minimize or prevent any adverse impact to the surface waters or groundwaters of the state resulting from noncompliance with any effluent limitation specified in this permit including, but not limited to, such accelerated or additional monitoring as necessary to determine the nature and impact of the discharge in noncompliance.

PART II

Section D. Management Responsibilities

6. Containment Facilities

The permittee shall provide facilities for containment of any accidental losses of polluting materials in accordance with the requirements of the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code). For a Publicly Owned Treatment Work (POTW), these facilities shall be approved under Part 41 of the NREPA.

7. Waste Treatment Residues

Residuals (i.e. solids, sludges, biosolids, filter backwash, scrubber water, ash, grit, or other pollutants or wastes) removed from or resulting from treatment or control of wastewaters, including those that are generated during treatment or left over after treatment or control has ceased, shall be disposed of in an environmentally compatible manner and according to applicable laws and rules. These laws may include, but are not limited to, the NREPA, Part 31 for protection of water resources, Part 55 for air pollution control, Part 111 for hazardous waste management, Part 115 for solid waste management, Part 121 for liquid industrial wastes, Part 301 for protection of inland lakes and streams, and Part 303 for wetlands protection. Such disposal shall not result in any unlawful pollution of the air, surface waters or groundwaters of the state.

8. Right of Entry

The permittee shall allow the Department, any agent appointed by the Department, or the Regional Administrator, upon the presentation of credentials and, for animal feeding operation facilities, following appropriate biosecurity protocols:

a. to enter upon the permittee's premises where an effluent source is located or any place in which records are required to be kept under the terms and conditions of this permit; and

b. at reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect process facilities, treatment works, monitoring methods and equipment regulated or required under this permit; and to sample any discharge of pollutants.

9. Availability of Reports

Except for data determined to be confidential under Section 308 of the Federal Act and Rule 2128 (R 323.2128 of the Michigan Administrative Code), all reports prepared in accordance with the terms of this permit, shall be available for public inspection at the offices of the Department and the Regional Administrator. As required by the Federal Act, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the Federal Act and Sections 3112, 3115, 4106 and 4110 of the NREPA.

10. Duty to Provide Information

The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or the facility's COC, or to determine compliance with this permit. The permittee shall also furnish to the Department, upon request, copies of records required to be kept by this permit.

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information.

PART II

Section E. Activities Not Authorized by This Permit

1. Discharge to the Groundwaters

This permit does not authorize any discharge to the groundwaters. Such discharge may be authorized by a groundwater discharge permit issued pursuant to the NREPA.

2. POTW Construction

This permit does not authorize or approve the construction or modification of any physical structures or facilities at a POTW. Approval for the construction or modification of any physical structures or facilities at a POTW shall be by permit issued under Part 41 of the NREPA.

3. Civil and Criminal Liability

Except as provided in permit conditions on "Bypass" (Part II.C.9. pursuant to 40 CFR 122.41(m)), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance, whether or not such noncompliance is due to factors beyond the permittee's control, such as accidents, equipment breakdowns, or labor disputes.

4. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee may be subject under Section 311 of the Federal Act except as are exempted by federal regulations.

5. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by Section 510 of the Federal Act.

6. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize violation of any federal, state or local laws or regulations, nor does it obviate the necessity of obtaining such permits, including any other Department of Environmental Quality permits, or approvals from other units of government as may be required by law.

Appendix C

Part 5: Farmland and Open Space Preservation

1211 Ludington St.
Escanaba, MI 49829
O: 906.233.9360
www.c2ae.com

5. Farmland and Open Space Preservation

A map of the Land Use in the project location is provided on the following page. It is not anticipated that the proposed project would involve converting farmlands to nonagricultural uses. Construction will be limited to previously disturbed areas.

15: Existing Land Use Map

VILLAGE OF NEWBERRY

Existing Land Use

0 0.125 0.25 Miles

Data Sources: State of Michigan Geographic Data Library, EUP

- Village Boundary
- State Roads
- All Roads
- Railroads
- Rivers / Streams
- Parcels
- Residential
- Community Commercial
- Central Business District
- Social / Institutional
- Industrial
- Open Space
- Unclassified / Vacant

Disclaimer: Parcel boundaries on this map are for illustrative purposes only and are not intended to represent legal descriptions. Select boundaries have been approximated from the original data source (EUPRPDC) and are unknown. Please confirm any questions regarding property boundaries with the Village of Newberry.

Beckett&Raeder

Appendix C

Part 6: Health Department Permits

1211 Ludington St.
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6. Health Department Permits

The proposed project does not involve the construction, alteration, extension, or replacement of onsite septic systems. Thus the local health department was not contacted.

Appendix C

Part 7: Lagoon Berm Permits

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7. Lagoon Berm Permits

The proposed project will not impact a lagoon as defined where the berm encloses more than five acres. Thus the EGLE WRD Damstaff was not contacted.

Appendix C

Part 8: National Natural Landmarks

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8. National Natural Landmarks

A list of national natural landmarks was reviewed, the following three designated National Natural Landmarks in the Upper Peninsula of Michigan were found:

1. Dukes Research Natural Area (Marquette County): 231 acres in the U.S. Forest Service Upper Peninsula Experimental Station, 22 miles southeast of Marquette near Maple Grove.
2. Porcupine Mountains (Gogebic and Ontonagon Counties): 47,761 acres on the southern shore of Lake Superior, 14 miles north of Wakefield.
3. Strangmoor Bog (Schoolcraft County): 9,700 acres within the Seney National Wildlife Refuge, 14 miles southwest of Seney.

None of which are near the vicinity of the project location.

Appendix C

Part 9: Project Site Contamination

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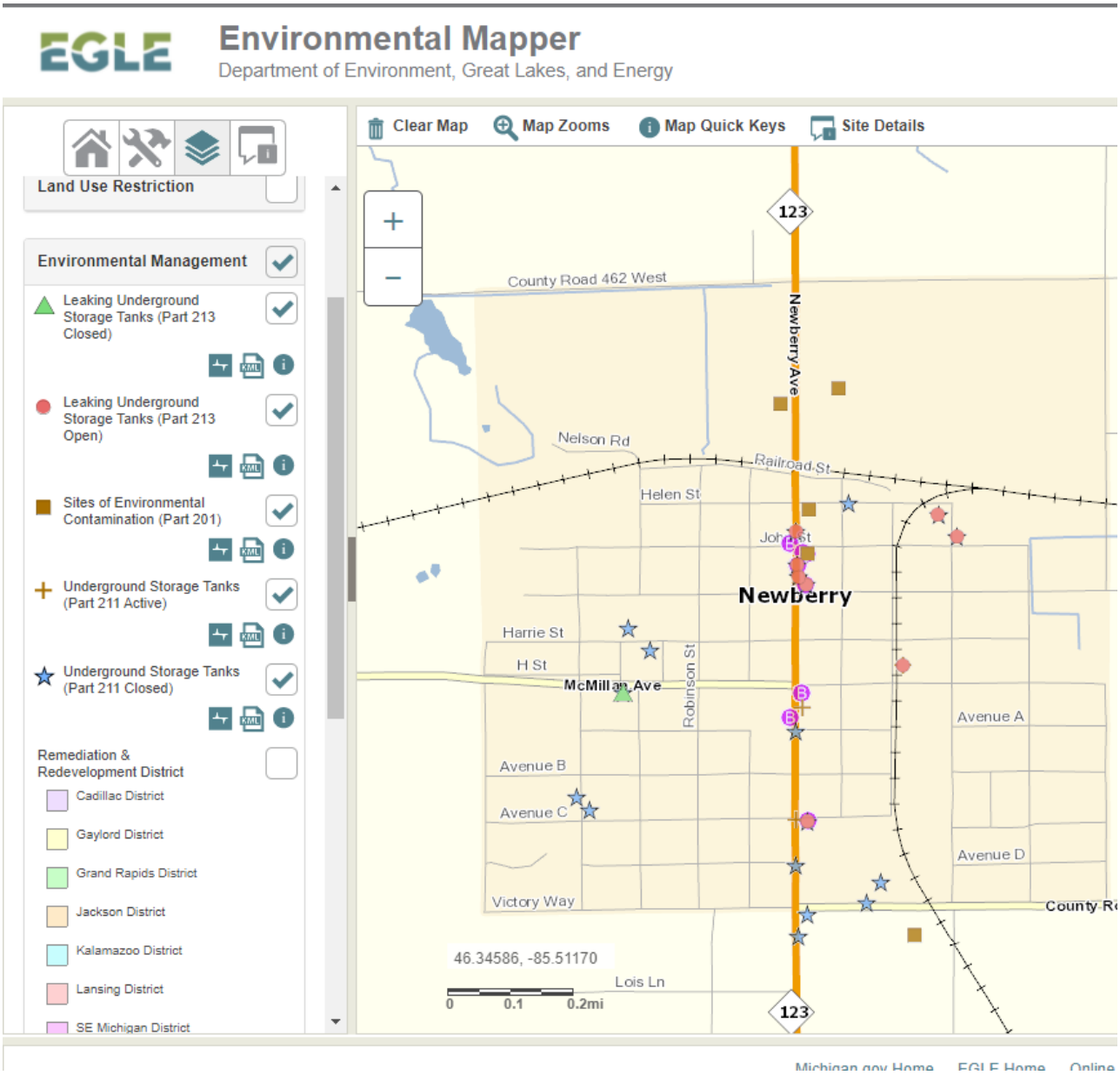
9. Project Site Contamination

The EGLE Environmental Mapper was used to examine for potential areas with contamination. The possible and/or confirmed contamination sites and sites with underground storage tanks are shown in the map below and listed in the following tables attached. When individual projects are designed contaminated areas will be avoided via utility routing where possible. When construction may infringe on impacted areas, a FOIA request for these sites will be made, EGLE permitting will be pursued if appropriate, and mitigation and safety measures will be required by contractor via construction documents:

> *Compliance with all applicable health and safety regulations, use of properly trained personnel in accordance with OSHA requirements, preparation of a Site Health and Safety Plan in accordance with OSHA requirements, monitoring of hydrocarbon levels in the work area, proper material segregation, storage and backfill of affected soils, and use of hydrocarbon resistant gaskets (Nitrile or Viton) on the utility being installed.*


EGLE
Environmental Mapper
Department of Environment, Great Lakes, and Energy
Clear Map
Map Zooms
Map Quick Keys
Site Details
Land Use Restriction
Environmental Management
Leaking Underground Storage Tanks (Part 213 Closed)
Leaking Underground Storage Tanks (Part 213 Open)
Sites of Environmental Contamination (Part 201)
Underground Storage Tanks (Part 211 Active)
Underground Storage Tanks (Part 211 Closed)
Remediation & Redevelopment District
Cadillac District
Gaylord District
Grand Rapids District
Jackson District
Kalamazoo District
Lansing District
SE Michigan District
123
County Road 462 West
Newberry Ave
Nelson Rd
Railroad St
Helen St
John St
Newberry
Harrie St
H St
McMillan Ave
Robinson St
Avenue A
Avenue B
Avenue C
Avenue D
Victory Way
Lois Ln
46.34586, -85.51170
0
0.1
0.2mi
Michigan.gov Home
EGLE Home
Online

Appendix C

Part 10: Protected Plants and Animals

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10. Protected Plants and Animals

Based on the ITA Meeting for this project, the project has been classified as an nonequivalency project, therefore MNFI and USFS were not contacted for review. Disturbance to these species will be minimized. All construction will be within existing facilities. Correspondence from previous 2012 Newberry Project Plan is attached providing no impact to endangered species.

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
LANSING

RICK SNYDER
GOVERNOR

RODNEY A. STOKES
DIRECTOR

April 13, 2012

Ms. Kristen M. Farrell, PE
C2AE
1211 Ludington Street
Escanaba, MI 49829

Dear Ms Farrell:

The Michigan Department of Natural Resources (DNR) is, unfortunately, no longer able to conduct Environmental Reviews (ER) and ceased acceptance of review requests September 16, 2011. Funding for the program was not included in the state budget for the fiscal year that begins October 1 and issuance of clearance letters will no longer be done. Project review requests can be sent to Michigan Natural Features Inventory (MNFI), a program of Michigan State University Extension.

After Oct. 1, MNFI will review projects for potential impacts to endangered species, but there will now be a cost to the requestor for MNFI's services. For information on environmental reviews or to request environmental reviews after October 1, 2011, contact Ed Schools, Senior Conservation Scientist, at 517-373-0798 or schools@msu.edu or go to MNFI website at www.msue.msu.edu/mnfi. Requests will no longer be accepted through the DNR Endangered Species Assessment web site.

Endangered species and wetland laws remain in place. Under Part 365 of Public Act 451 people are not allowed to take or harm any endangered or threatened of fish, plants or wildlife. The DNR will still be responsible for issuing permits and enforcement relative to the take of endangered and threatened species.

If you have any questions, please e-mail me at SargentL@michigan.gov. Thank you.

Sincerely,

Lori G. Sargent
Nongame Wildlife Biologist

Endangered Species

Midwest Region

Midwest Endangered Species Home

Section 7 Home

Section 7: A Brief Explanation

Section 7: Technical Assistance

Biological Assessment Guidance

Section 7 Consultation Handbook

Contact Us

S7 Consultation Technical Assistance

Decision Process for "No Effect" Determinations

Projects within a Develped Area - Step 5

Step 5. "No Effect" Determination and Documentation

Your project will have "no effect" on federally listed species. A "No Effect" determination is appropriate because your project is

- within a Developed Area (an area that is already paved or supports structures and the only vegetation is limited to frequently mowed grass or conventional landscaping), and
- does not involve removing native vegetation.

Since it will not affect suitable habitat for listed species, no listed species or designated critical habitat is anticipated to be directly or indirectly affected by this action.

To document your section 7 review and "no effect" determination, we recommend that you print this page (go to File<Print Preview), fill-in the project name and date, attach your species list, and file in your administrative record.

Last updated: March 29, 2011

USFWS Ecological Services Field Offices in the Upper Midwest
Illinois | Chicago | Indiana | Iowa | Michigan | Minnesota | Missouri | Ohio | Wisconsin

USFWS Midwest Region Sites
Home | Ecological Services | Coastal Conservation | Endangered Species | Environmental Contaminants |
Wind Energy | Ecological Services Field Offices

USFWS National Sites
Coastal Conservation | Endangered Species | Environmental Contaminants | Fisheries and Habitat Conservation

Appendix C

Part 11: Regional Planning

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10. Regional Planning

Based on the ITA Meeting for this project, the project has been classified as a non-equivalency project. Previous correspondence from the 2012 Newberry Project Plan is attached.

c2ae

Lansing • Grand Rapids
Gaylord • Escanaba

1211 Ludington Street
Escanaba, MI 49829

P: 906.233.9360
F: 906.233.9389

info@c2ae.com
www.c2ae.com

April 4, 2012

Jeff Hagan, Executive Director
Eastern Upper Peninsula Regional Planning & Development
P.O. Box 520
Sault Ste. Marie, MI 49783

Re: Village of Newberry, Michigan
Luce County
Wastewater Treatment Plant Improvements
Environmental Review and Evaluation

Dear Mr. Hagan:

On behalf of the Village of Newberry, Luce County, we are requesting review and comment of plans for improvements to their existing wastewater system.

The Village of Newberry is preparing an MDEQ SRF program Project Plan to evaluate needs and recommended alternatives for improvements to the Wastewater Treatment Plant and sanitary collection system.

We have enclosed a Project Summary and Location Maps. We are requesting your review and comment. Comments received within 30 days will allow them to be incorporated into the project planning prior to preparation of the final SRF Project Plan.

Comments can be mailed to our Escanaba office or emailed to kristen.farrell@c2ae.com.

Sincerely,

C2AE

Kristen M. Farrell

Kristen M. Farrell, P.E.

Enclosure

cc: 12-0010 File B-10

Appendix C

Part 12: Stormwater Discharge Permits

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12. Stormwater Discharge Permit

The proposed project does not involve additional stormwater discharges nor does it include separation of combine sewer system. Construction activities are part of the system upgrades only. Construction activity will be limited to the area encompassing these upgrades. Disturbance during construction will most likely be greater than one acre. Therefore, a Part 91 SESC permit and Notice of Coverage shall be required for this project. An SESC plan will be prepared to minimize soil erosion and sedimentation leaving the site during construction. Best Management Practices will be incorporated for review and approval by ELGE.

Appendix C

Part 13: Water Withdrawal and Dewatering

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13. Water Withdrawal and Dewatering

The proposed project will not require consumptive uses or diversions that would result in significant impacts to the water and water dependent natural resources. There is some dewatering that may be needed temporarily during construction. Construction is not anticipated to exceed depths more than twenty feet.

Appendix C

Part 14: Wild and Scenic Rivers

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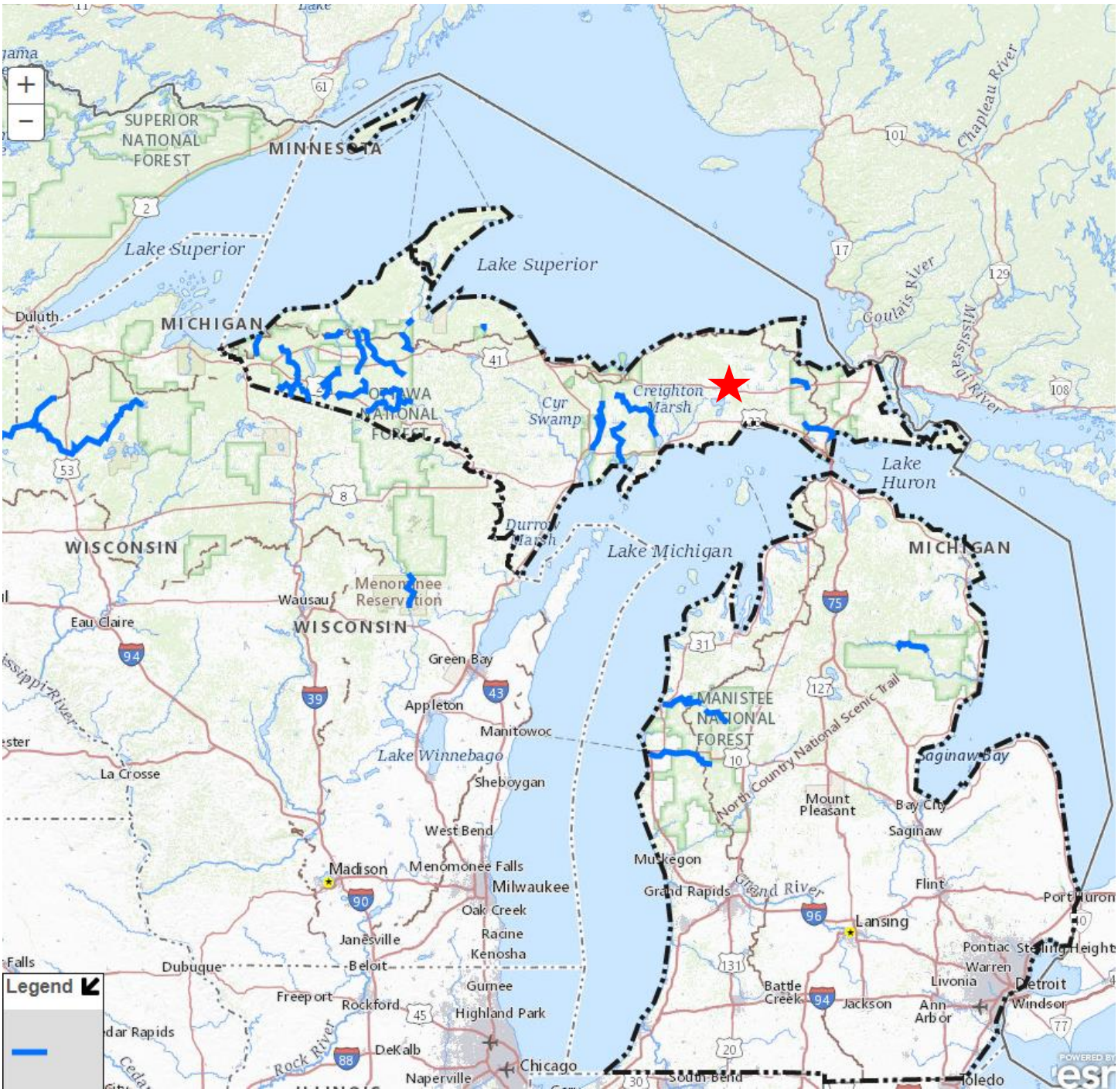
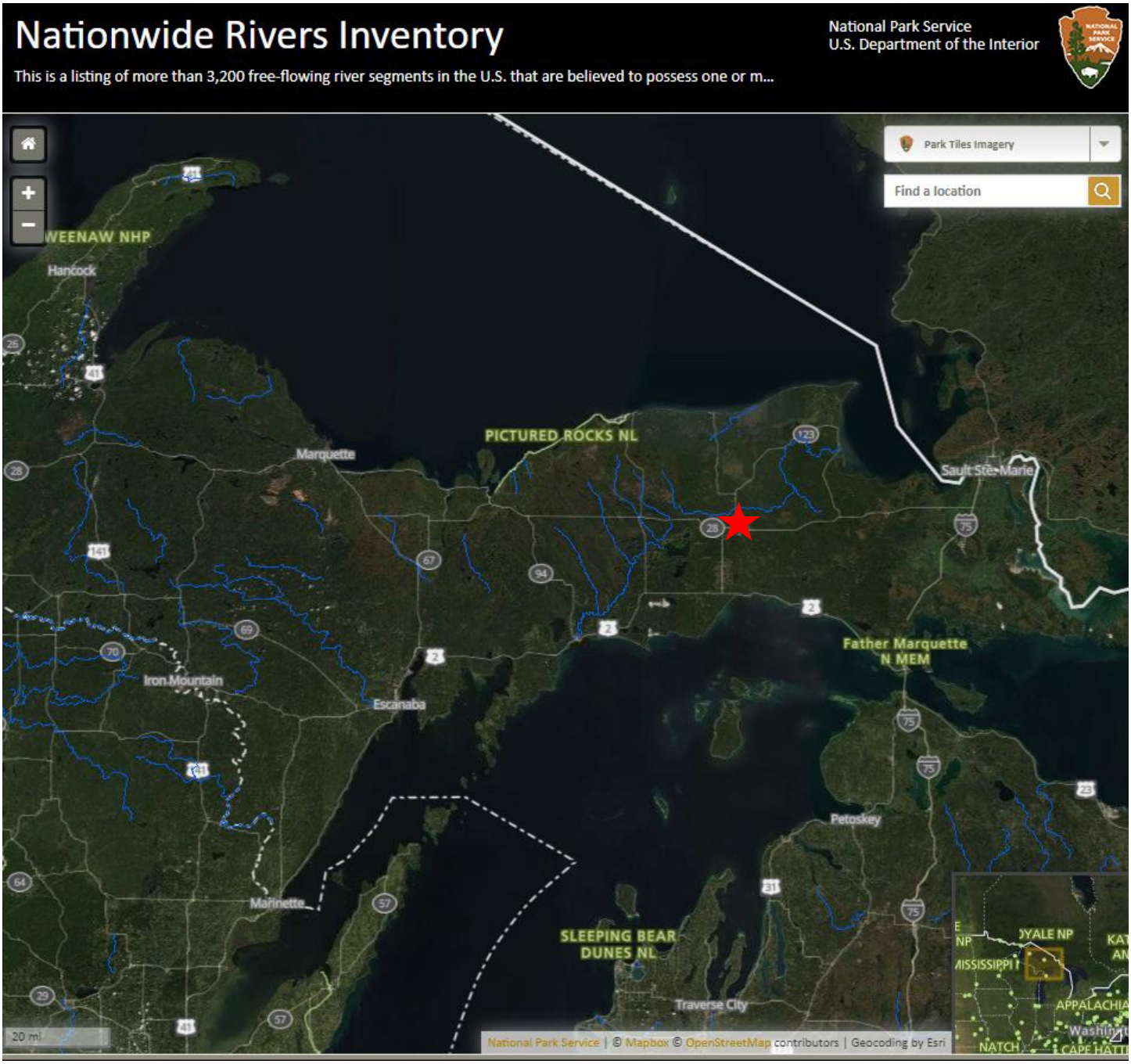
14. Wild and Scenic Rivers

The proposed project will not impact a wild, scenic, or natural river or tributary. Maps illustrating the proximity of the project location to these rivers are shown on the following pages.

MICHIGAN'S DESIGNATED NATURAL RIVERS

National Wild and Scenic Rivers




Nationwide Rivers Inventory
This is a listing of more than 3,200 free-flowing river segments in the U.S. that are believed to possess one or m...
National Park Service
U.S. Department of the Interior
Park Tiles Imagery
Find a location
WEENAW NHP
Hancock
PICTURED ROCKS NL
Marquette
Sault Ste Marie
Father Marquette
N MEM
Iron Mountain
Escanaba
Petoskey
Marinette
SLEEPING BEAR
DUNES NL
Traverse City
20 mi
National Park Service | © Mapbox © OpenStreetMap contributors | Geocoding by Esri

Appendix C

Part 15: Airspace and Airports

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15. Airspace and Airports

Construction will have minimal impact on airways and airport however, crane location during construction will meet FAA guidelines and Tall Structures Permit. Maps of the approaches are attached on the following pages.

Federal Aviation Administration

« OE/AAA

Notice Criteria Tool

Notice Criteria Tool - Desk Reference Guide V_2018.2.0

The requirements for filing with the Federal Aviation Administration for proposed structures vary based on a number of factors: height, proximity to an airport, location, and frequencies emitted from the structure, etc. For more details, please reference CFR Title 14 Part 77.9.

You must file with the FAA at least 45 days prior to construction if:

- your structure will exceed 200ft above ground level
- your structure will be in proximity to an airport and will exceed the slope ratio
- your structure involves construction of a traverseway (i.e. highway, railroad, waterway etc...) and once adjusted upward with the appropriate vertical distance would exceed a standard of 77.9(a) or (b)
- your structure will emit frequencies, and does not meet the conditions of the FAA Co-location Policy
- your structure will be in an instrument approach area and might exceed part 77 Subpart C
- your proposed structure will be in proximity to a navigation facility and may impact the assurance of navigation signal reception
- your structure will be on an airport or heliport
- filing has been requested by the FAA

If you require additional information regarding the filing requirements for your structure, please identify and contact the appropriate FAA representative using the Air Traffic Areas of Responsibility map for Off Airport construction, or contact the FAA Airports Region / District Office for On Airport construction.

The tool below will assist in applying Part 77 Notice Criteria.

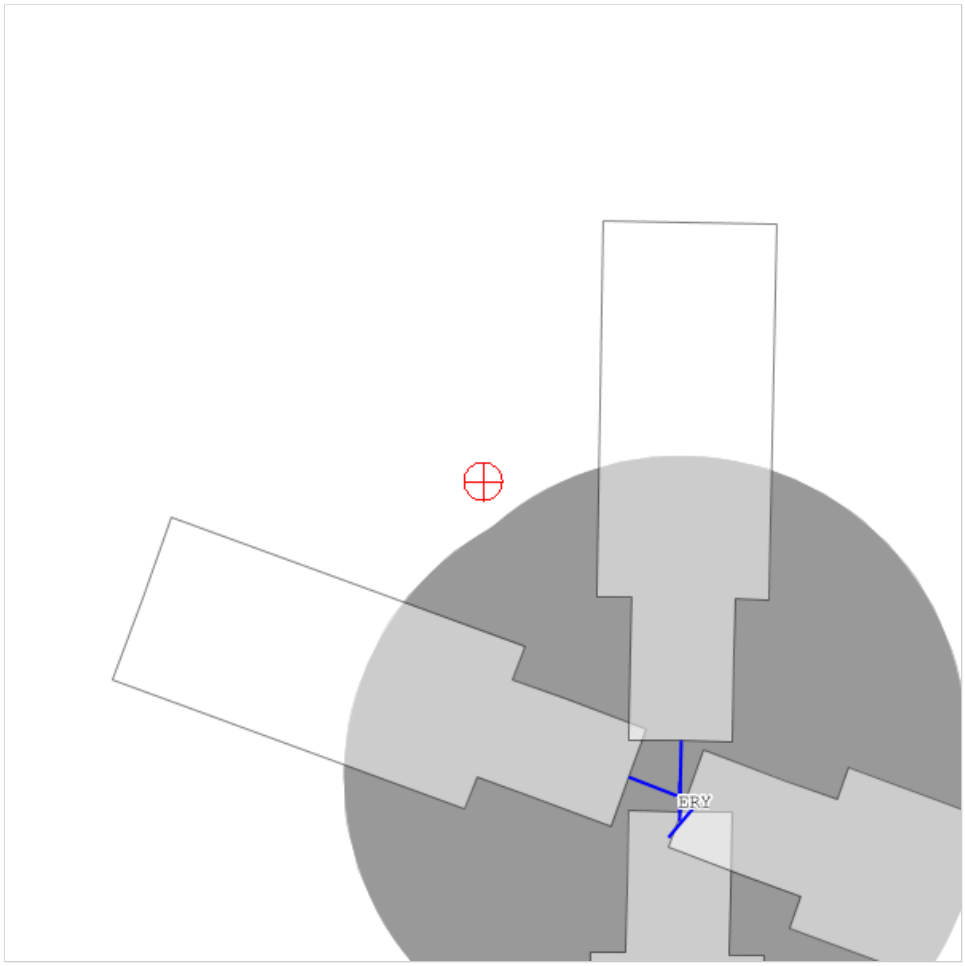
Latitude:	46 Deg 22 M 21.08 S N
Longitude:	85 Deg 30 M 30.15 S W
Horizontal Datum:	NAD83
Site Elevation (SE):	700 (nearest foot)
Structure Height :	1 (nearest foot)
Traverseway:	No Traverseway (Additional height is added to certain structures under 77.9(c)) User can increase the default height adjustment for Traverseway, Private Roadway and Waterway
Is structure on airport:	(•) No ( ) Yes

Results

You exceed the following Notice Criteria:

Your proposed structure is in proximity to a navigation facility and may impact the assurance of navigation signal reception. The FAA, in accordance with 77.9, requests that you file.

The FAA requests that you file


ERY

Appendix C

Part 16: Land-Water Interfaces

Appendix C

Part 16: Land-Water Interfaces
A. Inland Lakes and Streams

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16. Land – Water Interfaces

A. Inland Lakes and Streams

It is not anticipated that the project plan will result in the control or structural modification of any natural stream or inland body of water.

Appendix C

Part 16: Land-Water Interfaces
B. Floodplains

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16. Land – Water Interfaces

B. Flood Plains

It is not anticipated that the collection system improvements will result in impacts to any Flood Plains. However, the WWTP is in the 100-yr floodplain (see attached letter from 2012 Project Plan). Propper permitting will be followed.

STATE OF MICHIGAN

DEPARTMENT OF ENVIRONMENTAL QUALITY

LANSING

RICK SNYDER
GOVERNOR

DAN WYANT
DIRECTOR

April 23, 2012

Ms. Kristen M. Farrell, P.E.
C2AE
1211 Ludington Street
Escanaba, MI 49829

Dear Ms. Farrell:

SUBJECT: Floodplain Service Number: 12-48-0002-FP
Village of Newberry, Wastewater Treatment Plant Improvements
Tahquamenon River
Section 24, T 46N, R 10W
Village of Newberry, Luce County

This is in response to your letter of April 4, 2012, concerning improvements to the wastewater treatment plant in Newberry. The 100-year floodplain elevation of the Tahquamenon River at this site is estimated to be seven feet above normal water levels. This estimate was based on information in our files.

Any construction, filling, or grading below the 100-year floodplain elevation requires a permit from the Water Resources Division under the State's Floodplain Regulatory Authority found in Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA). Compensating cut for more than 300 cubic yards of fill placed in the floodplain must be provided.

In general, construction and fill may be permitted in portions of the floodplain that are not floodway, provided local ordinances and building standards are met. Floodways are the channel of the stream or drain and those portions of the floodplain adjoining the channel that are reasonably required to carry and discharge the 100-year flood. These are generally the areas of moving water during a flood.

No review has been performed as part of this service to determine whether wetlands exist at this subject site. Wetlands are regulated under the authority of Part 303, Wetlands Protection, of the NREPA. The existence of wetlands may restrict the development on site. If you are unsure of the presence of wetlands, it is recommended that you contact the Water Resources Division concerning the Wetlands Identification Program (WIP) or engage a private wetland consultant. For more information regarding the WIP, please contact Mr. Todd Losee, Inland Lakes and Wetlands Unit, at 517-335-3457. If the project will impact wetlands, please contact Ruth Howell of this office at 906-8560 for a permit application and information. The permit application may also be found at the following internet address: www.michigan.gov/jointpermit.

This letter does not obviate the need for any other State, Federal, or local permits which may be required by law. If you have any further questions regarding the floodplain requirements, please feel free to contact me at 906-346-8558.

Sincerely,

Sheila B. Meier

Sheila B. Meier, P.E.
Environmental Engineer
Water Resources Division

dn
cc: Village Supervisor
Water Resources Division, Marquette

Appendix C

Part 16: Land-Water Interfaces
C. Wetlands

1211 Ludington St.
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16. Land – Water Interfaces

C. Wetlands

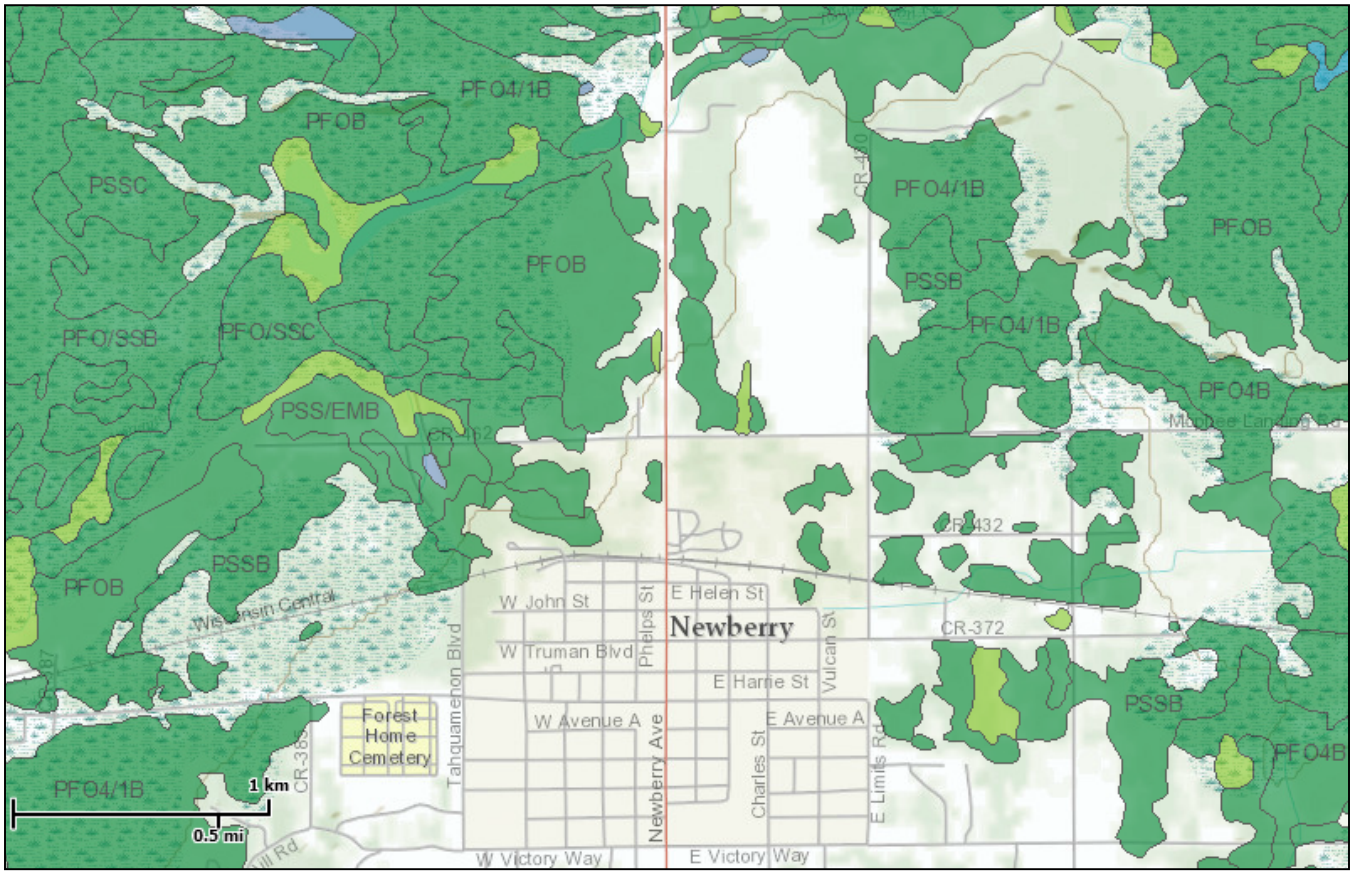
It is not anticipated that the project plan construction or operation will have wetland impacts. All proposed construction is within previously disturbed areas. The project location is outlined on a map from the National Wetlands Inventory from the US Fish and Wildlife Services on the following page

U.S. Fish and Wildlife Service

National Wetlands Inventory

Wetlands

May 14, 2012



Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

User Remarks:

Village of Newberry, Michigan

Appendix C

Part 16: Land-Water Interfaces
D. Great Lakes Shorelands Protection

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16. Land – Water Interfaces

D. Great Lakes Shorelands Protection

Newberry is not on a Great Lake Shoreland.

Appendix C

Part 16: Land-Water Interfaces
E. Army Corps of Engineers Regulated Activities

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16. Land – Water Interfaces

E. USACE Regulated Activities

It is not anticipated that the proposed construction will impact a water resource under federal jurisdiction. Correspondence from USACE from the 2012 Project Plan is attached.

DEPARTMENT OF THE ARMY
DETROIT DISTRICT, CORPS OF ENGINEERS
SAULT STE. MARIE FIELD OFFICE
312 WEST PORTAGE AVENUE
SAULT STE. MARIE, MICHIGAN 49783-1838

REPLY TO
ATTENTION OF:

June 27, 2012

Engineering & Technical Services
Regulatory Office
File Number LRE-2012-00239-248

Kristen Farrell
C2AE
1211 Ludington Street
Escanaba, Michigan 49829

Dear Ms. Farrell:

This is in response to your recent correspondence regarding Department of the Army jurisdiction on proposed improvements to the Village of Newberry's existing wastewater system. The proposed work is located in areas adjacent to the Tahquamenon River at Newberry, Michigan. Thank you for giving the Corps of Engineers the opportunity to review this project.

In 1984 a portion of the Corps' regulatory responsibilities was assumed by the Michigan Department of Environmental Quality (MDEQ). This project site is within the assumed area. Unless otherwise notified, a separate authorization from the Corps is not required; however, you may need to obtain a permit from the MDEQ. Therefore, we recommend that you contact Mr. Steve Casey, Upper Peninsula District Office, 420 5th Street, Gwinn, MI 49841, or phone (906) 346-8300 for a determination of State permit requirements.

If you have any questions please contact me at the above address, by telephone at 906-635-3461, or by E-Mail at Edward.J.Arthur@usace.army.mil. Please refer to File Number LRE-2012-00239-248 in all future communications with this office.

We are interested in your thoughts and opinions concerning your experience with the Detroit District, Corps of Engineers Regulatory Program. If you are interested in letting us know how we are doing, you can complete an electronic Customer Service Survey from our web site at: **http://per2.nwp.usace.army.mil/survey.html**. Alternatively, you may contact us and request a

paper copy of the survey that you may complete and return to us by mail or fax. Thank you for taking the time to complete the survey, we appreciate your feedback.

Sincerely,

Edward J. Arthur
Regulatory Project Manager
Sault Ste. Marie Field Office

Copy Furnished

Regulatory Office (Reinke)
MDEQ, UP District Office (Casey)
Village of Newberry (Cameron)

Appendix C

Part 16: Land-Water Interfaces
F. Joint Permit Applications

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16. Land – Water Interfaces

F. Joint Permit Applications

It is anticipated that a Joint Permit will be needed for this project. Appropriate permitting processes will be followed.

Appendix C

Part 17: Soils and Geology

Soil Map—Luce County, Michigan
(Village of Newberry, Michigan)

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:16,700 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 16N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Luce County, Michigan
Survey Area Data: Version 7, Oct 26, 2007

Date(s) aerial images were photographed: 6/20/2005; 7/5/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Luce County, Michigan (MI095)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
19B	Kalkaska sand, 0 to 6 percent slopes	243.2	35.8%
19D	Kalkaska sand, 6 to 15 percent slopes	8.3	1.2%
23	Leafriver mucky peat	19.7	2.9%
33	Pits, sand and gravel	0.3	0.0%
35	Histosols and Aquents, ponded	2.3	0.3%
36	Carbondale, Lupton, and Tawas soils	78.3	11.5%
46B	Kalkaska loamy sand, 0 to 6 percent slopes	42.8	6.3%
89A	Spot-Finch complex, 0 to 3 percent slopes	33.9	5.0%
116	Udipsamments and Udorthents, nearly level	75.4	11.1%
173B	Paquin-Finch sands, 0 to 6 percent slopes	14.3	2.1%
179B	Wallace sand, 0 to 6 percent slopes	141.8	20.9%
179D	Wallace sand, 6 to 15 percent slopes	16.0	2.3%
204	Gogomain muck	0.7	0.1%
W	Water	3.1	0.5%
Totals for Area of Interest		**680.0**	**100.0%**

APPENDIX D

Previous Studies

Appendix D

Part 1: Summary of Monthly Operating Reports 2014 to 2021

NEWBERRY WWTP - ASSET MANAGEMENT PLAN
MONTHLY OPERATING REPORT SUMMARY - (2014 THROUGH 2021)
2/2/2022

Month	Newberry RS Influent Flow (Mgd)			Temp. (C°)	pH	Raw Sewage (Mg/l), Mean				Primary Effluent (Mg/l), Mean				Final Effluent (Mg/l), Mean					Chemicals (Lbs/day), Mean				Raw Sludge, Mean			Remarks
	Average	Max Day	Pk Rate	Raw	Raw	BOD_5	TSS	P	VSS	BOD_5	TSS	P	VSS	BOD_5	TSS	P	DO	Fecal #/100ml	$FeCl_2$	Poly	Chlorine	$NaSO_4$ (Gal)	Gallon x 1000	Solids %	VS %	
Jan-14	0.57	0.60	0.70	46	6.9	91	114	2	89.0	35	58	1.4	45	4	3	0.2	9.0	20	11	-	13.0	2	3.0	3.5	78.4	
Feb-14	0.61	0.66	0.85	43	6.9	97	122	2	95.0	25	40	1.2	21	3	4	0.2	9.4	20	11	-	13.0	2	2.9	3.2	74.4	
Mar-14	0.62	0.76	1.10	41	7.4	84	108	2	86.0	35	42	1.2	24	4	4	0.2	9.0	20	11	-	14.0	2	2.8	3.3	78.2	
Apr-14	1.14	2.01	2.15	40	7.3	51	67	1	50.0	23	53	0.9	35	6	9	0.3	9.6	27	13	-	24.0	2	2.6	3.9	71.6	
May-14	0.90	1.75	1.27	45	7.3	55	87	1	70.0	55	87	1.4	70	3	4	0.2	8.9	46	10	-	20.0	2	2.9	3.5	74.6	
Jun-14	0.68	1.50	0.78	49	7.4	96	159	2	129.0	27	41	0.7	22	4	4	0.6	8.2	21	9	-	17.0	2	3.4	4.0	77.1	
Jul-14	0.63	1.20	0.78	52	7.4	119	151	2	122.0	32	55	1.1	37	4	3	0.3	7.7	54	9	-	16.0	2	3.0	4.0	77.0	
Aug-14	0.58	1.15	0.78	53	7.3	76	122	2	98.0	28	45	1.3	31	3	2	0.4	8.2	27	9	-	17.0	2	3.2	3.9	75.8	
Sep-14	0.62	1.55	0.87	53	7.4	69	102	2	74.0	28	37	1.0	20	3	3	0.3	7.8	93	10	-	19.0	2	2.7	4.0	76.3	
Oct-14	0.85	2.35	1.67	51	7.3	51	90	2	68.0	21	34	0.4	21	3	4	0.2	8.1	56	9	-	22.0	2	2.8	4.6	72.1	
Nov-14	0.82	2.20	1.75	47	7.2	47	81	1	60.0	20	24	0.5	14	3	4	0.2	8.4	63	9	-	21.0	2	2.7	3.7	72.5	
Dec-14	0.78	1.50	1.38	44	7.2	50	71	1	52.0	37	61	0.6	37	3	3	0.2	9.1	54	10	-	15.0	2	2.6	3.5	76.0	
Annual Ave.	**0.73**			**47**	**7.2**	**74**	**106**		**82.8**	**30**	**48**	**1.0**	**31**	**4**	**4**	**0.3**	**8.6**	**42**	**10**		**17.6**	**2**	**2.9**	**3.8**	**75.3**	
Summer Ave.	**0.61**																									
Winter Ave.	**0.60**																									
Jan-15	0.69	0.90	0.77	46	7.2	62	74	2	55.0	36	35	0.9	25	3	2	0.2	9.3	36	8	-	12.0	2	2.7	3.3	77.3	
Feb-15	0.67	0.88	0.73	43	7.1	56	68	2	52.0	43	56	1.1	33	4	4	0.2	9.3	7	11	-	13.0	2	2.6	3.5	75.1	
Mar-15	0.76	1.00	0.88	42	7.1	67	77	2	56.0	44	47	1.1	31	6	6	0.3	9.2	77	18	-	15.0	2	3.0	3.1	75.7	
Apr-15	0.78	1.70	1.20	53	7.1	66	66	1	52.0	42	251	2.9	186	5	5	0.3	9.1	85	12	-	18.0	2	2.7	3.7	69.0	
May-15	0.69	1.20	0.85	49	7.1	69	74	2	56.0	32	34	0.9	17	4	4	0.2	8.6	<20	13	-	15.0	2	3.4	4.3	74.8	
Jun-15	0.63	1.50	0.74	52	7.1	89	110	2	86.0	36	31	0.9	21	8	7	0.2	5.1	<20	11	-	14.0	2	2.2	4.5	77.9	
Jul-15	0.57	1.30	0.67	55	7.1	104	136	2	105.0	46	51	1.3	30	6	6	0.3	8.6	35	11	-	15.0	2	2.4	4.1	72.6	
Aug-15	0.56	0.85	0.65	55	7.1	132	186	2	148.0	51	49	1.0	30	7	10	0.4	8.3	26	17	-	18.0	2	1.8	4.3	75.3	
Sep-15	0.59	1.65	0.81	53	7.1	127	159	2	121.0	48	125	1.4	70	4	9	0.4	8.4	47	19	-	18.0	2	2.4	4.1	70.4	
Oct-15	0.54	0.95	0.64	51	7.1	106	147	2	119.0	34	48	1.4	30	3	3	0.2	8.9	<20	11	-	17.0	2	2.6	4.4	72.6	
Nov-15	0.60	1.99	0.82	51	7.1	112	135	2	106.0	37	45	1.4	26	4	5	0.2	9.4	<20	17	-	18.0	2	2.3	4.9	71.5	
Dec-15	0.80	2.72	1.87	50	7.1	130	139	3	109.0	79	52	1.5	40	6	5	0.3	9.6	29	7	-	19.0	2	3.4	5.1	73.7	
Annual Ave.	**0.65**			**50**	**7.1**	**93**	**114**		**88.8**	**44**	**69**	**1.3**	**44.88**	**5**	**5**	**0.3**	**8.7**	**43**	**13**		**16.0**	**2**	**2.6**	**4.1**	**73.8**	
Summer Ave.	**0.57**																									
Winter Ave.	**0.70**																									
Jan-16	0.68	0.91	0.72	51	7.1	114	74	2	64.0	60	47	1.2	35	4	2	0.2	9.6	<20	8	-	15.0	2	2.4	4.0	77.3	
Feb-16	0.71	1.19	0.93	50	7.0	149	139	3	116.0	125	112	2.9	82	6	4	0.3	9.5	<20	10	-	14.0	2	3.4	4.3	73.4	
Mar-16	0.94	2.89	1.42	51	6.9	92	98	2	79.0	97	104	1.9	89	7	11	0.5	9.8	25	12	-	18.0	2	2.9	3.9	72.8	
Apr-16	0.89	1.80	1.32	50	7.0	83	106	2	85.0	139	165	3.4	114	5	8	0.4	9.9	<20	12	-	21.0	2	2.9	3.7	71.7	
May-16	0.74	1.01	0.82	51	7.0	109	141	3	109.0	112	96	1.9	69	4	5	0.2	9.3	<20	11	-	20.0	2	3.4	4.0	73.0	
Jun-16	0.73	1.14	0.91	51	7.0	131	142	0	-	120	-	-	-	4	4	0.1	-	20	-	-	-	-	-	-	-	Inc. Data
Jul-16	0.67	1.79	0.77	54	7.1	168	124	3	107.0	109	50	1.4	39	4	3	0.4	8.4	20	24	-	15.4	2	-	-	-	
Aug-16	0.84	1.78	6.76	54	7.0	155	117	3	100.0	95	58	1.8	44	4	4	0.5	8.1	20	26	-	15.2	2	-	-	-	
Sep-16	0.73	2.53	1.03	54	7.0	173	124	3	109.0	84	68	1.7	53	4	5	0.3	8.2	20	36	-	15.1	3	-	-	-	
Oct-16	0.75	3.80	1.44	51	7.1	120	137	2	120.0	64	46	1.2	31	3	5	0.4	8.6	20	40	-	17.4	3	-	-	-	
Nov-16	0.71	1.40	0.97	51	7.0	129	106	2	91.0	74	60	1.4	42	3	3	0.4	9.1	20	24	-	16.3	2	-	-	-	
Dec-16	0.70	1.35	0.89	50	7.0	123	73	2	61.0	91	54	1.6	34	4	3	0.3	9.5	22	24	-	18.0	2	-	-	-	
Annual Ave.	**0.76**			**52**	**7.0**	**129**	**115**		**94.6**	**98**	**78**	**1.8**	**57**	**4**	**5**	**0.3**	**9.1**	**21**	**21**		**16.9**	**2**	**3.0**	**4.0**	**73.6**	
Summer Ave.	**0.75**																									
Winter Ave.	**0.78**																									
Jan-17	0.75	1.19	0.98	50	7.0	116	71	2	60.0	85	48	1.5	34	4	3	0.3	9.8	20	24	-	20.5	2	-	-	-	
Feb-17	0.84	8.60	1.30	50	7.1	98	69	2	60.0	74	51	1.6	42	4	4	0.3	9.8	20	27	-	19.7	3	-	-	-	
Mar-17	0.88	1.69	1.26	51	7.3	82	57	2	49.0	62	51	1.4	40	6	10	0.4	9.4	20	33	-	18.4	3	-	-	-	
Apr-17	0.89	1.46	1.14	51	7.4	89	72	2	61.0	67	62	1.5	50	4	4	0.3	9.0	20	24	-	17.7	3	-	-	-	
May-17	0.79	6.05	1.02	51	7.4	102	108	3	90.0	83	55	1.6	42	5	4	0.4	8.4	20	24	-	13.6	2	-	-	-	

Month	Newberry RS Influent Flow (Mgd)			Temp. (C°)	pH	Raw Sewage (Mg/l), Mean				Primary Effluent (Mg/l), Mean				Final Effluent (Mg/l), Mean					Chemicals (Lbs/day), Mean				Raw Sludge, Mean			Remarks
	Average	Max Day	Pk Rate	Raw	Raw	BOD_5	TSS	P	VSS	BOD_5	TSS	P	VSS	BOD_5	TSS	P	DO	Fecal #/100ml	$FeCl_2$	Poly	Chlorine	$NaSO_4$ (Gal)	Gallon x 1000	Solids %	VS %	
Jun-17	0.83	3.15	1.44	52	7.2	104	113	2	91.0	81	53	1.5	44	4	6	0.4	4.4	21	29	-	14.1	2	-	-	-	Inc. Data
Jul-17	0.79	1.67	1.01	55	7.3	110	124	3	104.0	80	68	1.7	49	4	5	0.3	8.2	21	29	-	25.0	3	-	-	-	5.7 Acres of Land Appl
Aug-17	0.77	1.75	1.41	53	7.3	88	89	2	75.0	75	64	1.7	50	3	4	0.3	7.8	20	27	-	17.3	2	-	-	-	6.3 Acres of Land Appl
Sep-17	0.67	1.01	0.75	55	7.3	164	115	3	99.0	75	59	1.5	40	5	9	0.5	8.1	16	31	-	15.6	2	-	-	-	12.5 Acres of Land Ap
Oct-17	0.79	2.21	1.13	52	7.3	102	118	2	89.0	63	57	1.8	35	4	9	0.3	8.9	23	30	-	14.8	2	-	-	-	
Nov-17																				-						missing
Dec-17	0.78	2.31	1.52	52	7.2	99	67	2	56.0	77	92	0.8	79	4	5	0.2	9.7	29	31	-	17.3	2	-	-	-	
Annual Ave.	**0.80**			**52**	**7.2**	**105**	**91**		**75.8**	**75**	**60**	**1.5**	**46**	**4**	**6**	**0.3**	**8.5**	**21**	**28**		**17.6**	**2**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	
Summer Ave.	**0.74**																									
Winter Ave.	**0.82**																									
Jan-18	0.80	1.51	1.16	51	7.2	97	72	2	64.0	67	78	0.9	62	4	6	0.2	9.6	22	25	-	14.3	2	-	-	-	
Feb-18																										missing
Mar-18	0.73	1.33	1.03	50	7.5	92	94	2	78.0	130	93	0.8	67	5	11	0.3	9.0	34	27	-	16.0	2	-	-	-	
Apr-18	0.85	1.40	1.11	51	7.6	93	112	2	89.0	84	104	0.4	73	5	11	0.2	9.2	20	26	-	16.6	2	-	-	-	
May-18	0.80	1.54	1.10	54	7.3	106	128	2	94.0	91	116	0.9	85	5	5	0.3	8.7	25	23	11	15.2	3	-	-	-	
Jun-18	0.67	0.97	0.79	54	7.4	111	126	2	105.0	94	111	1.0	79	3	4	0.3	8.1	20	14	-	14.1	2	-	-	-	
Jul-18	0.63	1.53	0.73	57	0.7	133	121	3	99.0	65	83	1.1	64	3	3	0.3	8.6	11	21	-	15.3	2	-	-	-	
Aug-18	0.62	3.37	0.78	57	7.4	123	140	3	122.0	59	61	1.2	47	4	5	0.3	8.1	17	24	-	15.7	2	-	-	-	
Sep-18	0.63	1.72	0.86	56	7.5	128	160	2	133.0	70	83	0.7	64	5	7	0.3	8.0	20	19	-	17.1	2	-	-	-	
Oct-18	0.88	2.86	1.88	53	7.5	104	111	2	98.0	60	75	0.8	62	6	8	0.2	8.9	21	31	-	18.8	2	-	-	-	
Nov-18	0.77	1.53	1.04	55	7.5	73	65	2	56.0	54	65	1.0	59	6	11	0.3	9.0	22	14	-	16.5	2	-	-	-	
Dec-18	0.71	1.19	0.93	56	7.6	76	71	2	60.0	54	63	1.2	50	4	3	0.2	9.0	20	18	-	15.3	2	-	-	-	
Annual Ave.	**0.73**			**54**	**6.8**	**103**	**109**		**90.7**	**75**	**85**	**0.9**	**65**	**5**	**7**	**0.3**	**8.7**	**21**	**22**		**15.9**	**2**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	
Summer Ave.	**0.63**																									
Winter Ave.	**0.76**																									
Jan-19	0.63	0.97	0.73	54	7.6	75	78	2	67.0	77	83	1.5	67	3	3	0.2	9.2	-	18	-	11.5	2	-	-	-	
Feb-19	0.70	1.17	0.73	55	7.6	82	85	2	76.0	76	78	1.5	67	3	3	0.2	9.3	20	20	23	11.1	2	-	-	-	
Mar-19	1.02	1.90	1.60	58	7.4	82	109	2	83.0	113	114	1.2	106	8	47	0.3	9.6	20	29	33	18.7	3	-	-	-	mistake?
Apr-19	1.13	2.43	1.45	54	7.5	68	81	1	65.0	92	140	0.8	105	9	20	0.4	9.9	44	32	24	17.8	3	-	-	-	
May-19	0.99	2.93	1.58	59	7.4	83	133	2	102.0	71	118	0.9	89	6	8	0.3	8.8	34	26	15	15.1	3	-	-	-	
Jun-19	0.82	2.13	1.14	59	7.4	73	92	2	76.0	55	114	1.2	90	4	6	0.3	8.0	20	25	9	12.3	3	-	-	-	
Jul-19	0.69	1.20	0.76	55	7.3	77	130	2	102.0	64	91	1.0	67	2	4	0.2	8.4	20	17	-	10.6	3	-	-	-	
Aug-19	0.64	1.46	0.74	64	7.3	108	149	2	125.0	81	117	1.2	90	3	4	0.2	7.9	20	18	-	9.9	4	-	-	-	
Sep-19	0.71	2.90	1.18	61	7.3	98	118	2	98.0	101	100	1.5	85	5	6	0.3	7.5	23	21	17	12.6	4	-	-	-	
Oct-19	0.89	6.43	1.37	60	7.3	52	76	1	61.0	77	95	0.9	75	3	5	0.2	8.7	7	29	27	15.9	4	-	-	-	
Nov-19	0.79	1.59	1.18	57	7.4	63	63	2	55.0	53	53	1.5	45	3	2	0.2	9.1	16	26	-	11.1	4	-	-	-	
Dec-19	0.81	2.15	1.38	56	7.5	58	48	2	43.0	61	52	1.6	43	3	2	0.3	9.6	7	25	-	12.5	4	-	-	-	
Annual Ave.	**0.82**			**58**	**7.4**	**77**	**97**		**79.4**	**77**	**96**	**1.2**	**77**	**4**	**9**	**0.3**	**8.8**	**21**	**24**		**13.3**	**3**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	
Summer Ave.	**0.68**																									
Winter Ave.	**0.78**																									
Jan-20	0.80	1.03	1.24	53	7.5	58	59	2	52.0	61	61	1.9	53	3	2	0.5	8.8	15	25	-	11.8	4	-	-	-	
Feb-20	0.69	0.76	1.10	57	7.6	75	73	2	66.0	80	77	1.8	63	3	2	0.3	8.5	17	24	53	8.9	4	-	-	-	
Mar-20	1.03	1.62	2.08	54	7.4	69	64	2	48.0	52	78	1.7	58	5	5	0.2	9.2	13	35	49	17.3	4	-	-	-	
Apr-20	1.03	1.30	2.21	56	7.4	58	94	2	73.0	41	152	1.5	111	5	10	0.3	9.1	17	38	54	9.7	5	-	-	-	
May-20	0.84	1.01	2.22	58	7.3	56	113	2	91.0	78	231	1.5	166	2	4	0.3	8.5	12	25	54	8.9	4	-	-	-	
Jun-20	0.78	1.30	2.22	60	7.4	69	102	2	81.0	77	221	0.5	169	4	7	0.3	8.0	20	26	-	9.8	4	-	-	-	
Jul-20	0.76	0.95	2.54	68	7.4	113	156	3	136.0	61	87	-	72	4	4	0.3	8.1	20	23	-	8.8	4	-	-	-	
Aug-20	0.71	0.80	1.43	68	7.3	120	197	3	159.0	50	60	-	51	3	5	0.4	7.5	20	24	-	8.2	4	-	-	-	
Sep-20	0.70	0.80	1.53	-	-	121	148	3	117.0	84	71	-	56	4	7	0.4	7.9	20	24	-	8.4	4	-	-	-	
Oct-20	0.77	1.21	6.39	61	7.4	92	125	3	94.0	72	68	-	45	5	15	0.5	8.4	22	24	-	8.9	3	-	-	-	
Nov-20	0.86	1.52	3.23	61	7.4	62	80	2	63.0	43	42	-	29	4	7	0.4	9.5	23	36	-	8.7	3	-	-	-	
Dec-20	0.64	0.94	0.71	-	-	60	90	2	74.0	61	60	-	36	3	5	0.3	9.2	8	35	-	7.8	4	-	-	-	
Annual Ave.	**0.80**			**60**	**7.4**	**79**	**108**		**87.8**	**63**	**101**	**1.5**	**76**	**4**	**6**	**0.3**	**8.6**	**17**	**28**		**9.8**	**4**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	
Summer Ave.	**0.72**																									
Winter Ave.	**0.84**																									

Month	Newberry RS Influent Flow (Mgd)			Temp. (C°)	pH	Raw Sewage (Mg/l), Mean				Primary Effluent (Mg/l), Mean				Final Effluent (Mg/l), Mean					Chemicals (Lbs/day), Mean				Raw Sludge, Mean			Remarks
	Average	Max Day	Pk Rate	Raw	Raw	BOD_5	TSS	P	VSS	BOD_5	TSS	P	VSS	BOD_5	TSS	P	DO	Fecal #/100ml	$FeCl_2$	Poly	Chlorine	$NaSO_4$ (Gal)	Gallon x 1000	Solids %	VS %	
Jan-21	0.60	0.62	0.87	61	7.4	67	123	2	98.0	51	57	-	39	3	5	0.4	9.1	24	26	-	7.6	4	-	-	-	
Feb-21	0.64	0.74	1.14	61	7.4	76	101	2	80.0	59	44	-	38	3	6	0.3	9.0	20	28	54	7.2	5	-	-	-	
Mar-21	0.93	5.77	2.57	59	7.3	54	95	2	78.0	68	85	-	65	4	9	3.0	9.3	24	32	74	8.7	4	-	-	-	
Apr-21	0.70	0.89	1.46	60	7.3	73	106	3	85.0	73	99	-	54	4	4	0.3	9.0	27	33	-	8.2	4	-	-	-	
May-21	0.61	0.83	1.20	59	7.3	113	164	3	139.0	-	184	-	91	2	4	0.3	8.9	20	27	-	7.6	4	-	-	-	
Jun-21	0.56	0.68	1.31	-	-	64	172	2	154.0	-	155	-	114	-	5	0.3	8.9	0	28	-	7.1	4	-	-	-	
Jul-21	0.58	0.80	2.49	69	7.3	119	158	3	139.0	92	130	-	116	2	4	0.4	8.2	24	24	-	6.9	4	-	-	-	
Aug-21	0.56	0.87	3.65	44	7.3	112	148	3	112.0	128	129	-	121	3	4	0.3	7.7	26	30	-	7.0	4	-	-	-	
Sep-21	0.56	0.64	1.65	43	7.4	111	109	4	91.0	91	102	-	79	3	5	0.3	8.1	20	23	43	7.9	4	-	-	-	
Oct-21	0.59	0.75	1.74	-	-	79	95	3	78.0	85	88	-	62	3	5	0.3	8.3	20	24	-	9.0	4	-	-	-	
Nov-21	0.60	0.71	3.30	44	7.3	75	103	3	92.0	91	80	-	56	3	4	0.2	9.1	20	22	-	8.3	4	-	-	-	
Dec-21	0.66	1.13	3.30	43	7.5	58	53	2	41.0	68	65	1.7	49	3	3	0.2	8.9	20	24	-	8.6	4	-	-	-	
Annual Ave.	**0.63**			**54**	**7.3**	**83**	**119**		**98.9**	**81**	**102**	**1.7**	**74**	**3**	**5**	**0.5**	**8.7**	**20**	**27**		**7.8**	**4**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	
Summer Ave.	**0.57**																									
Winter Ave.	**0.72**																									
5 Yr. Annual Ave.	**0.76**			**56**	**7.3**	**90**	**105**		**86.5**	**74**	**89**	**1.4**	**67**	**4**	**6**	**0.3**	**8.7**	**20**	**26**		**12.9**	**3**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	
5 Yr. Summer Ave.	**0.67**																									
5 Yr. Winter Ave.	**0.79**																									

Notes and Observations

The red highlighted data represents the largest data values within the column.

The green highlighted data represents the lowest data values within the column.

5 Yr. Annual Ave. represents data from (2017-2021)

Appendix D

Part 2: WWTP Process Evaluation 2020

November 4, 2020

Asset Management Plan for 2013
Wastewater Treatment Plant
Process and Overall Facility Evaluation Report

INTRODUCTION

The Village of Newberry is completing a Wastewater Asset Management plan under the Michigan SAW grant program. A component of the Asset Management Plan (AMP) is a facilities evaluation to consider process requirements and improvements that may not be considered under individual existing asset evaluations. The facilities evaluation included the following components:

1. A comparison of major treatment processes with standard design and operating criteria such as Ten State Standards.
2. Consideration of potential new treatment technologies for application at Newberry.
3. Recommendation for future capital improvement projects as are outlined in the AMP Capital Improvement Spreadsheets.

UNIT PROCESS EVALUATION

The basis of this evaluation was developed using the recent 2012 Michigan Clean Water State Revolving Fund (SRF) project plan. Process evaluation worksheet developed under the project plan, has been updated with daily operating report numbers from 2019 through 2014. Major treatment unit process design and operating criteria were evaluated and compared to industry norms and especially Ten State Standards for Wastewater, 2014. The Evaluation worksheet, which was developed using monthly operating reports is included with this report as Attachment A.

Raw Sewage Headworks

The existing WWTP headworks facility includes grinding, raw sewage pumping and influent metering which was constructed in 1998. Grinding is located upstream of the raw sewage pumps to mechanically reduce the size of debris, so pumps do not clog as often. Mechanically reduced materials are prone to reconstitute downstream of grinding and increase maintenance needs. Also, the lack of removal of solids reduces the quality of biosolids to be disposed of on agricultural land. Continuation of grinding has the potential to impact secondary treatment aeration basin fine bubble aeration and jet digester mixing.

Submersible raw sewage pumps have performed reliably for the Village. Two pumps are submerged in a flow control structure adjacent to the Control Building with a firm capacity of 2.1 MGD. A spare shelf unit is ready to deploy if a failure occurs. Fats, oils, and grease (FOG) buildup problem is experienced, requiring occasional removal of pumps for

maintenance. FOG is to be reduced at the source, via an enforcement protocol implemented by the Village. Raw sewage is metered by 1998 magnetic type flow meters.

It is recommended to replace grinding with automatic fine screening and washer compaction units. Automatic screening equipment would discharge solids to a washer compactor system to flush out organics and eliminate excess moisture. To protect proposed equipment a new headworks facility is recommended, see Capital Improvements section for more details. The headworks facility would also allow for the WWTP to accept more septage, see Grit Removal section below for more detail.

Grit Removal, Septage Receiving, and Secondary Grinding

Following influent metering sewage flows through a coarse manual trash rack and second stage of grinding and then into the aerated educator grit tank. Septage is received in front of the trash rack and grinder, upstream of the grit tank. Grinder has been rebuilt and is reliable for the WWTP. The educator grit system was recently rehabilitated under the 2012 SRF Project. Grit slurry is conveyed by the educator to a grit screw dewatering system which removes excess water and organic material. Grit screw classifier has recently been rebuilt and functions well.

The detention time in the aerated grit tank is 11 minutes at the current maximum day flow rate and 5 minutes at the design future peak flow rate. Recommended detention periods are in the range of 3-8 minutes, leaving adequate capacity. The additional capacity allows for high removal efficiencies, but can require higher rates of aeration to maintain lighter organic material in suspension.

Although grit systems function well, septage receiving improvements would benefit the WWTP. It is proposed to relocate the septage receiving to the proposed headworks facility. The shift in location would allow for controlled septage dosing to the WWTP. Fine screening downstream of septage receiving also protects the plant from any foreign debris entering the treatment facility.

Primary Settling

Two rectangular primary settling tanks were constructed in 1964 and recently rehabilitated in the 2012 SRF project. Primary clarifier drives for both primary settling tanks were replaced. Including drive motors, gear boxes, chain and flight assemblies, shafting and wall bearings, and screw cross selectors. Upgrades to the influent distribution chamber and installation of density baffles was completed in an effort to optimize the undersized tanks. Replacement of scum collection and effluent weirs was also completed. A pre-manufactured FRP building to house electrical gear and cover drive motors were installed.

The surface overflow rate at current peak flows are 1141 gpd/sf and at peak future rate is 2480 gpd/sf. Ten State Standards recommends that this rate maximum for primary tanks receiving waste activated sludge be less than 1200 gpd/sf. The settling tank SWD is 7.83 ft. compared to a recommended depth of 10 ft. Weir overflow rates exceed the recommended limits by two times under peak flows.

Existing primary settling tanks function well, but an additional clarifier is recommended to better handle flow rates. Note that with the addition of a third clarifier weir overflow rates slightly exceed 10 state standards of 1200 gpd/sf. See capital improvements section below for more detail.

Aeration

Two 131,200-gallon aeration tanks measuring 21.5 ft. W x 51.67 ft. x 15.5 ft. SWD were constructed in 1979, with upgrades performed under the 2012 SRF project. Aeration diffusers where upgrades to incorporate a fine bubble aeration system for energy conservation. Each aeration tank was retrofitted with fine bubble membrane type diffusers in a full floor coverage pattern. A design aeration capacity of 1700 SCFM was provided.

Two of the three existing blowers where replaced with smaller positive displacement units to function more efficiently with fine bubble aeration design. Blowers have variable frequency drive controllers. Aeration control is automatic using in tank dissolved oxygen monitoring to modulate the blowers to provide desired dissolved oxygen concentration in the aeration tanks.

Archimedes screw style pumps were rehabbed during SRF project to more reliably lift primary effluent up to the aeration basins. Drives and lubrications system, along with upper and lower bearings were replaced. The screw itself was rehabbed with new coatings and FRP cover panels replaced. The hydraulic retention time (HRT) is 8.4 hours at current average flow and 2.5 hours at future peak hydraulic flows. Organic loading rate is 18 lbs. BOD per day per 1000 cubic feet at current average flow and 32 lbs. at future peak flows as compared to the recommended maximum of 40.

Biological phosphorus removal may be achieved by implementing anoxic influent zones for each aeration tank. Anoxic zones with a detention time of approx. 60 minutes would reduce filamentous growth experienced within the aeration basin, effectively improving WWTP effluent by reducing suspended solids. Piping/channel modifications are required to segregate portions of the aeration tank, with mechanical mixers installed, see summary below:

Description:	Anoxic influent zone for each aeration tank plus piping/channel modifications. Anoxic tank common to two aeration tanks
Anoxic Detention Time:	60 minutes

Return Sludge Rate:	100%
Piping Modifications:	To allow RAW mixing anoxic zone and provide for bypass and flexibility

Final Settling

Two 35 ft. diameter covered final clarifiers installed in the late 70's was also upgraded under the 2012 SRF project. Drive mechanisms replaced and scrapper arms were rehabilitated.

The surface overflow rate at average annual flow is 390 gpd/sf. The surface overflow rate is 1300 gpd/sf at future peak flow and 1040 gpd/sf at existing peak flow. Ten State Standards recommends a rate less than 900 gpd/sf when coagulation is required to reduce phosphorus to below 1.0 ppm. Existing standards are based upon assumed peak flows, these overflow rates could be reduced. Improvements to lower flow rates within the final settling tanks may be required. The settling depth is 10.2 ft. compared to recommended minimum of 10 ft.

Existing domes were recently recoated during the SRF project, but are in need of replacement in the future. Aluminum geodesic domes are suggested to protect final clarifiers.

Disinfection

The chlorine contact tank measuring 12.0 ft. W x 27.0 ft. L x 8.0 ft. SWD was built in 1964 and is in fair condition. Baffling was replaced within the past 10 years. Chlorine solution is fed at the influent end of the tank and sodium bisulfite is fed at the effluent end for de-chlorination. Chlorinated effluent is discharge to the Tahquamenon River by means of concrete step cascade.

The detention time in disinfection is 37 minutes at average annual flows and 11 minutes at future peak flows. This is slightly low if peak future rates meet estimates.

De-chlorination

Sodium-bisulfite storage and feed equipment is located adjacent to the grit classifier room. The system is performing as expected.

Trucked Waste Handling

As mentioned under the grit removal, septage receiving, and secondary grinding section, septage is received from a receiving connection adjacent to the secondary grinder. Septage is introduced to the wastewater plant via hose connection, through a manual bar rack and through secondary grinding. Septage is introduced directly into the grit chamber without control of loading to the plant.

As recommended above, septage receiving upgrades shall consist of new loading station with dosing pumps located within the new headworks facility. A manual rock trap is to be implemented to contain large debris, while the fine screen downstream shall remove inorganics from septage.

Biosolids Treatment

The system was extensively rehabbed during the 2012 SRF project. Each digester had improvements performed along with the gas handling system modifications.

The secondary waste activated sludge (WAS) is co-settled in the primary clarifiers. Raw sludge pumps are two new double disc diaphragm belt drive pumps. Raw and co-settled WAS is pumped to a single 186,000-gallon, high rate anaerobic digester with a fixed steel cover. A mixing system comprised of sludge mixing chopper pump and mixing nozzles was installed during the SRF project. Overflow from the primary digester is piped to the 186,000-gallon secondary digester with floating, gas holder steel cover. Both Digesters may be heated via the 375,000 Btu/Hr. combined heat exchanger and boiler, which operates on methane or natural gas. Dual vertical sludge recirculation pumps with a recirculation rate of 150 gpm, draw from either tank and return heated sludge. Under normal operating conditions, only the primary digester is heated. Both digesters are 35 ft. diameter by 24.5 ft. liquid depth and are insulated with heavy aluminum cladding.

The average raw sludge pumping rate to digestion is 3,000 gallons per day at 3.9% solids or 920 pounds of solids per day based on monthly operating records. The computed theoretical production rate for digested solids is 2,150 gpd today and 4,164 gpd under future design flow conditions.

The digester gas handling system received piping and accessory upgrades to replace degraded systems under the SRF project. New flame arrestors and pressure control device were installed. A new automatic, electronic pilot waste gas burner was installed.

Biosolids disposal is contracted to private haulers and is by means of land application. Sludge drying beds are available, but are primarily used for sewer cleaning debris and as an emergency backup.

Solids storage is limited; operations report that before digesters are emptied they are forced to return solids back to the wastewater treatment plant. To provide the plant with more flexibility an additional sludge storage tank is suggested. Preliminary design concepts suggest a 250,000-gallon storage tank. A thorough review would be required to determine how the tank would function and exact size required.

Support Systems

Support systems are evaluated as individual and combined assets within the Inventory Workbook. Support systems for this study include:

1. Chemical feed systems
2. Sampling
3. HVAC
4. Potable, service, and PEW water systems
5. Electrical supply
6. SCADA

Recommendations for improvements to support systems are contained in the asset management workbook, based on remaining useful life. For HVAC and electrical systems further study should be conducted to confirm specific investments during planning and design phase of projects.

CAPITAL IMPROVEMENTS

Please refer to the WWTP Inventory Workbook for more detail regarding proposed capital improvements to the Village of Newberry's WWTP. See budgetary costs from the inventory workbook, presented in Table 1 below.

Table 1: Newberry WWTP Capital Improvements Budgetary Costs

Improvement Description	Asset No.	CIP Priority	Proposed Capital Cost
Wastewater Treatment Plant			
Sludge Storage, Increased Capacity	NEW	1	$ 1,385,000
Headworks Improvements	NEW	2	$ 2,029,000
Final Tank Domes Replacement	ST-P-001	3	$ 679,000
Primary Settling Tank Expansion	PT-TK-001	3	$ 838,000
Raw Sewage Pump Station Coating	HW-TK-001	3	$ 54,000

Headworks Facility

Preliminary treatment improvements include a new Headworks Building. The new headworks facility will combine automatic fine screening and septage handling in one building located along the interceptor sewer entering the WWTP. The site building layout and site location is shown on Figure 1 below. The new screening process would use one new automatic screen with the existing grinder used in the bypass channel. Automatic screening equipment would discharge solids to a washer compactor system to flush out organics and eliminate excess moisture.

Septage receiving system will be contained in the same structure and will include tanker discharge connecting piping with metering and sampling provisions, storage and equalization tankage, septage return pumps, and tanker control/security/operations software. An isolated electrical and septage control room will be accessible to drivers for use with authorization and data recording identification cards.

Following are preliminary design criteria:

Screen Type	Vertical bar or perforated plate
Screenings Handling:	Washer-compactor system
	continuous bag containment
Screen Opening	1/4 inch
Peak Flow	3.0 mgd
Width	2.0 ft. min.
Septage Receiving System:	Gravity/pressure discharge, metering, equalization,

	controls return pumping.
Septage Design Capacity:	7000 gpd
Max Month Received:	49,000 gallons
Storage/Equalization Volume:	8,000-gallons
Return Pumping Rate:	10 to 25 gpm
Return Pump Description:	Submersible, grinder
Screen Septage Building	Masonry, corrosion resistant construction
Screen and Septage Area:	26 Ft. x 26 ft., explosion proof, Nema 7
Electrical Area	12 Ft. x 10 ft., Nema 12
Disposal Container	Continuous bag or dumpster
Site Improvements	To allow movement for screenings removal and septage delivery

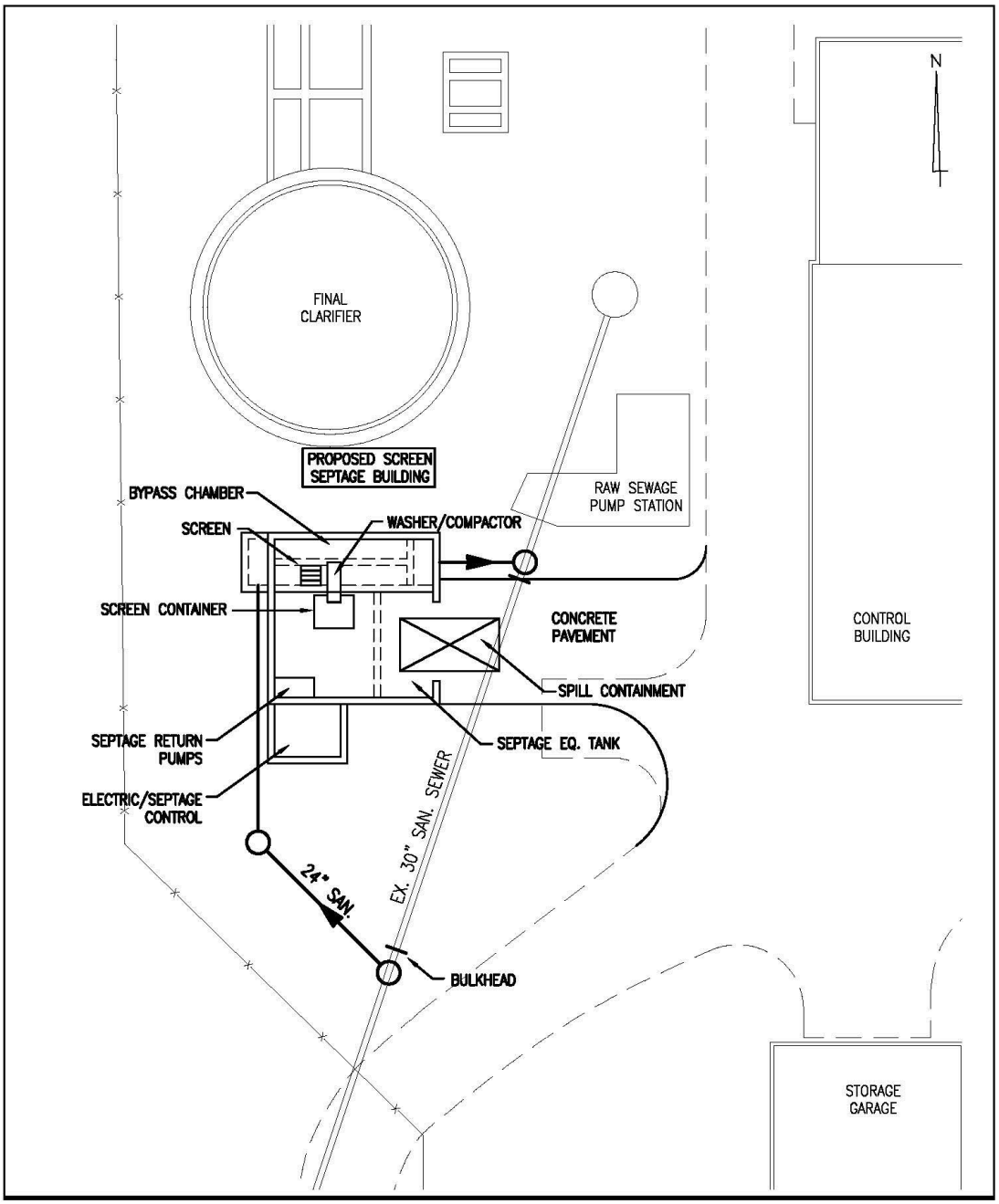


Figure 1: Proposed Headworks Facility

Capacity Expansion

- Bio-solids expansion – Solids storage is limited; operations report that before digesters are emptied they are forced to return solids back to the wastewater treatment plant. To provide the plant with more flexibility an additional sludge storage tank is suggested, preliminary design concepts suggest a 250,000-gallon storage tank. A thorough review would be required to determine how the tank would function and exact size required.
- Primary Settling – existing primary tanks are undersized and recommended to increase capacity with a third primary tank to the East of the existing tanks. Preliminary calculations suggest an additional rectangular tank would reduce surface overflow rate at existing average flows to 860 gpd/sf and 1865 gpd/sf for future flows. Note with expansion of similar size clarifier, performance still falls short of recommended 10 state standards.

General Rehabilitation/Replacement

- Raw Sewage Pump station currently has infiltration issues. It is recommended to dewater the structure and coat with a water barrier coating to reduce the I/I coming to the plant.
- Final Tank Dome Replacement – it is recommended to replace existing FRP domes with aluminum geodesic domes. Existing covers where coated under the SRF project, but are nearing the end of their useful service life.

ATTACHMENT A

Process Evaluation Worksheet

VILLAGE OF NEWBERRY, MICHIGAN
ASSET MANAGEMENT PLAN

WWTP PROCESS EVALUATION

Recommended Rate Per Ten State Standards

October 30, 2020

A. Sewage Flow Rates and Characteristics								
	1. Sewage Flow				**Existing 2019**	**Original Design**	**Proposed Future**	
	Annual Average Day (mgd)				0.75	0.90	0.90	
	Average Day Max Month (mgd)				1.50		2.22	
	Maximum Design Flow					2.50	2.50	
	Maximum Day (mgd)				1.15		1.78	
	Peak Hydraulic				2.00		2.50	
	2. Sewage Characteristics							
	Influent Sewage							
		BOD Average(mg/l)			100	165	150	
		BOD Max 7 Day (mg/l)			165			
		BOD Peak (mg/l)						
		TSS (mg/l)			105	156	200	
		P (mg/l)			1.0	5.0	3	
		NH_3 Average (mg/l)			25		25	
		NH_3 Max 7 Day (mg/l)			40		40	
		NH_3 Peak (mg/l)						
		VSS (%)			76		76	
B. Raw Sewage Pumping								
	Type:		Submersible, centrifugal, 2 Pumps					
	Pump Capacity:		1500 gpm @ 25' TDH					
	Firm Capacity		2.15 Mgd with 1 Pump Operating					
			Estimated 3.0 Mgd Capacity w/ 2 Pumps Operating					
			Verify TDH of Pumps					
C. Sewage Grinding/Screening								
	Existing Process:		Grinding, Vertical Shaft					
			Bypass Bar Screen					
	Grinding		Opposed rotation, double, vertical shaft					
	Bypass Screen Opening		3/4" Clear					
D. Grit Removal					**Ex. Max. Day Q**	**Existing Peak Q**	**Future Peak Q**	
	Description;		Aerated Eductor Grit with Screw Classifier					
	Grit Tank Size:		10.0' x 10.0' x 12.0' SWD					
		Length to Depth Ratio .8-1 per MOP 8						
	Tank Volume (gal)		8,950					
	Detention Time (min)				11	6	5	3-8 Min.
		(V/(Q(mgd)x695)						
		3-8 Min Recommended Per MOP 8						
	Weir Length (ft)		10					
	Eductor Tube Dia.(ft)		4.5					
	Air Supply Dia (in)		3					
		3-8 icfm/ft per MOP 8						
	Grit Slurry Educ. Dia (in)		6					
	Appears Tankage is properly sized							
	Classifier Description:		Grit Screw					

VILLAGE OF NEWBERRY, MICHIGAN
ASSET MANAGEMENT PLAN

WWTP PROCESS EVALUATION

Recommended Rate Per Ten State Standards

October 30, 2020

E. Primary Settling					**Existing Average Q**	**Existing Max Day Q**	**Future Peak Q**	
	Existing Process:		Rectangular, Concrete Tanks (2)					
	Approximate Size:		14.0' W x 36' L x 7.83 SWD					
	Minimum Settling Depth or SWD (Ft.)				7.83	7.83	7.83	10.0
	Trm't Volume per Tank (Gal/Tank):				29,500	29,500	29,500	
	Total Settling Volume (Gal.)				59,000	59,000	59,500	
	Detention Time (hrs):				1.89	0.71	0.57	
		(V/(Q(mgd)x695x60(min./hr))						
	Settling Tank Surface Area (sf)				1008.00	1008.00	1008.00	
	Surface Overflow Rate (gpd/sf)				1141	1984	2480	1200
		Q(mgd)x1,000,000/Settling Area(sf)						
	Effluent Weir Length (ft)				56	56	56	
	Weir Overflow Rate (gpd/lf of weir)				20,536	35,714	44,643	20,000
		Q(mgd)x1,000,000/Weir Length(lf)						
	Scum Skimmer;		Manual, Poor Condition					
F. Primary Effluent Pumps								
	Type:		Screw Pumps, Center Shaft, Lower Bearing					
	Number:		2					
G. Aeration System					**Existing Average Q**	**Existing Max Day Q**	**Future Peak Q**	
	Description		Plugged Flow, Activated Sludge					
	Number Tanks:		2					
	Tank Size:		21.5' W x 52.67' L x 15.5' SWD					
			Does Not agree with P&N Basis of Design					
	Volume Per Tank (gal)				131,200	131,200	131,200	
	Total Aeration Volume (gal)				262,400	262,400	262,400	
	Detention Time In 1 Tank (hrs):				4.20	1.57	1.26	
		(V/(Q(mgd)x695x60(min./hr))						
	Detention Time In 2 Tanks (hrs):				8.39	3.15	2.52	
		(V/(Q(mgd)x695x60(min./hr))						
	Single Tank Average Organic Loading (Lbs. BOD/day/1000 cf)				36		64	40
	BOD x 8.34 x Q(ave) x 1000 x 7.34 (gal/cf)/V(gal)							
	Double Tk Average Organic Loading (Lbs. BOD/day/1000 cf)				18		32	40
	Ex. Return Sludge Rates (mgd)			0-1.0 mgd				
	Percent of Design Average Q			110				100
	F:M Loading Rate (Lbs. BOD/day/lb. MLVSS)							
	Assumed MLSS				2,800		2,800	
	Percent VSS In ML				85		85	
	Assumed % Removal of BOD in Primary Settling				25		25	
	BOD Loading (Lbs. BOD/day)				469		844	
		Raw BOD x 8.34 x Q(ave) x %BOD To Sec.						
	Lbs. MLVSS in Aeration Tank				5,208		5,208	
	Lbs. BOD/day/lb. MSVSS				0.09		0.16	
	Actual Oxygenation Requirements				**Existing Average Q**		**Future Average Q**	
	Maximum 7 Influent Day BOD (mg/l)			165				
	Average Annual BOD			100				
	Effluent BOD (mg/l)			5				
	Maximum 7 Day Influent NH_3-N (mg/l)			40				
	Average Annual NH_3-N (mg/l)			25				
	Effluent NH3 (mg/l)			2				
	Aeration Design Flow-Average Annual (mgd)				0.75		0.90	
	(AOR) Actual Oxygenation Requirements (lbs./day)				1,315		3,312	
		AOR =1.5(lbs. BOD/day) = 4.6 (lbs. NH3/day)						
	Additional Peaking Ratio of Peak/7 Day Max				1.00		1.00	
	Suggested Design AOR (lbs./day)				1,315		3,312	

VILLAGE OF NEWBERRY, MICHIGAN
ASSET MANAGEMENT PLAN

WWTP PROCESS EVALUATION

Recommended Rate Per Ten State Standards

October 30, 2020

	Based on EPA Fine Pore Aeration Systems Design Manual							
	OTR=αF(SOTR)Øpower T-20(ΩtβC*∞20-C)/C*∞20							
	AOR (lbs. O2/day)				1,315		3,312	
	Wastewater T (Degrees C)				15		15	
	SOTE (Perforated membrane disc, 1.5% per ft depth)				22.5		22.5	
	P (at site)				14.3		14.3	
	Alpha				0.5		0.5	
	Beta				0.99		0.99	
	F				1.00		1.00	
	C*∞20				10.5		10.5	
	C*s20				9.09		9.09	
	C*s (Max Sustained Sew. T)				10.08		10.08	
	C*s (Average Summer Sew. T)							
	C*s (Ave Winter Sew. T)							
	t (C*s/C*s20)				1.11		1.11	
	Ω				0.97		0.97	
	1.024 to MLT-20 power				0.89		0.89	
	C				2		2	
	(ΩtβC*∞20 -C)/C*∞20				0.88		0.88	
	SOTR (Lbs. O2 Per Day)				3,376		8,499	
	Lbs. Air Per Day				64,668		162,820	
	Air T (Degrees F)				60		60	
	PI*528/14.7*T1				1.00		1.00	
	ICFM				598		1505	
		Existing Blower Capacity (cfm)			2500		2500	
		EPA Fine Bubble Aeration Design Methodology - Legend						
		AOR	Actual Oxygenation Rate					
		F	Kla (after time in service)/Kla for new diffuser					
		Alpha (α)	Wastewater Utilization Constant					
		Beta (β)	Constant					
		C*20	Oxygen Saturation at 20 Degrees C					
		SOTE	Standard Oxygen Transfer Efficiency in Clean Water					
		t	1.024 (T-20)Power					
		C*∞	Steady State DO Saturation Conc. at T and Field Atm. Press.					
		C*∞20	Steady State DO Saturation Conc. at Std. T and			x		
			10.5 mg/l					
		Ω	Site P Corr. For C*∞20, P(site)/P(standard)					
		t	C*s/C*20 Values of C from table in manual)					
		C*s20	Surface Saturation DO at Std T and Std. Press. (9.09 mg/l)					
		C*s	Surface Saturation DO at T and Std. Press.			x		
		OTR	Oxygen Transfer Rate, Set Equal to AOR					
		C	Design Dissolved Oxygen Concentration					
		C*	Oxygen Saturation at Site Conditions					
		SOTR	Standard Oxygen Transfer Rate in Clean Water					
			AOR/[αF(1.024 To MLT-20 Power)(ΩtβC*∞20-C/C*∞20)]					
H. Final Settling					**Existing Average Q**	**Existing Peak Hr. Q**	**Future Peak Q**	
	Existing Process:			Round, Concrete, Dome Covered				
	Number of Tanks			2				
	Tank Diameter (ft)			35				
	Max. Settling Depth or SWD (ft) Approx.				10.20	10.20	10.20	10
	Treatment Volume per Tank (Gal/Tank):				71,900	71,900	71,900	
	Total Settling Volume (gal), 2 Tanks				143,800	143,800	143,800	
	Total Detention Time (hrs):				4.60	1.72	1.38	
		(V/(Q(mgd)x695x60(min./hr))						
	Settling Tank Surface Area (sf)				1923	1923	1923	
	Surface Overflow Rate				390	1040	1300	900
		Q(mgd)x695/Settling Area(sf)						
	Effluent Weir Length (ft)				219.8	219.8	219.8	
	Weir Overflow Rate (gpd/lf of weir)				3,412	9,099	11,374	20,000
		Q(mgd)x1,000,000/Weir Length(lf)						
	Scum Skimmer;		Manual, Poor Condition					
	Solids Loading Rate							
	Design Maximum RAS Rate (mgd)						1.13	
	Design Max. Day Flow Rate (mgd)						1.78	
	MLSS (mg/l)						2800	
	Peak Solids Loading (lbs./day)						88,612	
	Peak Solids Loading Rate (lbs./day/sf)						46	50

VILLAGE OF NEWBERRY, MICHIGAN
ASSET MANAGEMENT PLAN

WWTP PROCESS EVALUATION

Recommended Rate Per Ten State Standards

October 30, 2020

I. Disinfection					**Existing Average Q**	**Existing Peak Hr. Q**	**Future Peak Q**	
	Disinfectant			Chlorine Gas				
	Contact Tank Type:			Rectangular Concrete, Vertical Baffled				
	Approx. Dimensions:			12.0' W x 27.0' L x 8.0' SWD				
	Contact Volume (gal)			19,300				
	Contact Time (min)				37	14	11	15
J. Existing Biosolids Handling System								
	Average Wastewater Flow (mgd):				0.75		0.90	
	Influent BOD (mgd)				100		150	
	Influent TSS (mgd)				105		200	
	Raw Sludge Percent VS				72		72	
	Sludge Solids Production							
	Sludge Production = Primary Solids + Stabilized Volatile Solids + Chemical Solids							
	TSS Removal In Primary Tanks (%)				65		55	
	Primary Sludge, Lbs./day)				427		751	
		= Q(mgd) x Inf. TSS (mg/l) x 8.34 x % TSS Removal						
	Assumed Percent BOD Removal in Primary Settling				45		35	
	Secondary Sludge Yield Factor for Plugged Flow Aeration				0.70		0.70	
		lbs. VSS/lb. BOD Removed						
	Secondary Solids Production (WAS) (lbs./day)				223		491	
		=(Inf BOD - Eff BOD) x mgd x 8.34 x Yield Factor						
	Additional Chemical Sludge (lbs./day)							
		Assumed 30% of New Secondary Sludge			67		147	
	Total Secondary Sludge or WAS				290		639	
		WAS + Chem Sludge						
	Total Sludge Produced (Lb./day)				717		1389	
		Primary+WAS+Chem						
	Total Raw Sludge Gallons at 4% (Gpd)				2150		4164	2,980 MOR
	Secondary Sludge VS Assumed(%)				75		75	
	Primary Sludge VS Assumed (%)				72		72	
	Secondary Sludge VS (lbs./day)				218		479	
		Total Secondary Sludge x %VS						
	Primary Sludge VS (lbs./day)				307		540	
		Prim. Sludge x %VS						
	Total VS Primary + Secondary (lbs./day)				525		1019	

VILLAGE OF NEWBERRY, MICHIGAN
ASSET MANAGEMENT PLAN

WWTP PROCESS EVALUATION

Recommended Rate Per Ten State Standards

October 30, 2020

Existing Digested Sludge Production and Storage Requirements					
Existing VSr Expected in Digestion (%)		45		40	
VSr In Digestion (lbs./day reduction)		236		408	
Total VS x %VSR					
Total Digested Solids Remaining (lbs./day)		481		981	
Tot Sludge - VSr in Dig.					
Digested Sludge Volume at 4% (Gpd)		1442		2942	
180 Day Storage Requirements		259,482		529,576	
Proposed Digested Sludge Production and Storage Requirements With Improvements					
Existing VSr Expected in Digestion (%)		60		55	
VSr In Digestion (lbs./day reduction)		315		561	
Total VS x %VSR					
Total Digested Solids Remaining (lbs./day)		402		829	
Tot Sludge - VSr in Dig.					
Digested Sludge Volume at 4% (Gpd)		1205		2484	
180 Day Storage Requirements (Gal.)		216,984		447,069	
Existing Digester Description					
Type of Digestion	High Rate, Anaerobic				
Number of Primary Digesters	1				
Number of Secondary Digesters	1				
Primary Digester Size	35' Dia. X 24.5' SWD				
Primary Digester Volume (cf)	23,500				
Primary Digester Volume (gal)	175,780				
Secondary Digester Size	35' Dia. X 24.5' SWD				
Secondary Digester Volume (Cf)	23,500				
Secondary Digester Volume (gal)	175,780				
Digester Operation					
Suggested Digester Feed Rate (lbs. VSS/Cf/day) Per MOP 8		0.12		0.12	
Total VSS Feed to Anaerobic Digester (lbs./day)		525		1,019	
VS Loading to Primary Digester (lbs. VSS/Cf)		0.02		0.04	0.40 to 0.08
Suggested Maximum Loading for Nozzle Mixing		0.06		0.06	
Hydraulic Detention Time (Days)		82		42	
Biogas Production					
Theoretical Biogas Production Rate (CF/Lb. VSr)		16		16	
Existing Daily Biogas Production W/o Improvements (Cf/day)		3,781		6,524	
Biogas Production W Improvements (Cf/day)		5,041		8,971	
Assumed BTU Value Per Cubic Foot of Biogas		600		600	
Existing Hourly BTU Production W/o Improvements		94,516		163,107	
Biogas Production W Improvements		126,022		224,272	
K. Sludge Disposal - Dry Beds.					
Total Annual Stabilized Biosolids Production (Lbs./year)		0		0	
Recommended by MOP 8 (lbs./year/sf)		10 to 25		10 to 25	
Design Application Rate (Lbs./yr./Sf):		20.00		20.00	
Recommended Bed Area Sf		0		0	

Appendix D

Part 3: SAW Wastewater AMP 2020

Wastewater Summary of Assets

id	Equipment Description	Asset ID	Capacity or Size	Material	Length	Northing State Plane Ordinate	Easting State Plane Ordinate	Elevation	Original Cost	Year Installed	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R)	Criticality (C)	Probability of Failure (P)	Business Risk (BRE)
222	Control Building	AS-BD-001				0.000	0.000	0.0	$489,160	08/01/2017	3	70	66	$466,472	$519,100	1	3	2	6
223	Control Building Roof	AS-BD-002				0.000	0.000	0.0	$12,439	08/01/2017	3	50	46	$11,631	$13,200	1	3	2	6
224	Control Building Doors & Windows	AS-BD-003				0.000	0.000	0.0	$12,033	08/01/1979	41	45	3	$996	$27,100	1	3	4	12
225	Laboratory Casework and Accessory Cabinets	AS-BD-004				0.000	0.000	0.0	$34,206	08/01/2017	3	40	36	$31,429	$36,300	1	2	1	2
226	WWTP Process and Sludge Piping, Yard & Interior	AS-P-001				0.000	0.000	0.0	$284,016	06/01/2017	3	70	66	$270,165	$301,400	1	3	2	6
227	WWTP Process and Sludge Valving	AS-P-002				0.000	0.000	0.0	$332,640	08/01/2017	3	70	66	$317,212	$353,000	1	3	2	6
228	Control Building HVAC Systems	AS-M-001				0.000	0.000	0.0	$37,128	08/01/2017	3	30	26	$33,110	$39,400	1	2	1	2
229	Control Building Potable and Service Water System	AS-M-002				0.000	0.000	0.0	$35,243	08/01/2017	3	30	26	$31,429	$37,400	1	4	2	8
230	Treatment Plant Effluent Water System	AS-M-003				0.000	0.000	0.0	$32,872	06/01/2018	2	30	27	$30,227	$34,200	1	4	2	6
231	Sump/Plant Drain Pumping, All Buildings	AS-M-004				0.000	0.000	0.0	$5,842	08/01/2017	3	45	41	$5,420	$6,200	1	3	2	6
232	Automatic Sampling System (RS, PE, and FE), Pumps and Accessories	AS-M-005				0.000	0.000	0.0	$42,122	08/01/2017	3	30	26	$37,563	$44,700	1	4	4	16
233	Main Elec. Transformer 480 Volt Electric Supply, 800 Amp ATS, 250kW Generator	AS-E-001				0.000	0.000	0.0	$157,745	08/01/2017	3	45	41	$146,364	$167,400	1	5	2	10
234	Control Building 480 Volt Power, MCC-1 and MCC-2, 600 Amp Ea.	AS-E-002				0.000	0.000	0.0	$213,436	08/01/2017	3	45	41	$198,037	$226,500	1	5	1	5
235	Control Building Low Voltage Electrical Distribution, DP-A and Lighting	AS-E-003				0.000	0.000	0.0	$93,950	06/01/2017	3	25	21	$81,121	$99,700	1	3	3	9
236	SCADA	AS-I-001				0.000	0.000	0.0	$118,733	08/01/2017	3	25	21	$103,313	$126,000	1	5	2	10
237	Remote I/O Control Panels, Digester and Secondary Treatment Buildings	AS-I-002				0.000	0.000	0.0	$51,545	08/01/2017	3	25	21	$44,851	$54,700	1	4	1	4
238	Flow Meters and Level Sensors, Control Building and Entire WWTP	AS-I-003				0.000	0.000	0.0	$53,249	06/01/2018	2	25	22	$48,107	$55,400	1	4	2	8
239	Laboratory Equipment	AS-OM-001				0.000	0.000	0.0	$70,742	08/01/2018	2	35	32	$66,201	$73,600	1	4	3	5
240	General Maintenance Equipment	AS-OM-002				0.000	0.000	0.0	$42,964	06/01/2018	2	30	27	$39,507	$44,700	1	2	3	5
241	Administration Support Equipment	AS-OM-003				0.000	0.000	0.0	$5,277	08/01/2017	3	20	16	$4,420	$5,600	1	2	3	6
242	Raw Sewage Wet Well Structure	HW-TK-001				0.000	0.000	0.0	$37,064	06/01/1998	22	75	52	$26,192	$57,300	1	4	2	8
243	Grit Chamber Concrete Flow Structures, Bar Screen Channel and Grit Chamber	HW-TK-002				0.000	0.000	0.0	$17,154	06/01/1976	44	75	30	$6,989	$41,000	1	4	3	12
244	Headworks (Grit Removal) Building	HW-BD-001				0.000	0.000	0.0	$14,075	08/01/1979	41	70	28	$5,775	$31,700	1	3	2	6
245	Raw Sewage Pumps, 2 Units	HW-P-001				0.000	0.000	0.0	$62,405	08/01/2015	5	30	24	$51,485	$68,900	0	5	3	4
246	Raw Sewage Grinders	HW-P-002				0.000	0.000	0.0	$49,020	08/01/2019	1	30	28	$46,983	$50,000	1	4	1	3
247	Aerated Grit Equipment, (Screw Conveyer, Classifier, Aeration)	HW-P-003				0.000	0.000	0.0	$174,644	08/01/2018	2	30	27	$161,565	$181,700	1	4	2	8
248	Primary Settling Tank Concrete Structures	PT-TK-001				0.000	0.000	0.0	$181,397	08/01/2017	3	75	71	$173,544	$192,500	1	4	3	10
249	Primary Settling Tanks No. 1 & 2, Collector System	PT-P-001				0.000	0.000	0.0	$244,627	08/01/2017	3	30	26	$218,153	$259,600	1	4	2	6
250	Primary Sludge Pumps, 2 Units	PT-P-002				0.000	0.000	0.0	$59,272	08/01/2017	3	30	26	$52,857	$62,900	1	4	2	6
251	Return Activated Sludge Pumps, Horizontal End Suction - Single Unit	PT-P-003				0.000	0.000	0.0	$22,616	08/01/2017	3	20	16	$18,944	$24,000	1	4	4	8
252	Return Activated Sludge Pump, Vertical Cent., 2 New Units	PT-P-004				0.000	0.000	0.0	$46,040	08/01/2018	2	30	27	$42,592	$47,900	0	4	2	2
253	Aeration Tanks No. 1 & 2	ST-TK-001				0.000	0.000	0.0	$284,958	06/01/2017	3	75	71	$271,987	$302,400	1	4	2	8
254	Final Settling Clarifiers No. 1 & 2	ST-TK-002				0.000	0.000	0.0	$402,249	06/01/2018	2	75	72	$389,303	$418,500	1	4	2	8
255	Secondary Treatment Building	ST-BD-001				0.000	0.000	0.0	$16,868	06/01/2017	3	70	66	$16,045	$17,900	1	3	2	6
256	Final Tank Domes, 2 FRP Units	ST-P-001				0.000	0.000	0.0	$158,310	06/01/2017	3	30	26	$140,295	$168,000	1	3	3	9
257	Aeration Blowers, 3 Units, Including VFD	ST-P-002				0.000	0.000	0.0	$135,223	08/01/2017	3	30	26	$120,589	$143,500	1	5	3	9
258	Secondary Influent Screw Pumps, 2 Units	ST-P-003				0.000	0.000	0.0	$153,127	08/01/2017	3	30	26	$136,555	$162,500	1	4	2	8
259	Air Diffusion System	ST-P-004				0.000	0.000	0.0	$49,943	08/01/2017	3	30	26	$44,538	$53,000	1	4	2	8
260	Final Clarifier Tank Skimming and Collection Equipment	ST-P-005				0.000	0.000	0.0	$17,489	08/01/1976	44	75	30	$7,164	$41,800	1	4	2	8
261	Chlorine Contact Tank	DF-TK-001				0.000	0.000	0.0	$58,400	01/01/2020	0	40	39	$57,192	$58,400	1	5	2	8
262	Chlorine Chemical Feed/Handling Equipment	DF-P-001				0.000	0.000	0.0	$28,577	06/01/1976	44	50	5	$3,177	$68,300	1	5	1	5
263	Dechlorination Chemical Feed/Handling Equipment, Sodium Bisulfite	DF-P-002				0.000	0.000	0.0	$3,298	08/01/2017	3	30	26	$2,941	$3,500	1	3	2	6
264	Ferric Chloride Primary Treatment Bulk Storage Tank	CT-TK-001				0.000	0.000	0.0	$51,922	08/01/2017	3	30	26	$46,303	$55,100	1	3	3	8
265	Ferric Chloride Primary Treatment Handling, Feed, and Accessories Systems	CT-P-001				0.000	0.000	0.0	$9,329	08/01/2017	3	30	26	$8,319	$9,900	1	4	2	8
266	Polymer Pumps Secondary Treatment Handling, Feed, and Accessories Systems	CT-P-002				0.000	0.000	0.0	$6,879	08/01/2017	3	70	66	$6,559	$7,300	1	4	2	7
267	Digester Building	SH-BD-001				0.000	0.000	0.0	$51,545	08/01/2017	3	75	71	$49,313	$54,700	1	3	2	6
268	Primary Digester Structure	SH-TK-001				0.000	0.000	0.0	$197,228	06/01/2017	3	75	71	$188,250	$209,300	1	4	2	8
269	Secondary Digester Structure	SH-TK-002				0.000	0.000	0.0	$158,781	08/01/2017	3	30	26	$141,597	$168,500	1	4	2	6
270	Secondary Digester Dome	SH-P-001				0.000	0.000	0.0	$188,688	08/01/2011	9	30	20	$130,496	$225,500	1	4	2	7
271	Sludge Recirculation Pumps, 2 Units	SH-P-002				0.000	0.000	0.0	$41,274	08/01/2017	3	30	26	$36,807	$43,800	1	4	2	4
272	Sludge Mixing Equipment, Pump and Nozzles	SH-P-003				0.000	0.000	0.0	$27,009	11/11/2017	2	30	27	$24,337	$28,100	1	4	2	8
273	Digester Gas Handling Equipment, and Waste Gas Burner	SH-P-004				0.000	0.000	0.0	$157,179	10/28/2017	3	30	26	$141,432	$166,800	1	4	2	8
274	Digester Dual Fired Boiler and Heat Exchanger	SH-M-001				0.000	0.000	0.0	$74,308	08/01/1976	44	75	30	$30,442	$177,600	1	4	2	6
275	Sludge Drying Beds	SD-TK-001				0.000	0.000	0.0	$28,786	08/01/1976	44	70	25	$10,579	$68,800	1	2	3	3
276	Storage Garage	F-BD-001				0.000	0.000	0.0	$40,852	08/01/1983	37	70	32	$19,100	$85,000	1	3	3	9
277	Facilities Pole Building, General Storage	F-BD-002				0.000	0.000	0.0	$39,162	08/01/1979	41	75	33	$17,610	$88,200	1	3	4	12
278	Flow Control Structures, Manholes and Misc. Structures	F-TK-001				0.000	0.000	0.0	$8,880	08/01/2014	6	70	63	$8,087	$10,000	1	3	4	12
279	Access Road Bituminous Pavement	F-C-001				0.000	0.000	0.0	$7,950	08/01/1976	44	70	25	$2,921	$19,000	1	2	3	6
280	Isolation and Safety Fencing with Gates	F-C-002				0.000	0.000	0.0	$28,451	06/01/2018	2	70	67	$27,469	$29,600	1	2	2	4
281	Gravity Storm and Sanitary Sewer	F-C-003				0.000	0.000	0.0	$65,020	08/01/2017	3	25	21	$56,576	$69,000	1	3	3	9
282	Site Electrical and Lighting	F-E-001				0.000	0.000	0.0	$5,959	06/01/2018	2	30	27	$5,479	$6,200	1	3	2	6
5534	Sanitary Cleanout Manhole	CO0001	48	BR		0.000	0.000	0.0	$533	01/01/1900	120	75	-46	$0	$4,839	1	1	3	3
5833	Sanitary Pipe	PS_PRIVATE1-SA0119A	2	PVC	333.9	573526.321	26620491.157	810.1	$33,454	01/01/1970	50	75	24	$10,767	$51,249	1	1	3	3
6216	Sanitary Pipe	PS-TWP1-SA2035	4	PVC	55.4	568348.441	26623097.888	892.3	$5,551	01/01/1976	44	75	30	$2,230	$8,504	1	3	3	9
6337	Sanitary Pipe	PS-TWP2-SA2035	2	PVC	53.8	568348.441	26623097.888	892.3	$5,388	01/01/1976	44	75	30	$2,165	$8,253	1	3	3	9
4109	Sanitary Manhole	SA0055	48	BR		120276.202	26087020.182	599.6	$533	01/01/1880	140	75	-66	$0	$4,839	1	3	1	4
6622	Sanitary Pipe	SA0055-SA0166	12	RCP	160.7	576603.302	26623309.977	771.9	$11,136	01/01/1880	140	50	-91	$0	$24,841	1	3	5	15
4195	Sanitary Manhole	SA0101	72	CR		122121.933	26086217.656	600.1	$6,396	01/01/1970	50	75	24	$2,058	$10,887	1	5	2	10
5969	Sanitary Pipe	SA0101-TWP5	30	RCP	372.2	577581.154	26622919.246	755.5	$38,091	01/01/1880	140	50	-91	$0	$85,705	1	5	5	25
4158	Sanitary Manhole	SA0102	60	CR		121655.431	26086206.480	600.5	$3,411	01/01/1970	50	75	24	$1,097	$6,148	1	5	2	10
5968	Sanitary Pipe	SA0102-SA0101	24	RCP	233.6	577208.976	26622924.609	759.0	$23,905	01/01/1880	140	50	-91	$0	$43,826	1	5	5	25
4157	Sanitary Manhole	SA0103	60	CR		121664.109	26085860.179	601.8	$3,411	01/01/1970	50	75	24	$1,097	$6,148	1	5	2	10
2094	Sanitary Pipe	SA0103-SA0102	24	RCP	371.2	121655.431	26086206.480	600.5	$37,992	01/01/1880	140	50	-91	$0	$69,652	1	5	5	25

id	Equipment Description	Asset ID	Capacity or Size	Material	Length	Northing State Plane Ordinate	Easting State Plane Ordinate	Elevation	Original Cost	Year Installed	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R)	Criticality (C)	Probability of Failure (P)	Business Risk (BRE)
4196	Sanitary Manhole	SA0104	60	CR		122148.368	26085872.734	601.1	$3,411	01/01/1970	50	75	24	$1,097	$6,148	1	5	2	10
5967	Sanitary Pipe	SA0104-SA0103	24	RCP	394.1	576605.171	26622954.739	773.6	$40,335	01/01/1880	140	50	-91	$0	$73,947	1	5	5	25
4156	Sanitary Manhole	SA0105	60	BR		121666.374	26085543.702	603.1	$1,812	01/01/1880	140	75	-66	$0	$6,148	1	5	4	20
5966	Sanitary Pipe	SA0105-SA0104	24	RCP	384.5	576211.081	26622961.138	778.1	$39,353	01/01/1880	140	50	-91	$0	$72,147	1	5	5	25
4153	Sanitary Manhole	SA0106	60	BR		121672.536	26085430.472	603.2	$1,812	01/01/1900	120	75	-46	$0	$6,148	1	5	4	20
2098	Sanitary Pipe	SA0106-SA0105	24	RCP	377.6	121666.374	26085543.702	603.1	$38,639	01/01/1900	120	50	-71	$0	$70,838	1	5	5	25
4155	Sanitary Manhole	SA0107	60	BR		121666.687	26085374.463	603.5	$2,345	01/01/1950	70	75	4	$129	$6,148	1	5	3	15
5965	Sanitary Pipe	SA0107-SA0106	21	RCP	371.7	575449.045	26622971.888	783.3	$41,209	01/01/1950	70	50	-21	$0	$68,946	1	5	5	25
3831	Sanitary Manhole	SA0108	60	BR		119421.094	26087981.878	591.3	$2,345	01/01/1950	70	75	4	$129	$6,148	1	5	3	15
5964	Sanitary Pipe	SA0108-SA0107	21	RCP	373.5	575077.390	26622978.073	785.7	$41,409	01/01/1950	70	50	-21	$0	$69,280	1	5	5	25
2333	Sanitary Manhole	SA0109	48	BR		121494.008	26085363.708	601.6	$1,066	01/01/1950	70	75	4	$58	$4,839	1	5	3	15
5908	Sanitary Pipe	SA0109-SA0108	18	VCP	46.1	574703.919	26622983.546	787.7	$4,377	01/01/1950	70	50	-21	$0	$7,819	1	5	4	20
4862	Sanitary Manhole	SA0110	48	BR		122165.720	26085458.880	602.4	$1,066	01/01/1950	70	75	4	$58	$4,839	1	4	3	12
5937	Sanitary Pipe	SA0110-SA0109	12	VCP	334.3	574667.356	26622955.413	787.2	$26,731	01/01/1950	70	50	-21	$0	$51,680	1	4	4	16
4626	Sanitary Manhole	SA0111	48	BR		122164.340	26085558.090	602.4	$1,599	01/01/1950	70	75	4	$87	$5,428	1	4	4	16
5936	Sanitary Pipe	SA0111-SA0110	12	VCP	349.5	574333.041	26622959.859	788.8	$31,665	01/01/1950	70	50	-21	$0	$57,743	1	4	4	16
4163	Sanitary Manhole	SA0112	48	BR		122344.668	26085430.236	601.8	$1,599	01/01/1950	70	75	4	$87	$5,428	1	4	4	16
5935	Sanitary Pipe	SA0112-SA0111	12	VCP	37.8	573983.643	26622966.848	791.2	$3,425	01/01/1950	70	50	-21	$0	$6,246	1	4	4	16
4164	Sanitary Manhole	SA0113	48	BR		122325.000	26085448.818	601.5	$1,599	01/01/1950	70	75	4	$87	$5,428	1	4	4	16
5934	Sanitary Pipe	SA0113-SA0112	12	VCP	332.4	573945.853	26622967.810	791.3	$30,119	01/01/1950	70	50	-21	$0	$54,923	1	4	4	16
4165	Sanitary Manhole	SA0114	48	BR		122317.827	26085711.644	601.0	$1,599	01/01/1950	70	75	4	$87	$5,428	1	4	4	16
5933	Sanitary Pipe	SA0114-SA0113	12	RCP	351.7	573613.608	26622977.993	794.5	$31,867	01/01/1950	70	50	-21	$0	$58,110	1	4	5	20
4167	Sanitary Manhole	SA0115	48	BR		122305.715	26086081.039	599.5	$2,665	01/01/1970	50	75	24	$857	$5,428	1	3	4	12
5932	Sanitary Pipe	SA0115-SA0114	10	RCP	436.1	573602.787	26622626.468	795.1	$38,117	01/01/1950	70	50	-21	$0	$70,656	1	3	5	15
5825	Sanitary Pipe	SA0115-SA0276	10	RCP	366.7	573956.312	26622178.090	794.1	$39,872	01/01/1970	50	50	-1	$0	$59,417	1	2	5	10
4166	Sanitary Manhole	SA0116	48	BR		122303.776	26086133.098	599.5	$2,665	01/01/1970	50	75	24	$857	$5,428	1	3	4	12
5931	Sanitary Pipe	SA0116-SA0115	10	RCP	263.3	573589.829	26622190.597	797.0	$28,625	01/01/1970	50	50	-1	$0	$42,657	1	3	5	15
4202	Sanitary Manhole	SA0117	48	BR		122648.834	26086143.738	601.2	$2,665	01/01/1970	50	75	24	$857	$5,428	1	3	4	12
2204	Sanitary Pipe	SA0117-SA0116	10	RCP	198.3	122303.776	26086133.098	599.5	$21,561	01/01/1970	50	50	-1	$0	$32,129	1	3	5	15
5361	Sanitary Manhole	SA0118	48	BR		573557.490	26621251.675	808.6	$2,665	01/01/1970	50	75	24	$857	$5,428	1	3	4	12
5930	Sanitary Pipe	SA0118-SA0117	10	VCP	477.9	573574.031	26621729.314	808.3	$51,966	01/01/1970	50	50	-1	$0	$77,439	1	3	5	15
4168	Sanitary Manhole	SA0119	48	CR		122294.296	26086430.211	598.9	$2,132	01/01/1970	50	75	24	$686	$4,839	1	3	2	6
5362	Sanitary Manhole	SA0119A	48	CR		573526.321	26620491.157	810.1	$2,132	01/01/1970	50	75	24	$686	$4,839	1	1	2	2
5927	Sanitary Pipe	SA0119A-SA0119B	8	PVC	214.3	573530.856	26620705.416	809.6	$21,474	01/01/1970	50	75	24	$6,911	$32,897	1	2	3	6
5363	Sanitary Manhole	SA0119B	48	CR		573530.856	26620705.416	809.6	$2,132	01/01/1970	50	75	24	$686	$4,839	1	2	2	4
5928	Sanitary Pipe	SA0119B-SA0119	8	PVC	222.5	573543.901	26620927.504	808.2	$22,292	01/01/1970	50	75	24	$7,174	$34,150	1	2	3	6
5929	Sanitary Pipe	SA0119-SA0118	10	PVC	324.5	573557.490	26621251.675	808.6	$32,512	01/01/1970	50	75	24	$10,464	$49,805	1	3	5	15
4169	Sanitary Manhole	SA0120	48	BR		122342.264	26086431.532	599.4	$1,066	01/01/1950	70	75	4	$58	$4,839	1	5	3	15
5963	Sanitary Pipe	SA0120-SA0108	15	RCP	45.5	574703.919	26622983.546	787.7	$3,834	01/01/1950	70	50	-21	$0	$7,231	1	5	5	25
4204	Sanitary Manhole	SA0121	48	BR		122613.377	26086453.613	599.7	$1,066	01/01/1950	70	75	4	$58	$4,839	1	5	3	15
2203	Sanitary Pipe	SA0121-SA0120	15	RCP	315.4	122342.264	26086431.532	599.4	$26,563	01/01/1950	70	50	-21	$0	$50,099	1	5	5	25
4162	Sanitary Manhole	SA0123	48	BR		122287.194	26086734.720	599.0	$2,132	01/01/1970	50	75	24	$686	$4,839	1	4	4	16
5962	Sanitary Pipe	SA0123-SA0121	10	RCP	758.6	574353.001	26623018.417	788.4	$59,839	01/01/1950	70	50	-21	$0	$116,443	1	4	5	20
4184	Sanitary Manhole	SA0124	48	BR		122670.138	26086749.172	599.6	$2,132	01/01/1970	50	75	24	$686	$4,839	1	3	4	12
2206	Sanitary Pipe	SA0124-SA0123	10	RCP	19.6	122287.194	26086734.720	599.0	$1,963	01/01/1970	50	50	-1	$0	$3,007	1	3	5	15
4185	Sanitary Manhole	SA0125	72	CR		122802.658	26086752.313	600.6	$6,396	01/01/1970	50	75	24	$2,058	$10,887	1	5	2	10
6054	Sanitary Pipe	SA0125-SA0101	27	RCP	183.2	577208.976	26622924.609	759.0	$18,749	01/01/1880	140	50	-91	$0	$42,186	1	5	5	25
4203	Sanitary Manhole	SA0126	72	CR		122723.214	26086441.832	600.8	$3,838	01/01/1880	140	75	-66	$0	$10,887	1	5	2	10
6055	Sanitary Pipe	SA0126-SA0125	27	RCP	208.2	577183.290	26623106.012	760.2	$21,309	01/01/1880	140	50	-91	$0	$47,946	1	5	5	25
5364	Sanitary Manhole	SA0127A	48	BR		577134.378	26623558.124	766.7	$1,066	01/01/1930	90	75	-16	$0	$5,428	1	5	4	20
6053	Sanitary Pipe	SA0127A-SA0126	27	RCP	246.5	577162.734	26623313.222	764.3	$25,230	01/01/1880	140	50	-91	$0	$56,767	1	5	5	25
5365	Sanitary Manhole	SA0130	48	BR		576978.519	26624234.354	765.9	$1,066	01/01/1930	90	75	-16	$0	$5,428	1	5	4	20
6052	Sanitary Pipe	SA0130-SA0127A	27	RCP	694.0	577134.378	26623558.124	766.7	$71,017	01/01/1930	90	50	-41	$0	$159,788	1	5	5	25
4874	Sanitary Manhole	SA0131	48	BR		121627.321	26087107.675	598.7	$1,066	01/01/1930	90	75	-16	$0	$5,428	1	5	4	20
5947	Sanitary Pipe	SA0131-SA0130	27	RCP	157.8	576978.519	26624234.354	765.9	$16,144	01/01/1930	90	50	-41	$0	$36,323	1	5	5	25
4964	Sanitary Manhole	SA0132	48	BR		120296.946	26086007.502	601.3	$1,066	01/01/1930	90	75	-16	$0	$5,428	1	5	4	20
5940	Sanitary Pipe	SA0132-SA0131	27	RCP	201.3	576820.815	26624238.258	765.6	$20,604	01/01/1930	90	50	-41	$0	$46,358	1	5	5	25
3279	Sanitary Manhole	SA0133	48	CR		120297.619	26086473.472	601.3	$3,731	01/01/1997	23	75	51	$2,544	$5,428	1	5	2	10
6047	Sanitary Pipe	SA0133-SA0167	24	PVC	25.2	576269.031	26624253.655	770.4	$3,924	01/01/1997	23	75	51	$2,676	$4,731	1	5	3	15
4183	Sanitary Manhole	SA0134	48	BR		122665.117	26086858.194	599.3	$1,066	01/01/1930	90	75	-16	$0	$5,428	1	5	4	20
6048	Sanitary Pipe	SA0134-SA0133	24	RCP	27.8	576243.824	26624253.016	770.6	$2,846	01/01/1930	90	50	-41	$0	$5,218	1	5	5	25
1332	Sanitary Manhole	SA0135	48	BR		120625.701	26087479.702	595.8	$533	01/01/1930	90	75	-16	$0	$4,839	1	5	4	20
6035	Sanitary Pipe	SA0135-SA0134	24	RCP	334.1	576216.033	26624254.026	770.5	$32,411	01/01/1930	90	50	-41	$0	$60,905	1	5	5	25
4895	Sanitary Manhole	SA0136	48	BR		117756.078	26086952.072	585.7	$533	01/01/1930	90	75	-16	$0	$4,839	1	5	4	20
6036	Sanitary Pipe	SA0136-SA0135	24	RCP	44.3	575882.038	26624263.070	771.4	$4,293	01/01/1930	90	50	-41	$0	$8,067	1	5	5	25
4896	Sanitary Manhole	SA0137	48	BR		117720.938	26087013.895	585.3	$533	01/01/1930	90	75	-16	$0	$4,839	1	4	4	16
5564	Sanitary Manhole	SA0137A	48	BR		575500.804	26624272.958	775.9	$533	01/01/1930	90	75	-16	$0	$4,839	1	4	4	16
6065	Sanitary Pipe	SA0137A-SA0136	12	VCP	337.1	575837.792	26624264.009	771.7	$23,358	01/01/1930	90	50	-41	$0	$52,107	1	4	5	20
6037	Sanitary Pipe	SA0137-SA0137A	12	VCP	42.0	575500.804	26624272.958	775.9	$2,910	01/01/1930	90	50	-41	$0	$6,492	1	4	5	20
4900	Sanitary Manhole	SA0138	48	BR		117612.314	26086874.704	584.3	$533	01/01/1930	90	75	-16	$0	$4,839	1	1	4	4
5563	Sanitary Manhole	SA0138A	48	BR		575495.312	26624044.581	777.3	$533	01/01/1930	90	75	-16	$0	$4,839	1	3	4	12
6134	Sanitary Pipe	SA0138A-SA0137A	10	VCP	228.4	575500.804	26624272.958	775.9	$15,585	01/01/1930	90	50	-41	$0	$35,067	1	3	5	15
6133	Sanitary Pipe	SA0138-SA0138A	8	VCP	106.5	575495.312	26624044.581	777.3	$7,265	01/01/1930	90	50	-41	$0	$16,346	1	2	5	10
4904	Sanitary Manhole	SA0139	48	BR		117819.271	26086475.165	583.2	$533	01/01/1930	90	75	-16	$0	$4,839	1	4	4	16

id	Equipment Description	Asset ID	Capacity or Size	Material	Length	Northing State Plane Ordinate	Easting State Plane Ordinate	Elevation	Original Cost	Year Installed	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R)	Criticality (C)	Probability of Failure (P)	Business Risk (BRE)
5979	Sanitary Pipe	SA0139-SA0137	12	VCP	334.5	575458.815	26624274.065	776.3	$23,176	01/01/1930	90	50	-41	$0	$51,701	1	4	5	20
4905	Sanitary Manhole	SA0141	48	BR		117955.325	26086207.872	583.5	$1,066	01/01/1930	90	75	-16	$0	$5,428	1	4	4	16
4799	Sanitary Pipe	SA0141-SA0139	12	VCP	383.2	117819.271	26086475.165	583.2	$30,639	01/01/1930	90	50	-41	$0	$63,320	1	4	5	20
4908	Sanitary Manhole	SA0142	48	BR		117994.392	26086082.710	583.1	$533	01/01/1930	90	75	-16	$0	$4,839	1	4	4	16
5980	Sanitary Pipe	SA0142-SA0141	12	VCP	422.7	574741.352	26624292.781	785.8	$29,286	01/01/1930	90	50	-41	$0	$65,330	1	4	5	20
4909	Sanitary Manhole	SA0143	48	BR		118065.808	26085997.138	583.2	$533	01/01/1930	90	75	-16	$0	$4,839	1	4	4	16
5981	Sanitary Pipe	SA0143-SA0142	12	VCP	349.1	574318.840	26624303.896	785.3	$24,191	01/01/1930	90	50	-41	$0	$53,965	1	4	5	20
4922	Sanitary Manhole	SA0145	48	BR		117731.606	26085777.566	582.9	$2,132	01/01/1970	50	75	24	$686	$4,839	1	4	4	16
5982	Sanitary Pipe	SA0145-SA0143	12	VCP	330.8	573969.821	26624312.667	785.5	$22,922	01/01/1930	90	50	-41	$0	$51,134	1	4	5	20
4927	Sanitary Manhole	SA0146	48	BR		117673.747	26085879.263	583.3	$2,132	01/01/1970	50	75	24	$686	$4,839	1	4	4	16
5784	Sanitary Pipe	SA0146-SA0145	12	VCP	18.9	573639.133	26624321.766	788.3	$1,917	01/01/1970	50	50	-1	$0	$2,926	1	4	4	16
5366	Sanitary Manhole	SA0147A	48	BR		573611.664	26623209.008	793.6	$2,132	01/01/1970	50	75	24	$686	$4,839	1	2	2	4
5978	Sanitary Pipe	SA0147A-SA0147C	6	VCP	212.5	573611.241	26623421.493	792.0	$21,292	01/01/1970	50	50	-1	$0	$32,617	1	2	4	8
5367	Sanitary Manhole	SA0147B	48	BR		573816.488	26623212.532	791.1	$2,132	01/01/1970	50	75	24	$686	$4,839	1	1	3	3
5786	Sanitary Pipe	SA0147B-SA0147A	6	PVC	204.9	573611.664	26623209.008	793.6	$20,527	01/01/1970	50	75	24	$6,606	$31,446	1	1	3	3
5368	Sanitary Manhole	SA0147C	48	BR		573611.241	26623421.493	792.0	$2,132	01/01/1970	50	75	24	$686	$4,839	1	2	3	6
5977	Sanitary Pipe	SA0147C-SA0147D	8	VCP	454.9	573626.081	26623876.128	790.5	$31,034	01/01/1930	90	50	-41	$0	$69,825	1	2	5	10
5369	Sanitary Manhole	SA0147D	48	BR		573626.081	26623876.128	790.5	$533	01/01/1930	90	75	-16	$0	$4,839	1	3	3	9
5976	Sanitary Pipe	SA0147D-SA0145	10	VCP	445.8	573639.133	26624321.766	788.3	$30,416	01/01/1930	90	50	-41	$0	$68,437	1	3	5	15
4938	Sanitary Manhole	SA0148	48	BR		117651.135	26086014.560	583.6	$533	01/01/1900	120	75	-46	$0	$4,839	1	5	4	20
5992	Sanitary Pipe	SA0148-SA0135	18	RCP	488.8	575882.038	26624263.070	771.4	$41,160	01/01/1930	90	50	-41	$0	$82,841	1	5	5	25
4894	Sanitary Manhole	SA0149	48	BR		117756.449	26086945.503	585.6	$533	01/01/1900	120	75	-46	$0	$4,839	1	4	4	16
5991	Sanitary Pipe	SA0149-SA0148	12	RCP	38.9	575867.214	26623774.540	774.2	$2,693	01/01/1900	120	50	-71	$0	$6,007	1	4	5	20
1410	Sanitary Manhole	SA0150	48	BR		120936.268	26087741.887	592.6	$533	01/01/1900	120	75	-46	$0	$4,839	1	4	4	16
5990	Sanitary Pipe	SA0150-SA0148	12	VCP	401.4	575867.214	26623774.540	774.2	$27,813	01/01/1900	120	50	-71	$0	$62,044	1	4	5	20
5370	Sanitary Manhole	SA0151	48	BR		575094.760	26623787.722	781.6	$1,066	01/01/1950	70	75	4	$58	$4,839	1	4	4	16
5989	Sanitary Pipe	SA0151-SA0150	12	VCP	371.2	575465.877	26623781.373	778.4	$29,675	01/01/1950	70	50	-21	$0	$57,372	1	4	4	16
5371	Sanitary Manhole	SA0152	48	BR		574725.391	26623793.683	785.8	$1,066	01/01/1950	70	75	4	$58	$4,839	1	4	4	16
5988	Sanitary Pipe	SA0152-SA0151	12	VCP	369.4	575094.760	26623787.722	781.6	$29,535	01/01/1950	70	50	-21	$0	$57,101	1	4	4	16
5372	Sanitary Manhole	SA0153	48	BR		574364.985	26623799.979	786.3	$1,066	01/01/1950	70	75	4	$58	$4,839	1	3	4	12
5985	Sanitary Pipe	SA0153-SA0152	10	VCP	360.5	574725.391	26623793.683	785.8	$28,435	01/01/1950	70	50	-21	$0	$55,332	1	3	4	12
5373	Sanitary Manhole	SA0154	48	BR		574349.765	26623378.251	787.3	$1,066	01/01/1950	70	75	4	$58	$4,839	1	3	4	12
5984	Sanitary Pipe	SA0154-SA0153	10	VCP	422.0	574364.985	26623799.979	786.3	$33,289	01/01/1950	70	50	-21	$0	$64,779	1	3	4	12
5246	Sanitary Manhole	SA0155	48	BR		118390.586	26087521.780	592.4	$1,066	01/01/1950	70	75	4	$58	$4,839	1	3	4	12
5983	Sanitary Pipe	SA0155-SA0154	10	VCP	200.2	574349.765	26623378.251	787.3	$15,793	01/01/1950	70	50	-21	$0	$30,731	1	3	4	12
5245	Sanitary Manhole	SA0156	48	BR		118323.389	26087500.330	591.8	$1,066	01/01/1880	140	75	-66	$0	$5,428	1	4	4	16
6051	Sanitary Pipe	SA0156-SA0126	12	RCP	154.6	577162.734	26623313.222	764.3	$12,360	01/01/1880	140	50	-91	$0	$25,543	1	4	5	20
5374	Sanitary Manhole	SA0157	48	BR		577002.619	26623142.175	766.5	$533	01/01/1880	140	75	-66	$0	$4,839	1	4	4	16
5938	Sanitary Pipe	SA0157-SA0156	12	RCP	189.1	577009.187	26623331.154	768.8	$13,102	01/01/1880	140	50	-91	$0	$29,228	1	4	5	20
5375	Sanitary Manhole	SA0158	48	BR		576628.047	26623144.751	772.3	$533	01/01/1880	140	75	-66	$0	$4,839	1	4	4	16
5376	Sanitary Manhole	SA0158A	48	CR		576786.719	26623142.162	771.2	$2,132	01/01/1970	50	75	24	$686	$4,839	1	3	2	6
5766	Sanitary Pipe	SA0158A-SA0158B	8	PVC	164.3	576799.366	26623305.930	771.4	$16,459	01/01/1970	50	75	24	$5,297	$25,214	1	2	3	6
5377	Sanitary Manhole	SA0158B	48	CR		576799.366	26623305.930	771.4	$2,665	01/01/1970	50	75	24	$857	$5,428	1	2	2	4
5765	Sanitary Pipe	SA0158B-SA0161	8	PVC	51.1	576795.202	26623356.839	771.4	$5,554	01/01/1970	50	75	24	$1,787	$8,276	1	2	3	6
5939	Sanitary Pipe	SA0158-SA0158A	12	RCP	158.7	576786.719	26623142.162	771.2	$10,996	01/01/1880	140	50	-91	$0	$24,529	1	3	5	15
5378	Sanitary Manhole	SA0159	48	BR		576302.240	26623150.455	776.5	$1,066	01/01/1880	140	75	-66	$0	$5,428	1	4	4	16
5750	Sanitary Pipe	SA0159-SA0158	12	RCP	325.9	576628.047	26623144.751	772.3	$26,052	01/01/1880	140	50	-91	$0	$53,841	1	4	5	20
5601	Sanitary Manhole	SA0160				0.000	0.000	0.0	$3,198	01/01/1997	23	75	51	$2,181	$4,839	1	4	1	4
6674	Sanitary Pipe	SA0160-SA0131	8	VCP	398.8	576820.815	26624238.258	765.6	$27,210	01/01/1930	90	50	-41	$0	$61,222	1	4	5	20
5379	Sanitary Manhole	SA0161	48	CR		576795.202	26623356.839	771.4	$3,731	01/01/1997	23	75	51	$2,544	$5,428	1	2	2	4
5380	Sanitary Manhole	SA0161A	48	CR		576807.612	26623591.314	772.1	$3,731	01/01/1997	23	75	51	$2,544	$5,428	1	4	2	8
5941	Sanitary Pipe	SA0161A-SA0160	8	PVC	248.2	0.000	0.000	0.0	$32,285	01/01/1997	23	75	51	$22,022	$40,224	1	4	3	12
5942	Sanitary Pipe	SA0161-SA0161A	8	PVC	234.8	576807.612	26623591.314	772.1	$30,537	01/01/1997	23	75	51	$20,829	$38,046	1	2	3	6
5535	Sanitary Manhole	SA0162	48	BR		0.000	0.000	0.0	$533	01/01/1930	90	75	-16	$0	$4,839	1	2	3	6
6050	Sanitary Pipe	SA0162-SA0132	10	PVC	344.7	576619.546	26624243.328	766.4	$34,541	01/01/1970	50	75	24	$11,117	$52,914	1	2	3	6
5382	Sanitary Manhole	SA0163	48	BR		576619.241	26623995.314	768.2	$533	01/01/1930	90	75	-16	$0	$4,839	1	4	4	16
5943	Sanitary Pipe	SA0163-SA0132	12	VCP	248.0	576619.546	26624243.328	766.4	$17,185	01/01/1930	90	50	-41	$0	$38,335	1	4	5	20
5383	Sanitary Manhole	SA0164	48	BR		576616.047	26623814.210	771.4	$533	01/01/1930	90	75	-16	$0	$4,839	1	4	4	16
5944	Sanitary Pipe	SA0164-SA0163	12	VCP	181.1	576619.241	26623995.314	768.2	$12,551	01/01/1930	90	50	-41	$0	$27,998	1	4	5	20
5384	Sanitary Manhole	SA0165	48	BR		576605.198	26623405.010	771.7	$533	01/01/1880	140	75	-66	$0	$4,839	1	3	4	12
5945	Sanitary Pipe	SA0165-SA0164	12	VCP	409.3	576616.047	26623814.210	771.4	$28,363	01/01/1880	140	50	-91	$0	$63,272	1	3	5	15
5385	Sanitary Manhole	SA0166	48	BR		576603.302	26623309.977	771.9	$533	01/01/1880	140	75	-66	$0	$4,839	1	3	3	9
5946	Sanitary Pipe	SA0166-SA0165	12	VCP	95.1	576605.198	26623405.010	771.7	$6,586	01/01/1880	140	50	-91	$0	$14,692	1	3	5	15
5386	Sanitary Manhole	SA0167	48	CR		576269.031	26624253.655	770.4	$3,731	01/01/1997	23	75	51	$2,544	$5,428	1	5	2	10
6049	Sanitary Pipe	SA0167-SA0132	24	RCP	350.7	576619.546	26624243.328	766.4	$35,886	01/01/1930	90	50	-41	$0	$65,791	1	5	5	25
5387	Sanitary Manhole	SA0168	48	CR		576263.458	26624046.603	771.1	$3,731	01/01/1997	23	75	51	$2,544	$5,428	1	4	2	8
6046	Sanitary Pipe	SA0168-SA0167	8	PVC	207.1	576269.031	26624253.655	770.4	$26,937	01/01/1997	23	75	51	$18,374	$33,561	1	4	3	12
5388	Sanitary Manhole	SA0169	48	CR		576238.242	26623771.773	0.0	$3,198	01/01/1997	23	75	51	$2,181	$4,839	1	4	2	8
6045	Sanitary Pipe	SA0169-SA0168	8	PVC	284.0	576263.458	26624046.603	771.1	$34,516	01/01/1997	23	75	51	$23,544	$43,600	1	4	3	12
5389	Sanitary Manhole	SA0170	48	CR		576245.165	26623354.586	774.3	$3,731	01/01/1997	23	75	51	$2,544	$5,428	1	2	2	4
5390	Sanitary Manhole	SA0170A	24	BR		575969.677	26623340.767	774.6	$2,132	01/01/1970	50	75	24	$686	$4,839	1	1	3	3
5791	Sanitary Pipe	SA0170A-UNK_S0170A	6	PVC	133.1	0.000	0.000	0.0	$13,335	01/01/1970	50	75	24	$4,292	$20,428	1	1	4	4
6044	Sanitary Pipe	SA0170-SA0169	8	PVC	408.2	576238.242	26623771.773	0.0	$53,093	01/01/1997	23	75	51	$36,215	$66,149	1	2	3	6
5391	Sanitary Manhole	SA0171	48	CR		576241.586	26623156.417	775.7	$3,731	01/01/1997	23	75	51	$2,544	$5,428	1	2	2	4

id	Equipment Description	Asset ID	Capacity or Size	Material	Length	Northing State Plane Ordinate	Easting State Plane Ordinate	Elevation	Original Cost	Year Installed	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R)	Criticality (C)	Probability of Failure (P)	Business Risk (BRE)
6043	Sanitary Pipe	SA0171-SA0170	8	PVC	198.2	576245.165	26623354.586	774.3	$25,776	01/01/1997	23	75	51	$17,582	$32,115	1	2	3	6
5392	Sanitary Manhole	SA0172	48	BR		575819.109	26623357.928	775.5	$533	01/01/1880	140	75	-66	$0	$4,839	1	4	4	16
6033	Sanitary Pipe	SA0172-SA0149	12	RCP	409.4	575829.051	26623767.213	774.4	$28,368	01/01/1900	120	50	-71	$0	$63,282	1	4	5	20
5393	Sanitary Manhole	SA0173	48	BR		575815.260	26623156.610	776.9	$1,066	01/01/1880	140	75	-66	$0	$5,428	1	4	4	16
6034	Sanitary Pipe	SA0173-SA0172	12	RCP	201.4	575819.109	26623357.928	775.5	$16,098	01/01/1880	140	50	-91	$0	$33,270	1	4	5	20
5394	Sanitary Manhole	SA0174	48	BR		575459.785	26623360.423	781.2	$1,066	01/01/1900	120	75	-46	$0	$5,428	1	3	4	12
6032	Sanitary Pipe	SA0174-SA0150	10	VCP	421.0	575465.877	26623781.373	778.4	$32,312	01/01/1900	120	50	-71	$0	$68,215	1	3	5	15
5395	Sanitary Manhole	SA0175	48	BR		575456.341	26623157.955	782.2	$533	01/01/1900	120	75	-46	$0	$4,839	1	3	4	12
6031	Sanitary Pipe	SA0175-SA0174	10	VCP	202.5	575459.785	26623360.423	781.2	$13,815	01/01/1900	120	50	-71	$0	$31,084	1	3	5	15
5396	Sanitary Manhole	SA0176	48	BR		575085.732	26623369.189	783.3	$1,066	01/01/1950	70	75	4	$58	$4,839	1	3	4	12
5397	Sanitary Manhole	SA0176A	48	BR		575239.268	26623349.859	782.0	$1,066	01/01/1950	70	75	4	$58	$4,839	1	1	3	3
5795	Sanitary Pipe	SA0176A-UNK_S0176A	6	VCP	107.7	0.000	0.000	0.0	$8,492	01/01/1950	70	50	-21	$0	$16,525	1	1	4	4
6078	Sanitary Pipe	SA0176-SA0151	10	VCP	418.6	575094.760	26623787.722	781.6	$33,023	01/01/1950	70	50	-21	$0	$64,261	1	3	4	12
5398	Sanitary Manhole	SA0177	48	BR		575081.319	26623164.223	784.8	$1,066	01/01/1950	70	75	4	$58	$4,839	1	3	4	12
5753	Sanitary Pipe	SA0177-SA0176	10	VCP	205.0	575085.732	26623369.189	783.3	$16,172	01/01/1950	70	50	-21	$0	$31,470	1	3	4	12
5399	Sanitary Manhole	SA0178	48	BR		574716.675	26623372.502	787.9	$1,066	01/01/1950	70	75	4	$58	$4,839	1	3	4	12
5986	Sanitary Pipe	SA0178-SA0152	10	VCP	421.3	574725.391	26623793.683	785.8	$33,232	01/01/1950	70	50	-21	$0	$64,667	1	3	4	12
5400	Sanitary Manhole	SA0179	48	BR		574712.709	26623171.717	787.5	$1,066	01/01/1950	70	75	4	$58	$4,839	1	3	4	12
5987	Sanitary Pipe	SA0179-SA0178	10	VCP	200.8	574716.675	26623372.502	787.9	$15,842	01/01/1950	70	50	-21	$0	$30,827	1	3	4	12
5401	Sanitary Manhole	SA0180	48	CR		576248.444	26624569.928	768.7	$3,731	01/01/1997	23	75	51	$2,544	$5,428	1	4	2	8
6011	Sanitary Pipe	SA0180-SA0133	10	PVC	316.9	576243.824	26624253.016	770.6	$41,219	01/01/1997	23	75	51	$28,116	$51,355	1	4	3	12
5402	Sanitary Manhole	SA0181	48	CR		576258.330	26624919.472	767.3	$3,198	01/01/1997	23	75	51	$2,181	$4,839	1	4	2	8
5537	Sanitary Manhole	SA0181A	48	BR		576096.816	26624922.894	766.9	$2,132	01/01/1970	50	75	24	$686	$4,839	1	4	4	16
6135	Sanitary Pipe	SA0181A-SA0181	10	PVC	161.6	576258.330	26624919.472	767.3	$16,188	01/01/1970	50	75	24	$5,210	$24,799	1	4	3	12
6012	Sanitary Pipe	SA0181-SA0180	10	PVC	349.7	576248.444	26624569.928	768.7	$42,495	01/01/1997	23	75	51	$28,986	$53,678	1	4	3	12
5403	Sanitary Manhole	SA0182	48	BR		575864.393	26624928.371	769.7	$533	01/01/1930	90	75	-16	$0	$4,839	1	4	4	16
6013	Sanitary Pipe	SA0182-SA0181A	12	VCP	232.5	576096.816	26624922.894	766.9	$16,109	01/01/1930	90	50	-41	$0	$35,936	1	4	5	20
5404	Sanitary Manhole	SA0183	48	BR		575484.910	26624938.391	772.7	$1,066	01/01/1930	90	75	-16	$0	$5,428	1	4	4	16
6014	Sanitary Pipe	SA0183-SA0182	12	VCP	379.6	575864.393	26624928.371	769.7	$30,350	01/01/1930	90	50	-41	$0	$62,724	1	4	5	20
5405	Sanitary Manhole	SA0184	48	BR		575127.915	26624947.373	775.4	$1,066	01/01/1930	90	75	-16	$0	$5,428	1	4	4	16
6015	Sanitary Pipe	SA0184-SA0183	12	VCP	357.1	575484.910	26624938.391	772.7	$28,551	01/01/1930	90	50	-41	$0	$59,005	1	4	5	20
5406	Sanitary Manhole	SA0185	48	BR		574779.508	26624957.290	782.6	$533	01/01/1930	90	75	-16	$0	$4,839	1	4	4	16
6016	Sanitary Pipe	SA0185-SA0184	12	VCP	348.5	575127.915	26624947.373	775.4	$24,151	01/01/1930	90	50	-41	$0	$53,875	1	4	5	20
5407	Sanitary Manhole	SA0186	48	BR		574315.412	26624970.497	784.9	$533	01/01/1930	90	75	-16	$0	$4,839	1	3	4	12
5542	Sanitary Manhole	SA0186A	30	BR		574331.920	26625415.631	782.9	$533	01/01/1930	90	75	-16	$0	$4,839	1	3	4	12
5871	Sanitary Pipe	SA0186A-SA0186	10	VCP	445.4	574315.412	26624970.497	784.9	$30,390	01/01/1930	90	50	-41	$0	$68,377	1	3	5	15
6017	Sanitary Pipe	SA0186-SA0185	10	RCP	464.3	574779.508	26624957.290	782.6	$31,675	01/01/1930	90	50	-41	$0	$71,269	1	3	5	15
5408	Sanitary Manhole	SA0188	48	BR		575848.401	26624339.475	770.9	$533	01/01/1930	90	75	-16	$0	$4,839	1	3	4	12
6042	Sanitary Pipe	SA0188-SA0182	10	VCP	589.1	575864.393	26624928.371	769.7	$40,192	01/01/1930	90	50	-41	$0	$90,431	1	3	5	15
5409	Sanitary Manhole	SA0189	48	BR		575499.404	26625539.442	769.3	$533	01/01/1930	90	75	-16	$0	$4,839	1	3	4	12
6040	Sanitary Pipe	SA0189-SA0190	10	VCP	301.0	575492.234	26625238.526	770.7	$20,535	01/01/1930	90	50	-41	$0	$46,205	1	3	5	15
5410	Sanitary Manhole	SA0190	48	BR		575492.234	26625238.526	770.7	$533	01/01/1930	90	75	-16	$0	$4,839	1	3	4	12
6041	Sanitary Pipe	SA0190-SA0183	10	VCP	300.2	575484.910	26624938.391	772.7	$20,483	01/01/1930	90	50	-41	$0	$46,086	1	3	5	15
5411	Sanitary Manhole	SA0191	48	BR		575477.305	26624640.194	773.7	$533	01/01/1930	90	75	-16	$0	$4,839	1	3	4	12
6039	Sanitary Pipe	SA0191-SA0183	10	VCP	298.3	575484.910	26624938.391	772.7	$20,351	01/01/1930	90	50	-41	$0	$45,789	1	3	5	15
5412	Sanitary Manhole	SA0192	48	BR		575469.731	26624339.025	775.1	$533	01/01/1930	90	75	-16	$0	$4,839	1	3	4	12
6038	Sanitary Pipe	SA0192-SA0191	10	VCP	301.3	575477.305	26624640.194	773.7	$20,553	01/01/1930	90	50	-41	$0	$46,245	1	3	5	15
5413	Sanitary Manhole	SA0193	48	BR		575115.481	26624348.342	779.7	$533	01/01/1930	90	75	-16	$0	$4,839	1	3	4	12
6023	Sanitary Pipe	SA0193-SA0194	10	VCP	300.3	575121.902	26624648.572	777.2	$20,488	01/01/1930	90	50	-41	$0	$46,097	1	3	5	15
5414	Sanitary Manhole	SA0194	48	BR		575121.902	26624648.572	777.2	$533	01/01/1930	90	75	-16	$0	$4,839	1	3	4	12
6022	Sanitary Pipe	SA0194-SA0184	10	VCP	298.9	575127.915	26624947.373	775.4	$20,390	01/01/1930	90	50	-41	$0	$45,876	1	3	5	15
5415	Sanitary Manhole	SA0195	48	BR		575134.145	26625247.337	773.1	$533	01/01/1930	90	75	-16	$0	$4,839	1	3	4	12
6021	Sanitary Pipe	SA0195-SA0184	10	VCP	300.0	575127.915	26624947.373	775.4	$20,469	01/01/1930	90	50	-41	$0	$46,056	1	3	5	15
5416	Sanitary Manhole	SA0196	48	BR		575140.214	26625547.183	770.9	$533	01/01/1930	90	75	-16	$0	$4,839	1	3	4	12
5565	Sanitary Manhole	SA0196A	48	BR		575140.206	26625573.168	771.1	$533	01/01/1930	90	75	-16	$0	$4,839	1	3	4	12
6096	Sanitary Pipe	SA0196A-SA0196	10	VCP	26.0	575140.214	26625547.183	770.9	$1,773	01/01/1930	90	50	-41	$0	$3,989	1	3	5	15
6020	Sanitary Pipe	SA0196-SA0195	10	VCP	299.9	575134.145	26625247.337	773.1	$20,461	01/01/1930	90	50	-41	$0	$46,037	1	3	5	15
5417	Sanitary Manhole	SA0197	48	BR		574334.127	26625592.760	782.1	$533	01/01/1930	90	75	-16	$0	$4,839	1	3	4	12
6019	Sanitary Pipe	SA0197-SA0196A	10	VCP	806.3	575140.206	26625573.168	771.1	$55,010	01/01/1930	90	50	-41	$0	$123,773	1	3	5	15
5418	Sanitary Manhole	SA0198	48	BR		574163.167	26625598.872	783.9	$2,665	01/01/1970	50	75	24	$857	$5,428	1	3	3	9
5419	Sanitary Manhole	SA0198A	48	BR		574155.367	26625289.317	784.4	$2,665	01/01/1970	50	75	24	$857	$5,428	1	2	3	6
6006	Sanitary Pipe	SA0198A-SA0198	8	RCP	309.7	574163.167	26625598.872	783.9	$33,669	01/01/1970	50	50	-1	$0	$50,174	1	2	5	10
6018	Sanitary Pipe	SA0198-SA0197	10	RCP	171.1	574334.127	26625592.760	782.1	$13,130	01/01/1930	90	50	-41	$0	$27,719	1	3	5	15
5420	Sanitary Manhole	SA0199	48	BR		573833.881	26625605.079	784.0	$2,665	01/01/1970	50	75	24	$857	$5,428	1	2	3	6
5421	Sanitary Manhole	SA0199A	48	BR		573823.446	26625307.215	783.3	$2,132	01/01/1970	50	75	24	$686	$4,839	1	2	3	6
6004	Sanitary Pipe	SA0199A-SA0199	8	RCP	298.0	573833.881	26625605.079	784.0	$29,866	01/01/1970	50	50	-1	$0	$45,751	1	2	5	10
6005	Sanitary Pipe	SA0199-SA0198	10	RCP	329.3	574163.167	26625598.872	783.9	$35,810	01/01/1970	50	50	-1	$0	$53,364	1	2	5	10
5422	Sanitary Manhole	SA0200	48	BR		573812.552	26624992.827	784.7	$2,132	01/01/1970	50	75	24	$686	$4,839	1	2	3	6
5423	Sanitary Manhole	SA0200A	48	BR		573811.247	26624776.806	783.9	$2,132	01/01/1970	50	75	24	$686	$4,839	1	2	3	6
6002	Sanitary Pipe	SA0200A-SA0200	8	RCP	216.0	573812.552	26624992.827	784.7	$21,647	01/01/1970	50	50	-1	$0	$33,161	1	2	5	10
5424	Sanitary Manhole	SA0200B	48	BR		573807.127	26624579.828	785.1	$2,132	01/01/1970	50	75	24	$686	$4,839	1	2	3	6
6001	Sanitary Pipe	SA0200B-SA0200A	8	RCP	197.0	573811.247	26624776.806	783.9	$19,742	01/01/1970	50	50	-1	$0	$30,244	1	2	5	10
6003	Sanitary Pipe	SA0200-SA0199A	8	RCP	314.6	573823.446	26625307.215	783.3	$31,522	01/01/1970	50	50	-1	$0	$48,289	1	2	5	10
5425	Sanitary Manhole	SA0201	48	BR		573802.989	26624390.901	785.7	$2,132	01/01/1970	50	75	24	$686	$4,839	1	2	3	6

id	Equipment Description	Asset ID	Capacity or Size	Material	Length	Northing State Plane Ordinate	Easting State Plane Ordinate	Elevation	Original Cost	Year Installed	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R)	Criticality (C)	Probability of Failure (P)	Business Risk (BRE)
6000	Sanitary Pipe	SA0201-SA0200B	8	RCP	189.0	573807.127	26624579.828	785.1	$18,936	01/01/1970	50	50	-1	$0	$29,008	1	2	5	10
5426	Sanitary Manhole	SA0202	48	BR		574763.278	26624351.650	785.2	$533	01/01/1930	90	75	-16	$0	$4,839	1	3	4	12
6027	Sanitary Pipe	SA0202-SA0203	10	VCP	300.2	574770.712	26624651.773	783.0	$20,482	01/01/1930	90	50	-41	$0	$46,084	1	3	5	15
5427	Sanitary Manhole	SA0203	48	BR		574770.712	26624651.773	783.0	$533	01/01/1930	90	75	-16	$0	$4,839	1	3	4	12
6026	Sanitary Pipe	SA0203-SA0185	10	VCP	305.6	574779.508	26624957.290	782.6	$20,852	01/01/1930	90	50	-41	$0	$46,918	1	3	5	15
5428	Sanitary Manhole	SA0204	48	BR		574559.902	26624658.690	785.3	$533	01/01/1930	90	75	-16	$0	$4,839	1	3	4	12
6028	Sanitary Pipe	SA0204-SA0203	10	RCP	210.9	574770.712	26624651.773	783.0	$14,390	01/01/1930	90	50	-41	$0	$32,378	1	3	5	15
5429	Sanitary Manhole	SA0205	48	BR		574329.876	26624663.973	785.3	$533	01/01/1930	90	75	-16	$0	$4,839	1	3	4	12
5752	Sanitary Pipe	SA0205-SA0204	10	RCP	230.1	574559.902	26624658.690	785.3	$15,697	01/01/1930	90	50	-41	$0	$35,319	1	3	5	15
5430	Sanitary Manhole	SA0206	48	BR		574555.133	26624475.635	784.4	$533	01/01/1930	90	75	-16	$0	$4,839	1	3	4	12
6029	Sanitary Pipe	SA0206-SA0204	10	RCP	183.1	574559.902	26624658.690	785.3	$12,493	01/01/1930	90	50	-41	$0	$28,109	1	3	4	12
5431	Sanitary Manhole	SA0207	48	BR		574336.984	26624474.502	783.9	$533	01/01/1930	90	75	-16	$0	$4,839	1	3	4	12
6030	Sanitary Pipe	SA0207-SA0206	10	RCP	218.2	574555.133	26624475.635	784.4	$14,883	01/01/1930	90	50	-41	$0	$33,487	1	3	5	15
5432	Sanitary Manhole	SA0208	48	BR		574787.446	26625251.471	783.1	$533	01/01/1930	90	75	-16	$0	$4,839	1	3	4	12
6025	Sanitary Pipe	SA0208-SA0185	10	VCP	294.3	574779.508	26624957.290	782.6	$20,077	01/01/1930	90	50	-41	$0	$45,174	1	3	5	15
5433	Sanitary Manhole	SA0209	48	BR		574794.968	26625551.096	781.6	$533	01/01/1930	90	75	-16	$0	$4,839	1	3	4	12
6024	Sanitary Pipe	SA0209-SA0208	10	VCP	299.7	574787.446	26625251.471	783.1	$20,448	01/01/1930	90	50	-41	$0	$46,008	1	3	5	15
5434	Sanitary Manhole	SA0211	48	BR		574146.462	26624979.876	785.2	$2,132	01/01/1970	50	75	24	$686	$4,839	1	2	3	6
6007	Sanitary Pipe	SA0211-SA0198A	8	RCP	309.6	574155.367	26625289.317	784.4	$31,020	01/01/1970	50	50	-1	$0	$47,520	1	2	5	10
5435	Sanitary Manhole	SA0212	48	BR		574131.611	26624374.726	785.0	$2,132	01/01/1970	50	75	24	$686	$4,839	1	2	3	6
5436	Sanitary Manhole	SA0212A	48	BR		574136.774	26624574.497	785.2	$2,132	01/01/1970	50	75	24	$686	$4,839	1	2	3	6
6009	Sanitary Pipe	SA0212A-SA0212B	8	RCP	197.0	574142.259	26624771.436	784.7	$19,742	01/01/1970	50	50	-1	$0	$30,243	1	2	5	10
5437	Sanitary Manhole	SA0212B	48	BR		574142.259	26624771.436	784.7	$2,132	01/01/1970	50	75	24	$686	$4,839	1	2	3	6
6008	Sanitary Pipe	SA0212B-SA0211	8	RCP	208.5	574146.462	26624979.876	785.2	$20,891	01/01/1970	50	50	-1	$0	$32,003	1	2	5	10
6010	Sanitary Pipe	SA0212-SA0212A	8	RCP	199.8	574136.774	26624574.497	785.2	$20,025	01/01/1970	50	50	-1	$0	$30,676	1	2	5	10
5438	Sanitary Manhole	SA0213	48	BR		577228.437	26622739.164	757.0	$533	01/01/1880	140	75	-66	$0	$4,839	1	5	3	15
5872	Sanitary Pipe	SA0213-SA0101	15	VCP	186.5	577208.976	26622924.609	759.0	$13,715	01/01/1880	140	50	-91	$0	$29,617	1	5	5	25
5439	Sanitary Manhole	SA0214	48	BR		577242.375	26622569.841	756.8	$533	01/01/1880	140	75	-66	$0	$4,839	1	5	4	20
5510	Sanitary Manhole	SA0214A	48	BR		0.000	0.000	0.0	$533	01/01/1880	140	75	-66	$0	$4,839	1	5	2	10
5873	Sanitary Pipe	SA0214A-SA0213	15	VCP	69.4	577228.437	26622739.164	757.0	$5,102	01/01/1880	140	50	-91	$0	$11,016	1	5	5	25
6640	Sanitary Pipe	SA0214-SA0214A	15	VCP	100.6	0.000	0.000	0.0	$7,396	01/01/1880	140	50	-91	$0	$15,971	1	5	5	25
5440	Sanitary Manhole	SA0215	48	BR		577259.089	26622293.355	755.9	$533	01/01/1900	120	75	-46	$0	$4,839	1	5	4	20
5874	Sanitary Pipe	SA0215-SA0214	15	VCP	277.0	577242.375	26622569.841	756.8	$20,374	01/01/1880	140	50	-91	$0	$43,996	1	5	5	25
5441	Sanitary Manhole	SA0216	48	BR		577256.757	26622119.661	756.6	$533	01/01/1900	120	75	-46	$0	$4,839	1	5	4	20
5875	Sanitary Pipe	SA0216-SA0215	15	VCP	173.7	577259.089	26622293.355	755.9	$12,777	01/01/1900	120	50	-71	$0	$27,591	1	5	5	25
5442	Sanitary Manhole	SA0217	48	BR		577230.934	26621652.451	758.8	$533	01/01/1900	120	75	-46	$0	$4,839	1	5	4	20
5876	Sanitary Pipe	SA0217-SA0216	15	VCP	467.9	577256.757	26622119.661	756.6	$34,418	01/01/1900	120	50	-71	$0	$74,322	1	5	4	20
5443	Sanitary Manhole	SA0218	48	BR		576962.303	26621654.840	767.6	$1,066	01/01/1900	120	75	-46	$0	$5,428	1	5	3	15
5877	Sanitary Pipe	SA0218-SA0217	15	VCP	268.6	577230.934	26621652.451	758.8	$22,623	01/01/1900	120	50	-71	$0	$45,533	1	5	4	20
5444	Sanitary Manhole	SA0219	48	BR		576591.298	26621657.911	778.8	$1,066	01/01/1900	120	75	-46	$0	$5,428	1	4	4	16
5881	Sanitary Pipe	SA0219-SA0218	12	VCP	371.0	576962.303	26621654.840	767.6	$29,663	01/01/1900	120	50	-71	$0	$61,303	1	4	5	20
5581	Sanitary Manhole	SA0220	48	BR		576564.827	26621689.217	778.6	$1,066	01/01/1950	70	75	4	$58	$4,839	1	3	4	12
5882	Sanitary Pipe	SA0220-SA0219	12	RCP	41.0	576591.298	26621657.911	778.8	$3,278	01/01/1950	70	50	-21	$0	$6,337	1	3	5	15
5445	Sanitary Manhole	SA0222	48	BR		576581.445	26621289.119	777.0	$533	01/01/1900	120	75	-46	$0	$4,839	1	4	4	16
5884	Sanitary Pipe	SA0222-SA0219	10	VCP	368.9	576591.298	26621657.911	778.8	$25,169	01/01/1900	120	50	-71	$0	$56,631	1	4	5	20
5446	Sanitary Manhole	SA0223	48	BR		576196.734	26621290.685	783.2	$1,066	01/01/1900	120	75	-46	$0	$5,428	1	4	4	16
5886	Sanitary Pipe	SA0223-SA0240A	10	VCP	167.8	576364.513	26621290.026	777.0	$12,877	01/01/1900	120	50	-71	$0	$27,186	1	4	5	20
5447	Sanitary Manhole	SA0224	48	BR		576202.272	26621655.811	785.4	$1,066	01/01/1900	120	75	-46	$0	$5,428	1	4	4	16
6056	Sanitary Pipe	SA0224-SA0223	10	VCP	365.2	576196.734	26621290.685	783.2	$28,027	01/01/1900	120	50	-71	$0	$59,169	1	4	4	16
5448	Sanitary Manhole	SA0225	48	BR		576205.909	26621791.022	785.5	$2,132	01/01/1970	50	75	24	$686	$4,839	1	4	4	16
6057	Sanitary Pipe	SA0225-SA0224	10	VCP	135.3	576202.272	26621655.811	785.4	$9,228	01/01/1900	120	50	-71	$0	$20,763	1	4	2	8
5449	Sanitary Manhole	SA0226	48	BR		576192.934	26621114.599	780.0	$533	01/01/1900	120	75	-46	$0	$4,839	1	3	3	9
5887	Sanitary Pipe	SA0226-SA0223	10	VCP	176.1	576196.734	26621290.685	783.2	$12,016	01/01/1900	120	50	-71	$0	$27,036	1	3	4	12
5450	Sanitary Manhole	SA0227	48	BR		575821.907	26621126.590	784.4	$2,132	01/01/1970	50	75	24	$686	$4,839	1	3	4	12
5888	Sanitary Pipe	SA0227-SA0226	10	VCP	371.2	576192.934	26621114.599	780.0	$25,326	01/01/1900	120	50	-71	$0	$56,984	1	3	5	15
5451	Sanitary Manhole	SA0228	48	BR		576047.062	26621295.344	784.9	$2,665	01/01/1970	50	75	24	$857	$5,428	1	4	3	12
6058	Sanitary Pipe	SA0228-SA0223	10	VCP	149.7	576196.734	26621290.685	783.2	$11,493	01/01/1900	120	50	-71	$0	$24,264	1	4	5	20
5452	Sanitary Manhole	SA0230	48	BR		575780.246	26621303.808	786.2	$2,665	01/01/1970	50	75	24	$857	$5,428	1	3	4	12
6059	Sanitary Pipe	SA0230-SA0227	10	PVC	182.0	575821.907	26621126.590	784.4	$19,794	01/01/1970	50	75	24	$6,370	$29,498	1	3	3	9
5453	Sanitary Manhole	SA0231	48	BR		575598.783	26621317.933	792.8	$2,665	01/01/1970	50	75	24	$857	$5,428	1	3	3	9
5889	Sanitary Pipe	SA0231-SA0230	10	VCP	182.0	575780.246	26621303.808	786.2	$13,970	01/01/1900	120	50	-71	$0	$29,492	1	3	5	15
1322	Sanitary Manhole	SA0232	48	BR		120834.784	26085340.001	602.2	$533	01/01/1900	120	75	-46	$0	$4,839	1	3	4	12
5890	Sanitary Pipe	SA0232-SA0231	10	VCP	104.7	575598.783	26621317.933	792.8	$7,146	01/01/1900	120	50	-71	$0	$16,078	1	3	5	15
5454	Sanitary Manhole	SA0233	48	BR		575634.234	26621135.061	786.8	$533	01/01/1900	120	75	-46	$0	$4,839	1	3	4	12
5891	Sanitary Pipe	SA0233-SA0232	10	VCP	86.6	575596.891	26621213.211	785.8	$5,909	01/01/1900	120	50	-71	$0	$13,295	1	3	5	15
5455	Sanitary Manhole	SA0234	48	BR		575629.345	26620973.999	786.1	$533	01/01/1900	120	75	-46	$0	$4,839	1	3	4	12
5539	Sanitary Manhole	SA0234A	48	BR		575619.536	26620572.877	784.7	$533	01/01/1900	120	75	-46	$0	$4,839	1	3	3	9
5861	Sanitary Pipe	SA0234A-SA0234	10	VCP	401.2	575629.345	26620973.999	786.1	$27,374	01/01/1900	120	50	-71	$0	$61,592	1	3	5	15
5749	Sanitary Pipe	SA0234-SA0233	10	VCP	161.1	575634.234	26621135.061	786.8	$10,993	01/01/1900	120	50	-71	$0	$24,735	1	3	5	15
5456	Sanitary Manhole	SA0235	48	BR		576973.457	26622126.490	765.6	$1,066	01/01/1900	120	75	-46	$0	$5,428	1	3	4	12
5878	Sanitary Pipe	SA0235-SA0218	10	VCP	471.8	576962.303	26621654.840	767.6	$36,210	01/01/1900	120	50	-71	$0	$76,444	1	3	5	15
5457	Sanitary Manhole	SA0236	48	BR		576985.332	26622566.543	765.1	$533	01/01/1880	140	75	-66	$0	$4,839	1	3	4	12
5879	Sanitary Pipe	SA0236-SA0235	12	RCP	440.2	576973.457	26622126.490	765.6	$30,502	01/01/1880	140	50	-91	$0	$68,044	1	3	5	15
5458	Sanitary Manhole	SA0237	48	CR		576971.210	26622759.582	765.4	$2,132	01/01/1970	50	75	24	$686	$4,839	1	3	2	6

id	Equipment Description	Asset ID	Capacity or Size	Material	Length	Northing State Plane Ordinate	Easting State Plane Ordinate	Elevation	Original Cost	Year Installed	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R)	Criticality (C)	Probability of Failure (P)	Business Risk (BRE)
5536	Sanitary Manhole	SA0237A	48	BR		576991.093	26622759.594	764.3	$533	01/01/1880	140	75	-66	$0	$4,839	1	3	4	12
5880	Sanitary Pipe	SA0237A-SA0236	12	RCP	193.1	576985.332	26622566.543	765.1	$13,382	01/01/1880	140	50	-91	$0	$29,853	1	3	5	15
5808	Sanitary Pipe	SA0237-SA0102	12	PVC	185.8	576976.301	26622945.344	765.7	$18,819	01/01/1970	50	75	24	$6,057	$28,724	1	3	3	9
5459	Sanitary Manhole	SA0238	48	CR		576618.000	26622803.742	774.2	$2,132	01/01/1970	50	75	24	$686	$4,839	1	4	2	8
5995	Sanitary Pipe	SA0238-SA0103	12	PVC	151.5	576605.171	26622954.739	773.6	$15,347	01/01/1970	50	75	24	$4,939	$23,424	1	4	3	12
5460	Sanitary Manhole	SA0239	48	BR		576613.974	26622562.864	777.2	$1,066	01/01/1880	140	75	-66	$0	$5,428	1	4	4	16
5994	Sanitary Pipe	SA0239-SA0238	12	RCP	240.9	576618.000	26622803.742	774.2	$19,261	01/01/1880	140	50	-91	$0	$39,806	1	4	5	20
5579	Sanitary Manhole	SA0240	48	BR		576574.904	26622133.826	781.1	$533	01/01/1900	120	75	-46	$0	$4,839	1	2	4	8
5461	Sanitary Manhole	SA0240A	48	BR		576364.513	26621290.026	777.0	$533	01/01/1900	120	75	-46	$0	$4,839	1	4	3	12
5885	Sanitary Pipe	SA0240A-SA0222	10	VCP	216.9	576581.445	26621289.119	777.0	$14,800	01/01/1900	120	50	-71	$0	$33,300	1	4	5	20
5462	Sanitary Manhole	SA0240B	48	BR		576756.083	26621929.289	773.1	$533	01/01/1900	120	75	-46	$0	$4,839	1	1	2	2
6080	Sanitary Pipe	SA0240B-SA0235	6	VCP	413.5	576973.457	26622126.490	765.6	$28,209	01/01/1900	120	50	-71	$0	$63,471	1	1	5	5
5580	Sanitary Manhole	SA0240C				576605.092	26622165.394	780.3	$1,066	01/01/1950	70	75	4	$58	$4,839	1	2	1	2
5993	Sanitary Pipe	SA0240C-SA0239	12	RCP	397.6	576613.974	26622562.864	777.2	$27,548	01/01/1880	140	50	-91	$0	$61,452	1	2	5	10
5883	Sanitary Pipe	SA0240-SA0220	12	RCP	444.7	576564.827	26621689.217	778.6	$35,556	01/01/1950	70	50	-21	$0	$68,741	1	2	5	10
5463	Sanitary Manhole	SA0241	48	CR		576234.461	26622806.485	778.4	$2,132	01/01/1970	50	75	24	$686	$4,839	1	4	2	8
5999	Sanitary Pipe	SA0241-SA0104	12	PVC	156.4	576211.081	26622961.138	778.1	$15,840	01/01/1970	50	75	24	$5,098	$24,176	1	4	3	12
5464	Sanitary Manhole	SA0242	48	BR		576228.027	26622567.574	781.0	$1,066	01/01/1880	140	75	-66	$0	$5,428	1	4	4	16
5998	Sanitary Pipe	SA0242-SA0241	12	VCP	239.0	576234.461	26622806.485	778.4	$19,108	01/01/1880	140	50	-91	$0	$39,490	1	4	5	20
5465	Sanitary Manhole	SA0243	48	BR		576216.145	26622148.523	785.3	$1,066	01/01/1900	120	75	-46	$0	$5,428	1	3	4	12
5997	Sanitary Pipe	SA0243-SA0242	12	VCP	419.2	576228.027	26622567.574	781.0	$33,517	01/01/1900	120	50	-71	$0	$69,268	1	3	5	15
5466	Sanitary Manhole	SA0244	48	BR		576208.215	26621873.823	785.4	$533	01/01/1900	120	75	-46	$0	$4,839	1	2	3	6
5996	Sanitary Pipe	SA0244-SA0243	12	VCP	274.8	576216.145	26622148.523	785.3	$19,042	01/01/1900	120	50	-71	$0	$42,478	1	2	5	10
5467	Sanitary Manhole	SA0245	48	BR		575809.254	26622939.323	780.6	$1,066	01/01/1880	140	75	-66	$0	$5,428	1	4	3	12
5896	Sanitary Pipe	SA0245-SA0105	12	VCP	31.2	575826.557	26622965.314	780.8	$2,496	01/01/1880	140	50	-91	$0	$5,159	1	4	5	20
5468	Sanitary Manhole	SA0246	48	BR		575800.965	26622576.045	782.6	$533	01/01/1880	140	75	-66	$0	$4,839	1	4	4	16
5895	Sanitary Pipe	SA0246-SA0245	12	RCP	363.4	575809.254	26622939.323	780.6	$25,178	01/01/1880	140	50	-91	$0	$56,166	1	4	5	20
5469	Sanitary Manhole	SA0247	48	BR		575790.706	26622152.580	785.3	$1,066	01/01/1900	120	75	-46	$0	$5,428	1	4	4	16
5894	Sanitary Pipe	SA0247-SA0246	12	RCP	423.6	575800.965	26622576.045	782.6	$33,866	01/01/1900	120	50	-71	$0	$69,990	1	4	5	20
5470	Sanitary Manhole	SA0248	48	BR		575781.634	26621849.434	788.5	$1,066	01/01/1900	120	75	-46	$0	$5,428	1	4	4	16
5893	Sanitary Pipe	SA0248-SA0247	12	RCP	303.3	575790.706	26622152.580	785.3	$24,247	01/01/1900	120	50	-71	$0	$50,111	1	4	5	20
5471	Sanitary Manhole	SA0249	48	BR		575777.348	26621609.640	789.7	$533	01/01/1900	120	75	-46	$0	$4,839	1	2	4	8
5472	Sanitary Manhole	SA0249A	48	BR		575780.041	26621507.004	787.9	$533	01/01/1900	120	75	-46	$0	$4,839	1	2	3	6
5855	Sanitary Pipe	SA0249A-SA0230	12	RCP	203.2	575780.246	26621303.808	786.2	$14,079	01/01/1900	120	50	-71	$0	$31,408	1	2	5	10
5892	Sanitary Pipe	SA0249-SA0248	12	RCP	239.8	575781.634	26621849.434	788.5	$16,618	01/01/1900	120	50	-71	$0	$37,071	1	2	5	10
5473	Sanitary Manhole	SA0250	48	BR		575622.137	26622577.936	784.2	$533	01/01/1900	120	75	-46	$0	$4,839	1	4	4	16
5897	Sanitary Pipe	SA0250-SA0246	12	RCP	178.8	575800.965	26622576.045	782.6	$12,392	01/01/1900	120	50	-71	$0	$27,643	1	4	5	20
5474	Sanitary Manhole	SA0251	48	BR		575613.297	26622140.805	786.0	$533	01/01/1900	120	75	-46	$0	$4,839	1	4	4	16
5584	Sanitary Manhole	SA0251A	48	CR		575483.171	26622144.499	786.4	$2,132	01/01/1970	50	75	24	$686	$4,839	1	4	2	8
5899	Sanitary Pipe	SA0251A-SA0251	12	RCP	130.2	575613.297	26622140.805	786.0	$9,020	01/01/1900	120	50	-71	$0	$20,122	1	4	5	20
5898	Sanitary Pipe	SA0251-SA0250	12	RCP	437.2	575622.137	26622577.936	784.2	$30,295	01/01/1900	120	50	-71	$0	$67,581	1	4	5	20
5475	Sanitary Manhole	SA0252	48	CR		575452.582	26622145.057	786.6	$2,132	01/01/1970	50	75	24	$686	$4,839	1	4	2	8
5521	Sanitary Manhole	SA0252A	48	CR		0.000	0.000	0.0	$2,132	01/01/1970	50	75	24	$686	$4,839	1	4	2	8
6063	Sanitary Pipe	SA0252A-SA0252	12	PVC	93.4	575452.582	26622145.057	786.6	$9,458	01/01/1970	50	75	24	$3,044	$14,436	1	4	3	12
5540	Sanitary Manhole	SA0252B	48	CR		575449.142	26621929.647	787.5	$2,132	01/01/1970	50	75	24	$686	$4,839	1	2	3	6
5841	Sanitary Pipe	SA0252B-SA0252	8	PVC	215.4	575452.582	26622145.057	786.6	$21,588	01/01/1970	50	75	24	$6,948	$33,071	1	2	3	6
6084	Sanitary Pipe	SA0252-SA0251A	12	PVC	30.6	575483.171	26622144.499	786.4	$3,098	01/01/1970	50	75	24	$997	$4,729	1	4	3	12
5476	Sanitary Manhole	SA0253	48	BR		575246.323	26622147.566	787.8	$1,066	01/01/1950	70	75	4	$58	$4,839	1	3	4	12
5900	Sanitary Pipe	SA0253-SA0252A	10	RCP	112.9	0.000	0.000	0.0	$8,906	01/01/1950	70	50	-21	$0	$17,332	1	3	5	15
5477	Sanitary Manhole	SA0254	48	BR		575234.641	26621679.495	792.6	$1,599	01/01/1950	70	75	4	$87	$5,428	1	3	4	12
5901	Sanitary Pipe	SA0254-SA0253	10	RCP	468.2	575246.323	26622147.566	787.8	$40,928	01/01/1950	70	50	-21	$0	$75,866	1	3	5	15
5478	Sanitary Manhole	SA0255	48	BR		575221.891	26621141.748	790.3	$1,066	01/01/1950	70	75	4	$58	$4,839	1	3	4	12
5523	Sanitary Manhole	SA0255A				0.000	0.000	0.0	$1,066	01/01/1950	70	75	4	$58	$4,839	1	1	1	1
5902	Sanitary Pipe	SA0255-SA0254	10	RCP	537.9	575234.641	26621679.495	792.6	$42,432	01/01/1950	70	50	-21	$0	$82,570	1	3	5	15
5560	Sanitary Manhole	SA0256	48	CR		575436.709	26622917.708	783.4	$533	01/01/1900	120	75	-46	$0	$4,839	1	4	2	8
5562	Sanitary Manhole	SA0256A	48	CR		575434.332	26622745.344	784.7	$1,066	01/01/1900	120	75	-46	$0	$5,428	1	4	2	8
5904	Sanitary Pipe	SA0256A-SA0256	12	RCP	172.4	575436.709	26622917.708	783.4	$13,782	01/01/1900	120	50	-71	$0	$28,482	1	4	5	20
5903	Sanitary Pipe	SA0256-SA0106	12	VCP	55.6	575449.045	26622971.888	783.3	$3,850	01/01/1900	120	50	-71	$0	$8,589	1	4	5	20
5479	Sanitary Manhole	SA0257	48	CR		575431.040	26622524.575	785.8	$533	01/01/1900	120	75	-46	$0	$4,839	1	4	2	8
6342	Sanitary Pipe	SA0257-SA0256A	12	RCP	220.8	575434.332	26622745.344	784.7	$15,299	01/01/1900	120	50	-71	$0	$34,128	1	4	5	20
5482	Sanitary Manhole	SA0258	48	CR		575052.646	26622529.508	787.3	$1,599	01/01/1950	70	75	4	$87	$5,428	1	4	2	8
5905	Sanitary Pipe	SA0258-SA0257	12	RCP	378.4	575431.040	26622524.575	785.8	$34,289	01/01/1950	70	50	-21	$0	$62,527	1	4	5	20
5483	Sanitary Manhole	SA0259	48	BR		575044.029	26622150.639	789.0	$1,599	01/01/1950	70	75	4	$87	$5,428	1	4	4	16
5906	Sanitary Pipe	SA0259-SA0258	12	RCP	379.0	575052.646	26622529.508	787.3	$34,338	01/01/1950	70	50	-21	$0	$62,617	1	4	5	20
5484	Sanitary Manhole	SA0260	48	BR		575038.167	26621804.680	791.6	$1,599	01/01/1950	70	75	4	$87	$5,428	1	3	4	12
5568	Sanitary Manhole	SA0260A	48	BR		575030.109	26621477.815	793.4	$1,599	01/01/1950	70	75	4	$87	$5,428	1	3	4	12
5827	Sanitary Pipe	SA0260A-SA0260	10	VCP	327.0	575038.167	26621804.680	791.6	$28,581	01/01/1950	70	50	-21	$0	$52,979	1	3	4	12
5569	Sanitary Manhole	SA0260B	48	BR		575022.116	26621201.111	791.8	$1,066	01/01/1950	70	75	4	$58	$4,839	1	3	4	12
6085	Sanitary Pipe	SA0260B-SA0260A	10	VCP	276.8	575030.109	26621477.815	793.4	$21,837	01/01/1950	70	50	-21	$0	$42,493	1	3	4	12
5907	Sanitary Pipe	SA0260-SA0259	10	VCP	346.0	575044.029	26622150.639	789.0	$30,245	01/01/1950	70	50	-21	$0	$56,064	1	3	4	12
5566	Sanitary Manhole	SA0261	48	BR		574722.621	26622895.840	787.5	$1,066	01/01/1950	70	75	4	$58	$4,839	1	4	4	16
5567	Sanitary Manhole	SA0261A	48	BR		574717.643	26622714.366	788.4	$1,599	01/01/1950	70	75	4	$87	$5,428	1	4	4	16
6070	Sanitary Pipe	SA0261A-SA0261	12	RCP	181.5	574722.621	26622895.840	787.5	$16,450	01/01/1950	70	50	-21	$0	$29,996	1	4	5	20
5909	Sanitary Pipe	SA0261-SA0109	12	RCP	81.3	574667.356	26622955.413	787.2	$6,497	01/01/1950	70	50	-21	$0	$12,560	1	4	5	20

id	Equipment Description	Asset ID	Capacity or Size	Material	Length	Northing State Plane Ordinate	Easting State Plane Ordinate	Elevation	Original Cost	Year Installed	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R)	Criticality (C)	Probability of Failure (P)	Business Risk (BRE)
5485	Sanitary Manhole	SA0262	48	BR		574714.759	26622581.507	789.3	$1,599	01/01/1950	70	75	4	$87	$5,428	1	4	4	16
5910	Sanitary Pipe	SA0262-SA0261A	12	RCP	132.9	574717.643	26622714.366	788.4	$12,041	01/01/1950	70	50	-21	$0	$21,958	1	4	5	20
5486	Sanitary Manhole	SA0263	48	BR		574703.165	26622158.456	789.9	$2,132	01/01/1970	50	75	24	$686	$4,839	1	4	4	16
5911	Sanitary Pipe	SA0263-SA0262	12	RCP	423.2	574714.759	26622581.507	789.3	$33,836	01/01/1950	70	50	-21	$0	$65,416	1	4	5	20
5487	Sanitary Manhole	SA0264	48	BR		574692.455	26621739.558	793.9	$2,665	01/01/1970	50	75	24	$857	$5,428	1	3	4	12
5541	Sanitary Manhole	SA0264A	48	BR		574681.109	26621306.865	795.0	$2,665	01/01/1970	50	75	24	$857	$5,428	1	3	4	12
6240	Sanitary Pipe	SA0264A-SA0264	10	VCP	432.8	574692.455	26621739.558	793.9	$47,064	01/01/1970	50	50	-1	$0	$70,134	1	3	5	15
5912	Sanitary Pipe	SA0264-SA0263	10	RCP	419.0	574703.165	26622158.456	789.9	$45,562	01/01/1970	50	50	-1	$0	$67,897	1	3	4	12
5488	Sanitary Manhole	SA0265	48	BR		574676.492	26621203.590	794.2	$2,665	01/01/1970	50	75	24	$857	$5,428	1	3	3	9
5913	Sanitary Pipe	SA0265-SA0264A	8	RCP	103.4	574681.109	26621306.865	795.0	$11,241	01/01/1970	50	50	-1	$0	$16,751	1	3	1	3
5489	Sanitary Manhole	SA0266	48	BR		574641.162	26621118.479	794.3	$2,665	01/01/1970	50	75	24	$857	$5,428	1	2	3	6
5914	Sanitary Pipe	SA0266-SA0265	8	RCP	92.2	574676.492	26621203.590	794.2	$10,020	01/01/1970	50	50	-1	$0	$14,932	1	2	5	10
5490	Sanitary Manhole	SA0267	48	BR		574623.047	26620486.874	793.2	$2,132	01/01/1970	50	75	24	$686	$4,839	1	2	4	8
5491	Sanitary Manhole	SA0267A	48	BR		574631.652	26620786.242	794.5	$2,132	01/01/1970	50	75	24	$686	$4,839	1	2	3	6
5915	Sanitary Pipe	SA0267A-SA0266	8	RCP	332.4	574641.162	26621118.479	794.3	$33,305	01/01/1970	50	50	-1	$0	$51,021	1	2	5	10
5916	Sanitary Pipe	SA0267-SA0267A	8	RCP	299.5	574631.652	26620786.242	794.5	$30,010	01/01/1970	50	50	-1	$0	$45,973	1	2	5	10
5492	Sanitary Manhole	SA0268	48	BR		574321.245	26622599.701	789.1	$1,066	01/01/1950	70	75	4	$58	$4,839	1	4	4	16
5517	Sanitary Manhole	SA0268A				0.000	0.000	0.0	$1,066	01/01/1950	70	75	4	$58	$4,839	1	4	1	4
5920	Sanitary Pipe	SA0268A-SA0268	12	RCP	20.8	574321.245	26622599.701	789.1	$1,661	01/01/1950	70	50	-21	$0	$3,212	1	3	4	12
5921	Sanitary Pipe	SA0268-SA0110	12	VCP	360.4	574333.041	26622959.859	788.8	$28,810	01/01/1950	70	50	-21	$0	$55,699	1	4	5	20
5493	Sanitary Manhole	SA0269	48	BR		574325.809	26622175.450	793.1	$2,665	01/01/1970	50	75	24	$857	$5,428	1	3	4	12
6650	Sanitary Pipe	SA0269-SA0268A	12	RCP	410.2	0.000	0.000	0.0	$37,168	01/01/1950	70	50	-21	$0	$67,777	1	3	5	15
5494	Sanitary Manhole	SA0270	48	BR		574306.267	26621675.969	796.5	$2,665	01/01/1970	50	75	24	$857	$5,428	1	3	4	12
5570	Sanitary Manhole	SA0270A	48	BR		574299.944	26621483.344	797.5	$2,665	01/01/1970	50	75	24	$857	$5,428	1	3	4	12
6244	Sanitary Pipe	SA0270A-SA0270	10	RCP	192.7	574306.267	26621675.969	796.5	$20,956	01/01/1970	50	50	-1	$0	$31,228	1	3	5	15
5919	Sanitary Pipe	SA0270-SA0269	10	RCP	499.9	574325.809	26622175.450	793.1	$54,351	01/01/1970	50	50	-1	$0	$80,994	1	3	5	15
5495	Sanitary Manhole	SA0271	48	BR		574288.664	26621170.074	795.6	$2,665	01/01/1970	50	75	24	$857	$5,428	1	3	4	12
5511	Sanitary Manhole	SA0271A				0.000	0.000	0.0	$2,132	01/01/1970	50	75	24	$686	$4,839	1	3	1	3
5917	Sanitary Pipe	SA0271A-SA0271	10	RCP	71.1	574288.664	26621170.074	795.6	$7,129	01/01/1970	50	50	-1	$0	$10,921	1	3	1	3
5918	Sanitary Pipe	SA0271-SA0270A	10	RCP	313.5	574299.944	26621483.344	797.5	$34,085	01/01/1970	50	50	-1	$0	$50,793	1	3	5	15
5496	Sanitary Manhole	SA0272	48	BR		574272.653	26620694.751	795.5	$2,132	01/01/1970	50	75	24	$686	$4,839	1	3	3	9
6649	Sanitary Pipe	SA0272-SA0271A	10	RCP	404.4	0.000	0.000	0.0	$40,527	01/01/1970	50	50	-1	$0	$62,084	1	3	5	15
5525	Sanitary Manhole	SA0273				0.000	0.000	0.0	$1,066	01/01/1950	70	75	4	$58	$4,839	1	1	1	1
5497	Sanitary Manhole	SA0274	48	BR		573971.726	26622613.655	793.2	$1,599	01/01/1950	70	75	4	$87	$5,428	1	4	4	16
5922	Sanitary Pipe	SA0274-SA0111	12	RCP	353.4	573983.643	26622966.848	791.2	$32,021	01/01/1950	70	50	-21	$0	$58,391	1	4	5	20
5498	Sanitary Manhole	SA0276	48	BR		573956.312	26622178.090	794.1	$2,132	01/01/1970	50	75	24	$686	$4,839	1	3	4	12
5923	Sanitary Pipe	SA0276-SA0274	10	RCP	435.8	573971.726	26622613.655	793.2	$34,381	01/01/1950	70	50	-21	$0	$66,903	1	3	5	15
5499	Sanitary Manhole	SA0277	48	BR		573944.678	26621724.465	798.9	$2,665	01/01/1970	50	75	24	$857	$5,428	1	3	3	9
5924	Sanitary Pipe	SA0277-SA0276	10	RCP	453.8	573956.312	26622178.090	794.1	$49,340	01/01/1970	50	50	-1	$0	$73,526	1	3	5	15
5500	Sanitary Manhole	SA0278	48	BR		573928.082	26621285.723	799.1	$2,132	01/01/1970	50	75	24	$686	$4,839	1	3	3	9
5501	Sanitary Manhole	SA0278A	48	CR		573920.848	26621081.233	799.4	$2,132	01/01/1970	50	75	24	$686	$4,839	1	2	2	4
5926	Sanitary Pipe	SA0278A-SA0278	8	PVC	204.6	573928.082	26621285.723	799.1	$20,504	01/01/1970	50	75	24	$6,599	$31,410	1	2	3	6
5925	Sanitary Pipe	SA0278-SA0277	10	PVC	439.1	573944.678	26621724.465	798.9	$43,995	01/01/1970	50	75	24	$14,160	$67,397	1	3	3	9
5598	Sanitary Manhole	SA0430	48	BR		575051.172	26622944.405	786.2	$1,599	01/01/1950	70	75	4	$87	$5,428	1	3	3	9
6607	Sanitary Pipe	SA0430-SA0431	12	RCP	9.2	575059.241	26622948.881	785.7	$836	01/01/1950	70	50	-21	$0	$1,525	1	3	5	15
5599	Sanitary Manhole	SA0431	48	BR		575059.241	26622948.881	785.7	$1,599	01/01/1950	70	75	4	$87	$5,428	1	3	1	4
6608	Sanitary Pipe	SA0431-SA0108-SA0107	10	VCP	33.2	0.000	0.000	0.0	$2,903	01/01/1950	70	50	-21	$0	$5,381	1	3	4	12
3821	Sanitary Manhole	SA2001	48	CR		118058.585	26086730.674	587.2	$2,665	01/01/1976	44	75	30	$1,071	$5,428	1	2	2	4
6137	Sanitary Pipe	SA2001-SA2002	8	PE	398.0	568854.242	26623908.103	889.6	$43,278	01/01/1976	44	75	30	$17,393	$64,493	1	2	3	6
3822	Sanitary Manhole	SA2002	48	CR		118200.470	26086466.167	585.2	$2,665	01/01/1976	44	75	30	$1,071	$5,428	1	2	2	4
6138	Sanitary Pipe	SA2002-SA2003	8	PE	398.9	568846.922	26623509.264	888.5	$43,374	01/01/1976	44	75	30	$17,431	$64,636	1	2	3	6
3823	Sanitary Manhole	SA2003	48	CR		118327.870	26086210.410	585.3	$2,665	01/01/1976	44	75	30	$1,071	$5,428	1	2	2	4
6139	Sanitary Pipe	SA2003-SA2007	8	PE	224.5	568732.733	26623315.997	890.5	$24,408	01/01/1976	44	75	30	$9,809	$36,373	1	2	3	6
3826	Sanitary Manhole	SA2004	48	CR		118344.817	26086028.908	587.3	$2,665	01/01/1976	44	75	30	$1,071	$5,428	1	2	2	4
6140	Sanitary Pipe	SA2004-SA2005	8	PE	398.3	568356.201	26623889.584	895.5	$43,307	01/01/1976	44	75	30	$17,405	$64,536	1	2	3	6
3824	Sanitary Manhole	SA2005	48	CR		118328.033	26086006.061	587.8	$3,731	01/01/1976	44	75	30	$1,499	$6,414	1	2	2	4
6141	Sanitary Pipe	SA2005-SA2006	8	PE	348.5	568502.861	26623573.415	892.2	$42,726	01/01/1976	44	75	30	$17,171	$61,303	1	2	1	2
3825	Sanitary Manhole	SA2006	48	CR		118367.955	26085933.911	588.8	$3,731	01/01/1976	44	75	30	$1,499	$6,414	1	2	2	4
6143	Sanitary Pipe	SA2006-SA2007	8	PE	345.1	568732.733	26623315.997	890.5	$42,308	01/01/1976	44	75	30	$17,003	$60,703	1	2	3	6
3827	Sanitary Manhole	SA2007	48	CR		118387.970	26085948.002	588.6	$3,731	01/01/1976	44	75	30	$1,499	$6,414	1	2	2	4
6144	Sanitary Pipe	SA2007-SA2008	8	PE	402.8	569102.249	26623155.677	888.4	$49,379	01/01/1976	44	75	30	$19,845	$70,848	1	2	3	6
4948	Sanitary Manhole	SA2008	48	CR		118473.243	26085930.346	591.7	$2,665	01/01/1976	44	75	30	$1,071	$5,428	1	4	2	8
6147	Sanitary Pipe	SA2008-SA2009	8	PE	401.0	569503.202	26623147.649	882.7	$43,605	01/01/1976	44	75	30	$17,524	$64,980	1	4	5	20
4949	Sanitary Manhole	SA2009	48	CR		118595.303	26085651.446	596.2	$2,665	01/01/1976	44	75	30	$1,071	$5,428	1	4	2	8
6151	Sanitary Pipe	SA2009-SA2010	8	PE	400.0	569903.112	26623137.251	868.3	$43,498	01/01/1976	44	75	30	$17,481	$64,820	1	4	3	12
4950	Sanitary Manhole	SA2010	48	CR		118649.512	26085481.341	598.8	$2,665	01/01/1976	44	75	30	$1,071	$5,428	1	4	2	8
6149	Sanitary Pipe	SA2010-SA2011	8	PE	400.6	570303.598	26623127.895	852.3	$43,558	01/01/1976	44	75	30	$17,505	$64,909	1	4	1	4
4947	Sanitary Manhole	SA2011	48	CR		118660.296	26085446.381	599.9	$2,132	01/01/1976	44	75	30	$856	$4,839	1	4	2	8
6150	Sanitary Pipe	SA2011-SA2012	8	PE	398.9	570702.460	26623119.580	836.3	$39,976	01/01/1976	44	75	30	$16,066	$61,240	1	4	1	4
4946	Sanitary Manhole	SA2012	48	CR		118653.323	26085359.670	599.8	$2,665	01/01/1976	44	75	30	$1,071	$5,428	1	4	2	8
6148	Sanitary Pipe	SA2012-SA2013	8	PE	424.8	571127.154	26623109.575	826.3	$46,191	01/01/1976	44	75	30	$18,564	$68,833	1	4	1	4
3052	Sanitary Manhole	SA2013	48	CR		118712.592	26085282.939	599.9	$2,665	01/01/1976	44	75	30	$1,071	$5,428	1	4	2	8
6154	Sanitary Pipe	SA2013-SA2014	8	PE	375.3	571502.391	26623100.935	822.3	$40,811	01/01/1976	44	75	30	$16,401	$60,816	1	4	1	4
3051	Sanitary Manhole	SA2014	48	CR		118719.832	26085264.115	599.5	$2,665	01/01/1976	44	75	30	$1,071	$5,428	1	4	2	8

id	Equipment Description	Asset ID	Capacity or Size	Material	Length	Northing State Plane Ordinate	Easting State Plane Ordinate	Elevation	Original Cost	Year Installed	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R)	Criticality (C)	Probability of Failure (P)	Business Risk (BRE)
6155	Sanitary Pipe	SA2014-SA2015	8	PE	380.5	571882.767	26623093.012	819.4	$41,368	01/01/1976	44	75	30	$16,625	$61,647	1	4	1	4
3687	Sanitary Manhole	SA2015	48	CR		0.000	0.000	0.0	$2,665	01/01/1976	44	75	30	$1,071	$5,428	1	4	2	8
6156	Sanitary Pipe	SA2015-SA2016	8	PE	299.3	572182.011	26623086.119	816.5	$32,546	01/01/1976	44	75	30	$13,080	$48,500	1	4	1	4
3050	Sanitary Manhole	SA2016	48	CR		118560.936	26085048.033	589.9	$2,665	01/01/1976	44	75	30	$1,071	$5,428	1	4	2	8
6157	Sanitary Pipe	SA2016-SA2017	8	PE	460.4	572642.298	26623073.967	810.5	$50,065	01/01/1976	44	75	30	$20,121	$74,607	1	4	1	4
3046	Sanitary Manhole	SA2017	48	CR		118704.701	26084875.538	597.7	$2,665	01/01/1976	44	75	30	$1,071	$5,428	1	4	2	8
6158	Sanitary Pipe	SA2017-SA2018	8	PE	301.1	572943.216	26623064.354	802.8	$32,736	01/01/1976	44	75	30	$13,156	$48,783	1	4	1	4
3047	Sanitary Manhole	SA2018	48	CR		118686.955	26084781.577	597.7	$2,665	01/01/1976	44	75	30	$1,071	$5,428	1	4	2	8
6159	Sanitary Pipe	SA2018-SA2019	8	PE	298.1	573241.164	26623054.280	796.6	$32,415	01/01/1976	44	75	30	$13,027	$48,305	1	4	1	4
3820	Sanitary Manhole	SA2019	48	CR		118119.816	26086634.151	587.0	$2,132	01/01/1976	44	75	30	$856	$4,839	1	4	2	8
5751	Sanitary Pipe	SA2019-SA2020	8	PE	294.0	573535.044	26623045.560	794.7	$29,461	01/01/1976	44	75	30	$11,840	$45,132	1	4	3	12
3048	Sanitary Manhole	SA2020	48	CR		118681.319	26084731.522	597.2	$2,132	01/01/1976	44	75	30	$856	$4,839	1	4	2	8
5597	Sanitary Manhole	SA2020A				573549.585	26623040.598	794.4	$2,132	01/01/1970	50	75	24	$686	$4,839	1	1	1	1
5863	Sanitary Pipe	SA2020-SA0123	8	PE	60.1	573594.693	26623038.282	794.4	$6,021	01/01/1976	44	75	30	$2,419	$9,224	1	4	4	16
3049	Sanitary Manhole	SA2021	48	CR		118328.067	26084614.351	594.1	$2,132	01/01/1976	44	75	30	$856	$4,839	1	4	2	8
1945	Sanitary Pipe	SA2021-SA2020	8	PE	76.0	118681.319	26084731.522	597.2	$7,620	01/01/1976	44	75	30	$3,062	$11,673	1	4	5	20
4943	Sanitary Manhole	SA2022	48	CR		118590.260	26084265.720	590.3	$2,132	01/01/1976	44	75	30	$856	$4,839	1	4	2	8
6192	Sanitary Pipe	SA2022-SA2021	8	PE	293.7	573534.764	26622969.519	795.3	$29,426	01/01/1976	44	75	30	$11,826	$45,078	1	4	4	16
4942	Sanitary Manhole	SA2023	48	CR		118530.170	26084257.480	590.7	$2,665	01/01/1976	44	75	30	$1,071	$5,428	1	4	2	8
2416	Sanitary Pipe	SA2023-SA2022	8	PE	329.1	118590.260	26084265.720	590.3	$35,781	01/01/1976	44	75	30	$14,380	$53,321	1	4	3	12
4941	Sanitary Manhole	SA2024	48	CR		118469.320	26083979.750	588.3	$2,665	01/01/1976	44	75	30	$1,071	$5,428	1	4	2	8
5514	Sanitary Manhole	SA2024A				0.000	0.000	0.0	$2,132	01/01/1976	44	75	30	$856	$4,839	1	4	1	4
6193	Sanitary Pipe	SA2024A-SA2024	8	PE	212.2	572641.159	26623000.540	810.3	$21,263	01/01/1976	44	75	30	$8,545	$32,574	1	4	1	4
2415	Sanitary Pipe	SA2024-SA2023	8	PE	271.4	118530.170	26084257.480	590.7	$29,511	01/01/1976	44	75	30	$11,860	$43,977	1	4	3	12
4937	Sanitary Manhole	SA2025	48	CR		118541.733	26083678.834	588.4	$2,665	01/01/1976	44	75	30	$1,071	$5,428	1	4	2	8
6130	Sanitary Pipe	SA2025-SA2024A	8	PE	138.8	0.000	0.000	0.0	$15,094	01/01/1976	44	75	30	$6,066	$22,492	1	4	1	4
4936	Sanitary Manhole	SA2026	48	CR		0.000	0.000	0.0	$2,665	01/01/1976	44	75	30	$1,071	$5,428	1	4	2	8
2413	Sanitary Pipe	SA2026-SA2025	8	PE	362.5	118541.733	26083678.834	588.4	$39,419	01/01/1976	44	75	30	$15,842	$58,742	1	4	1	4
4935	Sanitary Manhole	SA2027	48	CR		0.000	0.000	0.0	$2,665	01/01/1976	44	75	30	$1,071	$5,428	1	4	2	8
2412	Sanitary Pipe	SA2027-SA2026	8	PE	388.1	0.000	0.000	0.0	$42,201	01/01/1976	44	75	30	$16,960	$62,888	1	4	3	12
3038	Sanitary Manhole	SA2028	48	CR		118985.749	26083353.270	593.1	$2,665	01/01/1976	44	75	30	$1,071	$5,428	1	4	2	8
2411	Sanitary Pipe	SA2028-SA2027	8	PE	390.1	0.000	0.000	0.0	$42,415	01/01/1976	44	75	30	$17,046	$63,207	1	4	5	20
3037	Sanitary Manhole	SA2029	48	CR		119053.597	26083353.843	593.5	$2,665	01/01/1976	44	75	30	$1,071	$5,428	1	4	2	8
1757	Sanitary Pipe	SA2029-SA2028	8	PE	407.9	118985.749	26083353.270	593.1	$44,355	01/01/1976	44	75	30	$17,826	$66,097	1	4	1	4
3036	Sanitary Manhole	SA2030	48	CR		119060.006	26082975.286	594.7	$2,132	01/01/1976	44	75	30	$856	$4,839	1	4	3	12
1755	Sanitary Pipe	SA2030-SA2029	8	PE	402.1	119053.597	26083353.843	593.5	$40,295	01/01/1976	44	75	30	$16,194	$61,728	1	4	4	16
3035	Sanitary Manhole	SA2031	48	CR		119066.531	26082737.382	595.1	$3,731	01/01/1976	44	75	30	$1,499	$6,414	1	4	2	8
1754	Sanitary Pipe	SA2031-SA2030	8	PE	421.8	119060.006	26082975.286	594.7	$51,704	01/01/1976	44	75	30	$20,779	$74,184	1	4	1	4
4944	Sanitary Manhole	SA2032	48	CR		0.000	0.000	0.0	$2,665	01/01/1976	44	75	30	$1,071	$5,428	1	4	2	8
2421	Sanitary Pipe	SA2032-SA2031	8	PE	375.0	119066.531	26082737.382	595.1	$40,775	01/01/1976	44	75	30	$16,387	$60,763	1	4	1	4
1484	Sanitary Manhole	SA2033	48	CR		119391.120	26083361.925	592.2	$2,665	01/01/1976	44	75	30	$1,071	$5,428	1	4	2	8
6214	Sanitary Pipe	SA2033-SA2032	8	PE	402.4	569543.410	26623071.911	882.9	$43,758	01/01/1976	44	75	30	$17,586	$65,208	1	4	1	4
1485	Sanitary Manhole	SA2034	48	CR		119397.044	26082963.629	592.8	$2,665	01/01/1976	44	75	30	$1,071	$5,428	1	4	2	8
6215	Sanitary Pipe	SA2034-SA2033	8	PE	398.5	569141.044	26623079.624	889.9	$43,334	01/01/1976	44	75	30	$17,415	$64,576	1	4	3	12
1487	Sanitary Manhole	SA2035	48	CR		119404.391	26082638.329	593.6	$2,665	01/01/1976	44	75	30	$1,071	$5,428	1	4	2	8
1526	Sanitary Pipe	SA2035-SA2034	8	PE	394.3	119397.044	26082963.629	592.8	$42,871	01/01/1976	44	75	30	$17,229	$63,885	1	4	3	12
3040	Sanitary Manhole	SA2049	48	CR		119039.260	26083987.908	595.5	$2,665	01/01/1970	50	75	24	$857	$5,428	1	3	2	6
6160	Sanitary Pipe	SA2049-SA2050	10	VCP	151.8	568435.085	26624443.234	888.0	$16,504	01/01/1970	50	50	-1	$0	$24,594	1	3	4	12
3039	Sanitary Manhole	SA2050	48	BR		119044.390	26083740.037	594.6	$2,665	01/01/1970	50	75	24	$857	$5,428	1	3	4	12
6161	Sanitary Pipe	SA2050-SA2051	10	VCP	271.9	568706.947	26624438.965	886.4	$29,564	01/01/1970	50	50	-1	$0	$44,056	1	3	4	12
1439	Sanitary Manhole	SA2051	48	BR		119381.245	26083760.409	601.1	$2,665	01/01/1970	50	75	24	$857	$5,428	1	3	4	12
6168	Sanitary Pipe	SA2051-SA2052A	10	VCP	289.0	0.000	0.000	0.0	$31,422	01/01/1970	50	50	-1	$0	$46,826	1	3	4	12
1426	Sanitary Manhole	SA2052	48	BR		119487.304	26083704.621	601.8	$2,665	01/01/1970	50	75	24	$857	$5,428	1	3	4	12
5529	Sanitary Manhole	SA2052A	48	BR		0.000	0.000	0.0	$2,132	01/01/1970	50	75	24	$686	$4,839	1	3	3	9
6631	Sanitary Pipe	SA2052A-SA2052	10	VCP	267.0	569262.479	26624416.404	867.7	$26,754	01/01/1970	50	50	-1	$0	$40,986	1	3	2	6
6167	Sanitary Pipe	SA2052-SA2053	10	VCP	264.0	569526.248	26624406.035	860.4	$28,702	01/01/1970	50	50	-1	$0	$42,772	1	3	4	12
1427	Sanitary Manhole	SA2053	48	BR		119736.028	26083710.496	601.9	$2,132	01/01/1970	50	75	24	$686	$4,839	1	3	4	12
5558	Sanitary Manhole	SA2053A	48	CR		569492.206	26624470.692	862.4	$2,665	01/01/1970	50	75	24	$857	$5,428	1	3	2	6
6166	Sanitary Pipe	SA2053A-SA2053	10	VCP	73.1	569526.248	26624406.035	860.4	$7,945	01/01/1970	50	50	-1	$0	$11,840	1	3	4	12
6169	Sanitary Pipe	SA2053-SA2054	10	VCP	234.9	569761.082	26624401.135	858.5	$23,536	01/01/1970	50	50	-1	$0	$36,056	1	3	5	15
1434	Sanitary Manhole	SA2054	48	BR		119920.480	26083717.750	602.2	$2,132	01/01/1970	50	75	24	$686	$4,839	1	3	4	12
6172	Sanitary Pipe	SA2054-SA2055	10	VCP	287.5	570048.522	26624395.966	854.5	$28,807	01/01/1970	50	50	-1	$0	$44,130	1	3	4	12
1425	Sanitary Manhole	SA2055	48	BR		119660.726	26083457.194	602.3	$2,132	01/01/1970	50	75	24	$686	$4,839	1	3	4	12
6272	Sanitary Pipe	SA2055-SA2056	10	VCP	44.4	570092.880	26624394.307	853.1	$4,448	01/01/1970	50	50	-1	$0	$6,814	1	3	4	12
6186	Sanitary Pipe	SA2055-SA2056A	10	VCP	97.2	570049.942	26624493.180	854.0	$9,742	01/01/1970	50	50	-1	$0	$14,924	1	2	2	4
1424	Sanitary Manhole	SA2056	48	BR		119817.497	26083232.873	602.5	$2,665	01/01/1970	50	75	24	$857	$5,428	1	3	4	12
5543	Sanitary Manhole	SA2056A	48	CR		570049.942	26624493.180	854.0	$2,132	01/01/1970	50	75	24	$686	$4,839	1	2	3	6
6187	Sanitary Pipe	SA2056A-SA2999	10	VCP	45.1	0.000	0.000	0.0	$4,515	01/01/1970	50	50	-1	$0	$6,917	1	2	4	8
6189	Sanitary Pipe	SA2056-SA2057	10	VCP	352.8	570445.670	26624387.767	841.3	$38,366	01/01/1970	50	50	-1	$0	$57,173	1	3	2	6
1395	Sanitary Manhole	SA2057	48	CR		119988.156	26082990.455	602.6	$2,132	01/01/1970	50	75	24	$686	$4,839	1	3	3	9
6190	Sanitary Pipe	SA2057-SA2058	10	VCP	46.8	570492.474	26624386.238	840.7	$4,692	01/01/1970	50	50	-1	$0	$7,189	1	3	4	12
4619	Sanitary Manhole	SA2058	48	BR		119995.760	26082986.860	602.7	$2,132	01/01/1970	50	75	24	$686	$4,839	1	3	4	12
6630	Sanitary Pipe	SA2058-SA2059	10	VCP	396.5	0.000	0.000	0.0	$39,734	01/01/1970	50	50	-1	$0	$60,870	1	3	5	15
1396	Sanitary Manhole	SA2059				120061.364	26083001.796	602.8	$2,132	01/01/1970	50	75	24	$686	$4,839	1	3	1	3

id	Equipment Description	Asset ID	Capacity or Size	Material	Length	Northing State Plane Ordinate	Easting State Plane Ordinate	Elevation	Original Cost	Year Installed	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R)	Criticality (C)	Probability of Failure (P)	Business Risk (BRE)
6191	Sanitary Pipe	SA2059-SA2060	10	VCP	408.0	0.000	0.000	0.0	$40,883	01/01/1970	50	50	-1	$0	$62,630	1	3	2	6
1397	Sanitary Manhole	SA2060	48	BR		120054.272	26083354.415	603.1	$2,132	01/01/1970	50	75	24	$686	$4,839	1	3	3	9
6629	Sanitary Pipe	SA2060-SA2063	10	VCP	440.0	571736.748	26624360.729	815.8	$44,090	01/01/1970	50	50	-1	$0	$67,542	1	3	3	9
3042	Sanitary Manhole	SA2063	48	BR		119028.559	26084489.125	599.5	$2,132	01/01/1970	50	75	24	$686	$4,839	1	3	4	12
6628	Sanitary Pipe	SA2063-SA2064A	10	VCP	148.3	0.000	0.000	0.0	$14,859	01/01/1970	50	50	-1	$0	$22,763	1	3	4	12
3045	Sanitary Manhole	SA2064	48	BR		118960.067	26084877.251	601.3	$2,132	01/01/1970	50	75	24	$686	$4,839	1	3	3	9
5528	Sanitary Manhole	SA2064A				0.000	0.000	0.0	$2,132	01/01/1970	50	75	24	$686	$4,839	1	3	1	3
6194	Sanitary Pipe	SA2064A-SA2064	10	VCP	150.0	572034.991	26624355.475	815.1	$15,031	01/01/1970	50	50	-1	$0	$23,026	1	3	5	15
6195	Sanitary Pipe	SA2064-SA2065	10	VCP	141.1	572176.057	26624351.661	812.3	$14,141	01/01/1970	50	50	-1	$0	$21,662	1	3	5	15
5527	Sanitary Manhole	SA2065	48	BR		572176.057	26624351.661	812.3	$2,132	01/01/1970	50	75	24	$686	$4,839	1	3	4	12
6627	Sanitary Pipe	SA2065-SA2066A	10	VCP	128.2	0.000	0.000	0.0	$12,845	01/01/1970	50	50	-1	$0	$19,677	1	3	5	15
3053	Sanitary Manhole	SA2066	48	BR		118979.400	26085265.691	600.3	$2,665	01/01/1970	50	75	24	$857	$5,428	1	3	4	12
5481	Sanitary Manhole	SA2066A				0.000	0.000	0.0	$2,132	01/01/1970	50	75	24	$686	$4,839	1	3	1	3
6196	Sanitary Pipe	SA2066A-SA2066	10	VCP	162.0	572466.175	26624345.272	800.8	$16,233	01/01/1970	50	50	-1	$0	$24,868	1	3	5	15
6225	Sanitary Pipe	SA2066-SA2067	10	VCP	166.3	0.000	0.000	0.0	$18,078	01/01/1970	50	50	-1	$0	$26,940	1	3	5	15
5480	Sanitary Manhole	SA2067				0.000	0.000	0.0	$2,132	01/01/1970	50	75	24	$686	$4,839	1	3	1	3
6626	Sanitary Pipe	SA2067-SA2068	10	VCP	219.0	0.000	0.000	0.0	$21,945	01/01/1970	50	50	-1	$0	$33,617	1	3	5	15
3043	Sanitary Manhole	SA2068	48	BR		119006.377	26084650.467	601.3	$2,132	01/01/1970	50	75	24	$686	$4,839	1	3	3	9
5785	Sanitary Pipe	SA2068-SA2069	10	VCP	392.0	0.000	0.000	0.0	$39,280	01/01/1970	50	50	-1	$0	$60,174	1	3	2	6
3044	Sanitary Manhole	SA2069	48	BR		119025.353	26084577.220	600.4	$2,132	01/01/1970	50	75	24	$686	$4,839	1	3	3	9
6224	Sanitary Pipe	SA2069-SA0146	10	VCP	377.0	573620.206	26624322.204	788.5	$37,777	01/01/1970	50	50	-1	$0	$57,871	1	3	3	9
5549	Sanitary Manhole	SA2999	48	BR		0.000	0.000	0.0	$2,132	01/01/1970	50	75	24	$686	$4,839	1	2	3	6
6188	Sanitary Pipe	SA2999-SA2056	10	VCP	97.6	570092.880	26624394.307	853.1	$9,779	01/01/1970	50	50	-1	$0	$14,981	1	2	2	4
5545	Sanitary Manhole	SA-PRISON1	48	BR		0.000	0.000	0.0	$2,132	01/01/1970	50	75	24	$686	$4,839	1	3	3	9
6165	Sanitary Pipe	SA-PRISON1-SA2049	10	VCP	150.3	568335.996	26624328.256	892.2	$15,060	01/01/1970	50	50	-1	$0	$23,071	1	3	4	12
5546	Sanitary Manhole	SA-PRISON2	48	BR		0.000	0.000	0.0	$2,132	01/01/1970	50	75	24	$686	$4,839	1	3	3	9
6164	Sanitary Pipe	SA-PRISON2-SA-PRISON1			285.7	0.000	0.000	0.0	$28,928	01/01/1970	50	50	-1	$0	$44,154	1	3	5	15
5502	Sanitary Manhole	TWP1	48	BR		578817.429	26622895.900	747.4	$533	01/01/1900	120	75	-46	$0	$4,839	1	5	3	15
5972	Sanitary Pipe	TWP1-TWP6	30	RCP	593.1	579410.379	26622881.171	742.8	$68,919	01/01/1950	70	50	-21	$0	$135,308	1	5	5	25
5503	Sanitary Manhole	TWP2	48	BR		582084.482	26622821.819	726.4	$1,066	01/01/1950	70	75	4	$58	$4,839	1	5	4	20
5975	Sanitary Pipe	TWP2-TWP3	30	RCP	112.6	582191.494	26622856.972	725.4	$13,088	01/01/1950	70	50	-21	$0	$25,695	1	5	3	15
5504	Sanitary Manhole	TWP3	48	BR		582191.494	26622856.972	725.4	$1,066	01/01/1950	70	75	4	$58	$4,839	1	5	4	20
5869	Sanitary Pipe	TWP3-WWTP	30	RCP	724.1	0.000	0.000	719.6	$84,137	01/01/1950	70	50	-21	$0	$165,186	1	5	5	25
5505	Sanitary Manhole	TWP4	48	BR		577903.763	26622913.164	752.9	$1,066	01/01/1900	120	75	-46	$0	$5,428	1	5	3	15
5971	Sanitary Pipe	TWP4-TWP1	30	RCP	913.8	578817.429	26622895.900	747.4	$108,130	01/01/1950	70	50	-21	$0	$210,415	1	5	5	25
5506	Sanitary Manhole	TWP5	48	BR		577581.154	26622919.246	755.5	$1,066	01/01/1900	120	75	-46	$0	$5,428	1	5	3	15
5970	Sanitary Pipe	TWP5-TWP4	30	RCP	322.7	577903.763	26622913.164	752.9	$38,180	01/01/1950	70	50	-21	$0	$74,296	1	5	5	25
5507	Sanitary Manhole	TWP6	48	BR		579410.379	26622881.171	742.8	$1,066	01/01/1950	70	75	4	$58	$4,839	1	5	3	15
5973	Sanitary Pipe	TWP6-TWP7	30	RCP	1175.1	580585.153	26622855.141	737.4	$136,535	01/01/1950	70	50	-21	$0	$268,060	1	5	4	20
5508	Sanitary Manhole	TWP7	48	BR		580585.153	26622855.141	737.4	$533	01/01/1900	120	75	-46	$0	$4,839	1	5	3	15
5974	Sanitary Pipe	TWP7-TWP2	30	RCP	1499.7	582084.482	26622821.819	726.4	$174,256	01/01/1950	70	50	-21	$0	$342,117	1	5	4	20
5813	Sanitary Pipe	UNK_E0112-SA0112	12	RCP	4.9	573945.853	26622967.810	791.3	$388	01/01/1950	70	50	-21	$0	$751	1	1	5	5
5862	Sanitary Pipe	UNK_E0147B-SA0147B	4	PVC	45.1	573816.488	26623212.532	791.1	$4,521	01/01/1970	50	75	24	$1,455	$6,926	1	1	3	3
5762	Sanitary Pipe	UNK_E0159-SA0159	6	VCP	41.2	576302.240	26623150.455	776.5	$2,814	01/01/1880	140	50	-91	$0	$6,331	1	1	5	5
6061	Sanitary Pipe	UNK_E0181-SA0181	10	PVC	79.2	576258.330	26624919.472	767.3	$7,936	01/01/1970	50	75	24	$2,554	$12,158	1	2	3	6
5849	Sanitary Pipe	UNK_E0225-SA0225	10	VCP	33.6	576205.909	26621791.022	785.5	$2,291	01/01/1900	120	50	-71	$0	$5,155	1	3	5	15
6233	Sanitary Pipe	UNK_E0228-SA0228	6	VCP	47.7	576047.062	26621295.344	784.9	$3,256	01/01/1900	120	50	-71	$0	$7,326	1	1	5	5
5847	Sanitary Pipe	UNK_E0240A-SA0240A	6	VCP	35.7	576364.513	26621290.026	777.0	$2,438	01/01/1900	120	50	-71	$0	$5,486	1	1	5	5
5836	Sanitary Pipe	UNK_E0250-SA0250	6	VCP	39.7	575622.137	26622577.936	784.2	$2,708	01/01/1900	120	50	-71	$0	$6,093	1	1	5	5
6242	Sanitary Pipe	UNK_E0271-SA0271	8	VCP	87.2	574288.664	26621170.074	795.6	$8,739	01/01/1970	50	50	-1	$0	$13,388	1	2	4	8
6152	Sanitary Pipe	UNK_E2009-SA2009	4	PVC	86.6	569503.202	26623147.649	882.7	$8,674	01/01/1976	44	75	30	$3,486	$13,287	1	1	3	3
6153	Sanitary Pipe	UNK_E2011-SA2011	8	PE	91.4	570303.598	26623127.895	852.3	$9,155	01/01/1976	44	75	30	$3,679	$14,024	1	2	3	6
6268	Sanitary Pipe	UNK_E2019-SA2019	6	PVC	64.1	573241.164	26623054.280	796.6	$6,422	01/01/1976	44	75	30	$2,580	$9,838	1	1	3	3
6578	Sanitary Pipe	UNK_E2053A-SA2053A	10	VCP	30.5	569492.206	26624470.692	862.4	$3,057	01/01/1970	50	50	-1	$0	$4,683	1	2	4	8
6276	Sanitary Pipe	UNK_E2065-SA2065	4	VCP	36.2	572176.057	26624351.661	812.3	$3,630	01/01/1970	50	50	-1	$0	$5,561	1	1	4	4
6266	Sanitary Pipe	UNK_ETWP1-TWP1	8	VCP	56.7	578817.429	26622895.900	747.4	$3,871	01/01/1900	120	50	-71	$0	$8,709	1	2	5	10
5867	Sanitary Pipe	UNK_ETWP4-TWP4	12	CMP	39.1	577903.763	26622913.164	752.9	$3,127	01/01/1950	70	25	-46	$0	$6,045	1	2	5	10
5865	Sanitary Pipe	UNK_ETWP5-TWP5	6	RCP	39.1	577581.154	26622919.246	755.5	$3,085	01/01/1950	70	50	-21	$0	$6,003	1	1	5	5
6267	Sanitary Pipe	UNK_ETWP7-TWP7	8	VCP	56.5	580585.153	26622855.141	737.4	$3,853	01/01/1900	120	50	-71	$0	$8,670	1	2	5	10
5815	Sanitary Pipe	UNK_N0119-SA0119	6	PVC	41.1	573543.901	26620927.504	808.2	$4,120	01/01/1970	50	75	24	$1,326	$6,311	1	1	3	3
5764	Sanitary Pipe	UNK_N0127A-SA0127A	4	VCP	32.4	577134.378	26623558.124	766.7	$2,207	01/01/1930	90	50	-41	$0	$4,966	1	1	5	5
6247	Sanitary Pipe	UNK_N0131-SA0131	4	PVC	54.1	576820.815	26624238.258	765.6	$5,418	01/01/1970	50	75	24	$1,743	$8,300	1	1	3	3
6073	Sanitary Pipe	UNK_N0147C-SA0147C	6	VCP	33.4	573611.241	26623421.493	792.0	$3,343	01/01/1970	50	50	-1	$0	$5,122	1	1	4	4
5790	Sanitary Pipe	UNK_N0170A-SA0170A	4	PVC	30.3	575969.677	26623340.767	774.6	$3,038	01/01/1970	50	75	24	$977	$4,654	1	1	3	3
6260	Sanitary Pipe	UNK_N0173-SA0173	6	VCP	44.4	575815.260	26623156.610	776.9	$3,026	01/01/1880	140	50	-91	$0	$6,809	1	1	5	5
5792	Sanitary Pipe	UNK_N0176A-SA0176A	4	PVC	142.9	575239.268	26623349.859	782.0	$14,316	01/01/1970	50	75	24	$4,607	$21,931	1	1	3	3
6255	Sanitary Pipe	UNK_N0177-SA0177	4	PVC	34.2	575081.319	26623164.223	784.8	$3,426	01/01/1970	50	75	24	$1,102	$5,249	1	1	3	3
5774	Sanitary Pipe	UNK_N0198A-SA0198A	4	PVC	41.5	574155.367	26625289.317	784.4	$4,161	01/01/1970	50	75	24	$1,339	$6,374	1	1	3	3
6076	Sanitary Pipe	UNK_N0199A-SA0199A	4	PVC	58.5	573823.446	26625307.215	783.3	$5,862	01/01/1970	50	75	24	$1,886	$8,980	1	1	3	3
5777	Sanitary Pipe	UNK_N0212-SA0212	4	PVC	37.4	574131.611	26624374.726	785.0	$3,747	01/01/1970	50	75	24	$1,206	$5,740	1	1	3	3
6066	Sanitary Pipe	UNK_N0225-SA0225	6	VCP	25.4	576205.909	26621791.022	785.5	$1,733	01/01/1900	120	50	-71	$0	$3,899	1	1	5	5
5859	Sanitary Pipe	UNK_N0234-SA0234	6	VCP	38.7	575629.345	26620973.999	786.1	$2,641	01/01/1900	120	50	-71	$0	$5,943	1	1	5	5
6245	Sanitary Pipe	UNK_N0249-SA0249	6	VCP	31.2	575777.348	26621609.640	789.7	$2,127	01/01/1900	120	50	-71	$0	$4,787	1	1	5	5
6575	Sanitary Pipe	UNK_N0261A-SA0261A	12	VCP	32.2	574717.643	26622714.366	788.4	$2,571	01/01/1950	70	50	-21	$0	$4,972	1	3	4	12

id	Equipment Description	Asset ID	Capacity or Size	Material	Length	Northing State Plane Ordinate	Easting State Plane Ordinate	Elevation	Original Cost	Year Installed	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R)	Criticality (C)	Probability of Failure (P)	Business Risk (BRE)
5817	Sanitary Pipe	UNK_N0278-SA0278	6	PVC	43.2	573928.082	26621285.723	799.1	$4,332	01/01/1970	50	75	24	$1,394	$6,637	1	1	3	3
6274	Sanitary Pipe	UNK_N2057-SA2057	10	VCP	20.7	570445.670	26624387.767	841.3	$2,073	01/01/1970	50	50	-1	$0	$3,176	1	2	4	8
5754	Sanitary Pipe	UNK_NE0156-SA0156	6	VCP	39.9	577009.187	26623331.154	768.8	$2,719	01/01/1880	140	50	-91	$0	$6,117	1	1	5	5
6258	Sanitary Pipe	UNK_NE0176-SA0176	6	VCP	37.0	575085.732	26623369.189	783.3	$2,919	01/01/1950	70	50	-21	$0	$5,680	1	1	4	4
6343	Sanitary Pipe	UNK_NE0237A-SA0237A	6	RCP	11.0	576991.093	26622759.594	764.3	$751	01/01/1880	140	50	-91	$0	$1,689	1	1	5	5
5820	Sanitary Pipe	UNK_NE0270-SA0270	4	VCP	48.3	574306.267	26621675.969	796.5	$4,844	01/01/1970	50	50	-1	$0	$7,420	1	1	4	4
6072	Sanitary Pipe	UNK_NW0106-SA0106	12	VCP	8.2	575449.045	26622971.888	783.3	$568	01/01/1900	120	50	-71	$0	$1,266	1	2	5	10
5959	Sanitary Pipe	UNK_NW0125-SA0125	6	PVC	30.0	577183.290	26623106.012	760.2	$3,001	01/01/1970	50	75	24	$965	$4,598	1	1	3	3
6075	Sanitary Pipe	UNK_NW0134-SA0134	18	VCP	12.0	576216.033	26624254.026	770.5	$1,013	01/01/1930	90	50	-41	$0	$2,039	1	2	5	10
6064	Sanitary Pipe	UNK_NW0137-SA0137	6	VCP	42.4	575458.815	26624274.065	776.3	$2,891	01/01/1930	90	50	-41	$0	$6,505	1	1	5	5
5781	Sanitary Pipe	UNK_NW0138-SA0138	6	VCP	44.4	575492.050	26623938.142	778.2	$3,031	01/01/1930	90	50	-41	$0	$6,820	1	1	5	5
5788	Sanitary Pipe	UNK_NW0148-SA0148	6	VCP	38.4	575867.214	26623774.540	774.2	$2,623	01/01/1900	120	50	-71	$0	$5,902	1	1	5	5
5783	Sanitary Pipe	UNK_NW0150-SA0150	6	VCP	60.6	575465.877	26623781.373	778.4	$4,138	01/01/1900	120	50	-71	$0	$9,310	1	1	5	5
5798	Sanitary Pipe	UNK_NW0151-SA0151	6	VCP	58.5	575094.760	26623787.722	781.6	$4,618	01/01/1950	70	50	-21	$0	$8,986	1	1	4	4
5801	Sanitary Pipe	UNK_NW0152-SA0152	6	VCP	60.4	574725.391	26623793.683	785.8	$4,762	01/01/1950	70	50	-21	$0	$9,267	1	1	4	4
5803	Sanitary Pipe	UNK_NW0153-SA0153	6	VCP	58.4	574364.985	26623799.979	786.3	$4,607	01/01/1950	70	50	-21	$0	$8,966	1	1	4	4
6079	Sanitary Pipe	UNK_NW0154-SA0154	6	VCP	40.2	574349.765	26623378.251	787.3	$3,169	01/01/1950	70	50	-21	$0	$6,166	1	1	4	4
5767	Sanitary Pipe	UNK_NW0162-SA0162	4		26.5	0.000	0.000	0.0	$1,809	01/01/1930	90	50	-41	$0	$4,070	1	1	5	5
6257	Sanitary Pipe	UNK_NW0177-SA0177	6	VCP	33.9	575081.319	26623164.223	784.8	$2,675	01/01/1950	70	50	-21	$0	$5,205	1	1	4	4
6250	Sanitary Pipe	UNK_NW0206-SA0206	4	VCP	32.0	574555.133	26624475.635	784.4	$2,181	01/01/1930	90	50	-41	$0	$4,908	1	1	5	5
5846	Sanitary Pipe	UNK_NW0222-SA0222	6	VCP	37.2	576581.445	26621289.119	777.0	$2,540	01/01/1900	120	50	-71	$0	$5,716	1	1	5	5
6637	Sanitary Pipe	UNK_NW0234A-SA0234A	6	VCP	11.9	575619.536	26620572.877	784.7	$810	01/01/1900	120	50	-71	$0	$1,822	1	1	5	5
5805	Sanitary Pipe	UNK_NW0235-SA0235	6	VCP	37.6	576973.457	26622126.490	765.6	$2,567	01/01/1900	120	50	-71	$0	$5,776	1	1	5	5
5843	Sanitary Pipe	UNK_NW0244-SA0244	6	VCP	31.4	576208.215	26621873.823	785.4	$2,140	01/01/1900	120	50	-71	$0	$4,814	1	1	5	5
5829	Sanitary Pipe	UNK_NW0247-SA0247	10	VCP	28.3	575790.706	26622152.580	785.3	$1,931	01/01/1900	120	50	-71	$0	$4,345	1	2	5	10
5831	Sanitary Pipe	UNK_NW0248-SA0248	6	VCP	44.0	575781.634	26621849.434	788.5	$3,001	01/01/1900	120	50	-71	$0	$6,752	1	1	5	5
6068	Sanitary Pipe	UNK_NW0254-SA0254	6	PVC	43.6	575234.641	26621679.495	792.6	$4,365	01/01/1970	50	75	24	$1,404	$6,687	1	1	3	3
5842	Sanitary Pipe	UNK_NW0255-SA0255	6	VCP	46.7	575221.891	26621141.748	790.3	$3,683	01/01/1950	70	50	-21	$0	$7,167	1	1	4	4
6238	Sanitary Pipe	UNK_NW0259-SA0259	6	VCP	43.9	575044.029	26622150.639	789.0	$3,461	01/01/1950	70	50	-21	$0	$6,735	1	1	4	4
6142	Sanitary Pipe	UNK_NW2005-SA2005	6	PVC	124.2	568356.201	26623889.584	895.5	$12,444	01/01/1976	44	75	30	$5,001	$19,063	1	1	3	3
6145	Sanitary Pipe	UNK_NW2007-SA2007	4	PVC	75.1	568732.733	26623315.997	890.5	$7,524	01/01/1976	44	75	30	$3,023	$11,527	1	1	3	3
6163	Sanitary Pipe	UNK_NW2050-SA2050	4	PVC	81.5	568435.085	26624443.234	888.0	$8,170	01/01/1970	50	75	24	$2,629	$12,516	1	1	3	3
6269	Sanitary Pipe	UNK_NW2051-SA2051	4	PE	62.1	568706.947	26624438.965	886.4	$6,226	01/01/1970	50	75	24	$2,003	$9,538	1	1	3	3
6171	Sanitary Pipe	UNK_NW2054-SA2054	4	VCP	42.9	569761.082	26624401.135	858.5	$4,301	01/01/1970	50	50	-1	$0	$6,588	1	1	4	4
6634	Sanitary Pipe	UNK_NW2060-SA2060	4	PE	14.7	0.000	0.000	0.0	$1,475	01/01/1970	50	75	24	$474	$2,260	1	1	3	3
5868	Sanitary Pipe	UNK_NWTWP6-TWP6	6		43.5	579410.379	26622881.171	742.8	$3,433	01/01/1950	70	50	-21	$0	$6,681	1	1	5	5
6062	Sanitary Pipe	UNK_S0101-SA0101	6	PE	50.6	577208.976	26622924.609	759.0	$5,074	01/01/1970	50	75	24	$1,633	$7,773	1	1	3	3
5811	Sanitary Pipe	UNK_S0106-SA0106	12	VCP	14.2	575449.045	26622971.888	783.3	$981	01/01/1900	120	50	-71	$0	$2,188	1	2	5	10
5814	Sanitary Pipe	UNK_S0114-SA0114	6	PVC	45.7	573602.787	26622626.468	795.1	$4,576	01/01/1970	50	75	24	$1,472	$7,010	1	1	3	3
5816	Sanitary Pipe	UNK_S0119-SA0119	6	PVC	38.1	573543.901	26620927.504	808.2	$3,816	01/01/1970	50	75	24	$1,228	$5,846	1	1	3	3
5864	Sanitary Pipe	UNK_S0124-SA0124	10	PVC	55.8	573587.902	26623056.655	794.3	$5,587	01/01/1970	50	75	24	$1,798	$8,558	1	2	3	6
6253	Sanitary Pipe	UNK_S0154-SA0154	4	PVC	68.9	574349.765	26623378.251	787.3	$6,907	01/01/1970	50	75	24	$2,223	$10,581	1	1	3	3
6252	Sanitary Pipe	UNK_S0155-SA0155	6	VCP	54.1	574342.849	26623178.172	788.1	$4,271	01/01/1950	70	50	-21	$0	$8,312	1	1	4	4
5960	Sanitary Pipe	UNK_S0157-SA0157	12	RCP	35.8	577002.619	26623142.175	766.5	$2,482	01/01/1880	140	50	-91	$0	$5,537	1	2	5	10
5761	Sanitary Pipe	UNK_S0158-SA0158	6	VCP	40.1	576628.047	26623144.751	772.3	$2,735	01/01/1880	140	50	-91	$0	$6,153	1	1	5	5
5763	Sanitary Pipe	UNK_S0159-SA0159	6	VCP	29.9	576302.240	26623150.455	776.5	$2,042	01/01/1880	140	50	-91	$0	$4,596	1	1	5	5
5769	Sanitary Pipe	UNK_S0162-SA0162	4		36.7	0.000	0.000	0.0	$2,506	01/01/1930	90	50	-41	$0	$5,638	1	1	5	5
6256	Sanitary Pipe	UNK_S0177-SA0177	6	VCP	41.8	575081.319	26623164.223	784.8	$3,295	01/01/1950	70	50	-21	$0	$6,412	1	1	4	4
5775	Sanitary Pipe	UNK_S0198A-SA0198A	6	RCP	35.4	574155.367	26625289.317	784.4	$3,545	01/01/1970	50	50	-1	$0	$5,431	1	1	5	5
6246	Sanitary Pipe	UNK_S0199-SA0199	4	PVC	86.1	573833.881	26625605.079	784.0	$8,630	01/01/1970	50	75	24	$2,777	$13,221	1	1	3	3
6251	Sanitary Pipe	UNK_S0203-SA0203	6	VCP	61.3	574770.712	26624651.773	783.0	$4,184	01/01/1930	90	50	-41	$0	$9,415	1	1	5	5
5776	Sanitary Pipe	UNK_S0212-SA0212	4	PE	34.3	574131.611	26624374.726	785.0	$3,434	01/01/1970	50	75	24	$1,105	$5,261	1	1	3	3
6227	Sanitary Pipe	UNK_S0213-SA0213	6	VCP	25.1	577228.437	26622739.164	757.0	$1,712	01/01/1880	140	50	-91	$0	$3,852	1	1	5	5
6641	Sanitary Pipe	UNK_S0214A-SA0214A	6	VCP	7.5	0.000	0.000	0.0	$513	01/01/1880	140	50	-91	$0	$1,154	1	1	5	5
5806	Sanitary Pipe	UNK_S0216-SA0216	10	RCP	203.7	577256.757	26622119.661	756.6	$16,072	01/01/1950	70	50	-21	$0	$31,276	1	2	5	10
5850	Sanitary Pipe	UNK_S0225-SA0225	6	PVC	30.6	576205.909	26621791.022	785.5	$3,070	01/01/1970	50	75	24	$988	$4,703	1	1	3	3
5851	Sanitary Pipe	UNK_S0227-SA0227	6	VCP	36.1	575821.907	26621126.590	784.4	$2,462	01/01/1900	120	50	-71	$0	$5,540	1	1	5	5
5856	Sanitary Pipe	UNK_S0228-SA0228	10	VCP	49.9	576047.062	26621295.344	784.9	$3,404	01/01/1900	120	50	-71	$0	$7,659	1	3	5	15
5860	Sanitary Pipe	UNK_S0234-SA0234	6	VCP	34.8	575629.345	26620973.999	786.1	$2,376	01/01/1900	120	50	-71	$0	$5,346	1	1	5	5
6344	Sanitary Pipe	UNK_S0237A-SA0237A	4	RCP	13.6	576991.093	26622759.594	764.3	$927	01/01/1880	140	50	-91	$0	$2,086	1	1	5	5
5809	Sanitary Pipe	UNK_S0237-SA0237	8	PVC	47.4	576971.210	26622759.582	765.4	$4,748	01/01/1970	50	75	24	$1,528	$7,274	1	2	3	6
6228	Sanitary Pipe	UNK_S0239-SA0239	12	RCP	199.6	576613.974	26622562.864	777.2	$13,831	01/01/1880	140	50	-91	$0	$30,854	1	2	5	10
6230	Sanitary Pipe	UNK_S0240-SA0240	4	VCP	48.1	576574.904	26622133.826	781.1	$3,279	01/01/1900	120	50	-71	$0	$7,377	1	1	5	5
6067	Sanitary Pipe	UNK_S0242-SA0242	6	VCP	61.7	576228.027	26622567.574	781.0	$4,207	01/01/1880	140	50	-91	$0	$9,467	1	1	5	5
6235	Sanitary Pipe	UNK_S0245-SA0245	12	VCP	29.5	575809.254	26622939.323	780.6	$2,041	01/01/1880	140	50	-91	$0	$4,553	1	2	5	10
5835	Sanitary Pipe	UNK_S0249A-SA0249A	12	RCP	35.8	575780.041	26621507.004	787.9	$2,483	01/01/1900	120	50	-71	$0	$5,538	1	2	5	10
5832	Sanitary Pipe	UNK_S0249-SA0249	6	VCP	35.8	575777.348	26621609.640	789.7	$2,444	01/01/1900	120	50	-71	$0	$5,500	1	1	5	5
5838	Sanitary Pipe	UNK_S0250-SA0250	6	VCP	38.7	575622.137	26622577.936	784.2	$2,638	01/01/1900	120	50	-71	$0	$5,936	1	1	5	5
6077	Sanitary Pipe	UNK_S0253-SA0253	10	RCP	166.7	575246.323	26622147.566	787.8	$13,154	01/01/1950	70	50	-21	$0	$25,596	1	2	5	10
6241	Sanitary Pipe	UNK_S0264-SA0264	6	VCP	45.2	574692.455	26621739.558	793.9	$4,527	01/01/1970	50	50	-1	$0	$6,936	1	1	4	4
6239	Sanitary Pipe	UNK_S0266-SA0266	6	VCP	29.6	574641.162	26621118.479	794.3	$2,962	01/01/1970	50	50	-1	$0	$4,537	1	1	4	4
5834	Sanitary Pipe	UNK_S0267-SA0267	4	PVC	20.3	574623.047	26620486.874	793.2	$2,036	01/01/1970	50	75	24	$655	$3,119	1	1	3	3
5822	Sanitary Pipe	UNK_S0272-SA0272	6	VCP	51.5	574272.653	26620694.751	795.5	$5,158	01/01/1970	50	50	-1	$0	$7,901	1	1	4	4
5824	Sanitary Pipe	UNK_S0278A-SA0278A	6	PVC	38.9	573920.848	26621081.233	799.4	$3,895	01/01/1970	50	75	24	$1,253	$5,967	1	1	3	3

id	Equipment Description	Asset ID	Capacity or Size	Material	Length	Northing State Plane Ordinate	Easting State Plane Ordinate	Elevation	Original Cost	Year Installed	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R)	Criticality (C)	Probability of Failure (P)	Business Risk (BRE)
6146	Sanitary Pipe	UNK_S2007-SA2007	6	PVC	83.1	568732.733	26623315.997	890.5	$8,327	01/01/1976	44	75	30	$3,346	$12,756	1	1	3	3
6271	Sanitary Pipe	UNK_S2052-SA2052	4	PVC	88.1	569262.479	26624416.404	867.7	$8,833	01/01/1970	50	75	24	$2,843	$13,531	1	1	3	3
6273	Sanitary Pipe	UNK_S2056-SA2056	4	VCP	27.9	570092.880	26624394.307	853.1	$2,791	01/01/1970	50	50	-1	$0	$4,276	1	1	4	4
5810	Sanitary Pipe	UNK_SE0106-SA0106	12	VCP	11.6	575449.045	26622971.888	783.3	$804	01/01/1900	120	50	-71	$0	$1,795	1	2	5	10
5782	Sanitary Pipe	UNK_SE0138-SA0138	4	VCP	44.5	575492.050	26623938.142	778.2	$3,033	01/01/1930	90	50	-41	$0	$6,825	1	1	5	5
5799	Sanitary Pipe	UNK_SE0152-SA0152	6	VCP	52.6	574725.391	26623793.683	785.8	$4,147	01/01/1950	70	50	-21	$0	$8,070	1	1	4	4
5802	Sanitary Pipe	UNK_SE0153-SA0153	10	VCP	61.2	574364.985	26623799.979	786.3	$4,830	01/01/1950	70	50	-21	$0	$9,398	1	2	4	8
5755	Sanitary Pipe	UNK_SE0156-SA0156	6	VCP	45.9	577009.187	26623331.154	768.8	$3,134	01/01/1880	140	50	-91	$0	$7,050	1	1	5	5
5794	Sanitary Pipe	UNK_SE0174-SA0174	6	VCP	38.3	575459.785	26623360.423	781.2	$2,611	01/01/1900	120	50	-71	$0	$5,874	1	1	5	5
5793	Sanitary Pipe	UNK_SE0176-SA0176	6	VCP	49.7	575085.732	26623369.189	783.3	$3,918	01/01/1950	70	50	-21	$0	$7,624	1	1	4	4
5772	Sanitary Pipe	UNK_SE0184-SA0184	12	VCP	55.6	575127.915	26624947.373	775.4	$3,855	01/01/1930	90	50	-41	$0	$8,600	1	1	5	5
5778	Sanitary Pipe	UNK_SE0185-SA0185	6	VCP	33.3	574779.508	26624957.290	782.6	$2,275	01/01/1930	90	50	-41	$0	$5,119	1	1	5	5
5853	Sanitary Pipe	UNK_SE0230-SA0230	10	VCP	41.5	575780.246	26621303.808	786.2	$2,828	01/01/1900	120	50	-71	$0	$6,364	1	2	5	10
5858	Sanitary Pipe	UNK_SE0231-SA0231	6	VCP	29.5	575598.783	26621317.933	792.8	$2,013	01/01/1900	120	50	-71	$0	$4,529	1	1	5	5
6638	Sanitary Pipe	UNK_SE0234A-SA0234A	4	PVC	12.4	575619.536	26620572.877	784.7	$1,372	01/01/1980	40	75	34	$624	$1,900	1	1	3	3
6229	Sanitary Pipe	UNK_SE0239-SA0239	6	RCP	52.5	576613.974	26622562.864	777.2	$3,581	01/01/1880	140	50	-91	$0	$8,058	1	1	5	5
6231	Sanitary Pipe	UNK_SE0240-SA0240	4	VCP	49.8	576574.904	26622133.826	781.1	$3,399	01/01/1900	120	50	-71	$0	$7,647	1	1	5	5
5837	Sanitary Pipe	UNK_SE0250-SA0250	6	VCP	39.9	575622.137	26622577.936	784.2	$2,725	01/01/1900	120	50	-71	$0	$6,131	1	1	5	5
6340	Sanitary Pipe	UNK_SE0264A-SA0264A	6	VCP	39.1	574681.109	26621306.865	795.0	$3,922	01/01/1970	50	50	-1	$0	$6,008	1	1	4	4
5818	Sanitary Pipe	UNK_SE0268-SA0268	12	VCP	56.4	574321.245	26622599.701	789.1	$4,512	01/01/1950	70	50	-21	$0	$8,723	1	1	4	4
6265	Sanitary Pipe	UNK_SETWP4-TWP4	6	VCP	39.4	577903.763	26622913.164	752.9	$2,691	01/01/1900	120	50	-71	$0	$6,055	1	1	5	5
6071	Sanitary Pipe	UNK_SW0106-SA0106	12	VCP	14.5	575449.045	26622971.888	783.3	$1,002	01/01/1900	120	50	-71	$0	$2,235	1	2	5	10
5797	Sanitary Pipe	UNK_SW0151-SA0151	6	VCP	59.7	575094.760	26623787.722	781.6	$4,707	01/01/1950	70	50	-21	$0	$9,160	1	1	4	4
5800	Sanitary Pipe	UNK_SW0152-SA0152	6	VCP	54.3	574725.391	26623793.683	785.8	$4,280	01/01/1950	70	50	-21	$0	$8,328	1	1	4	4
5756	Sanitary Pipe	UNK_SW0156-SA0156	6	VCP	42.4	577009.187	26623331.154	768.8	$2,893	01/01/1880	140	50	-91	$0	$6,509	1	1	5	5
5758	Sanitary Pipe	UNK_SW0157-SA0157	6	VCP	41.3	577002.619	26623142.175	766.5	$2,819	01/01/1880	140	50	-91	$0	$6,342	1	1	5	5
5768	Sanitary Pipe	UNK_SW0162-SA0162	4		46.8	0.000	0.000	0.0	$3,195	01/01/1930	90	50	-41	$0	$7,188	1	1	5	5
6263	Sanitary Pipe	UNK_SW0163-SA0163	6	VCP	38.2	576619.241	26623995.314	768.2	$2,607	01/01/1930	90	50	-41	$0	$5,865	1	1	5	5
6262	Sanitary Pipe	UNK_SW0165-SA0165	6	VCP	35.0	576605.198	26623405.010	771.7	$2,390	01/01/1880	140	50	-91	$0	$5,378	1	1	5	5
5789	Sanitary Pipe	UNK_SW0173-SA0173	6	VCP	48.8	575815.260	26623156.610	776.9	$3,330	01/01/1880	140	50	-91	$0	$7,492	1	1	5	5
6259	Sanitary Pipe	UNK_SW0174-SA0174	6	VCP	41.3	575459.785	26623360.423	781.2	$2,817	01/01/1900	120	50	-71	$0	$6,339	1	1	5	5
6254	Sanitary Pipe	UNK_SW0178-SA0178	6	VCP	35.6	574716.675	26623372.502	787.9	$2,809	01/01/1950	70	50	-21	$0	$5,467	1	1	4	4
6060	Sanitary Pipe	UNK_SW0185-SA0185	6	VCP	36.4	574779.508	26624957.290	782.6	$2,482	01/01/1930	90	50	-41	$0	$5,584	1	1	5	5
5870	Sanitary Pipe	UNK_SW0188-SA0188	4	PVC	33.3	575848.401	26624339.475	770.9	$3,335	01/01/1970	50	75	24	$1,073	$5,109	1	1	3	3
6226	Sanitary Pipe	UNK_SW0216-SA0216	6	VCP	36.4	577256.757	26622119.661	756.6	$2,480	01/01/1900	120	50	-71	$0	$5,580	1	1	5	5
5852	Sanitary Pipe	UNK_SW0227-SA0227	6	VCP	36.1	575821.907	26621126.590	784.4	$2,460	01/01/1900	120	50	-71	$0	$5,534	1	1	5	5
5854	Sanitary Pipe	UNK_SW0230-SA0230	6	VCP	46.2	575780.246	26621303.808	786.2	$3,154	01/01/1900	120	50	-71	$0	$7,096	1	1	5	5
5857	Sanitary Pipe	UNK_SW0231-SA0231	4	PVC	28.7	575598.783	26621317.933	792.8	$2,873	01/01/1970	50	75	24	$924	$4,402	1	1	3	3
5807	Sanitary Pipe	UNK_SW0236-SA0236	12	RCP	49.0	576985.332	26622566.543	765.1	$3,398	01/01/1880	140	50	-91	$0	$7,579	1	1	5	5
5844	Sanitary Pipe	UNK_SW0244-SA0244	6	VCP	32.4	576208.215	26621873.823	785.4	$2,210	01/01/1900	120	50	-71	$0	$4,973	1	1	5	5
5828	Sanitary Pipe	UNK_SW0247-SA0247	12	RCP	28.0	575790.706	26622152.580	785.3	$1,943	01/01/1900	120	50	-71	$0	$4,335	1	1	5	5
5830	Sanitary Pipe	UNK_SW0248-SA0248	8	VCP	54.2	575781.634	26621849.434	788.5	$3,699	01/01/1900	120	50	-71	$0	$8,324	1	2	5	10
5839	Sanitary Pipe	UNK_SW0250-SA0250	6	VCP	35.3	575622.137	26622577.936	784.2	$2,408	01/01/1900	120	50	-71	$0	$5,418	1	1	5	5
6237	Sanitary Pipe	UNK_SW0260-SA0260	6	VCP	46.1	575038.167	26621804.680	791.6	$3,635	01/01/1950	70	50	-21	$0	$7,073	1	1	4	4
6339	Sanitary Pipe	UNK_SW0264A-SA0264A	6	VCP	35.2	574681.109	26621306.865	795.0	$3,525	01/01/1970	50	50	-1	$0	$5,399	1	1	4	4
6162	Sanitary Pipe	UNK_SW2050-SA2050	4	PVC	87.8	568435.085	26624443.234	888.0	$8,801	01/01/1970	50	75	24	$2,832	$13,482	1	1	3	3
6270	Sanitary Pipe	UNK_SW2051-SA2051	4	VCP	53.2	568706.947	26624438.965	886.4	$5,329	01/01/1970	50	50	-1	$0	$8,163	1	1	4	4
6170	Sanitary Pipe	UNK_SW2054-SA2054	4	DIP	61.6	569761.082	26624401.135	858.5	$6,175	01/01/1970	50	75	24	$1,987	$9,459	1	1	4	4
6275	Sanitary Pipe	UNK_SW2058-SA2058	4	VCP	16.2	570492.474	26624386.238	840.7	$1,623	01/01/1970	50	50	-1	$0	$2,487	1	1	4	4
6635	Sanitary Pipe	UNK_SW2060-SA2060	4	VCP	16.6	0.000	0.000	0.0	$1,666	01/01/1970	50	50	-1	$0	$2,552	1	1	4	4
5958	Sanitary Pipe	UNK_SWTWP7-TWP7	4	VCP	60.4	580585.153	26622855.141	737.4	$4,118	01/01/1900	120	50	-71	$0	$9,265	1	1	5	5
6647	Sanitary Pipe	UNK_W0055-SA0055	6	VCP	10.5	576600.299	26623149.293	772.6	$714	01/01/1880	140	50	-91	$0	$1,607	1	1	5	5
5780	Sanitary Pipe	UNK_W0137-SA0137	6	VCP	100.6	575458.815	26624274.065	776.3	$6,867	01/01/1930	90	50	-41	$0	$15,450	1	1	5	5
5787	Sanitary Pipe	UNK_W0147A-SA0147A	6	PVC	50.1	573611.664	26623209.008	793.6	$5,020	01/01/1970	50	75	24	$1,615	$7,690	1	1	3	3
6261	Sanitary Pipe	UNK_W0149-SA0149	6	VCP	31.6	575829.051	26623767.213	774.4	$2,157	01/01/1900	120	50	-71	$0	$4,853	1	1	5	5
5757	Sanitary Pipe	UNK_W0156-SA0156	6	VCP	29.5	577009.187	26623331.154	768.8	$2,009	01/01/1880	140	50	-91	$0	$4,521	1	1	5	5
5759	Sanitary Pipe	UNK_W0157-SA0157	6	VCP	35.9	577002.619	26623142.175	766.5	$2,446	01/01/1880	140	50	-91	$0	$5,504	1	1	5	5
5760	Sanitary Pipe	UNK_W0158-SA0158	6	VCP	44.4	576628.047	26623144.751	772.3	$3,030	01/01/1880	140	50	-91	$0	$6,817	1	1	5	5
5796	Sanitary Pipe	UNK_W0174-SA0174	6	VCP	36.8	575459.785	26623360.423	781.2	$2,513	01/01/1900	120	50	-71	$0	$5,655	1	1	5	5
5770	Sanitary Pipe	UNK_W0182-SA0182	6	VCP	17.9	575864.393	26624928.371	769.7	$1,223	01/01/1930	90	50	-41	$0	$2,752	1	1	5	5
5771	Sanitary Pipe	UNK_W0183-SA0183	6	VCP	48.3	575484.910	26624938.391	772.7	$3,294	01/01/1930	90	50	-41	$0	$7,412	1	1	5	5
5773	Sanitary Pipe	UNK_W0197-SA0197	6	VCP	35.9	574334.127	26625592.760	782.1	$2,446	01/01/1930	90	50	-41	$0	$5,503	1	1	5	5
6248	Sanitary Pipe	UNK_W0198-SA0198	6	RCP	68.1	574163.167	26625598.872	783.9	$6,821	01/01/1970	50	50	-1	$0	$10,450	1	1	5	5
5779	Sanitary Pipe	UNK_W0205-SA0205	6	VCP	42.1	574329.876	26624663.973	785.3	$2,873	01/01/1930	90	50	-41	$0	$6,464	1	1	5	5
6249	Sanitary Pipe	UNK_W0207-SA0207	4	PVC	33.2	574336.984	26624474.502	783.9	$3,322	01/01/1970	50	75	24	$1,069	$5,089	1	1	3	3
5845	Sanitary Pipe	UNK_W0222-SA0222	6	VCP	36.6	576581.445	26621289.119	777.0	$2,500	01/01/1900	120	50	-71	$0	$5,625	1	1	5	5
6234	Sanitary Pipe	UNK_W0228-SA0228	3	PVC	52.3	576047.062	26621295.344	784.9	$5,245	01/01/1970	50	75	24	$1,688	$8,034	1	1	3	3
6639	Sanitary Pipe	UNK_W0234A-SA0234A	6	VCP	14.3	575619.536	26620572.877	784.7	$979	01/01/1900	120	50	-71	$0	$2,202	1	1	5	5
5848	Sanitary Pipe	UNK_W0240A-SA0240A	6	VCP	30.0	576364.513	26621290.026	777.0	$2,049	01/01/1900	120	50	-71	$0	$4,609	1	1	5	5
5804	Sanitary Pipe	UNK_W0240B-SA0240B	6	RCP	28.7	576756.083	26621929.289	773.1	$2,260	01/01/1950	70	50	-21	$0	$4,399	1	1	5	5
6236	Sanitary Pipe	UNK_W0245-SA0245	6	VCP	16.6	575809.254	26622939.323	780.6	$1,130	01/01/1880	140	50	-91	$0	$2,543	1	1	5	5
5840	Sanitary Pipe	UNK_W0250-SA0250	6	VCP	34.2	575622.137	26622577.936	784.2	$2,336	01/01/1900	120	50	-71	$0	$5,257	1	1	5	5
6341	Sanitary Pipe	UNK_W0260B-SA0260B	8	VCP	28.3	575022.116	26621201.111	791.8	$2,233	01/01/1950	70	50	-21	$0	$4,346	1	2	4	8
5826	Sanitary Pipe	UNK_W0267-SA0267	6	RCP	30.9	574623.047	26620486.874	793.2	$3,098	01/01/1970	50	50	-1	$0	$4,747	1	1	5	5

id	Equipment Description	Asset ID	Capacity or Size	Material	Length	Northing State Plane Ordinate	Easting State Plane Ordinate	Elevation	Original Cost	Year Installed	Age	Expected useful life (years)	Remaining Useful Life (years)	Depreciated Value	Replacement Cost	Redundancy Score (R)	Criticality (C)	Probability of Failure (P)	Business Risk (BRE)
5821	Sanitary Pipe	UNK_W0272-SA0272	10	RCP	46.2	574272.653	26620694.751	795.5	$4,634	01/01/1970	50	50	-1	$0	$7,100	1	2	5	10
5823	Sanitary Pipe	UNK_W0278A-SA0278A	8	PVC	34.5	573920.848	26621081.233	799.4	$3,454	01/01/1970	50	75	24	$1,111	$5,292	1	2	3	6
6609	Sanitary Pipe	UNK_W0430-SA0430	12	RCP	24.7	575051.172	26622944.405	786.2	$1,977	01/01/1950	70	50	-21	$0	$3,822	1	3	5	15
6646	Sanitary Pipe	UNK_W0431-SA0431	6	VCP	11.5	575059.241	26622948.881	785.7	$905	01/01/1950	70	50	-21	$0	$1,761	1	1	4	4
6232	Sanitary Pipe	UNK_W2028-SA2028	6	PVC	29.7	571149.789	26623034.264	825.8	$2,977	01/01/1976	44	75	30	$1,196	$4,560	1	1	3	3
6277	Sanitary Pipe	UNK_W2031-SA2031	4	PVC	70.2	569918.309	26623062.859	868.0	$7,034	01/01/1976	44	75	30	$2,826	$10,775	1	1	3	3
6278	Sanitary Pipe	UNK_W2032-SA2032	4	PVC	48.2	569543.410	26623071.911	882.9	$4,834	01/01/1976	44	75	30	$1,942	$7,405	1	1	3	3
6338	Sanitary Pipe	UNK_W2033-SA2033	4	PVC	41.3	569141.044	26623079.624	889.9	$4,141	01/01/1976	44	75	30	$1,664	$6,343	1	1	3	3
6636	Sanitary Pipe	UNK_W2052A-SA2052A	4	PVC	14.1	0.000	0.000	0.0	$1,410	01/01/1970	50	75	24	$453	$2,161	1	1	3	3
6577	Sanitary Pipe	UNK_W2063-SA2063	4	VCP	21.8	571736.748	26624360.729	815.8	$2,183	01/01/1970	50	50	-1	$0	$3,344	1	1	4	4
6576	Sanitary Pipe	UNK_W2066-SA2066	4	VCP	46.0	572466.175	26624345.272	800.8	$4,607	01/01/1970	50	50	-1	$0	$7,058	1	1	4	4
5961	Sanitary Pipe	UNK_WTWP2-TWP2	4	PVC	35.4	582084.482	26622821.819	726.4	$3,929	01/01/1980	40	75	34	$1,788	$5,440	1	1	3	3
6264	Sanitary Pipe	UNK_WTWP4-TWP4	6	RCP	43.3	577903.763	26622913.164	752.9	$3,413	01/01/1950	70	50	-21	$0	$6,641	1	1	5	5
5866	Sanitary Pipe	UNK_WTWP5-TWP5	6	VCP	39.9	577581.154	26622919.246	755.5	$2,723	01/01/1900	120	50	-71	$0	$6,126	1	1	5	5
5957	Sanitary Pipe	UNK_WTWP7-TWP7	8	VCP	63.0	580585.153	26622855.141	737.4	$4,296	01/01/1900	120	50	-71	$0	$9,667	1	2	5	10

Appendix D

Part 4: SAW Summary 2020

1211 Ludington St.
Escanaba, MI 49829
O: 906.233.9360
www.c2ae.com

VILLAGE OF NEWBERRY
ASSET MANAGEMENT PROGRAM SUMMARY

Grantee Information

Village of Newberry SAW Grant
302 E. McMillan Ave Newberry, MI 49868
www.villageofnewberry.com

Contact Information for the Grantee

Allison Watkins
Address: 302 E. McMillan Ave Newberry, MI 49868
Phone: 906-293-3433
Email: awatkins@newberrymi.gov

SAW Grant Project Number: 1274-01

Executive Summary

The Village of Newberry Asset Management Program (AMP) was created through funding from the Michigan Department of Environment, Great Lakes, and Energy.

The applicant has formed a SAW team which is composed of Village officials and members of the public. The purpose of the team is to develop a mission statement and to discuss and decide upon the Level of Service the system should provide, this impacts cost. The team will meet annually before the Village's budget process begins.

The program is GIS based which provides a digital map background of the Newberry sanitary and storm collection systems. The Village treats its own sewage and the treatment facility is also included.

The other major components of the program include the asset management spreadsheet (AMS), financial advice recommendations, and filing system; the filing system is accessed through the GIS system.

The AMS utilizes the EGLE/WEF recommended spreadsheet workbook, which is the master compilation tool for the program. It includes (worksheets ordered as follows):

1. System information and personnel worksheet
2. Summary – worksheet; listing all assets and calculating the business risk
3. Asset Rating Definitions – worksheet
4. Level of Service Statement – worksheet
5. Criticality Calculation – worksheet
6. Probability of Failure – worksheet

7. Budget and Rate formulation worksheet
8. Replacement – worksheet
9. Timing – worksheet
10. Capital Improvement Project – worksheet
11. Ten Year Forecast – worksheet

A. The System Information and Personnel worksheet contains system basic data.
B. The Summary worksheet lists all system assets, with accompanying data related to asset type, location, capacity or size, material type, estimate of original installation year and costs, expected remaining life and value, the cost of replacement in today's dollars, and data from items E and F above, plus redundancy due to number of units, which leads to a calculation of business risk observation.
C. The one to five rating scales for condition, probability of failure and criticality of asset is found in the asset rating definitions.
D. Level of service statement for the system is developed by the SAW team committee and along with the mission statement.
E. Worksheets E and F are the calculator worksheets for criticality and probability of failure of a particular asset. These worksheets were only used for major assets where additional documentation was felt necessary. Most cases utilize engineering judgment for the rating decision.
G. The budget and rate sheet is another calculator which includes the operating budget for the system as well as required capital commitment. It makes an assessment of needed operating reserves based on the planned short term replacements needs as well as future capital needs. It also indicates what is being put away to satisfy these requirements.
H. The replacement worksheet derives the depreciated value of the system as well as a calculation of the replacement value.
I. The timing worksheet attempts to identify whether an asset needs replacing and when to consider and formulate future capital improvement projects.
J. Capital Improvement Plan indicating future possible projects. This is a forecast based on current data, debt retirement, and typical funding agency grouping of project value
K. Ten-year budget worksheet attempts to identify the work of inflation on the plan over "10 years".
L. A twenty-year cash flow forecast is included to assist in the formulation of utility rates. It also includes the detailed level of service statement and detailed capital improvement forecast.

Finally, is the data filing system which will include items such as, the system televising data, the hydraulic model, easements, user information and other relevant data.

The Village of Newberry received fourth round grants as follows:

WAMP

Grant	Local Share	Total
$379,622	$0	$379,622

SAMP

Grant	Local Share	Total
$213,620	$0	$213,620

The asset management development procedure generally followed this path:

A. Identifying and numbering all the assets before field efforts begin.
B. A survey team gathered all GPS coordinates of items such as manholes in the field.
C. A digital orthographic photo was developed using aerial photography to create a GIS system background.
D. A Sewer system layer was created in the GIS system to locate the various assets.
E. A field team inspected and using the NASSCO rating system inventoried and detailed the in-ground assets. Field inspections, records research, capacity testing where needed, and management/staff interviews were used to inventory pump stations and treatment facility components.
F. The inventory data is used in the construction of a production data base which helps populate the Asset Management Data Base and subsequent Spreadsheet (AMS) as described above.
G. The AMS is the calculating tool for assessing the future viability of the delineated assets and the criticality and future impact on the system overall.
H. The criteria of Business Risk and remaining useful life are used to determine what assets need attention and the cost impact of that attention.
I. This data also leads to the formulation of future capital improvement projects.
J. The data is combined into the system's current operating budget to determine whether sufficient financial reserves are being collected.
K. Rate impacts are then considered.
L. The system operators are then trained by IGI in the GIS system use and maintenance
M. The process is to be revisited annually.

Wastewater and Stormwater Asset Inventory

The program included two components under different grant offers. The Wastewater Asset Management Program is call the WAMP and the corresponding Stormwater Asset Management Program is called the SAMP.

The WAMP includes:

A. All collection system components

The SAMP includes all assets making up

A. The stormwater collection system
B. The ditches, culverts, and drainage structures

The inventory was performed by records research, field visitation, and inspection. Briefly it included; Collection systems both sanitary and storm

a) Name and label all manholes
b) Acquire GPS coordinates of all these structures

c) Visually inspect all manholes structures as per NASSCO dictated methodology.
d) Televise selected portions of the collection piping and rate per NASSCO
e) Acquire the age (installation year) of all the elements as close as possible.

The decision was made to utilize the EGLE offered spreadsheet for compiling and analyzing the data.

The manholes condition assessment was gleaned from the field inventories. The NASSCO rating system was utilized to develop a quick rating of the components. In some circumstances engineering judgement was necessary. The process evaluation for the Wastewater Treatment Facility went a step further determining whether the equipment in place was functioning as is needed to maintain regulatory compliance.

The results of the Newberry WAMP and SAMP assessments were as follows:

WAMP
In ground (828 assets)
28% were considered low business risk
52% were considered average business risk
20% were considered in need of effort

SAMP
In ground (854 assets)
37% were considered low business risk
54% were considered average business risk
9% were considered in need of effort

Criticality of Assets

The criticality of assets was determined based on the following factors;

Collection System (WAMP & SAMP)

Highly Critical (5 rating)
Failure of an asset would result in flooding, severe adverse environmental impact, or impede an activity.

Moderately Critical (3-4 rating)
Failure of an asset would damage properties in high value areas or a large number of users

Slightly Critical (1-2 rating)
Failure will develop slowly and can be dealt with when personnel are available.

The ranking of an asset has a component of criticality involved but it is only one factor in determining business risk, the other two being redundancy (i.e. back up of the asset) and probability of failure (the condition) of the asset. Our methodology utilizes business risk (ranking 1 to 25) and depreciation (age) of the asset to rank its need for attention and subsequent budget set aside for maintenance or replacement.

Level of Service Determination

The level of services that the system is to offer was determined by the SAW Team to prioritize what the system should offer and how it should respond. Typically, four or five major goals were determined and then subdivided into items that should be or not be pursued to meet the goals. These items are placed in a level of service statements with reference in the asset management database.

Revenue Structure

The EGLE spreadsheet was utilized to list and prioritize items, which required short term or long-term capital infusion. The long-term items were grouped into project groups and targeted as future projects under the Capital Improvement Plan, which follows. The intent for these projects is future borrowing with monies being added to the current operating budget for future borrowing applications.

The short-term capital needs were identified for operating budget inclusion annually. They may include annual maintenance needs or small replacement items along with large project needs in the first seven years after the project is created.

We found that set aside reserves are adequate.

The SAMP identified budget considerations, which have been delivered to the Village's management to determine what should be done and when to align with other possible future utility or street improvements.

A wastewater system twenty-year cash flow statement is attached.

Capital Improvement Plan

Newberry's future Wastewater capital improvement project scheduling for a twenty year a cash flow analysis is projected as follows:

Project	Cost	Funding	Year
Plant and Collection System Upgrades – Phase 1	$4,500,000	USDA RD	2025
Plant and Collection System Upgrades – Phase 2	$6,000,000	SRF	2040
Collection System Upgrades – Phase 3	$6,000,000	SRF	2050
Collection System Upgrades– Phase 4	$6,000,000	USDA RD	2060
Plant Upgrades	$4,000,000	SRF	2070

The SAMP has identified three priority project areas. The Village will attempt to pursue these storm sewer improvements with other utility and street projects. The dollars indicated are budgeting attempts to maintain the consideration of storm work in other utility or road repair projects.

Project	Cost	Year
Storm Improvements – Project 1	$1,500,000	2020 – 2035
Storm Improvements – Project 2	$5,500,000	2035 – 2060
Storm Improvements – Project 3	$3,500,000	2060 – 2070

List of Major Assets

Wastewater:

The Village of Newberry's wastewater system includes:

Treatment:

- Control Building
- Raw Sewage Grinding
- Raw Sewage Pumps
- Grit Removal
- Primary Clarifiers
- Aeration Basins
- Positive displacement blowers
- Final Settling
- Anaerobic Digestion
- Support Systems - HVAC, SCADA, etc.

Mainline Gravity Sewer:

2-inch	388 feet
3-inch	52 feet
4-inch	2,283 feet
6-inch	5,585 feet
8-inch	19,673 feet
10-inch	30,742 feet
12-inch	18,464 feet
15-inch	1,905 feet
18-inch	547 feet
21-inch	745 feet
24-inch	2,543 feet
27-inch	1,691 feet
30-inch	5,713 feet
Unknown	286 feet

System Value: $6,010,000
Replacement Value: $22,610,000

Stormwater:

Sewer & Culverts:

4-inch	80 feet
6-inch	1,232 feet
8-inch	1,586 feet
10-inch	441 feet
12-inch	7,892 feet
15-inch	5,172 feet
18-inch	2,458 feet
21-inch	4,541 feet
24-inch	5,484 feet
27-inch	1,592 feet
30-inch	5,478 feet
34-inch	392 feet
36-inch	2,284 feet
40-inch	1,146 feet
42-inch	517 feet
48-inch	411 feet
Unknown	8,983 feet

System Value:	$172,000
Replacement Value:	$10,750,000

Appendix D

Part 5: Wastewater Model Summary 2020

1211 Ludington St.
Escanaba, MI 49829
O: 906.233.9360
www.c2ae.com

TECHNICAL MEMO

To: George Blakely

From: Ashley Hendricks

CC: Darren Pionk

Date: December 2020

Re: Wastewater Model
Village of Newberry, Luce County, MI

INTRODUCTION

As part of the Village's SAW Grant, a wastewater model was developed to predict flow to the wastewater treatment plant (WWTP) for a 25-year, 24-hour storm event of 3.5 inches. Under these the conditions, the peak instantaneous inflow is 4.4 MGD to the WWTP. The following summarizes the model development and results.

The Village of Newberry's wastewater system consists of approximately 90,600 feet of 2-to 30-inch diameter sanitary sewers, 287 sanitary manholes, and a discharge to the Wastewater Treatment Plant. Additionally, the Village's WWTP receives flow from Pentland and McMillan Township. Pentland Township includes of four Lift Stations. The WWTP discharges into the Tahquamenon River via EGLE NPDES Permit No. MIG570218.

MODEL DEVELOPMENT

The model developed utilizes manhole inventories, population data, structure counts, land use/zoning information, and pump meter data to estimate wastewater flows; wastewater flows were assigned to applicable sanitary manholes throughout the system. For baseline flows, the Village assumes a flow rate of 100 GPD/REU for residential dwellings (gallon per day per Residential Equivalent Unit) or 3000 gal/month/REU. The Village currently bills customers based on REUs rather than meter data. Commercial flows were estimated based on typical usage for commercial types. The prison flow was estimated by multiplying the number of REUs billed and the Village's average flow rate per REU. Metering individual commercial usage could provide more accurate estimates of groundwater infiltration and baseline flows. Meter 3 is suspected to have less groundwater infiltration then estimated in Table 1. EPA software Sanitary Sewer Overflow Analysis and Planning (SSOAP) Toolbox coupled with flow monitoring data, pump run time hours, and draw down testing was used to determine the dry weather flows. The following flows were used as baseline and dry weather flows to the WWTP, broken down by flow monitor tributary area:

Table 1. Baseline Flows, Ground Water Infiltration, and Dry Weather Flows

Meter	Baseline Flow (GPD)	Groundwater Infiltration (GPD)	Dry Weather Flow (GPD)
Meter 1	288,275	525,792	814,067
Meter 2	54,424	3,326	57,750
Meter 3	118,320	133,169	251,489

The model was skeletonized in Autodesk Storm and Sanitary Analysis (SSA) to include the parts of the wastewater system which have a significant impact on the behavior of the system and to optimize the efficiency, usability, and focus of the model. The parts of the system that are not modeled directly are accounted for within the simplified connectivity scheme in the model. There are no lift stations within the limits of the Village. Lift Stations in Pentland Township were not included, and rather, a baseflow from Pentland Township was used based on flows at the M123 and Cherry St Meters.

The model was calibrated using flow meter data from four portable flow meters, which recorded data during March 14th, 2019 to September 11th, 2020:

- Meter 1: TWP1 near the intersection of M123 and County Road 462 East (downstream of Meter 2 and 3)
- Meter 2: SA2020A near the intersection of M123 and County Road 466 (Near VFW), includes flow from Pentland Township
- Meter 3: SA0146 near the intersection of Charles Street and County Road 466, includes flow from prison
- Rain Gage: Next to Meter 3, near the intersection of Charles Street and County Road 466

Dry weather calibration consisted of comparing the diurnal hydrographs, and via an iterative process, adjusting the diurnal time pattern(s) to "correspond to" the dry weather flow meter data. Similarly, SSA used flow meter data from significant rainfall events to accomplish the wet weather model calibration at the flow meter site by developing relationships between rainfall events and RDII (rainfall derived infiltration/inflow) using RTK values for the wastewater system. Defined by SSA and SSOAP, the R value is the amount of precipitation that is received by the sanitary sewers expressed as a percentage or fraction, T is the duration between the start of the precipitation event to the peak of the event, and K is the ratio of the time to recession of the unit hydrograph to the time to peak. Rainfall data was obtained from a rain gage installed at Meter 3.

Under a dry weather scenario there were no surcharged pipes. In SSA, a surcharged pipe is defined as the flow condition where the water is above the crown of the pipe; flow is greater than the design capacity of the pipe.

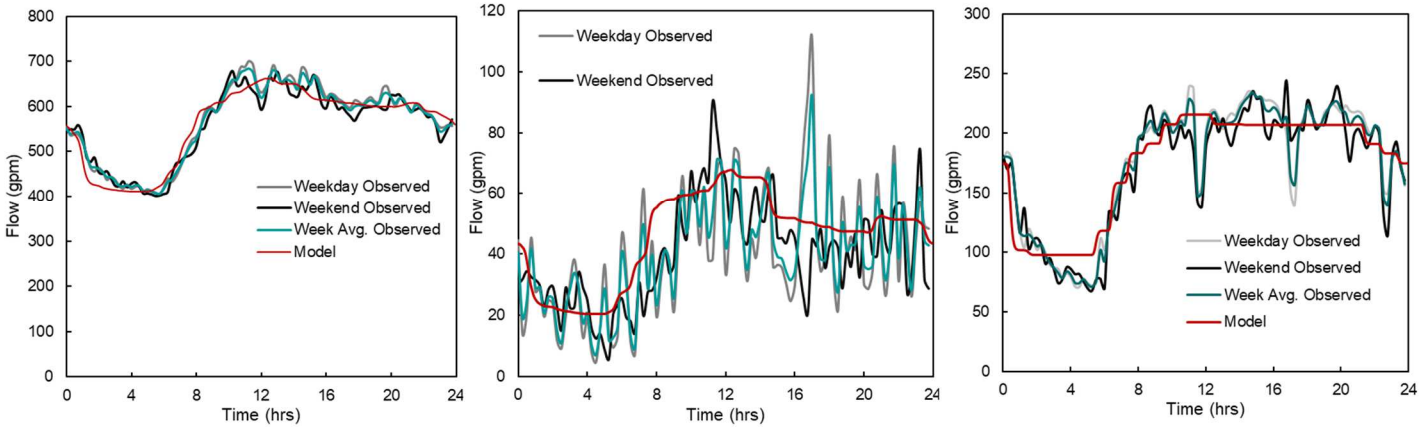


Figure 1. Modeled dry weather flows compared with observed dry weather flows from the flow monitors for Meter 1 (left), Meter 2 (center), and Meter 3 (right).

Significant rainfall events of more than one-inch of rain during flow monitoring occurred on October 21 to 22, 2019 (1.24 inches); April 29 to 30, 2020 (1.36 inches); June 22 to 23, 2020 (1.95 inches); and July 10th, 2020 (1.57 inches). The following table summarizes the RTK values used in the calibrated model, where 1 refers to the short-term response and 3 denotes the long-term response. The RTK values form the four rain events were averaged to get final RTK values for

the model. Meter 1 was found to be the only meter that was sensitive to wet weather events. Pipes in both Meter 2 and 3 are 1970s and newer. Figure 2 compares modeled and observed wet weather events for Meter 1.

Table 2. Calibrated RTK Values

Meter	R1	R2	R3	T1	T2	T3	K1	K2	K3
Meter 1	0.0179	0.0243	0.0332	0.55	2	4.7	1.5	3.5	6.5

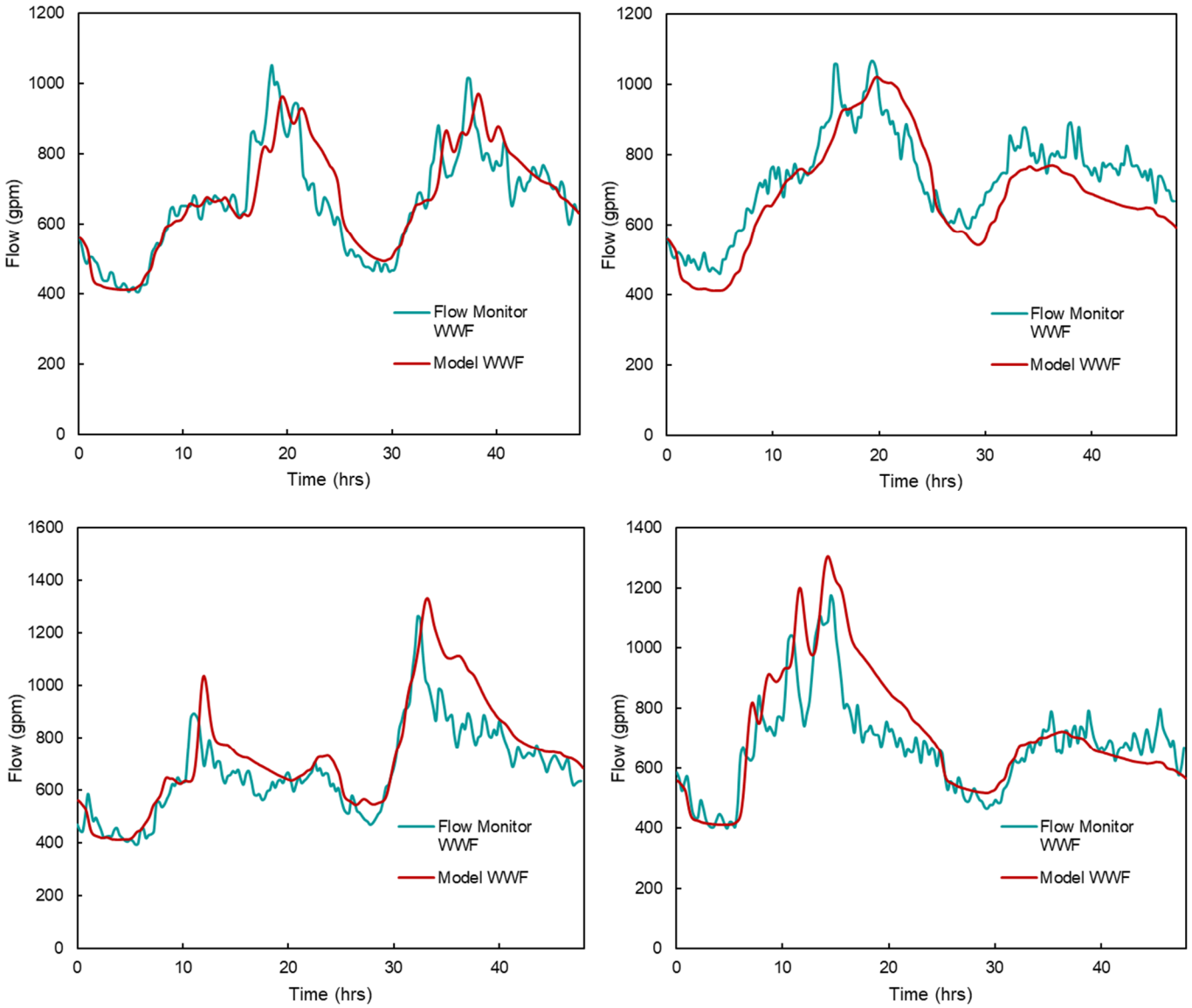


Figure 2. Modeled wet weather flows for storm event occurring on October 21 to 22, 2019 (top left), April 29 to 30, 2020 (top right), June 22 to 23, 2020 (bottom left), and July 10, 2020 (bottom right) compared with observed flows from the flow monitoring for Meter 1 (left)

Sources of inflow and infiltration (I & I) within the Village include roof drains, catch basins tied into sanitary, deterioration of infrastructure, and perforated sanitary manhole covers. Initial field investigations identified two catch basins in an intersection that are potentially tied into a sanitary manhole. This intersection is at Sherman Street and West Avenue C. A map identifying the perforated sanitary manhole covers within the system is attached to this memo. Perforated manhole covers include any manhole cover that has one hole or more identified during field inventorying. Out of the 287 manholes in the system, 219 of the manholes have holes in the cover. This can further be broken down to 167 manholes with one to two holes and 52 manholes with 10 to 27 holes in the cover. Remaining roof drains connected to the sanitary sewer still pose a problem to the Village. In the 1998 SSES study, there were 27 roof drains identified to as connected to the sanitary sewer, it is suspected that some or more of these still remain after examining the 25-year, 24-hour flow (see following "Results and Discussion" section). Since there are no spikes observed in the flow data recorded by Meter 3 (downstream of the prison), it is not suspected that the prison's roof drains are still connected to the sanitary sewer.

RESULTS AND DISCUSSION

The calibrated model was used to evaluate/confirm the capacity of the sanitary sewer system relative to the EPA and EGLE stipulated storm event (25-year, 24-hour with SCS Type II Rainfall Distribution) of 3.5 inches of rain for Luce County. The peak instantaneous flowrate to the WWTP for the storm is 4.4 MGD. The following figure shows the hydrograph of the flowrate to the WWTP. Under the 25-year, 24-hour storm, there were no surcharged pipes.

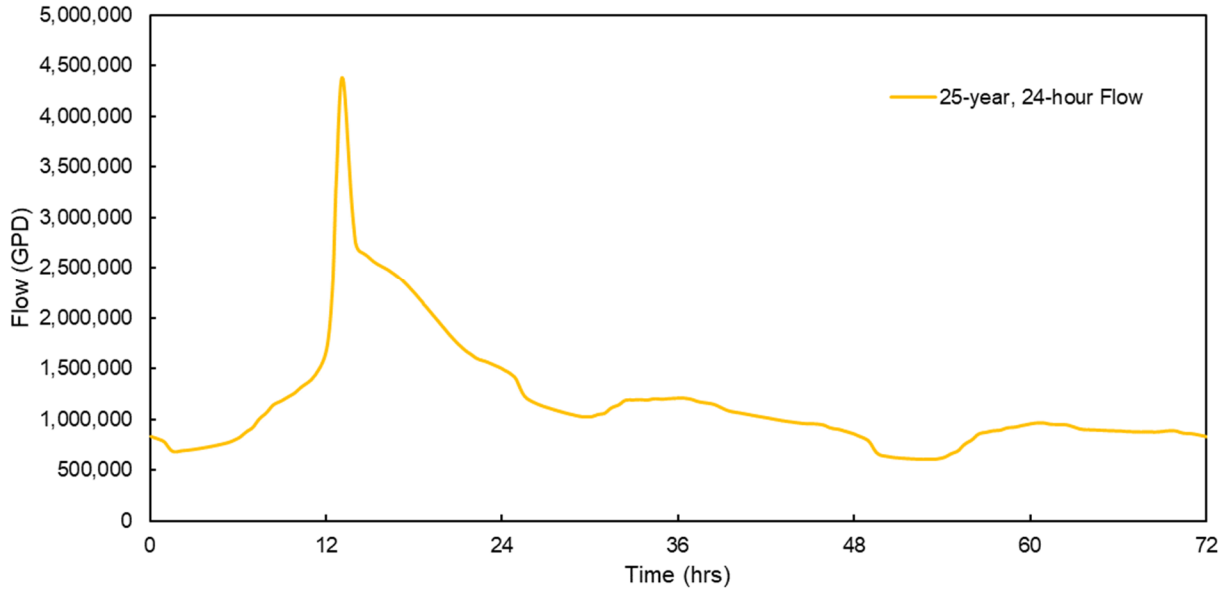


Figure 4. Inflow to the WWTP during a 25-year, 24-hour storm of 3.5 inches.

Attached maps:

a. Map 1: System Map with Flow Monitor Locations & Basins
b. Map 2: Perforated Manhole Locations

WASTEWATER COLLECTION SYSTEM METER & RAIN GAUGE LOCATIONS

VILLAGE OF NEWBERRY
PROJECT: 13-0210
LUCE COUNTY, MICHIGAN

c2ae architecture • engineering

0 550 1,100 2,200 3,300 4,400 Feet

N

County Road 403 North
County Road 462 East
County Road 432
E Truman St
County Road 428 East
County Road 392
County Road 430
County Road 391
East Limits St
County Road 466
E McMillan Ave
Vulcan St
E Avenue B
E Avenue C
E Avenue D
E John St
E Harrie St
Charles St
County Road 451
State St
Center St
1st St
E Willow St
Parmelee St
E Helen St
Handy St
E Avenue A
E Avenue B
E Avenue C
Cambell Ave
Plumbush Ave
WWTP
McMillan Township
M 123
M1
Newberry Ave
Village of Newberry
M2
M3
R
Pentland Township
County Road 395
Phelps St
Schroder Ln
Autumn Ln
N Cooper St
Cooper St
W Willow St
Robinson St
W Avenue A
W Avenue C
W Avenue D
W Victory Way
Lois Ln
Removed St
W Helen St
W John St
W Truman St
W McMillan Ave
W Harrie St
H St
W Avenue B
Washington Blvd
Nelson Rd
County Road 462 West
Tahquamenon Blvd
County Road 385
County Road 405 North

Legend

- M1 — Meter 1
- M2 — Meter 2
- M3 — Meter 3
- R — Rain Gauge
- WWTP — WWTP
- Sanitary Manhole
- Pipes Observed with Infiltration in CCTV
- Sanitary Pipe
- Village Boundary
- Minor Civil Division
- Road

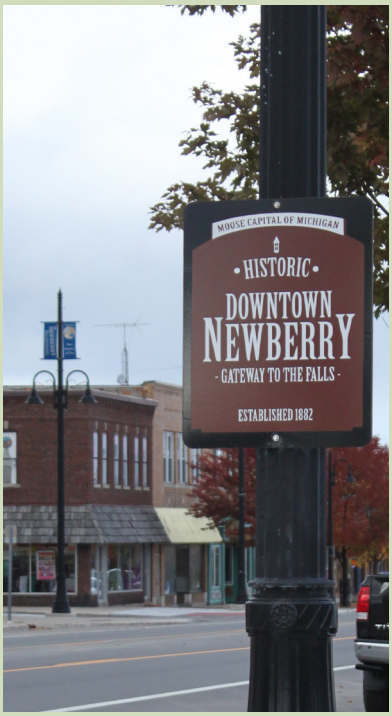
PLOTTED BY: ASHLEY.HENDRICKS 12/08/2020 09:17 AM N:\2013\13021O_Newberry_SAW_App\Drawings\ArcMap\Village of Newberry Field Inspections\ArcMap Documents\Newberry_Sanitary_Model_maps_2020.mxd

WE RECYCLE

Appendix D

Part 6: Village of Newberry Master Plan 2018

A MASTER PLAN for



The Village of NEWBERRY

Adopted July 2018

ACKNOWLEDGMENTS

VILLAGE COUNCIL

John Dewitt III
President

Sharon L. Brown
Pro-Tem

Dan Hardenbrook
Village Councilor

Charles (Buzz) Medelis
Village Councilor

Lew Hitts
Village Councilor

Dennis Hendrickson
Village Councilor

PLANNING COMMISSION

Larry Vincent
Chairman

Harold Dishaw
Commissioner

Dan Hardenbrook
Commissioner

Steve Stiffler
Commissioner

Kevin Vanatta
Commissioner

VILLAGE OF NEWBERRY
MOOSE CAPITAL OF MICHIGAN

B R i
Beckett&Raeder

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risingtide

an initiative of the Michigan Department of Talent and Economic Development

The Rising Tide project supports vibrant, thriving communities to attract business investment and talent by creating a sustainable path toward economic stability and growth. The Michigan Economic Development Corporation, Talent Investment Agency, and Michigan State Housing Development Authority–collectively, the Talent and Economic Development (TED) team–have committed their assets to engaging specific communities across the state in order to empower them to shape their future and maximize economic potential. This document was produced as part of that effort.

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in association with

PLACE of Main ADVISORS, LLC

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LandUseUSA

ADVANCED REDEVELOPMENT SOLUTIONS

VILLAGE OF NEWBERRY

LUCE COUNTY, MICHIGAN

VILLAGE OF NEWBERRY PLANNING COMMISSION

RESOLUTION RECOMMENDING THE ADOPTION OF THE

VILLAGE OF NEWBERRY COMMUNITY MASTER PLAN

WHEREAS, the Michigan Planning Enabling Act (MPEA) authorizes municipal planning commissions to prepare a "master plan" pertinent to the future development of the municipality; and

WHEREAS, the Planning Commission has prepared a draft master plan for the municipality; and

WHEREAS, the Village Board of Trustees authorized the distribution of the draft Community Master Plan to the general public and the various entities as required by the MPEA, for review and comment purposes; and

WHEREAS, the proposed Community Master Plan was made available to the various entities and the general public as required by the MPEA, and a public hearing thereon was held by the Planning Commission on February 26, 2018 pursuant to notice as required by the MPEA; and

WHEREAS, the Planning Commission finds the proposed Master Plan as submitted for the public hearing is desirable and proper, and furthers the land use and development goals and strategies of the Village;

NOW, THEREFORE, the Newberry Planning Commission hereby resolves to recommend to the Village Board of Trustees adoption of the new Community Master Plan as submitted for the public hearing, including all the text, charts, tables, maps, and descriptive and other matter therein intended by the Planning Commission to form the complete Master Plan, including the Future Land Classification Map.

CERTIFICATE

I hereby certify the foregoing resolution was approved by a majority of the members of the Newberry Planning Commission by a roll call vote at a regular meeting of the Commission held on June 25, 2018 in compliance with the Open Meetings Act.

Motion by: Harold Dishaw
Seconded by: Kevin Vanatta
Ayes: Larry Vincent, Harold Dishaw, Kevin Vanatta, Dan Hardenbrook, Steve Stiffler
Nays: None

VILLAGE OF NEWBERRY
LUCE COUNTY, MICHIGAN

VILLAGE OF NEWBERRY VILLAGE COUNCIL
RESOLUTION RECOMMENDING THE ADOPTION OF THE
VILLAGE OF NEWBERRY COMMUNITY MASTER PLAN

WHEREAS, the Michigan Planning Enabling Act (MPEA) authorizes municipal planning commissions to prepare a "master plan" pertinent to the future development of the municipality; and

WHEREAS, the Planning Commission has prepared and recommended adoption of a draft master plan for the municipality; and

WHEREAS, the Village Board of Trustees authorized the distribution of the draft Community Master Plan to the general public and the various entities as required by the MPEA, for review and comment purposes; and

WHEREAS, the proposed Community Master Plan was made available to the various entities and the general public as required by the MPEA, and a public hearing thereon was held by the Planning Commission on January 22, 2018 and continued on February 27, 2018 pursuant to notice as required by the MPEA; and

WHEREAS, the Village Council finds the proposed Master Plan as submitted for the public hearing is desirable and proper, and furthers the land use and development goals and strategies of the Village;

NOW, THEREFORE, the Newberry Village Council hereby resolves to adopt the new Community Master Plan as submitted for the public hearing, including all the text, charts, tables, maps, and descriptive and other matter therein intended by the Planning Commission to form the complete Master Plan, including the Future Land Classification Map.

CERTIFICATE

I hereby certify the foregoing resolution was approved by a majority of the members of the Newberry Village Council by a roll call vote at a meeting of the Commission held on July 16, 2018 in compliance with the Open Meetings Act.

Motion by: Hardenbrook

Seconded by: Medelis

Terese Schemmer 7/16/18

Clerk
Village of Newberry

FIGURES, MAPS, TABLES

CONTENTS

EXECUTIVE SUMMARY

With the adoption of the Village's first-ever master plan, Newberry is embarking on a new chapter in economic and community development. This master plan serves as a living document to guide Newberry's future development based on community needs and desires.

Several important state mandates and initiatives served as the backbone for this effort. The Michigan Planning Enabling Act (MPEA), Public Act 33 of 2008, requires that the planning commission create and approve a master plan as a guide for development. Further, Project Rising Tide (PRT) is a statewide economic development program envisioned by Governor Snyder and implemented by the Department of Talent and Economic Development (TED). Newberry was one of ten communities selected statewide and represents the Upper Peninsula region. The mission is to provide at-risk communities with the necessary tools to design and build a successful economic framework. Through this effort, the Village is committed to creating a physical and social environment conducive to economic success and wealth creation.

Newberry is the county seat of Luce County. Located within McMillan Township at its very southern end, the population of Newberry was 1,519 at the 2010 U.S. Census. Newberry is surrounded by miles of state forests and is considered one of two gateways to the Tahquamenon Falls area. The Village of Newberry has experienced an overall decline in population since 2000. When compared with the state of Michigan, Newberry has a relatively low median household income ($32,000), a low per capita income ($18,500), and a high percentage of families living below the poverty line (27%). Further, only 55% of Newberry of-age residents participated in the labor force in 2015. Communities were selected for

the Project Rising Tide program based on income, poverty, and employment statistics.

Community leaders, local officials, and members of the public were engaged throughout the planning process. A community assessment was conducted by the Michigan Rural Council and laid the groundwork for the master plan. The Newberry Planning Commission served as a steering committee to guide the master planning process. The planning commission was formed just before the planning process officially kicked off and met monthly to review existing conditions, develop an action plan and future land use map, and craft the zoning plan.

Economic development is a top priority in Newberry, and economic development strategies served as the foundation for Newberry's action plan. The Village has a number of sites that are currently fit to be redeveloped including the former Falls Hotel, the Pines building, and the Old Bank building. Because of the high-quality public infrastructure already in place, Newberry is focused on incentivizing and supporting redevelopment first and foremost in the downtown.

Included in this plan is a series of goals and actions that can be broken into five major themes: (1) Governance & Leadership; (2) Thriving Downtown; (3) Business Attraction and Retention; (4) Recreation-based Prosperity; and (5) Strong Neighborhoods. The final chapter of the plan identifies and prioritizes the goals and actions and provides ideas and tools for implementation.

INTRODUCTION

Courtesy of Sharon Brown

PLANNING CONTEXT

The purpose of this master plan is to serve as a living document to guide Newberry's future development based on community needs and desires. A master plan is comprehensive in scope and provides more specific actions and site locations for implementing the community's goals.

The Michigan Planning Enabling Act (MPEA), Public Act 33 of 2008, requires that the planning commission create and approve a master plan as a guide for development and review the master plan at least once every five years after adoption.

This master plan is of particular significance to Newberry since this will be the Village's first-ever comprehensive master plan to guide future development and growth.

RISING TIDE

Project Rising Tide (PRT) is a statewide program envisioned by Governor Synder and implemented by the Department of Talent and Economic Development (TED). TED is composed of the Michigan Economic Development Corporation (MEDC), Talent Investment Agency, and the Michigan State Housing Development Authority (MSHDA). The mission is to provide at-risk communities with the necessary tools to design and build a successful economic framework.

Newberry was one of ten communities selected statewide and represents the Upper Peninsula region. One community from each prosperity region was selected, based on the following criteria:

- Poverty level
- Unemployment level
- Labor participation rate
- Renter-occupied units
- Vacancy rates
- Percentage of households receiving food stamps

This initiative employs MEDC's Redevelopment Ready Communities (RRC) as a mechanism for preparing each community for a brighter economic future. RRC is a certification program that encourages communities to use innovative redevelopment strategies to signal to developers and businesses that they are attractive places to invest.

Newberry desires to be a place of economic opportunity, with everything from traditional employment options to entrepreneurial endeavors and development opportunities. The Village is committed to creating a physical and social environment conducive to economic success and wealth creation. The master plan is an important step to achieving this vision.

REGIONAL CONTEXT

Newberry is the county seat of Luce County. Luce County has over 300,000 acres of public access land, 15,000 acres of inland lakes, and 658 miles of rivers and streams. It is primarily made up of State forestland and freshwater wetlands. Luce County borders about 31 miles of Lake Superior shoreline at its northern edge. Located within McMillan Township at its very southern end, the population of Newberry was 1,519 at the 2010 U.S. Census.

Newberry was designated as the moose capital of Michigan by the state legislature, in House Resolution 2002-572 and Senate Resolution 2002-259. The designation has been used to promote its uniqueness to visitors.

Newberry is surrounded by miles of state forests and is considered one of two gateways to the Tahquamenon Falls area (the other is Paradise, approximately 40 miles to the northeast).

"The Village of Newberry will take steps to create the physical and social environment conducive to economic success and wealth creation."

Visitors at the famous Oswald's Bear Ranch, located just outside of Newberry.

OTHER PLANS AND PLANNING EFFORTS

There were a number of community and regional planning efforts already completed or underway at the time this master planning process began. In an effort to build on this positive momentum, the following plans and strategies were used to inform the goals and objectives of this master plan.

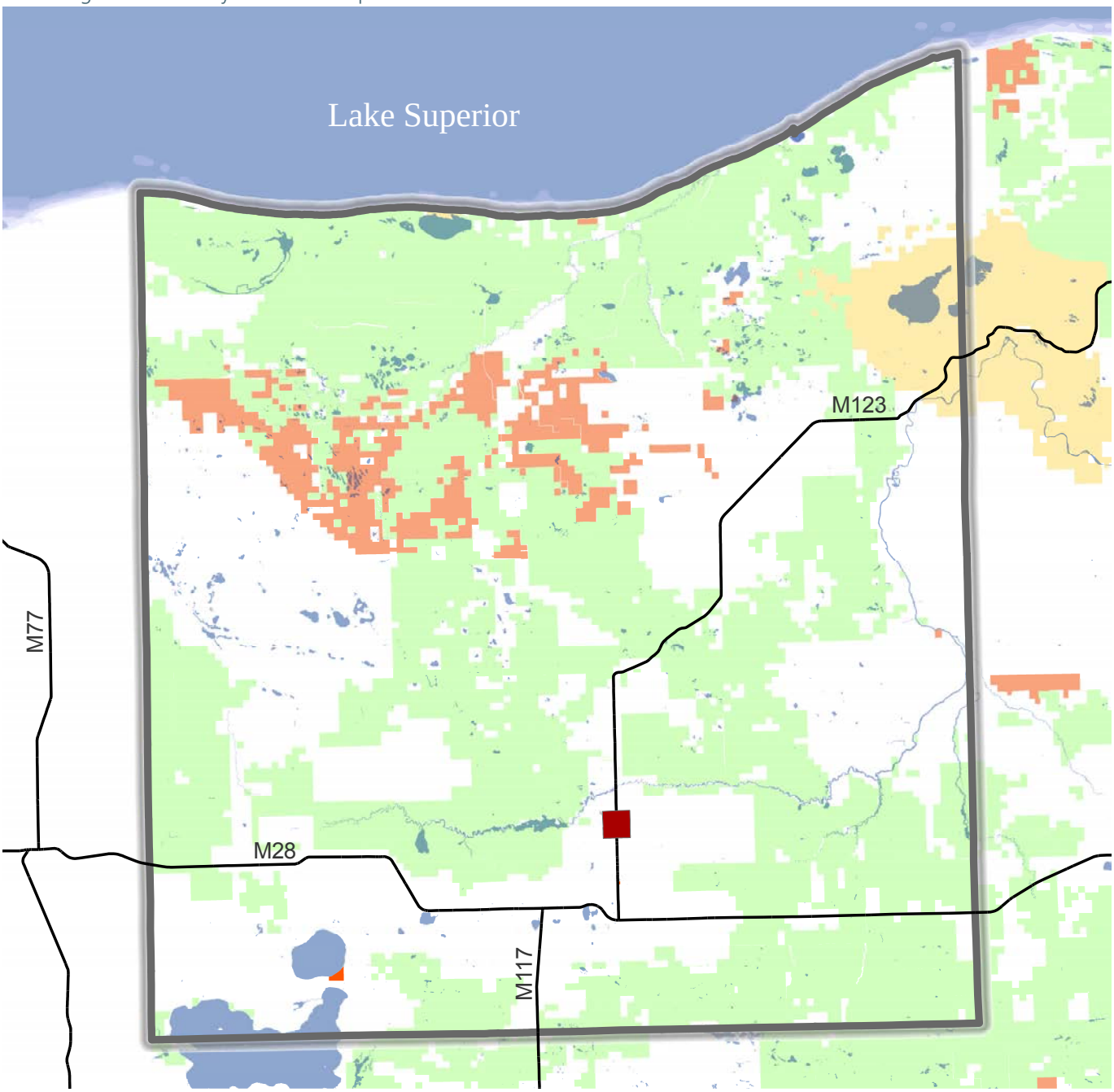
Village of Newberry Economic Development Strategy

As a part of the PRT effort, the Newberry Steering Committee completed an Economic Development Strategy for the Village. The strategy identifies key challenges and opportunities related to economic development, and outlines a set of goals, objectives, and implementation strategies to enhance economic development in the Village and the larger region.

2002 Luce County Comprehensive Plan

The Luce County Comprehensive Plan serves as a guide for future decisions by the county and member communities. Luce

1: Village of Newberry Location Map

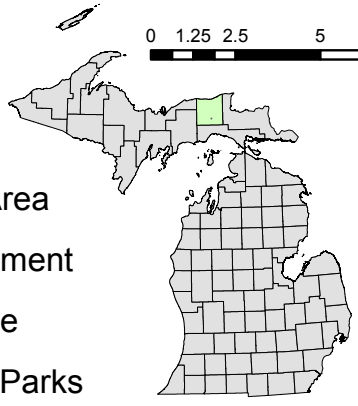


VILLAGE OF NEWBERRY

Village of Newberry Location

Data Sources: State of Michigan Geographic Data Library
Eastern Upper Peninsula Regional Planning and Development Commission

0 1.25 2.5 5 7.5 10 Miles



- Village of Newberry
- State Roads
- Luce County
- Lakes
- Conservation Area
- Forest Management
- Nature Preserve
- County/Village Parks

County provides zoning services for all townships within Luce County.

2015 Eastern Upper Peninsula Comprehensive Economic Development Strategy

This report, titled Elevating the Eastern Upper Peninsula, covers the economic development trends, conditions, needs, and strategies for the three-county Eastern Upper Peninsula Region in Michigan and allows the region to maintain its Economic Development District designation to qualify for EDA assistance, loan programs, and planning programs. This strategy identifies a number of actions to create year-round diverse employment opportunities such as technical assistance, vocational training, data tracking, and inter-jurisdictional collaboration.

2016 Luce County Target Market Analysis

A Residential Target Market Analysis (TMA) was conducted for Luce County in 2016 by Land Use USA. The purpose of the TMA was to identify the housing needs and unmet housing market potential of communities in Luce County. The results of the TMA can be used to identify walkable neighborhood types and missing middle housing formats that would be successful in Newberry.

Parks and Recreation Master Plan

The Village of Newberry 2016-2021 Recreation Master Plan ensures Newberry will be eligible for MDNR grants and other funding opportunities through 2021. The plan identifies a number of different strategies for fostering economic development by improving and promoting recreational facilities and trails. One key action is the development of the Tahquamenon Outdoor Recreation Complex.

2015 Tahquamenon Scenic Byway Corridor Management Plan

The scenic byway runs along the M-123 Corridor from Eckerman to the Village of Newberry. The corridor management plan includes an inventory of historical and natural assets, a traffic and safety analysis, and ideas for marketing the unique assets along the corridor.

COMMUNITY ENGAGEMENT

The Village of Newberry understands that citizen input is paramount to a successful planning process. Community leaders, local officials, and members of the public were engaged throughout the Rising Tide process in general community visioning exercises and goal setting specifically focused on economic development and downtown revitalization.

Hamilton Lake Natural Area

Community Assessment

A community assessment was conducted by the Michigan Rural Council and laid the groundwork for the master plan. The overall purpose of the community assessment was to identify assets, projects, goals, and areas for development. The community assessments are intended to empower communities by giving them the tools to plan for the future.

The Newberry assessment was held in May 2017 and consisted of listening sessions in which a number of stakeholder groups in the community had a chance to voice their ideas and concerns. A Village Hall meeting was held in the evening with a small but mighty group of attendees representing a broad cross section of Newberry residents. The following summarizes assets, challenges, and ideas/actions identified through this process.

Assets

- Low cost of living
- Dedicated community organizers
- Surrounded by pristine natural resources

Challenges

- Limited skilled workforce
- Resistance to change
- Isolated location

2: Community Assessment Recommendations

TOPIC	IDEA	RESOURCES
Downtown Vacancies	Initiate and Support Civic Events	MML's Place POP program can facilitate engaging, temporary improvements to civic spaces to spur private development.
	Facade Improvement Program	Could be funded through CDBG grants, a DDA, or Business Improvement Program
	Michigan Main Street Program	A coordinator could implement the Main Street model to improve visual appeal, organization, and preserve historical assets.
Limited Housing Options	Design Charrette	MSU's Small Town Designs Initiative could lead a charrette aimed at identifying locations for affordable workforce housing near the downtown.
	Rehabilitate Upper-Story Units	MED's Community Assistance Team administers CDBG funds for rental rehabilitation.
Need High-Quality Jobs	Business and Industry Loans and Grants	USDA Rural Development business and industry loans and grants are available for non-profits and public entities.
	Business Incubator	Clusters of small retail spaces with training and support opportunities have been a successful model in a number of Michigan communities.
	Small Scale Manufacturing	Local producers and maker industries are a growing asset and key sector to strengthen local economic resilience.

- Poverty is prevalent
- Limited housing options, especially rentals
- Aging building stock, both residential and commercial

Ideas for Action

- Create a DDA or business improvement district to rehab downtown
- Stricter enforcement of the blight code paired with rehabilitation assistance.
- Promote ecotourism and market natural resources.
- Coordinated business recruitment

The table called Community Assessment Results summarizes some of the key recommendations for further action made by the Michigan Rural Partners based on the community assessment results.

Planning Commission

The Newberry Planning Commission served as a steering committee to guide the master planning process. The planning commission was formed just before the planning process officially kicked off and met monthly to review existing conditions, develop an action plan and future land use map, and craft the zoning plan. The process of developing a future land use map and zoning plan was particularly important in Newberry because the map and zoning plan will lay the foundation for Newberry's first-ever zoning ordinance.

THE PEOPLE OF NEWBERRY

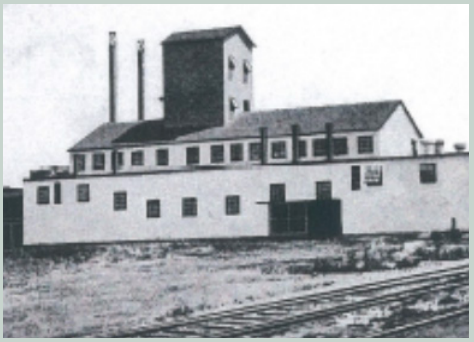
Luce County Park, Courtesy of Newberry News

This section will investigate the demographic trends and historic and cultural resources in the Village of Newberry and its surrounding communities to understand how the people and social capital have shaped Newberry over time, and what the future may hold. Trends in this community profile were used throughout the planning process to inform this master plan's strategic goals and future land use classifications.

HISTORY

The village was named in honor of John Stoughton Newberry, a U.S. representative and industrialist from the state of Michigan.

In the late 1800s and early 1900s Newberry, like many Northern Michigan towns, was a lumbering town, with other industrial



Chemical Plant, Lake Superior Iron and Chemical Co., Newberry, Michigan. Photo Courtesy of Jim Dwyer

3: Surrounding Population 1990 - 2015, % Change

	1990 POPULATION	2000 POPULATION	2010 POPULATION	2015 POPULATION	% CHANGE (2000 - 2015)
Newberry	ND	2,686	1,578	1,729	-36%
Luce County	5,786	7,006	6,631	6,415	-8%
Eastern Upper Peninsula	51,291	57,530	56,264	55,338	-4%

Sources: U.S. Census Bureau: 1990 & 2000 Decennial Censuses; 2010 & 2015 American Community Survey

processes typical for the day. In the one-mile stretch between the railroad and the Tahquamenon River to the north were the factory and lumber yards.

In 1882, some businessmen from Detroit with interests in the railroad established the Vulcan Furnace Company named for the Roman god of fire. The first industrial process undertaken on the property was making charcoal. The Village of Newberry eventually sprang up around it. Before then, Newberry was known as "Grant's Camp." As the years went on, Newberry's growth and development continued to be rooted in lumber and industry.

POPULATION TRENDS

The figures in this section have been taken from the following sources in this preferred order:

- The 2010 US Census. This is the gold standard for demographic data. It measures 100% of the population and often depends on sampling. However, available data is limited to population and housing information, and the ten-year interval between data points means it is rarely "fresh."
- The 2011 - 2015 American Community Survey. The ACS program replaced the "long form" census questions beginning in 2000, asking

"The people of our community are the only reason we are here. Therefore, we are committed to working with the community to provide ethical and responsible local government so that everyone can enjoy the benefits of living and working in Newberry."

-Community Leader

4: Surrounding Area Income & Poverty %

	MEDIAN INCOME	PER CAPITA INCOME	% LIVING IN POVERTY
Newberry	$32,000	$18,551	27.1%
Luce County	$37,088	$17,195	19.6%
Eastern Upper Peninsula	$39,998	$20,310	19.0%
Michigan	$49,576	$26,607	15.7%

ACS 5-Year Estimates 2011-2015, 2015 Small Area Income & Poverty Estimates

5: Educational Attainment

	TOTAL POPULATION OVER AGE 25	% NO HIGH SCHOOL DIPLOMA	% HIGH SCHOOL DIPLOMA	% SOME COLLEGE, ASSOCIATE'S DEGREE	% BACHELOR'S DEGREE OR HIGHER
Newberry	1,212	13.4	42.2	33.3	12.5
Luce County	4,866	11.7	45.0	31.0	12.4
Michigan	6,557,055	10.2	29.6	32.9	27.2

ACS 5-Year Estimates 2011-2015

6: % of Individuals Living with a Disability

CIVILIAN NON-INSTITUTIONALIZED POPULATION		
	With a Disability	With an Ambulatory Difficulty
Newberry	23.9%	11.5%
Luce County	25.3%	12.5%
Eastern Upper Peninsula	19.0%	9.3%
Michigan	14.1%	7.4%

ACS 5-Year Estimates 2011-2015

the same types of detailed questions about social, economic, and housing conditions on a rolling basis instead of once per decade.

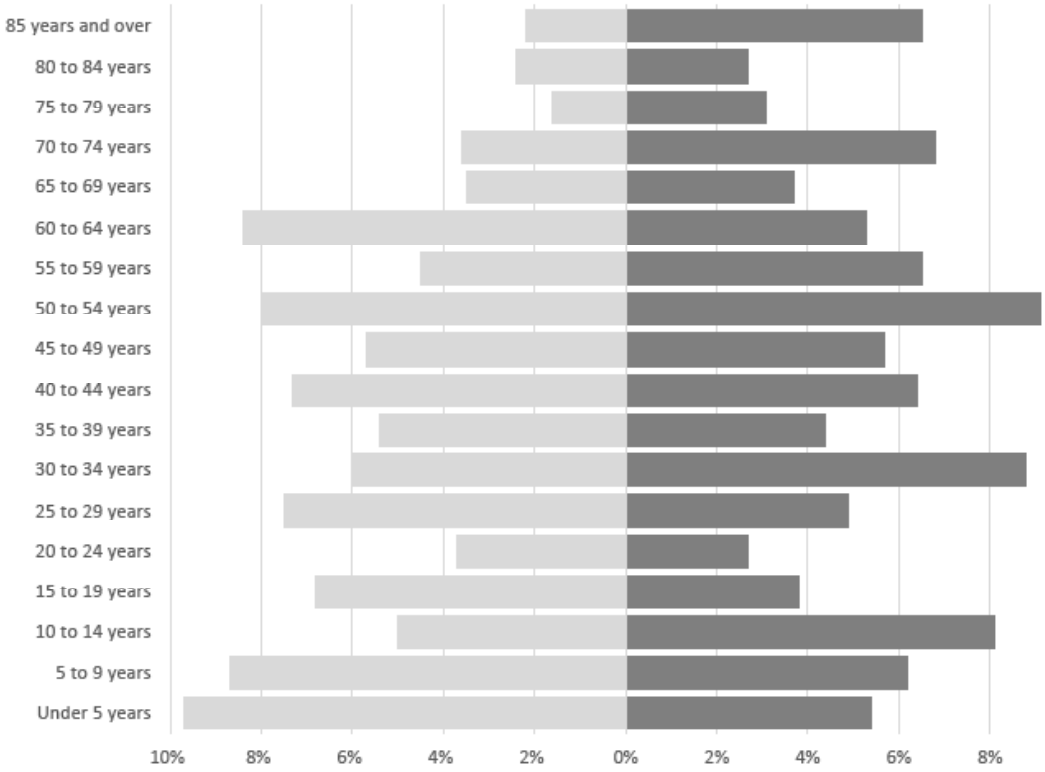
The Village of Newberry has experienced an overall decline in population since 2000. The 2011-2015 ACS estimates the current population of Newberry to be 1,729. This trend closely aligns with Luce County, which experienced population growth until 2000, when the population witnessed a notable decline.

When looking at the population trends, it is important to keep in mind that the Newberry Correctional Facility is located just outside the Village limits. The population of 1,100 inmates is counted in the overall population of Luce County, and impacts the demographic trends.

Age & Gender Distribution

The distribution of males and females in Newberry is similar to that of the state average, with 51% of residents identifying as female and 49% as male. The median age is 42 years, which has increased since 2010 and is slightly older than the state average. The age distribution is fairly evenly distributed, although the age and gender trends reflect a larger trend throughout Michigan: younger people, aged 18-24, tend to leave for out-of-state college or relocate

7: Age and Gender Distribution (2015), %



immediately after graduating from a Michigan university for better career opportunities. Because the numbers rebound in older age brackets, it is likely that those who left in their youth returned to Newberry later on.

Income & Poverty

The Village of Newberry's median household income (MHI) is substantially lower than the state of Michigan's, $32,000 to $49,576 respectively. Per capita income in Newberry is also significantly lower than the state average at $18,551. It should be noted, however, that per capita income has increased by 9.6% in Newberry since 2010.

In the past 12 months, it was estimated that 27.1% of individuals are living below poverty the line in Newberry. This compares with 19.6% and 15.7% in Luce County and the state of Michigan respectively.

The 2011-2015 ACS estimates that 12.8% of households in Newberry have received Food Stamps/SNAP benefits in the last 12 months, compared with only 3.4% statewide.

Educational Attainment

The link between poverty and educational attainment is real. For those with less than a high school diploma the mean income is less than $12,000 per year, compared with over $45,000 for those with a bachelor's degree. It should be noted that a bachelor's degree does not guarantee gainful employment; however, the rates of poverty are significantly lower with a post-secondary degree.

Disability Status

The disabled population is 25% in Luce County compared with only 14% in the state of Michigan. Luce County, as well as the state as a whole, is experiencing an overall increase in the number of disabled residents. A growing disabled population corresponds with a nationally aging population. The highest proportion of those who suffer from ambulatory and

self-care difficulty are senior citizens. It is important to track types of disabilities and how they change over time in Newberry and the region because residents with mobility constraints require different housing and community amenities to meet their needs.

Race

Newberry continues to be primarily white (89.1%). However, it is interesting to note that Newberry has seen a substantial increase in the number of individuals who identify as American Indian or Alaska Native. From 2010 to 2015, this number jumped from 5% to 12%. It should be noted that because of a small sample size, the ACS estimates have a relatively high margin of error.

Health Statistics

Although the Village of Newberry and Luce County have considerable natural resources for outdoor activity and exercise, Luce County residents are less healthy than residents of other counties in the state of Michigan. Based on the Robert Wood Johnson County Health rankings compiled in 2016, Luce County is ranked 70th of 82 in Michigan for quality of life (1 county did not have sufficient data), which is based on overall physical health, mental health, and birth weight data. Notably, the County ranks eighth in length of life.

8: Luce County Health Rankings

LUCE COUNTY HEALTH RANKINGS	
HEALTH VARIABLE	RANKING
Health Outcomes	26
Length of Life	8
Quality of Life	70
Health Factors	65
Health Behaviors	79
Clinical Care	59
Social and Economic Factors	61
Physical Environment	4

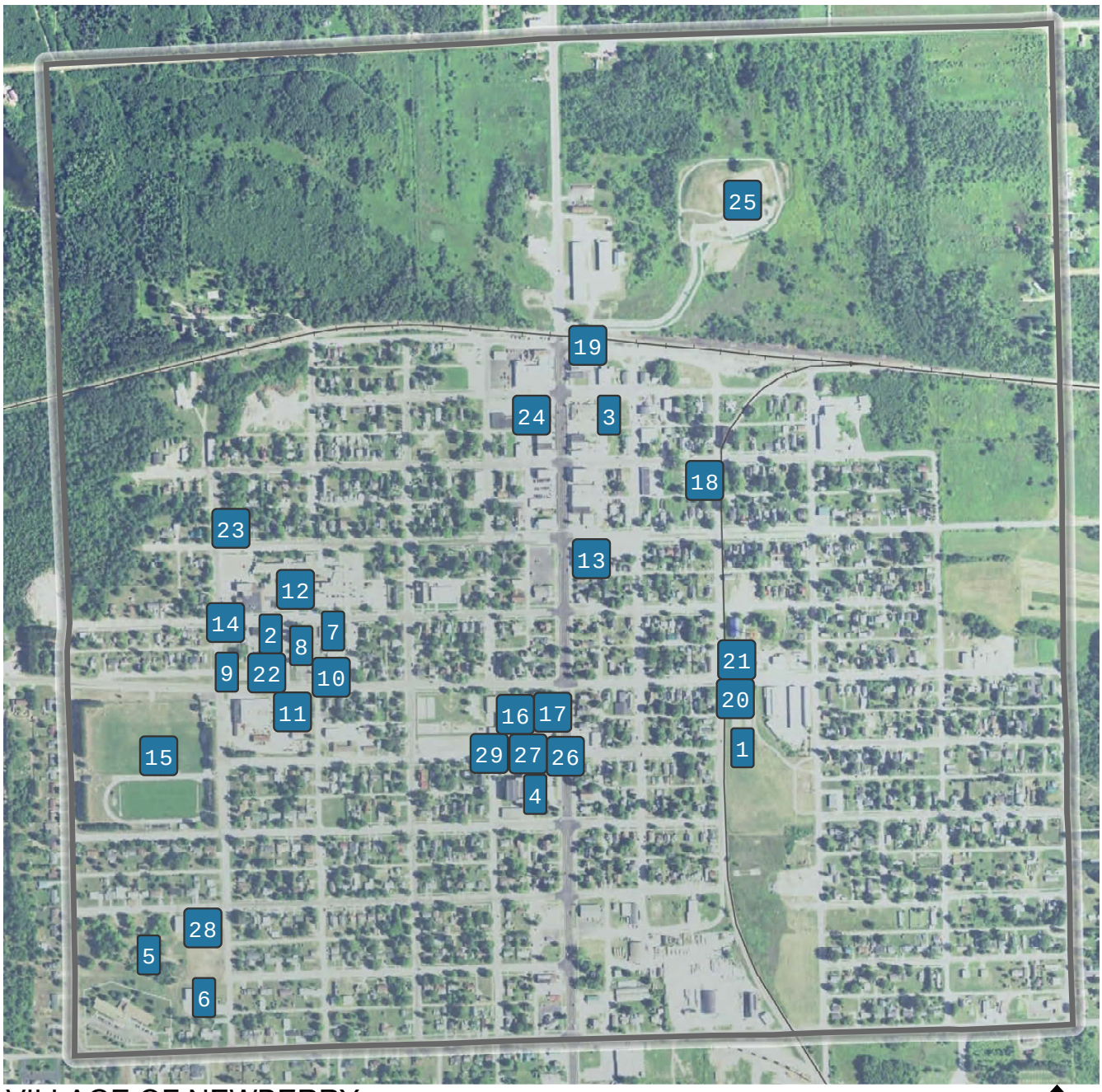
Source: 2016 County Health Rankings

The County Health Rankings & Roadmaps program is a collaboration between the Robert Wood Johnson Foundation and the University of Wisconsin Population Health Institute. Health outcomes represent how healthy a county is, and are measured by how long people live and how healthy people feel while alive. Health factors represent what influences the health of a county, and are measured by health behaviors, clinical care, social and economic factors, and the physical environment.

Probably most disconcerting is that Luce County is ranked 79th out of 82 counties for health behaviors, which is a score for indicators such as food security, drug overdoses, and motor vehicle crash deaths.

Photo courtesy of the Newberry News

9: Community Institutions



VILLAGE OF NEWBERRY

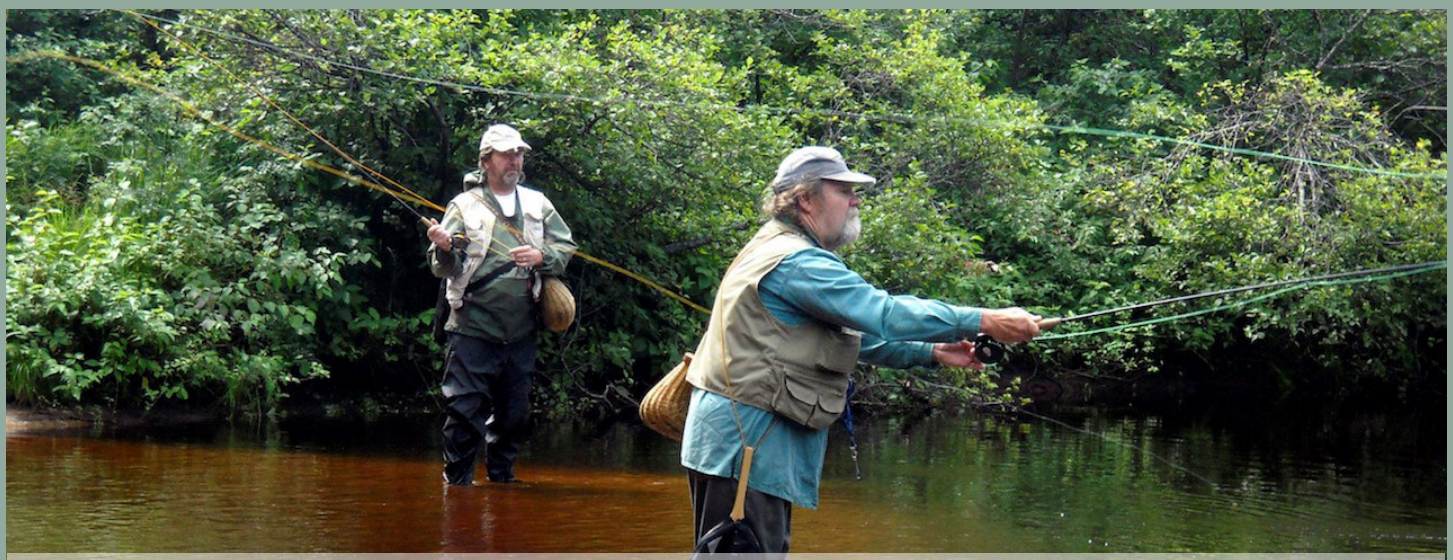
Community Institutions

0 0.05 0.1 0.2 0.3 0.4 Miles

Data Sources: State of Michigan Geographic Data Library
Eastern Upper Peninsula Regional Planning and Development Commission

Institution Name

1. Atlas Park
2. CHAC Community Health Access
3. Chip-Luce-Mack Community Action
4. Consolidated Community School Service
5. Knierim Park
6. Luce County Ambulance Service
7. Luce County Building
8, Luce County Historical Society
9. Luce County Human Services
10. Luce County Parks & Rec Department
11. Luce County Road Commission
12. Helen Newberry Joy Hospital
13. McMillan Township Office
14. Michigan Works!
15. Newberry Athletic Field
16. Newberry Elementary School
17. Newberry Middle School
18. Newberry Post Office
19. Newberry Railroad Depot
20. Newberry Village Office/ Admin Building
21. Newberry Water & Light Board
22. Secretary of State
23. Sherman Park
24. Tahqaland Theatre
25. Tahqua Outdoor Rec Complex
26. Tahquamenon Area Library
27. Tahquamenon Area School District
28. The Barn
29. Newberry High School



THE NATURAL & BUILT ENVIRONMENT, & LAND USE

Courtesy of Newberry News

This chapter summarizes the natural resources, including water, soils, and wildlife; facilities like water, sewer, broadband accessibility, and parks; and existing land use.

NATURAL FEATURES

Newberry, and the surrounding area, is defined by its pristine natural features, including prime woodlands, high water quality, and abundant wildlife. The Village is fairly flat, with rolling hills in the surrounding forested areas.

There is general agreement by community members that while Newberry is home to some of the most beautiful natural features in the state, many of the attractions are not well known to people outside of the community. There is a strong desire to brand Newberry with a unique identity. Much of the foundation for Newberry's community identity will be its high-quality natural resources.

Watershed

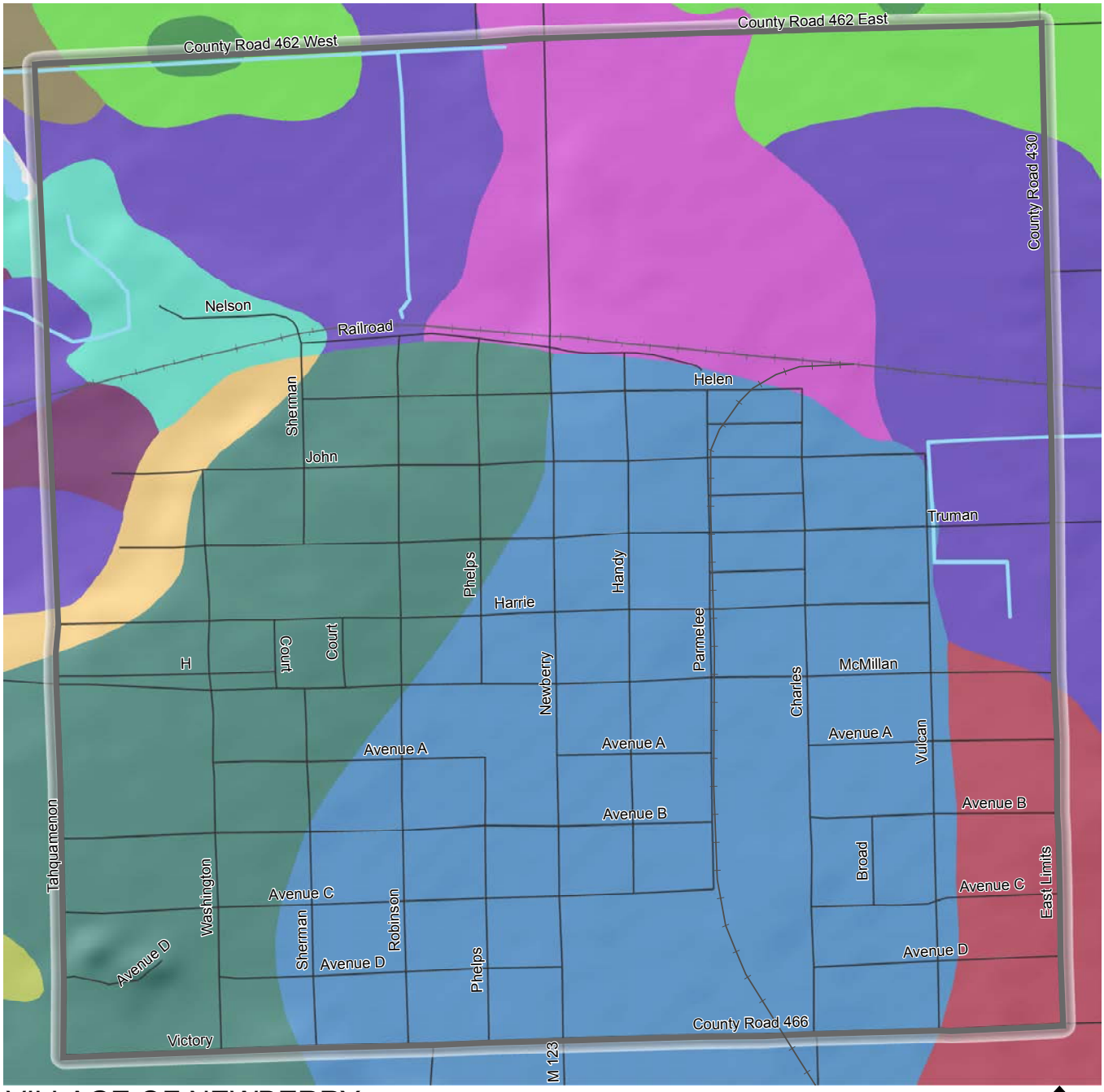
Newberry is located within the Tahquamenon River Watershed. According to the Eastern Upper Peninsula (EUP) Watershed profile prepared by the Chippewa Luce Mackinac Conservation District, this subwatershed is 517,968 acres and is part of the greater EUP watershed.

Land cover in the EUP watershed is predominately forest and wetland. Seventy-eight percent of the watershed is forested, while 13% is composed of wetlands. Less than 10% of the watershed is considered developed for urban or agriculture. Most of the land is in public ownership, either through state ownership (41%) or federal (15%).

Water Quality

As a part of a five-year monitoring cycle for watersheds in the state, the Michigan Department of Environmental Quality has identified erosion as a concern along the Tahquamenon River from a variety of sources, including agriculture operations, past logging operations, and road/stream crossings. The Tahquamenon River has been significantly altered by historical logging operations, and erosion issues continue to occur at road/stream crossings and in developed areas along the lakeshore.

10: Detailed Soil Classification Map



VILLAGE OF NEWBERRY

Detailed Soils Classification

0 0.05 0.1 0.2 0.3 0.4 Miles

Data Sources: State of Michigan Geographic Data Library
Eastern Upper Peninsula Regional Planning and Development Commission

- Village of Newberry
- Roads
- Ditches/Rivers
- Lakes
- Railroads
- Allendale loamy fine sand
- Carbondale, Lupton, and Tawas soils
- Gogomain muck
- Kalkaska loamy sand
- Kalkaska sand
- Paquin-Finch sands
- Pits, sand and gravel
- Rudyard silt loam
- Spot-Finch complex
- Udipsamments and Udorthents
- Wallace sand
- Wallace sandy loam

Forests

Luce County is relatively flat with large expanses of open peat-lands and forested lowland swamps. The Eastern Upper Peninsula State Forest Management Plan states that lowland open/semi-open lands make up 19% of the EUP, northern hardwoods 11%, aspen 11%, cedar 11%, and jack pine 9%.

As public land is transfered to private ownership in much of the Upper Peninsula, the overall health of forested areas is threatened because of habitat fragmentation. Forests become fragmented and diminished as land is cleared for buildings, lawns, and roads. Fragmentation hinders ecological functions, especially habitat for wildlife.

Additionally, there are a number of forest insects and diseases that are threatening forest conditions in the EUP; the most significant of these are beech bark disease, spruce budworm, and emerald ash borer.

Wildfire

Wildfire is a very real concern in Luce County and the Village of Newberry. In 2007, the Sleeper Lake Wildfire burned 18,185 acres in McMillan Township, just north of the Village. In 2012, the Duck Lake Wildfire burned 21,069 acres, causing Governor Snyder to declare a state of disaster in Luce and Schoolcraft counties. Numerous campgrounds and other recreational facilities were closed as well as ORV trails and county roads.

Although homes and businesses in Newberry are not generally directly under threat from wildfire, the impacts of wildfire have far-reaching consequences on tourism, local businesses, and the overall quality of surrounding natural habitat and forestland.

Wetlands

Wetlands are an important natural resource. They provide a number of important ecosystem services, including flood control, nutrient and pollution filtration, groundwater recharge, and habitat for plants and wildlife. The Village has a number of wetland areas north of the railroad tracks, 18 acres of which are within a designated brownfield.

Soils

The soil characteristics recorded by the county soil survey form the base of knowledge on a variety of development-related factors. Understanding soil profiles and compositions is key when evaluating development needs.

Most soils in Luce County have severe agricultural limitations that make them unsuited to cultivation.

The majority of the Village has a sandy soil association, which is suitable for development and is well-drained. In the northern portion of the Village, the soils are more loamy and less well-drained, located along streams, old drainageways, and small embankments (Luce County Soil Survey). The northern portion of the Village has slight elevation grades, wetlands, and hydric soils.

Recreation

Local residents are quick to highlight that you can drive to six of the seven Wonders of Michigan within a few hours of the Village limit. Newberry's close proximity to tourist attractions is a big asset that the community hopes to leverage for economic development.

Newberry's Recreation Master Plan identifies a number of recreational amenities within the Village, as well as opportunities for expanding amenities within the Village and the surrounding area. Newberry has four parks located within the Village; these include the Curt Kneirim Memorial Park, Sherman Park, Atlas Park, and the site of the Tahquamenon Outdoor Recreation Complex. The Village plans for more playground facilities at the local parks. Additionally, Village leadership desires to collaborate with the township and county to improve canoe and kayak access at the Logging Museum and Dollarville Dam and fishing/motorized boat access at McPhee's Landing.

11: Recreation Infrastructure Map

VILLAGE OF NEWBERRY

Recreation Infrastructure

0 0.05 0.1 0.2 0.3 0.4 Miles

Data Sources: State of Michigan Geographic Data Library
Eastern Upper Peninsula Regional Planning and Development Commission

Recreation Infrastructure

- Newberry Athletic Field
- Park Land
- State Land
- Newberry Village Office/ Admin Building
- Sherman Park
- TORC Facility
- Tahqaland Theatre
- Knierim Park
- Atlas Park
- Luce County Parks & Rec Department
- Luce County Historical Society

- Village of Newberry
- Railroads
- Roads

Tahquamenon Outdoor Recreation Complex

The Tahquamenon Area Recreation Authority (TARA) is made up of four units of government - Pentland and McMillan Townships, Luce County, and the Village of Newberry. The authority was formed to construct a new skating facility for Newberry.

The new complex will be located on the former Iron Charcoal Facility northeast of the crossing of M-123 and the Canadian National Railroad, just north of historic downtown Newberry. The site is located on a brownfield, and the community used MDEQ funds for clean-up, remediation, and redevelopment of the brownfield in Phase 1. TARA was awarded a Michigan Natural Resources Trust Fund grant with the Village of Newberry for $300,000 for improvements to the facility.

Tahquamenon River and Falls

The popular Tahquamenon River and waterway is located within a mile of the Village. The Tahquamenon River is a recreational jewel in the region, and one that the region hopes to better leverage for placemaking and economic development.

The river is 94 miles long and drains approximately 820 square miles. It begins in the Tahquamenon Lakes in northeast Columbus Township in Luce County. M-123 runs alongside a portion of the river north of Newberry.

The Tahquamenon River in the Ojibwa language is Adikamegongziibi, meaning "River at where the Whitefish are found."

The Upper Falls in the summer. Photo courtesy of the Newberry News

A family enjoying ice cream at The Scoop while on vacation.

Tahquamenon Falls State Park is Michigan's second largest park, exceeding 40,000 acres. The Falls are the second largest waterfall east of the Mississippi. Half a million visitors come each year to marvel at the spectacular waterfalls.

Cultural Resources

The Village is ripe with historical and cultural resources that contribute to its identity and shape what Newberry is today. Located within the Village of Newberry are the Luce County Historical Museum, the Luce County Historical Society, and the Tahqua-Land Theater. The Community Institutions map shows the location of these facilities as well as other public institutions in the Village.

Just outside of the city limits is the Tahquamenon Logging Museum. Situated on 29 acres on the shores of the Tahquamenon River, the museum features artifacts from Michigan's early days of lumbering. There is an opportunity to improve access to the Tahquamenon River at this site for fishing and other recreational activities.

During a community visioning session, a number of participants expressed a desire to foster and support cultural groups and local artists. The desire for year-round entertainment, more recreation activities, and more civic events was also expressed.

PUBLIC FACILITIES AND SERVICES

Newberry Water & Light

Newberry Water & Light is the municipal utility for the Village of Newberry and surrounding residents. The utility provides electrical, garbage, water, and sewer services to residents.

Newberry Water & Light also provides electrical services about 1.5 miles south of the Village to businesses located along M-123. Newberry Water & Light provides an Energy Optimization Program

for customers to reduce energy demand and reduce the monthly payment burden for customers.

Garbage service is provided for all Village residents and the Village is also looking at adding recycling drop-off services with funding from a DEQ grant.

Sanitary Sewer System

Newberry Water & Light provides continuous sewer infrastructure for all residents and businesses within the Village as well as portions of the surround townships. Rehabilitation of the waste water treatment plant is currently underway as of summer 2017.

Water Supply

Water service is also supplied by Newberry Water & Light. Water lines extend to all residents and businesses within the Village limits as well as some property owners located in surrounding townships.

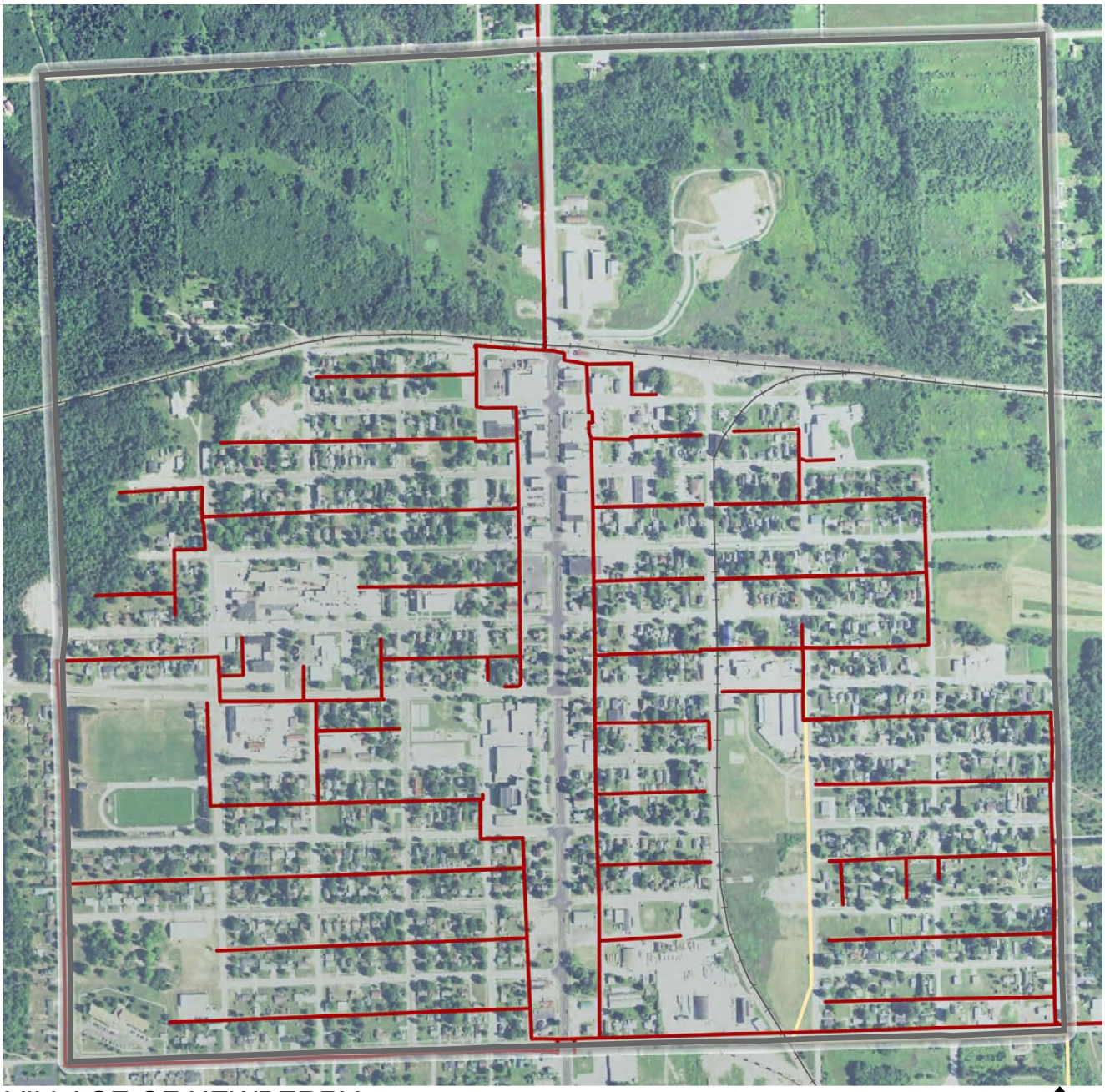
The Phase 5 Water Project, which was funded through the United States Department of Agriculture Rural Development, assisted the Village in replacing approximately 90% of the water lines and refurbishing the water tower.

Stormwater Management

Street trees provide a great opportunity for adding green infrastructure by reducing stormwater runoff and increasing air and water quality. The Newberry Recreation Plan notes that the Village has an aging stock of

Newberry High School

12: Public Utilities Map



VILLAGE OF NEWBERRY

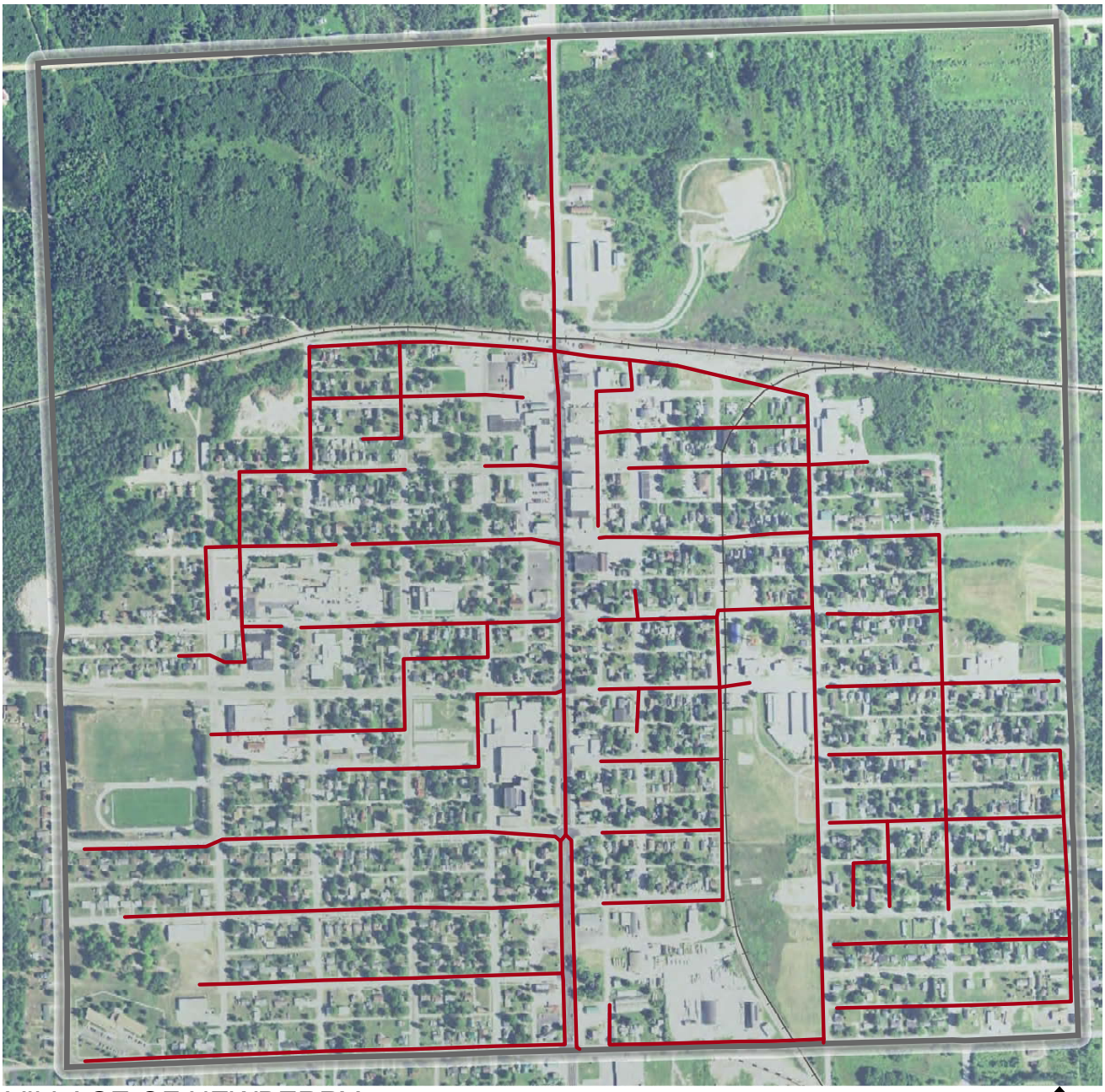
Public Utilities

0 0.05 0.1 0.2 0.3 0.4 Miles

Data Sources: Semco Energy
CTC Engineering, Inc.
Eastern Upper Peninsula Regional Planning and Development Commission

Village of Newberry
Major Electric Lines
Gas Pipe Lines
Railroads

13: Sanitary Sewer System Map



VILLAGE OF NEWBERRY

Sanitary Sewer System

0 0.05 0.1 0.2 0.3 0.4 Miles

Data Sources: C2AE
Eastern Upper Peninsula Regional Planning and Development Commission

Newberry Sewer Lines

Village of Newberry

Railroads

14: Water System Map

VILLAGE OF NEWBERRY

Water Distribution System

0 0.05 0.1 0.2 0.3 0.4 Miles

Data Sources: Semco Energy
CTC Engineering, Inc.
Eastern Upper Peninsula Regional Planning and Development Commission

Village of Newberry

Newberry Watermains

Railroads

15: Existing Land Use Map

VILLAGE OF NEWBERRY

Existing Land Use

0 0.125 0.25 Miles

Data Sources: State of Michigan Geographic Data Library, EUP

- Village Boundary
- State Roads
- All Roads
- Railroads
- Rivers / Streams
- Parcels
- Residential
- Community Commercial
- Central Business District
- Social / Institutional
- Industrial
- Open Space
- Unclassified / Vacant

Disclaimer: Parcel boundaries on this map are for illustrative purposes only and are not intended to represent legal descriptions. Select boundaries have been approximated from the original data source (EUPRPDC) and are unknown. Please confirm any questions regarding property boundaries with the Village of Newberry.

Beckett&Raeder

trees, many of which line the main corridor. Unfortunately, many are being cut down as they become hazards and are not being replaced.

In the future, the Village will need to address stormwater infiltration to reduce negative impacts of extreme rain events on infrastructure, especially considering their increase in frequency and intensity as a result of a changing climate. Currently, there are areas within the Village that are overwhelmed with flooding during and immediately after extreme precipitation events.

Communications

The Village sees high-speed Internet connections as an essential tool for economic development and has worked to get higher-speed broadband services to Newberry residents. The Village has secured fiber optic in the downtown area from Hiawatha. By ensuring better broadband access, more people may be incentivized to work remotely in Newberry. Fiber-optic communications will also provide an incentive for a business incubator or other start-ups to locate in the Village.

Schools

The Newberry Elementary School, Middle School, and High School are all co-located within the Village. Although the schools are a recognized asset, community leaders expressed concerns about an underfunded school system, both from the perspective of diminishing population and deterioration of building conditions.

Newberry Correctional Facility

The Newberry Correctional Facility is located just outside of the Village limits in Pentland Township and was part of the former Newberry Regional Mental Health Center. The Newberry Correctional Facility consists of seven interconnected, 80-bed units, two-bed housing units, one 88-bed unit, one 134-bed unit, a 32-bed housing unit, and an adjoining educational building.

EXISTING LAND USE

The existing land use map was developed by the Newberry Planning Commission with assistance from the Newberry code enforcement officer. Volunteers and Village officials conducted a detailed windshield inventory, categorizing all land uses into seven different categories, which include Residential, Central Business District, Community Commercial, Social/Institutional, Industrial, Open Space, and Vacant/Unclassified.

As is the case in most urban incorporated cities and villages, the majority of the Village (65% of total land area) is considered *urban and built up*. The portion of the Village located north of the railroad tracks is predominately forested and/or wetlands (25% of total land area).

This detailed inventory of existing land uses will allow the Village to establish zoning districts that are based on historical development patterns and existing land use conditions.

ECONOMIC PROFILE

One challenge for Newberry and the greater county is transitioning from a rural community, heavily reliant on government jobs, to a community that leverages all available assets and strengths to retain the next generation of skilled workers.

Luce County's natural resources provide an abundant and accessible asset that can be utilized and expanded. While natural resource-based jobs derived from resource extraction and commodification will not disappear, Newberry has the opportunity to leverage its natural resources for tourism and recreation as well.

Like many other sparsely populated regions in Michigan, Newberry will need to figure out how to retain smart, educated young people.

Employment Trends by Industry

Education, Services, & Health Care & Social Assistance collectively account for 23% of all jobs in Newberry. This is rivaled by Public Administration, which represents almost 19% of total employment. In addition, Retail Trade represents about 17% of employment.

Largest Employers

Because Newberry is the county seat and the only incorporated community in Luce County, many of the jobs in the region are concentrated within the Village limits, and the largest employers within the Village are government-based. Thirty percent of Newberry workers are classified as government workers, as compared with a statewide average of 12%.

The following are the largest employers of Newberry residents:

1. The State of Michigan
2. Luce County
3. Helen Newberry Joy Hospital
4. Tahquamenon Area Schools

Retail Leakage

Esri Business Analyst is a proprietary software program that compiles privately-generated market research data and census information. It is a useful tool to determine retail potential within a community and its surrounding service area.

For Newberry, a Retail MarketPlace Profile was generated for a 10-minute driving radius surrounding the Village of Newberry, which encompasses a population of just over 4,000

people.

The Leakage/Surplus Factor presents a snapshot of retail opportunity. This is a measure of the relationship between supply and demand that ranges from +100 (total leakage) to -100 (total surplus). A positive value represents 'leakage' of retail opportunity outside the trade area. A negative value represents a surplus of retail sales, a market where customers are drawn in from outside the trade area.

According to the report, there is a 100% leakage of people going outside of the region to access home furnishings, lawn and garden supplies, specialty food and drink, shoes and clothing, and books/media. Of course, it is not realistic for the Village and surrounding township to accommodate all of these goods and services within this 10-minute radius, but these are opportunities for the Village to consider when looking to attract new businesses.

It appears people from outside the area travel to Newberry for various services. Examples of these goods and services include building materials, general groceries, florists, office supplies, and drinking establishments. These could be niche markets that Newberry continues to grow and leverage by attracting new businesses to these industry groups.

16: Employment by Industry

EMPLOYMENT BY INDUSTRY			
	Newberry	Luce County	Michigan
Agriculture, Forestry, Fishing & Hunting, & Mining	3.0%	6.4%	1.3%
Construction	5.7%	4.6%	4.8%
Manufacturing	7.8%	11.9%	17.8%
Wholesale Trade	0.0%	0.5%	2.4%
Retail Trade	16.9%	12.3%	11.4%
Transportation & Warehousing, & Utilities	3.0%	4.8%	4.2%
Information	0.5%	0.3%	1.6%
Finance & Insurance, & Real Estate & Rental & Leasing	1.9%	3.4%	5.4%
Pro., Sci., & Mgmt., & Admin. & Waste Mgmt. Services	1.4%	3.9%	9.3%
Edu. Services, & Health Care & Social Assistance	23.0%	21.0%	23.9%
Arts, Entertainment, & Rec., & Food Services	13.7%	11.7%	9.5%
Other Services, Except Public Admin.	4.3%	5.0%	4.7%
Public Admin.	18.9%	14.2%	3.6%

ACS 5-Year Estimates 2011-2015

Participation in the Labor Force

In 2015, only 55% of Newberry residents aged 16-65 participated in the labor force. This is substantially lower than the state average of 63%. Community leaders have raised concerns that a lack of jobs and an aging population could be contributing to this figure. A combination of attracting workers to the community and expanding job opportunities for existing residents could push Newberry closer to the state average.

TALENT PIPELINE

According to the 2013 Governor's Economic Summit, 85% of projected jobs will likely require a bachelor's degree between 2012-2021. At 4% per year, Michigan has the highest rate of educated youth leaving the state—more than double the rate in other midwestern states. Michigan ranks in the bottom five states for the percentage of 25-34 year olds. Stakeholders in Newberry noted a lack of vocational training or support for technical jobs. The result is a lack of qualified workers as well as a movement of young people to other parts of the country with more educational and training opportunities.

JOB GROWTH

With a historically accurate track record, the University of Michigan Research Seminar in Quantitative Economics estimates there will be almost 42,000 jobs created in 2017 and another 50,000 jobs in 2018. However, this job growth rate projection falls short of reaching residents who often remain chronically unemployed. In 2016, according to the Current Population Survey, there were 237,600 unemployed workers in Michigan— a figure that does not include discouraged workers, or those who have stopped actively looking for work because they believe there are no jobs available. In 2016, the Bureau of Labor of Statistics estimated discouraged workers to number around 18,300 in Michigan. This leaves a gap of over 163,000 jobless Michiganders. In other words, job growth is not a comprehensive indicator to describe a person's economic opportunity. Regardless of occupation, there is some truth to the statement that "there are no jobs."

While the percent of individuals over the age of 16 who are employed has grown in Newberry over the past five years, poverty has not seen a corresponding decrease in prevalence. It is estimated that 27% of individuals in Newberry are living below poverty line and 13% of households in Newberry have received Food Stamps/SNAP benefits in the last 12 months.

TRANSPORTATION

Transportation plays a major role in job accessibility. In 2015, Michigan Works! interviewed 400 of its clients, former job-seekers. Almost half (48%) of the interviewees reported that transportation is a problem for finding and keeping a job; those with reliable access to a vehicle are more likely to be employed. Transportation by automobile is most households' second-largest expense (up to $15,000 per year), leaving those in poverty without a reliable way to connect to employment. Furthermore, in Region 9, 56% of workers with cars cannot necessarily afford repairs. The need for improved transportation networks is affirmed by the high demand for transportation services requested through other MiWorks! agencies: 76-92% of all requests are for transportation assistance. Transportation options are very limited in Newberry. Without a reliable personal automobile, workers are quite limited in where and when they can work.

HOUSING

Many communities are dealing with the complicated relationships among housing values, vacancy rates, changing tenure, and how these affect a community's prospects for attracting and retaining talent. Much of the housing stock in Newberry is not in good condition. Although real estate can be purchased very cheaply, many residents do not have the resources to afford improvements or regular maintenance and upkeep. During public input sessions, Newberry residents were quick to note that rental housing opportunities are almost nonexistent within the Village limits.

Some MiWorks representatives working on the ground with employers also reported that when companies find qualified candidates, there may not be homes available for them to live within the community. This is due in large part to a shortage of jobs post-recession and a lack of housing options. Housing formats that lie along the spectrum of single-family detached homes, and large apartment complexes are missing. Those who wish to live in a condo, townhome, loft, or midrise apartment complex downtown are out of luck.

EDUCATION AND TRAINING

The largest labor mismatch comes from middle-skilled jobs. In Newberry and the Upper Peninsula as a whole, natural resource extraction was the primary economic engine. Now, as the knowledge economy and technological innovations drive much of the economy, many rural parts of the Upper Peninsula have struggled to keep pace.

With a rebounding economy, manufacturing and construction have seen an uptick in activity, but are hindered by an untrained workforce. Middle-skilled jobs refer to jobs that require more than a high school degree but not necessarily a bachelor's degree, typically an associates degree or some technical training. In 2015, 54% of jobs were middle-skilled, but only 48% of workers were trained for these jobs. A 6% difference equates thousands of workers out of work. Below, are some shortcomings in both the public and private sector that have contributed to this gap.

PUBLIC

- Federal cuts to career, technical, and adult education in 2012 that are only recently being funded again
- Michigan state funding tied to ratio of college-bound students
- Little effort to teach soft skills

PRIVATE

- Drop in the amount of apprenticeship programs through employers eroding a pathway to middle-skilled jobs
- Less private/corporate money spent on employee training and education
- Stagnating wages

STIGMA

Well-intentioned parents are often at the forefront of steering children away from working in factories with claims that the work is dangerous, unstable, and low-paying. Some of their trepidation stems from images of polluting factories, jobs being shipped offshore, and stagnating wages. According to a survey conducted by the non profit organization, SME, 20% of parents surveyed think manufacturing is outdated and nearly 25% think it is not well-paying. Half of all respondents do not think it is exciting or challenging.

17: % Change in Employment by Occupation

% CHANGE IN EMPLOYMENT BY OCCUPATION (2010-2015)			
	Newberry	Luce County	Michigan
Civilian Employed Population 16 Years & Over	0.2%	0.1%	0.1%
Management, Business, Science, & Arts Occupations	-20.5%	4.0%	4.0%
Service Occupations	-3.4%	1.5%	1.5%
Sales & Office Occupations	15.4%	-5.5%	-5.5%
Natural Resources, Construction, & Maintenance Occupations	31.1%	-6.5%	-6.5%
Production, Transportation, & Material Moving Occupations	13.0%	2.5%	2.5%
Sources: U.S. Census Bureau: American Community Survey			

Unemployment

Notably, Newberry has a low unemployment rate of only 7.7%, significantly lower than the state average. This number could be lower because fewer individuals are claiming unemployment or because individuals are underemployed.

Entrepreneurs

Community members noted one positive attribute of the economic climate: Newberry has a relatively low start-up cost for new businesses. For example, there are historic buildings for sale in downtown Newberry for as little as $35,000. While many of these buildings require substantial improvements and investments, the start-up costs are much lower compared with other communities.

Incubators

There are a number of small communities in Michigan that have taken a proactive approach to promoting an inviting atmosphere for small-scale business start-ups through development of a business incubator program. A retail business incubator could provide a collective place for start-up companies to build clientele and capital. For example, individuals can often lease space by square foot on a monthly basis, with the goal of helping the businesses work towards relocating to a permanent building. In addition to space, businesses often will have access to training and business development. This is a strategy that Newberry may want to explore.

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CORRIDORS

Transportation networks and connectivity are the cornerstones of a modern society. Our economy, and increasingly our social lives, depends on how well cities are linked to goods and services.

Within Newberry, transportation corridors provide residents, employees, and visitors with easy and affordable access to businesses, recreational amenities, schools, and other key services.

Downtown Newberry is aligned along Highway 123 (Newberry Avenue) and links the village south to Highway 28, which is ideal for leveraging drive-by traffic. As shown in the Traffic Flow map, approximately 7,300 vehicles travel through this corridor daily.

Newberry is typical of historic villages and small cities: when designed, streets were laid out in a grid pattern. This type of design creates small blocks and numerous cross-streets.

CORRIDOR TYPES

Roads within communities across the country are categorized by the National Functional Classification (NFC) System. The NFC is a system developed by the Federal Highway Administration to classify all streets, roads, and highways according to their function. The NFC system classifies roads into the following categories, from the most intensively used and highest speeds, to the least intensively used with lower speeds:

- Principal Arterial
- Minor Arterial
- Collector
- Local

The Road Classification Map shows where the roads that are classified are located within the Village.

It is interesting to note in the Traffic Flow map that the majority of traffic flows through the Village north-south through downtown on Newberry Avenue. However, because the number drops off north of the railroad tracks, it appears that people are not passing through the Village. Instead, they are probably accessing amenities in the Village, and leaving south out of town, the same way they entered.

18: National Functional Classification

RISING TIDE

Road Classification

Data Sources: State of Michigan Geographic Data Library, EUP

- Village Boundary
- State Roads
- All Roads
- Railroads
- Rivers / Streams
- Parcels

National Functional Classification:

- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local
- Unclassified

Beckett&Raeder

19: Traffic Flow Map

VILLAGE OF NEWBERRY

Traffic Flow

0 0.05 0.1 0.2 0.3 0.4 Miles

Data Sources: State of Michigan Geographic Data Library
Eastern Upper Peninsula Regional Planning and Development Commission

Village of Newberry
Roads
Rivers
Lakes
Railroads

Annual Average Daily Traffic

240
1300
1800
7000
7300

TRANSPORTATION TYPOLOGIES

Another way of understanding the roadways and corridors within a community is by identifying typologies. Transportation typologies are categories with loose definitions for describing the various options a person has as a driver, cyclist, or pedestrian. Transportation typologies are based on the following criteria:

- its physical conditions;
- how it accommodates its users;
- the surrounding land uses; and
- the development intensity.

These typologies differ from the National Functional Classifications because they assess how a road is viewed by users other than drivers. These typologies are not exact, but provide a description of different options for how roads can suit users' needs over time.

Main Street

Newberry Avenue (also known as M-123) is the principal, or main, street that runs through the downtown. This type of street should serve as many users as possible and offer an attractive ambiance. With an average right-of-way of about 100 feet, speed limits are slower to make pedestrians more comfortable during their downtown experience.

A view of West McMillan Avenue, which is a neighborhood collector

A view looking down East Avenue A, which is considered a residential or local street.

Commercial Arterials

Commercial arterials prioritize vehicular mobility between residential neighborhoods. Vehicular mobility is usually measured by flow of traffic and speed limits, and is therefore less pedestrian-oriented. This type of corridor contains retail stores with a large footprint or retail closer to the right-of-way. In this case, the northern and southern portions of Newberry Avenue also function as a commercial arterial.

Neighborhood Connectors

Neighborhood connectors provide access to neighborhood commercial properties and multi-

family housing. They may also serve as residential collectors, but mobility is still second to access.

Examples:

- McMillan Avenue
- Truman Boulevard

Residential

A residential street provides access to individual residential properties for motorized vehicles, bicycles, and pedestrians. They carry traffic that has a destination or an origin in a residential neighborhood. They may also offer on-street parking. Most residences in Newberry front on paved streets. Few of these paved streets, however, have curbs and gutters.

Examples:

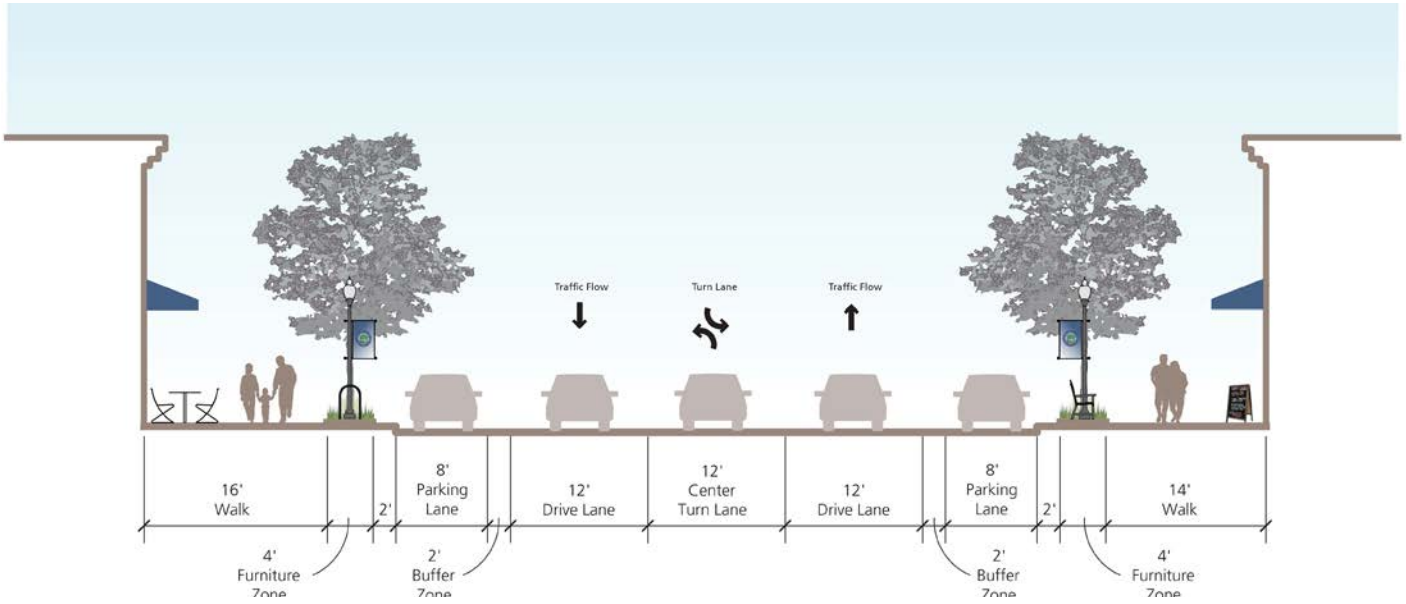
- Harrie Street
- John Street

TRANSPORTATION MODES

Michigan is a car-dependent state. Newberry is no different. Eighty-seven percent of workers commute alone to work by car. However,

Truman Boulevard has a wide right-of-way, but the center greenspace contributes to the overall user experience of the corridor.

Two kids take a break while riding their bikes in the afternoon on East McMillan Avenue. There is a bike path nearby through Atlas Park.



A sample cross section of a complete street. Although this street does not include bike lanes, there are wide sidewalks, greenspace for street trees, and parking.

it is interesting to note that 11% of Newberry residents reported walking to work, versus less than 1% in Luce County, indicating that the walkable urban design of Newberry facilitates more transportation choices than the surrounding townships.

Commute Time

Newberry residents report spending an average of 12 minutes getting to work each day, which is about half that of the state average. Although Newberry is spread out, congestion and slowed traffic are not issues for Newberry residents.

Complete Streets

There has been increasing public awareness, led by organizations like Smart Growth America, that streets should be designed for pedestrians, bicyclists, motorists, and public transit users of all ages and abilities. This concept, called Complete Streets, means that public rights-of-way are designed for everyone, not just vehicles.

Instead of measuring a successful road by vehicular mobility, Complete Streets look at design elements, safety, and convenience for all users. In 2010, Complete Streets legislation passed in Michigan that requires MDOT to consider multi-modal features with new road construction. Elements of a Complete Street differ by community, but common characteristics are sidewalks, bike lanes and racks, frequent and safe crossings, median islands, curb extensions, and elements that enhance the experience of using a street to encourage multiple modes. The idea is to reduce reliance on automobiles to shift the bias from mobility to accessibility.

Newberry's Complete Street Elements

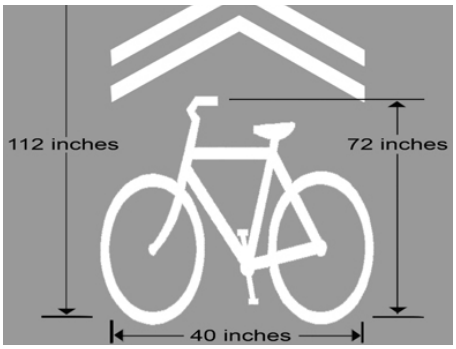
Newberry sees non-motorized infrastructure as both an equity issue to ensure that all residents have access to safe and affordable transportation options, as well as an economic development strategy.

The Michigan Department of Transportation funded a resurfacing and road diet project on three miles of M-123 N from Hamilton Lake Road through downtown Newberry. By investing in non-motorized infrastructure, the Village can use placemaking to attract and retain talented workers as well as better position themselves as the recreational hub of the Eastern Upper Peninsula.

Sidewalks

Although progress has been made, community residents note that a disconnected sidewalk system negatively impacts walkability

Newberry has fairly consistent sidewalks along Newberry Avenue. A special emphasis has been placed on routes that children regularly use for getting to and from

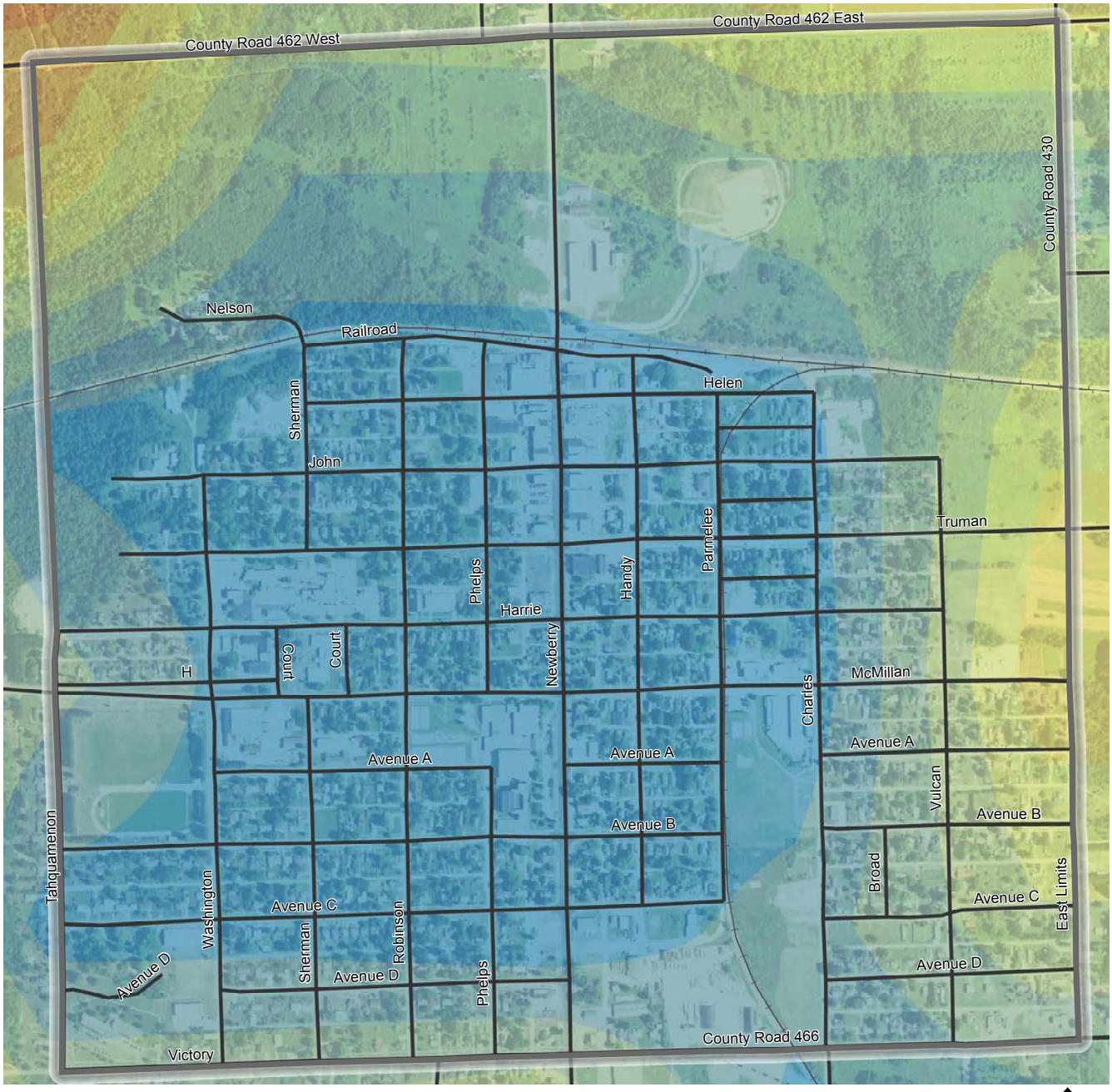


An example of a shared-lane marking or sharrow, found within the road right-of-way

school. Newberry had a walking audit completed, which informed infrastructure investments funded through a Safe Routes to School grant. Under this funding, three important routes to school were paved. As a part of this effort, the Village also made a commitment to regular snow removal along those routes.

The map "Walkability Score" shows the relative ease one can get around the Village by foot, and how many community destinations are within a reasonable walking distance. The blue colors indicate a W*alkers' Paradise*, where most errands can be accomplished on foot and many people get by without using a car. The walkability decreases on the color spectrum all the way to red, which indicates a car-dependent environment, where it is very difficult to access goods and services without an automobile.

20: Walkability Score Map



VILLAGE OF NEWBERRY

Walkability Score

0 0.05 0.1 0.2 0.3 0.4 Miles

Data Sources: Eastern Upper Peninsula Regional Planning and Development Commission

- Village of Newberry
- Roads
- 0 - 10
- 11 - 20
- 21 - 30
- 31 - 40
- 41 - 50
- 51 - 60
- 61 - 70
- 71 - 80
- 81 - 90
- 91 - 100

This Walkablity Map is based on business diversity and recreational opportunites in realationshipto trail, sidewalk, and road intersections. A high score correlates to many recreational opporunities and a large variety businesses within a 0.75 mile radius.

Streetscape Design

To improve walkability and sense of place, many communities are making streetscape improvements. These can include landscaping, lighting, traffic calming, and other public amenities.

The idea is to create a sense of place in the public right-of-way as opposed to a through-way. Improvements in streetscaping improve safety and perceived safety, and can also spur economic investment by improving visual appeal.

Newberry has already invested in significant streetscaping improvements along Newberry Avenue and plans to continue to pursue funding for additional projects, focused on the Central Business District.

Crosswalks are one component of streetscaping that has significant benefits for improving access and safety for pedestrians. Crosswalks can be mid-block crossings but are more commonly found at intersections. Downtown Newberry could benefit from additional marked crosswalks across Newberry Avenue. Newberry also serves as a gateway into the community from both the north and the south. Beautifying these entrance points could do a lot for Newberry's curb appeal.

Bicycle Amenities

There are two primary types of bicycle facilities that are appropriate for a community of Newberry's size. These include:

Bike lanes, which provide an exclusive space for bicyclists within the existing roadway. Bike lanes are generally four to six feet wide and are most appropriate on roadways with speeds not exceeding 25 mph. Newberry could consider a bike lane on Newberry Avenue as well as on McMillan Avenue.

Non-motorized paths, which provide an exclusive space for non-motorized transportation modes completely separated from the roadway. These paths are wider than sidewalks and often follow green spaces and abandoned rail beds, or might be adjacent to natural features like rivers. Newberry currently has one path at Atlas Park and one planned at the new Tahquamenon Outdoor Recreation Complex.

Shared Lane Markings (SLMs), or "sharrows," are road markings used to indicate that the roadway is an appropriate environment for bicycles and automobiles to co-exist. Although not considered a facility type, a sharrow is useful on low-traffic roads to remind automobiles that the roadway is intended to be shared by all users, and can also assist bicycles with wayfinding.

Trails

The Village is interested in improving access and connectivity to recreational opportunities for non-motorized and motorized trail users. Each winter, thousands of snowmobilers descend on Newberry and the surrounding community. Improved snowmobile access in town could mean more business for local restaurants, coffee shops, and lodging facilities.

Trails can be a significant driver of economic development in a community, especially in the new economy, where people tend to choose where they want to live based on community amenities they will have access to.

Trail Towns is an economic development strategy aimed at leveraging recreational trail amenities for economic development by improving connections between the trail head and the Central Business District.

Newberry has already embraced this idea and is an official Trail Town of the North Country Trail. Newberry can take advantage of additional opportunities to further capitalize on the fact that people are already coming to enjoy the natural resources of the surrounding area.

WAYFINDING SIGNAGE

As a part of establishing an identity and bringing people into the Village, Newberry plans to invest in better wayfinding signage, both into and around the Village. A uniform set of signs demarcating

21: Bike Infrastructure Map

VILLAGE OF NEWBERRY

Bike Infrastructure

0 0.05 0.1 0.2 0.3 0.4 Miles

Data Sources: State of Michigan Geographic Data Library
Eastern Upper Peninsula Regional Planning and Development Commission

Village of Newberry
Rivers/Ditches
Lakes
Light AADT
Medium AADT
Medium AADT w/ Wide Shoulder
Roads
Railroads

key destinations would be useful for people traveling by vehicle as well as trail users and pedestrians.

AIRPORT

The Luce County Airport is located in Pentland Township and supports general aviation uses.

RAIL

The Canadian National Railway connects the Village of Newberry west to the City of Munising (Alger County) and east to the City of Sault Ste. Marie (Chippewa County).

PASER RATING

Although not always at the forefront of economic development discussions, the quality of a community's roadways play an important role in the visitor's experience and the overall desirability for businesses looking to locate there.

Newberry Avenue from the southern tip of the Village limit to the railroad tracks has a PASER (Pavement Surface Evaluation and Rating) of 10, on a scale of 0-10, with 0 being the poorest condition. These mandatory visual surveys are conducted by a team of representatives from the municipality, MDOT, and the regional planning agency. It should be noted that the PASER rating was given in 2016, just before MDOT funded a full repaving of Newberry Avenue. If the road were to be reevaluated, it would probably receive a much lower score.

The other roads within the Village limit that received a rating include McMillan Avenue (rating of 6) and County Road 466/Victory Way (rating of 4/9 depending on the segment). The remaining streets within the Village did not receive a rating.

22: Road Quality Map

HOUSING & NEIGHBORHOODS

Newberry has well-established, attractive neighborhoods. These neighborhoods help define the character and unique sense of place within the Village. The preservation and enhancement of these neighborhoods is essential to the Village's success. Homes are the building blocks of neighborhoods, and a diverse housing stock lays the groundwork for healthy neighborhoods. This chapter explores the housing conditions and neighborhood typologies in Newberry.

HOUSING PROFILE

According to the American Community Survey, there are approximately 910 total housing units within the Village of Newberry. The age of the housing stock would make many Newberry neighborhoods eligible for listing on the National Register of Historic Places. Forty-one percent of these units were built prior to 1940, 22% were built in the 1940s, and 12% were built in the 1950s.

There was a lull in the 1960s with only 29 units constructed, and a small boom in the 1970s (12.7% of total supply). With so many older homes, there is a wealth of cultural heritage, but also a daunting maintenance challenge. According to the ACS, there were not any homes constructed within the Village between 2010 and 2015.

Fifty-three percent of housing units in Newberry are owner-occupied, while 27% are renter-occupied. The percentage of renter-occupied housing units in Newberry is slightly higher than the state average and significantly higher than the rate in Luce County, which is only 13%. In general, urban areas have lower rates of home ownership compared with their rural counterparts.

Most homes in the Village are single-family, detached homes (83%).The median housing value of owner-occupied housing units in Newberry in 2015 was $51,100. This compares with a county and state median value of $74,200 and $122,400 respectively.

During a community visioning session, community members noted the relatively low cost of home ownership in Newberry as both a positive and a negative. While it is affordable for families to buy a home in Newberry, many of the homes are in disrepair.

23: Housing Tenure

% OF THE TOTAL HOUSING UNITS			
	Newberry	Luce County	Michigan
Occupied Housing Units	80.4%	54.8%	84.6%
Owner-Occupied Housing Units	53.4%	41.4%	60.1%
Renter-Occupied Housing Units	27.0%	13.4%	24.5%
Vacant Housing Units	19.6%	45.2%	15.4%

ACS 5-Year Estimates 2011-2015

24: Housing Types

% OF THE TOTAL HOUSING UNITS			
	Newberry	Luce County	Michigan
1-Unit, Detached	83.3%	84.8%	72.1%
1-Unit, Attached	0.3%	0.1%	4.7%
2 Units	3.8%	2.0%	2.5%
3 or More Units	7.6%	2.4%	15.4%
Mobile Home	4.9%	9.7%	5.4%

ACS 5-Year Estimates 2011-2015

Additionally, the number of homes available for rent and for sale is very limited.

Cost of Living

Because the cost of living varies so greatly across the state, it is helpful to look at a series of indices to better understand the overall cost burden of housing on residents of Newberry.

The American Community Survey calculates the Selected Monthly Owner Costs as a Percentage of Household Income (SMOCAPI) to better understand the relative cost-burden of owning a home in Newberry.

A rule of thumb is that 30% or more of income spent on housing is considered to be a housing cost-burden. Despite the low cost of home ownership, 27% of homeowners spend more than 30% of their income on housing costs in Newberry, which is slightly lower than the state average.

Even more notable is that 54% of renters spend over 30% of their income on rent, as measured using the Gross Rent as a Percentage of Household Income (GRAPI).

Housing Target Market Analysis

According to the 2016 Housing Target Market Analysis, the Village of Newberry will need to intercept migrating households that are choosing other locations in Luce County if the community wants to experience population growth. This can best be accomplished through a combination of reinvesting in the downtown, growing small businesses, and adding amenities through a placemaking strategy.

Based on the target market analysis results for an aggressive scenario, there is a maximum annual market potential of up to 10 attached units throughout Luce County, plus 97 detached houses (for a total of 107 units). Among the 10 attached units, about one third (1/3) of the market potential will be captured by the Village of Newberry (three units annually). There will also be seven migrating households in Luce County each year seeking attached units in locations other than the Village of Newberry.

These seven households also represent an upside opportunity that Newberry could pursue through initiatives like job creation, downtown reinvestment, and placemaking.

25: Monthly Owner Costs as a % of Household Income (SMOCAPI)

SELECTED MONTHLY OWNER COSTS AS A PERCENTAGE OF HOUSEHOLD INCOME (SMOCAPI)	Newberry	Luce County	Michigan
Less than 20.0 percent	48.8%	49.2%	44.5%
20.0 to 24.9 percent	19.2%	14.4%	16.1%
25.0 to 29.9 percent	5.4%	5.1%	10.7%
30.0 to 34.9 percent	0.8%	4.7%	7.1%
35.0 percent or more	25.8%	26.6%	21.7%

ACS 5-Year Estimates 2011-2015

26: Gross Rent as a % of Household Income (GRAPI)

GROSS RENT AS A PERCENTAGE OF HOUSEHOLD INCOME (GRAPI)	Newberry	Luce County	Michigan
Less than 15.0 percent	13.7%	18.6%	12.1%
15.0 to 19.9 percent	11.3%	14.1%	12.0%
20.0 to 24.9 percent	14.6%	9.2%	11.8%
25.0 to 29.9 percent	6.6%	9.0%	11.2%
30.0 to 34.9 percent	7.1%	11.5%	8.6%
35.0 percent or more	46.7%	37.5%	44.3%

ACS 5-Year Estimates 2011-2015

Results of the analysis are intended to help communities and developers focus on Missing Middle Housing choices, which include triplexes and fourplexes; townhouses and row houses; and other multiplexes, like courtyard apartments and flats or lofts above street-front retail.

HOUSING ASSESSMENT

One concern identified by Newberry early on in the planning process was the prevalence of blight in the community and the inability of the Village to address the blight through local ordinance enforcement.

To better understand housing condition trends in the Village of Newberry, the project team conducted an external visual housing quality assessment of all housing structures within the Village limits. The team found that the housing stock in Newberry differs greatly from home to home within a single block. Following is a detailed summary of the results.

Methodology

The condition of each structure was recorded using an ArcGIS collector application that allows for immediate and reliable data storage and compilation.

A housing unit can be a detached, single-family home, an attached home, or an apartment or condo in a multi-family building. A unit is different than a structure, because one structure could contain several housing units. This is an important distinction because the team could only collect data on housing structures, which precludes any assessment of individual units if located inside a structure.

The team used a checklist that ranks homes based on the amount and severity of the damage visible on the exterior of the home. No interior assessments were conducted. The table on the following page is an example of the criteria considered and how each home was scored. The scoring system is based primarily

on assessing the quality of the structure; therefore some chipped paint does not weigh as heavily as structural damage such as missing windows or a building that leans. The types of repairs are categorized as "major," "minor," or "no problem," and the final score depends on the combination of major and minor repairs recorded. Based on the amount and type of repair needed, the team gave each housing structure one of the following scores:

In the table called 'Housing Checklist' is a more detailed description of how to distinguish between major and minor repairs for each housing feature. In this example, this home would be rated "good" because the home does not need more than two minor repairs.

27: Housing Checklist

Score	Description
0 (Demolition)	House is not structurally sound
1 (Poor)	Needs two or more major repairs
2 (Fair)	Needs three or more minor repairs, but no more than one major repair
3 (Good)	Needs 2 or fewer minor repairs

Findings

The project team visited and assessed 710 structures. Of all the assessed structures, 524 were ranked "good." Almost 74% of assessed structures were considered in good condition. 138 structures were ranked "fair" (19.4%), and 21 were ranked "poor" (2.9%). Five structures were considered blighted enough for demolition.

As can be seen on the map of General Housing Conditions, the homes that were rated as good, fair, and poor are fairly evenly distributed throughout the Village. This is a good sign because it indicates that in every

28: Housing Checklist Example

HOUSING FEATURE	TYPE OF REPAIR NEEDED				
	Major		Minor		Notes
Building frame/ structure	The building is not straight; leans or tilts		Building is not leaning; but foundation is in need of minor repairs or is missing material		
Roof/chimney/ gutters	A lot of deterioration, missing material, holes in roof, or sagging roof		Minor deterioration, improper roof repair, some mortar missing from chimney, gutters in need of repair	X	Some roof shingles are loose
Windows/doors	Windows missing, doors missing or rotted		Window frames need replacing or paint is peeling		
Siding/paint	Building missing many bricks, wood siding is rotted		Some peeling or cracking paint	X	Paint is chipping
Porch	Significant deterioration; steps missing, porch sagging, supports holding up porch are rotted		Separation of the porch from the building, paint needed		
SCORE: 3				GOOD	

HOUSING STOCK INVENTORY

Example of "good" housing stock

Example of "fair" housing stock

Example of "poor" housing stock, housing to demolish

29: General Housing Conditions Map

RISING TIDE - NEWBERRY

General Housing Conditions: 10/14/2016

Data Sources: State of Michigan Geographic Data Library, EUP

- Village Boundary
- State Roads
- All Roads
- Railroads
- Rivers / Streams
- Lakes / Ponds

Housing Categories:

- Poor Quality
- Average Quality
- Great Quality
- Vacant
- Non-Residential / Empty

Housing evaluation fieldwork conducted October 12 - 14, 2016

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neighborhood throughout the Village, there are residents with the means and the commitment to take care of their property.

DEFINING NEIGHBORHOODS

To better define the neighborhoods in Newberry, the Village has identified five different neighborhood regions based on density, housing type, natural and constructed edges, and the function they serve for the community.

The neighborhoods depicted on the Neighborhoods map will serve as a starting point for the Village in helping members of the community establish formal neighborhood associations should they desire and also prove helpful in informing the residential zoning districts. Attributes such as average lot size and average setback distance should be based on the existing attributes of a neighborhood and the surrounding homes.

Centers & Edges

A neighborhood center is based on sense of place rather than geography. It is either an anchor institution, a landmark, or a frequently visited location that serves its members in some way. Listed in the next sections are existing locations that either already serve as neighborhood gathering space, or could in the future.

Edges define the boundaries of a neighborhood and are generally delineated by busy roads, railroad tracks, municipal boundaries, and natural features such as wetlands, lakes, or rivers. The Neighborhood map depicts the general edges of each neighborhood.

Northwest

Built in a traditional grid pattern, Northwest Neighborhood is bounded by McMillan Avenue to the south, the railroad tracks to the north, the Village limits to the west, and Newberry Avenue to the east. This neighborhood is made up of older homes with a mix of lot sizes, many of which are quite small. There are a mix of alleys and homes served by driveways. The majority of homes in this neighborhood are single-family, usually detached homes. There are a few opportunities for infill development within this neighborhood.

Centers: The County Historical Society, Sherman Park, and Tahqua-Land Theater.

Southwest

Built in a traditional grid pattern, Southwest Neighborhood is bounded by McMillan Avenue to the north, the Village limits to the west and south, and Newberry Avenue to the east. This neighborhood is made up of older homes with a mix of lot sizes, many of which are quite small. Most homes are served by alleys. The majority of homes in this neighborhood are single-family, with multi-family in the southwest portion of the neighborhood. There are a number of parks and recreational opportunities within this neighborhood.

Centers: Public Schools, Newberry Athletic Field, the Barn, and Knierim Park.

Northeast

Built in a traditional grid pattern, Northeast Neighborhood is bounded by McMillan Avenue to the south, the railroad tracks to the north, the Village limits to the east, and Newberry Avenue to the west. This neighborhood is made up of older homes on small lots. There are a mix of alleys and homes served by driveways. The majority of homes in this neighborhood are single-family, usually detached homes. There are a few opportunities for infill development within this neighborhood.

Centers: Tahquamenon Outdoor Recreation Complex

South Central

Built in a traditional grid pattern, South Central Neighborhood is bounded by McMillan Avenue to the north, Avenue C to the south, Newberry Avenue to the west, and

A home on Truman Boulevard in Northwest Neighborhood.

A home on Avenue B in the Southwest Neighborhood.

Parmalee Street to the east. This neighborhood is made up of older homes with a mix of lot sizes, with larger homes that line Newberry Avenue. All homes are served by alleys and there is only one vacant parcel in this neighborhood.

Center: Atlas Park

Southeast

Built in a traditional grid pattern, Southeast Neighborhood is bounded by Charles Street to the west, McMillan Avenue to the north, and the village limits to the east and south. This neighborhood is made up of older homes with a mix of lot sizes, many of which are quite small. There are a mix of alleys and homes served by driveways. The majority of homes in this neighborhood are single-family, usually detached homes. There are a few opportunities for infill development within this neighborhood.

Center: Atlas Park

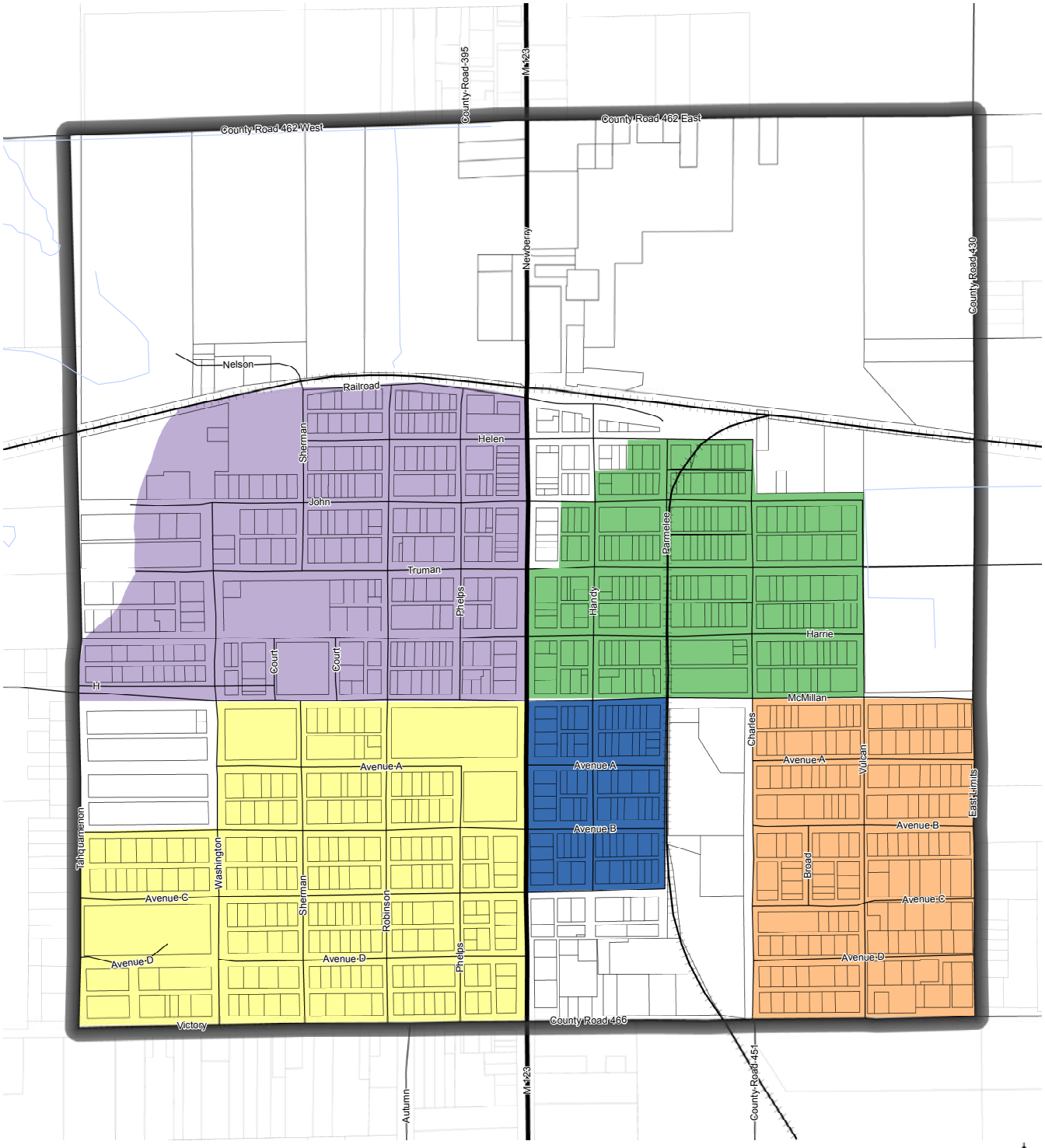
Atlas Park serves neighborhoods in the southeast portion of the Village.

A home on Newberry Avenue in the South Central Neighborhood.

A home on Truman Boulevard in the Northeast Neighborhood.

A home on Avenue B in the Southeast Neighborhood.

30: Neighborhoods



VILLAGE OF NEWBERRY MASTER PLAN

Neighborhood Typologies

0 0.15 0.3 Miles

Data Sources: State of Michigan Geographic Data Library, EUP, ESRI Basemap

- Village Boundary
- State Roads
- All Roads
- Railroads
- Rivers / Streams
- Parcels
- Northeast Neighborhood
- Northwest Neighborhood
- Southeast Neighborhood
- Southwest Neighborhood
- South Central Neighborhood

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REDEVELOPMENT

From a land-use planning perspective as well as an economic development perspective, it is important to take stock of the areas in the community that are ripe for redevelopment.

Because of the high-quality public infrastructure already in place, Newberry is focused on incentivizing and supporting redevelopment first and foremost in the downtown.

With the low cost of real estate and a number of vacant buildings, the Village offers a supportive environment for redevelopment. This section provides an overview of the redevelopment-ready sites in Newberry as well as some of the strategies the Village is using and plans to use to attract redevelopment.

PRIORITY REDEVELOPMENT AREAS

The Village of Newberry, and the surrounding area, has a number of sites that are currently fit to be redeveloped. These sites are either vacant buildings for sale, vacant land, or sites where there is space available for lease or rent. The Michigan Economic Development Corporation (MEDC) encourages communities to take a proactive approach to identifying and preparing properties to be redeveloped. A key element of the MEDC's Redevelopment Ready Communities Program is to identify redevelopment-ready sites and strategies associated with each site. As part of this master planning effort, a number of sites have been identified on a redevelopment map and key attributes of some priority sites have been described. As a next step, the Village will want to collaborate with the Luce County Economic Development Corporation to actively list and promote these properties for redevelopment.

Downtown Redevelopment

Downtown Newberry is ripe for redevelopment. Despite positive momentum and a number of downtown businesses that have recently opened, there are still empty store fronts and the capacity for the Village to attract new businesses.

The Village has several opportunities in the downtown for rehabilitation and facade

restoration. There are a number of buildings currently for sale that have the potential for rental rehabs or conversions into flats or lofts above main street. The following describes some high-priority redevelopment sites in the downtown district.

Former Falls Hotel

Known as the Falls Hotel, this historically significant building is currently for sale for $139,000.

The 17,708 square foot, three-story building has a working commercial kitchen, a lounge/dining room, 27 hotel rooms, and a historic brick exterior.

The Pines Building

Located just off the corner of John Street and Newberry Avenue, the Pine Building was once a general retail store and is currently vacant. At the time this plan was written in 2017, this two-story building was listed for sale for $20,000.

Old Bank Building

The Old Bank Building was once home to a number of different businesses including an art gallery, an antique store, and a natural food store. While the building has been vacant for a number of years, a number of businesses are poised to reopen there soon. The current owner is in the process of applying to the redevelopment programs available through MEDC. If the project is funded, there will be

two apartments on the upper level and more accessible retail spaces on the ground floor. In addition, the exterior will be restored to the original appearance.

John Street

There are three parcels on John Street just of Newberry Avenue that could be combined to support a mixed-use development.

Brownfield Sites

According to the Environmental Protection Agency, a brownfield is "a property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant." Often, brownfields are vacant or abandoned. Restoring brownfields is an important way to maximize existing infrastructure, wisely control future growth, and create economic opportunities.

Tahquamenon Outdoor Recreation Complex

This brownfield redevelopment project (TORC) is located on a parcel north of the railroad tracks in the Village of Newberry. The clean-up of the former Charcoal Iron plant was completed with MDEQ funds several years ago. The redevelopment funding will fund environmental remedies through capping activities including berming, seeding and mulching and paving the parking lot and

trails for the recreation complex. The Village of Newberry was also awarded funding from the Michigan Natural Resources Trust Fund in the amount of $300,000 to make a number of on-site improvements, including a new challenge course and playground equipment. Future fundraising will be needed to erect a support building for the park, with facilities for locker rooms, restrooms, concessions, meetings, and storage.

Trails designated for walking and biking are funded for the TORC and it will function as a trailhead for bicyclists heading north to Tahquamenon Falls and Paradise.

Former Lumber Yard

The former lumber yard at the corner of McMillan and Charles Street near the Village Offices could be used in its current form for DPW functions, light manufacturing or it could be demolished and used for residential or light industrial development.

SW Corner of M-123 and Avenue C

Two vacant parcels are across from Napa Auto Parts and one block down from the school. It would be an idea location for commercial or mixed-use redevelopment.

Newberry Avenue across from Avenue D

A vacant parcel is south of Napa Auto Parts. It could be ideal for commercial or mixed-use development.

Luce County Industrial Park Expansion Project

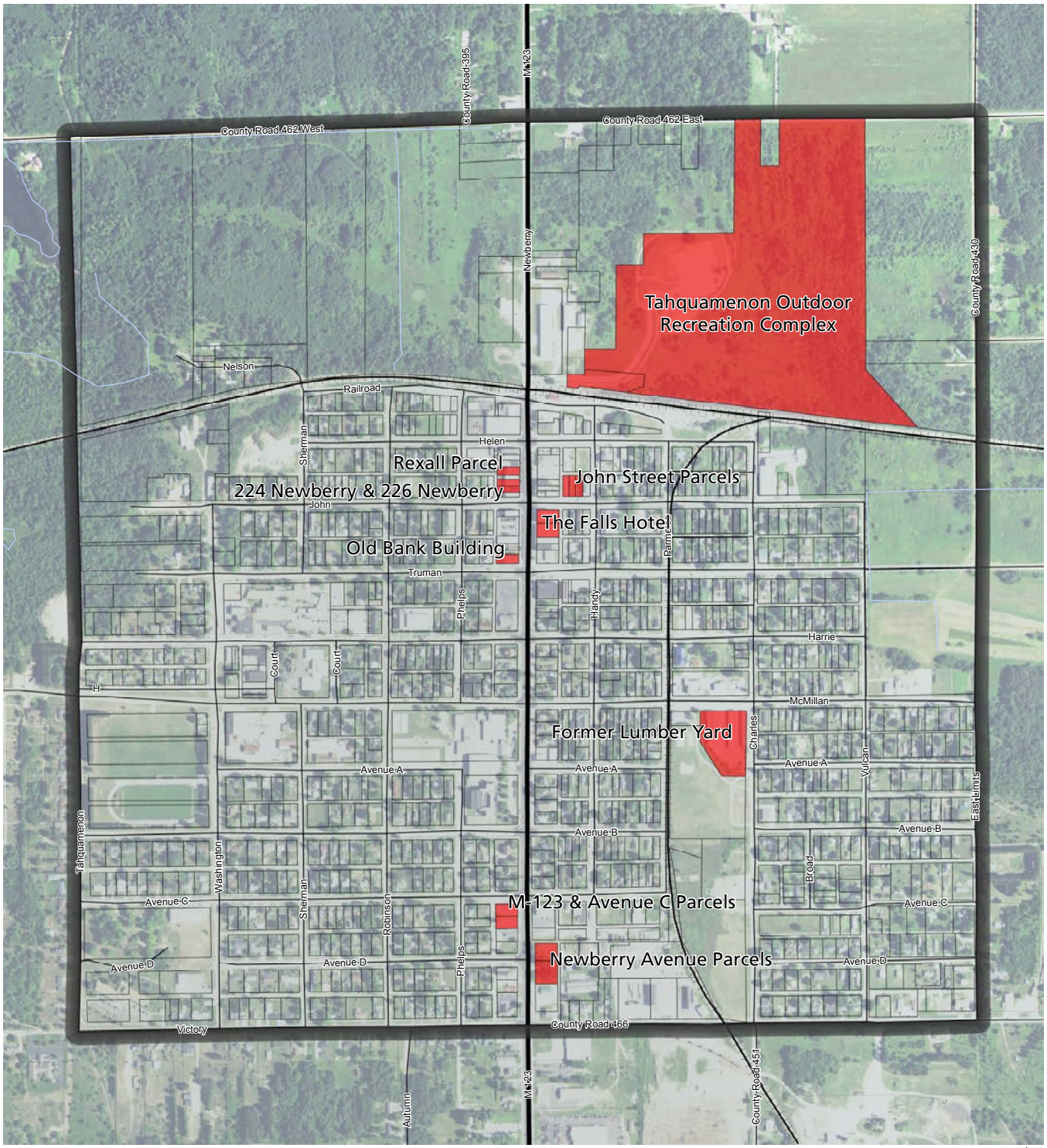
Although not located within the Village's boundary, the 115-acre industrial park includes a number of shovel-ready sites. The Luce County EDC constructed water, sewer, roads, and a rail extension into the industrial park with partial funding from an Economic Development Administration Public Works grant. The county plans to attract companies to the park that will be high-volume rail users, and this goal is consistent with the goals and objectives of the CEDS.

PUBLIC SECTOR INITIATIVES

There are a number of strategies Newberry can employ to incentivize redevelopment and to attract new businesses.

Collaboration is paramount to ensure a regional approach to economic development and avoid duplication of efforts.

31: Redevelopment Sites Map



RISING TIDE

Redevelopment Ready Sites

0 0.15 0.3 Miles

Data Sources: State of Michigan Geographic Data Library, EUP, ESRI Basemap

- Village Boundary
- Redevelopment Ready Sites
- State Roads
- All Roads
- Railroads
- Rivers / Streams
- Parcels

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Newberry Area Tourism Association

Tourism is a critical driver in Newberry's economy with Tahquamenon Falls drawing over 400,000 tourists a year. The newly formed Newberry Area Tourism Association will allow the Village to partner with surrounding entities to leverage tourism destinations in one supportive effort.

Downtown Development Authority

The Village of Newberry is interested in exploring the creation of a Downtown Development Authority (DDA) under Act 197 of Public Acts of 1975 of the State of Michigan, commonly referred to as the Downtown Development Authority Act. This act was created in part to correct and prevent deterioration of business districts and to promote economic growth and revitalization. Under this act, the Village could create an authority authorized to use tax increment financing to fund improvements to downtown and potentially acquire vacant properties to assist with redevelopment.

Design Standards

Design standards can be a proactive way for a local government to initiate revitalization by improving the public realm. Design standards are often included in the zoning ordinance as standards that apply to the Central Business District or as a separate overlay district. Examples of standards include requiring a minimum ground floor transparency, build-to lines to preserve the traditional pedestrian-centered development patterns, and streetscape elements such as signage, trees, and pedestrian-friendly design. These standards would be useful in positioning Newberry as an inviting place for creative, mixed-use developments that are pedestrian oriented.

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FUTURE LAND USE AND ZONING

This section details future land use and a plan for developing a zoning ordinance in Newberry to move toward implementing the Village's vision for the future.

FUTURE LAND USE

The Michigan Planning Enabling Act of 2008 requires the inclusion of a future land use map and zoning plan in the master plan. The future land use map and districts identify a generalized, preferred organization of future land uses in the Village of Newberry. It is a general framework intended to guide land use and policy decisions within the Village over the next 15-20 years. It guides the development of a zoning plan and ultimately influences the new zoning ordinance.

Future Land Use Map

The Future Land Use Map is not intended to be used to identify future land use on a parcel-by-parcel basis, but rather to identify districts that may evolve within the Village. The Future Land Use Map shows the preferred locations for future development in Newberry. Existing land development patterns were used as a basis for establishing the Future Land Use Map.

The Village can be segmented into four land categories including: (1) Residential, (2) Commercial, (3) Recreation/Conservation, and (4) Public Service. Each category can be further subdivided into land use districts. The following summarizes the future land use districts in the Village of Newberry.

Residential Districts

Village Residential

The Village Residential area is intended to preserve and enhance the small-lot residential neighborhood within and adjacent to the central downtown area of the Village of Newberry. The Village Residential area will continue to support the existing cottage industries and home-based businesses. The Village sees this as an important tool for incubating new businesses and fostering economic prosperity.

Multi-Family Residential

The multi-family district is

The A-OK Car Wash and A-OK Mini Storage are located in the community commercial Future Land Use District.

designated to accommodate higher-density residential use, such as apartments or a modular home development.

Commercial Districts

Central Business District

The Central Business District includes the area commonly considered to be Downtown Newberry. The district includes existing commercial uses that are primarily in the retail and service sectors and public services provided by public entities and civic and/or non-profit organizations. Residential uses on the second floor are encouraged as a strategy for increasing activity and a mix of uses in the Village center.

Mixed-Use District

The mixed-use district is intended to accommodate neighborhood services located within walking and biking distance to residences, while retaining the primary land use as residential. Uses may include a mix of housing types, including multiple-family units, and limited neighborhood services.

Community Commercial

This district includes retail and service-sector businesses that often require larger lots outside the downtown. Public services and non-profit organizations are considered compatible with allowable uses in this district.

Light Industrial

This district accommodates light industrial uses within the Village that would have a low impact on surrounding neighborhoods.

Recreation/ Conservation District

This category is intended to include existing recreation property, areas planned for future recreation use, and other environmentally sensitive areas and natural resources.

Public Service District

The Village of Newberry is fortunate to have a variety of public facilities. This plan recommends a special district be designated for these properties that are located outside the Central Business District. The Public Service district would include the schools, DPW, etc.

Wetlands Overlay District

Newberry is fortunate to have a number of wetlands in the northern portion of the Village. Many of these wetlands are smaller and may not be protected under state and federal regulations. By including existing wetlands on the Future Land Use Map, the Village can consider the location of these resources when reviewing development proposals.

ZONING PLAN

According to Section 2(d) of the Michigan Planning Enabling Act (PA 33 of 2008), the master plan shall include a zoning plan depicting the various zoning districts and their use, as well as standards for height, bulk, location, and use of buildings and premises. The zoning plan serves as the basis for the zoning ordinance.

Relationship to the Master Plan

As a key component of the master plan, the zoning plan is based on the recommendations of the master plan and is intended to identify areas where existing zoning is inconsistent with the objectives and strategies of the master plan, and to guide the development of the zoning ordinance. Because Newberry does not have a zoning ordinance, this plan will serve as the foundation for the planning commission as they undertake the development of a new zoning ordinance. The zoning ordinance is the primary implementation tool for the future development of Newberry.

Documenting Existing Conditions

Despite not having a zoning ordinance, Newberry was developed before the advent of the automobile in a traditional grid system. Most setbacks are uniform and commercial buildings are close to the public right-of-way.

One important first step in developing the zoning ordinance will be documenting existing setback distances in each district. Average setback distances, lot widths, and lot sizes should be used as the foundation for the district regulations and boundaries.

The Existing Land Use map will also be an important tool to inform the Future Zoning map for Newberry. Historic development patterns and general locations of existing residential, commercial, industrial spaces, and open space will serve as the basis for the new zoning districts.

Luce County Zoning

Luce County provides zoning services for all the communities within the county, with the exception of Newberry. Zoning designations in surrounding communities, particularly those that border the Village limit, will also be useful in determining zoning designations for Newberry.

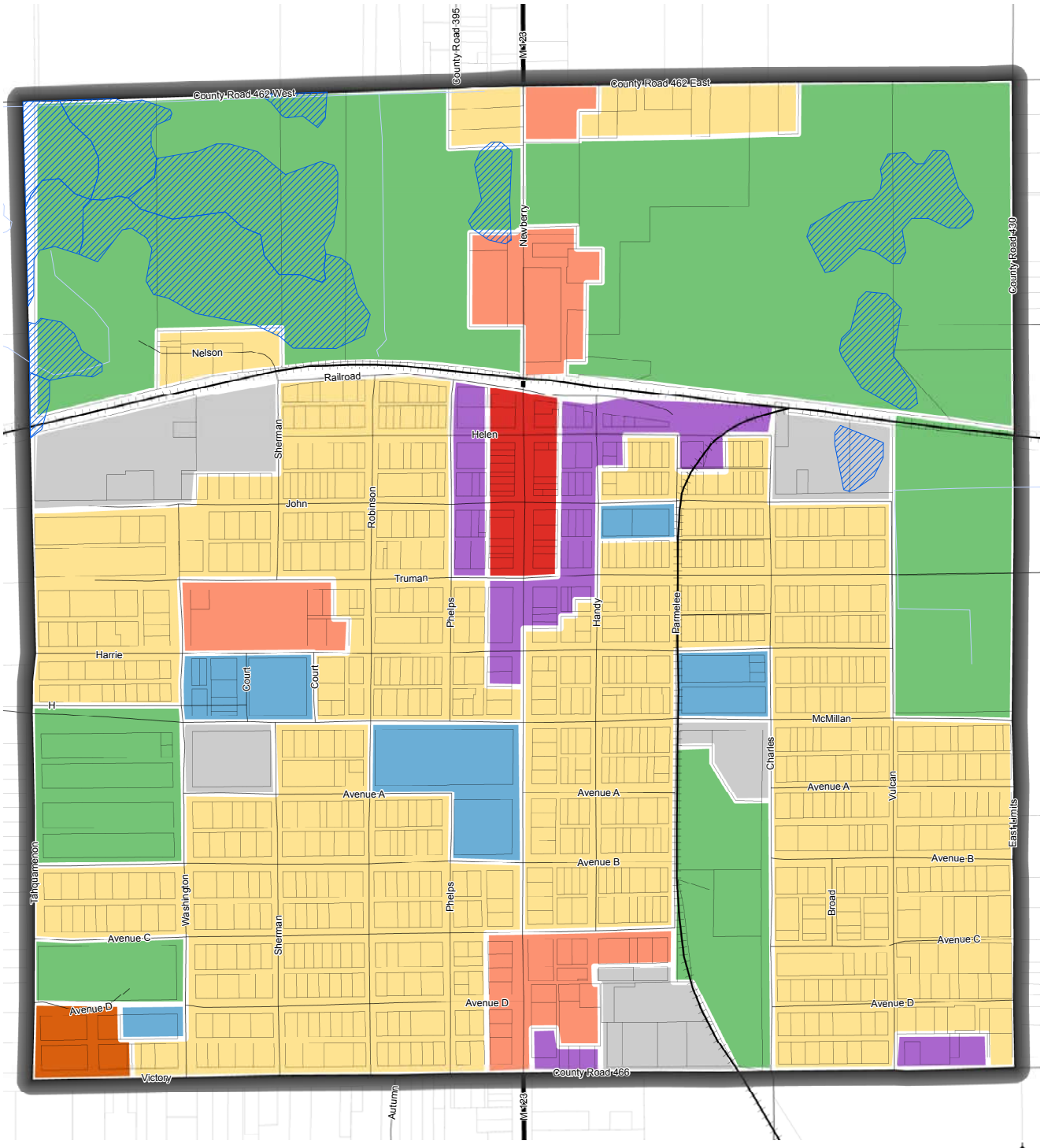
Consolidation of Police Power Ordinances

There are a number of police power ordinances that deal with issues related to land use that could be consolidated into the new zoning ordinance. Additionally, the new zoning ordinance will have to be written in such a way that it does not contradict existing police power ordinances.

The following is a list of ordinances that have components that relate to zoning:

1. Ordinance #6: Streets, Sidewalks, and Alleys
2. Ordinance #12: Construction
3. Ordinance #14: Mobile Home and Trailer
4. Ordinance 19: Width and Depth of Plats in Village
5. Ordinance 29B: Compilation of Property Use Ordinances
6. Ordinance 29C: Regulation of Fences
7. Ordinance 35: Trees, Vegetation, Set-backs, and Utility Connection.

32: Future Land Use Map



VILLAGE OF NEWBERRY

Future Land Use

0 0.125 0.25 Miles

Data Sources: State of Michigan Geographic Data Library, EUP

- Village Boundary
- State Roads
- All Roads
- Railroads
- Rivers / Streams
- Parcels
- Village Residential
- Multi-Family Residential
- Central Business District
- Community Commercial
- Light Industrial
- Recreation / Conservation
- Public Service
- Mixed Use
- Wetlands Overlay District

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ACTION PLAN

Under the direction of the planning commission, with citizen and stakeholder input, the Village of Newberry has identified five themes, each with corresponding goals and actions. Because this master plan takes a 15-20 year approach to planning, it is anticipated that these goals and corresponding actions could take up to that amount of time to be realized. The tables on page 72-74 outline a planned implementation schedule for each action and include a general time frame for implementation, the party responsible for implementing, priority level, and anticipated funding source.

GOALS AND ACTION STEPS

This section outlines the key goals and actions identified by the Village of Newberry. The goals and actions fall into five major themes, as listed below:

1. Governance & Leadership
2. Thriving Downtown
3. Business Attraction & Retention
4. Recreation-Based Prosperity
5. Strong Neighborhoods

Governance & Leadership

The Village of Newberry will continue to seek intergovernmental collaboration and transparency to support community development. Although a relatively small village, Newberry is a population center of the Eastern Upper Peninsula. Given the rural nature and sparse population of the surrounding area, it is especially critical that Newberry collaborates with surrounding communities, non-profits, and regional governments to leverage social capital for the benefit of the region. Specifically, collaborations with McMillan and Pentland Townships on economic development initiatives will be paramount moving forward.

Looking internally, there have been a number of changes in Newberry's Village leadership. With these changes, institutional memory is lost, but new social capital and fresh perspectives are gained. Additionally, Newberry is embarking on its first-ever master plan, and as a part of

that process, has created a new planning commission. The planning commission has the opportunity to provide proactive leadership and land use policies that will foster economic prosperity.

Thriving Downtown

Downtown Newberry has always been the hallmark and centerpiece of the Village. Many of the buildings date back to the 1800s, and offer a window into Newberry's rich history. Although the architectural styles are rich with tradition, many of these buildings are also in dire need of repairs and facade improvements. Despite the relatively inexpensive cost of purchasing these buildings, there are a number of other barriers to rehabilitation. The Village will need to institute creative and collaborative funding and implementation tactics to ensure the long-term prosperity and success of the downtown.

Business Attraction & Retention

The Village is committed to supporting existing businesses to help them continue to grow and react to changing conditions. Additionally, Newberry is looking for opportunities to support small business development and entrepreneurs.

Newberry is no stranger to losing young people to jobs elsewhere in the state or country. Partnering with educational institutions and others in the region will be crucial for providing high-quality vocational training opportunities to keep the next generation of workers gainfully employed.

Infrastructure investments like upgrades to the Village water system, although painful at first for residents, will pay dividends in supporting and attracting new businesses looking to locate in the area.

Recreation-Based Prosperity

Newberry is blessed with being close to some of the most pristine natural assets in Michigan, including the Tahquamenon River

VISION

Over the next 15-20 years, Newberry will continue to restore and rehabilitate its core infrastructure to create a vibrant, mixed-use downtown that serves as a focal point of community, recreational, and economic activity. Neighborhoods will be strengthened to provide a diversity of high-quality housing options that meet the needs of all residents. Newberry will continue to leverage its unique natural resources to define its character and position Newberry as a recreational hub for the Eastern Upper Peninsula.

and Falls, and Lake Superior. Critical to a comprehensive economic strategy will be leveraging these resources to support economic development. Newberry has the opportunity to position itself as a four-season recreational destination.

Strong Neighborhoods

Neighborhoods are the building blocks of a strong, vibrant community. The Village will need to support strategies that preserve and enhance Newberry's housing and neighborhoods. This includes exploring opportunities to modernize and expand elder housing, securing grants for housing rehabilitation, and providing a zoning ordinance that supports a diversity of housing options.

A comprehensive approach to recreation includes uprades to Village parks as well as collaborative marketing and promotion of recreational assets outside of the Village limits.

33. Governance & Leadership Goals

GOAL	ACTION	PRIORITY LEVEL	RESPONSIBLE PARTNERS	TIME FRAME
Seek intergovernmental collaboration and transparency to support community development.	Start a community investment fund to match funds for grants and establish public/private partnerships.	Medium	Village	1 - 5 Years
	Develop a coordinated web presence between the Chamber, Economic Development Corporation, agencies, and businesses.	High	Village, Chamber, EDC, Townships, local businesses	1 - 5 Years
	Coordinate with Pure Michigan and others to develop a tourism plan for Newberry and the surrounding area.	High	Village, MEDC, Chamber	Within 1 Year
	Explore the establishment of Newberry as a city	High	Village	Within 1 Year
	Map the water and sewer service areas outside of the Village boundary.	Medium	Village, consultants	Within 1 Year
Support a citizen planning commission that will lead the Village with innovative land use policies.	Adopt a zoning ordinance based on the master plan.	High	Planning Commission	Within 1 Year
	Institutionalize a regular five-year review of the master plan and annual planning commission reports.	Medium	Planning Commission	Annually

34. Thriving Downtown Goals

GOAL	ACTION	PRIORITY LEVEL	RESPONSIBLE PARTNERS	TIME FRAME
Create a vibrant, mixed-use downtown that serves as a focal point of community, recreational, and economic activity.	Adopt zoning standards that support and facilitate mixed-use development.	High	Planning Commission	Within 1 Year
	Create a sense of place through public amenities and streetscape investments in the downtown district.	High	Village	1 - 5 Years
	Explore creation of a Downtown Development Authority and tax increment financing.	High	Village	1 - 5 Years
	Conduct a survey to designate Newberry as low-mod income to qualify for economic development grants.	High	Village, MEDC	Within 1 Year
	Develop a public plaza, pocket park, or focal point in downtown.	Medium	Village	1 - 5 Years

35. Business Attraction & Retention Goals

GOAL	ACTION	PRIORITY LEVEL	RESPONSIBLE PARTNERS	TIME FRAME
Attract a diversity of new businesses to Newberry	Explore the use of tax breaks to incentivize new businesses to locate.	High	Village, EDC	Within 1 Year
	Conduct a detailed market study and explore business recruitment strategies.	Medium	Village, Chamber, EDC	1 - 5 Years
	Publish information on available development and redevelopment properties for businesses looking to locate or grow, using MEDC's Redevelopment Ready Communities guidelines.	Medium	Village, EDC	Within 1 Year
Support existing businesses to help them grow and react to changing conditions.	Develop an advertising campaign that *Newberry is Open for Business!*	High	Village, Chamber	Within 1 Year
	Use position as a municipal power provider to encourage start-ups, relocations, and expansions.	High	Village (NW&L)	1 - 5 Years
	Explore economic gardening and incubator efforts to support small business development and entrepreneurs.	Medium	Village, Chamber, EDC	1 - 5 Years
	Partner with educational institutions and others to provide and promote expanded vocational training opportunities.	Medium	Village, TAS, Luce County, EUP	1 - 5 Years

36. Recreation-Based Prosperity Goals

GOAL	ACTION	PRIORITY LEVEL	RESPONSIBLE PARTNERS	TIME FRAME
Establish Newberry as a recreational hub for the Eastern Upper Peninsula.	Update the Five-Year Recreation Master Plan for the Village.	Medium	P&R Committee	1 - 5 Years
	Map trails and other recreation assets to increase their use and draw tourists to the area.	High	P&R Committee, EUP, TASA	Within 1 Year
	Complete the TORC to provide an indoor recreation center for year-round activity.	Medium	Village, TARA, P&R Committee	1 - 5 Years
	Continue to grow and expand the role of the Newberry Area Tourism Association.	High	Village, EDC, Luce County, Chamber	Within 1 Year
Expand tourism business (ecotourism) opportunities.	Promote shoulder season (fall and spring) activities like bird watching, mountain biking, etc.	High	Village, EDC, Chamber	1 - 5 Years
	Improve access to the river by the logging museum and by the Dollarville Dam for fishing.	High	Village, P&R Committee, Luce County, DNR	1 - 5 Years
Develop a connected and accessible network of transportation options in Newberry.	Complete the sidewalk network, beginning with the downtown core.	High	Village, MDOT	5+ years
	Improve snowmobile access from trails to Village amenities.	Medium	Village, MDOT, TASA	1 - 5 Years
	Look for funding opportunities and collaborate with MDOT to improve crossings along Newberry Avenue.	Medium	Village, MDOT	5+ years

37. Strong Neighborhoods Goals

GOAL	ACTION	PRIORITY LEVEL	RESPONSIBLE PARTNERS	TIME FRAME
Preserve and enhance Newberry's neighborhoods.	Explore opportunities to modernize and expand elder housing.	Medium	Village, Luce County	1 - 5 Years
	Look for opportunities to develop and expand neighborhood gathering spaces.	High	Village, Planning Commission	1 - 5 Years
Reduce neighborhood blight	Investigate funding sources to remove and/or rehabilitate dangerous buildings.	High	Village, Planning Commission	Within 1 Year
	Pursue funding to assist homeowners with maintenance and improvements.	High	Village, MEDC, EUP Housing Authority	1 - 5 Years

CAPITAL IMPROVEMENTS STRATEGY

Once the master plan is adopted a future task would include the preparation and adoption of a Capital Improvement Program; or CIP. The Village of Newberry 2017-2021 Capital Improvements Program would provide a framework for the realization of community goals and objectives as envisioned in the Village's master plan. All CIP projects are listed on a priority basis and reflected by fiscal year within the plan. The plan also includes an indication for providing the financial means for implementing the projects.

IMPLEMENTATION OPPORTUNITIES

To realize its goals, Newberry will have to be proactive and take advantage of a variety of funding opportunities available and form public-private partnerships to implement key projects. The following is an overview of funding sources and programs the Village could use to implement priority actions identified in this plan.

Economic Development

The Michigan Economic Development Corporation (MEDC) Community Development division focuses on creating vibrant, sustainable, and unique places by providing economic development services and programs to attract and retain talent in Michigan communities. The concept of placemaking considers cultural and natural amenities, resources, and social and professional networks.

MEDC offers a variety of grants and loans to Michigan communities to preserve downtowns, enhance cultural resources, and foster historic preservation.

Community Development Block Grants

The MEDC, on behalf of the Michigan Strategic Fund, administers the Community Development Block Grant (CDBG) program. The Village is currently not on the qualifying list of communities who are 51% low-to-moderate income or higher. This designation is important as it allows for the village to qualify for a number of CDBG programs including Infrastructure Capacity Enhancement (ICE) grants and Facade Improvement grants. The Facade Improvement grants could be valuable to downtown business and property owners who may want to reinvest in their current programs and be eligible for up to 50% grant funds.

Newberry plans to administer an income survey to determine the percentage of Low-and-Moderate Income (LMI) residents in the Village to qualify for grants through MEDC.

Downtown Development Authority or Business Improvement District

Newberry's downtown serves as the foundation of the Village from both a historical and economic perspective. The Village hopes to revitalize the downtown by renovating vacant buildings and attracting additional business activity to the district.

One way the Village can promote economic development is by investing in public infrastructure in the downtown. Examples of improvements include street tree replacement, street lighting, landscaping, and hardscaping.

The Village may explore creation of a Downtown Development Authority, which is allowed under Michigan Public Act 197 of 1975, as amended. A DDA can institute a variety of funding options including a tax increment financing mechanism, which can be used to fund public improvements in the downtown district.

Another strategy for improving the corridors is the formation of a Business Improvement District. A BID is a defined area where businesses pay an additional fee in order to fund projects within the district's boundaries. The Village could also explore grants and other funding opportunities to pay for the improvements.

Tahquamenon Convention and Visitor's Bureau

Tourism is a critical driver in Newberry's economy and promoting the area as a tourism destination is a high priority. Although past convention and visitor's bureau (CVB) efforts have failed, there seems t be positive momentum for an inter-jurisdictional CVB through Northern Initiatives, an effort connecting marketing efforts of both Newberry and Paradise. This regional CVB would be a good strategy for leveraging the Tahquamenon Falls so the entire region can benefit.

PlacePOP

PlacePOP is a service run by the Michigan Municipal League (MML) that supports low-cost, high-impact events that showcase how powerful creating "place" can be. As a way to make downtowns more vibrant, MML develops short-term upgrades to public space to engage its residents in a new way. Moreover, a physical display provides a more visual, and interactive form of community engagement that engenders more participation than a public hearing. The idea is to reinvent space to help catalyze development, beautify underutilized areas, and create connections amongst community members. While most public improvement projects are costly and time-intensive and may have unintended consequences, this type of project removes a lot of the initial risk.

Becoming a City

To provide higher-quality services for its residents and to reduce the overall tax burden, the Village of Newberry is interested in exploring the opportunity of converting from a village to a city. It is important to note that the Village is not committed to becoming a city, but rather exploring whether or not this change would benefit the residents and Village financially and organizationally. Since 1931 there has been a steady conversion of villages to cities in Michigan.

A village is not a primary local unit of government because it does not assess or collect taxes. In addition to provision of services, this could also afford Newberry the opportunity to draft a new charter under the provisions of the Home Rule City Act (1909 PA 279).

Transportation and Trails

Safe Routes to School (SR2S) programs are sustained efforts by parents, schools, community leaders, and local, state, and federal governments to improve the health and well-being of children by enabling and encouraging them to walk and bicycle to school. The

A picture of the Taquamenon Riverwalk

National Center for Safe Routes to School offers several sources of funding for community projects that link neighborhoods with schools.

The Transportation Alternatives Program is a competitive grant program that funds projects such as bike paths, streetscapes, and historic preservation of transportation facilities that enhance Michigan's intermodal transportation system, promote walkability, and improve quality of life for Michigan citizens.

Housing

The United States Department of Agriculture (USDA) Rural Development Agency sponsors two programs for rural development that can be of help to Newberry homeowners.

Single Family Housing Direct Home Loans are subsidies for low- and very low-income residents to ensure that they live in safe and decent housing. These funds can be used to build, repair, renovate or relocate a home in a rural area. The amount of money loaned to a homeowner depends on income, debts, and assets.

Similarly to the single-family assistance provided by the USDA, multi-family funds are available. The Multi-family Housing Loan Guarantee provides qualified private-sector lenders funds to lend to borrowers who wish to increase the supply of low- and moderate-income individuals and families. The funds can be used for new construction, improvement, or purchase of multi-family rental units. The rent for the units is capped at 30% of 115% of the area median income. Complexes must have at least five units, but can also include detached, semi-detached,or row houses.

APPENDIX

PATHWAY TO BECOMING A REDEVELOPMENT READY COMMUNITY

Six Best Practice Steps

ONE COMMUNITY PLANS & PUBLIC OUTREACH

THE PLANS

Adopted a master plan in the past five years, and must achieve:

- Reflects a desired future direction
- Identify priority redevelopment area
- Identify land use, infrastructure, & complete streets elements
- Includes zoning plan
- Implementation recommendations
- Progress annually reported
- Available online

Adopted a downtown plan & corridor plan

- Identify projects, costs, & timeline
- Identify development boundaries
- Includes mixed-uses & pedestrian oriented development
- Includes transit oriented development
- Coordinates with master plan & capital improvements plan
- Available online

Adopted a capital improvements plan

- Details a minimum of a six year projection with annual review
- Coordinates with other projects to minimize construction costs
- Coordinates with master plan & budget
- Available online

PUBLIC PARTICIPATION

Public participation strategy for engaging a diverse set of community stakeholders

- Identify key stakeholders
- Identify public participation methods & venues
- Any third party adheres to strategy

Public participation efforts go beyond the basic methods

- Basic practices: Open Meetings Act, newspaper, website, community hall door, postcards, water bills inserts, local cable access, announcements
- Proactive practices: Individual mailings, charrettes, focus groups, workshops, canvassing, crowd-sourcing, social networking, interviews

Share outcomes of the public participation processes

- Track outreach methods
- Communicate outcomes

TWO ZONING REGULATIONS

Alignment with the goals of the master plan

- Evaluate master plan recommendations

Provide for areas of concentrated development in appropriate locations & encourages the type & form of development desired

- Allow mixed-use by right in development
- Consider form-based code
- Requires one or more: build-to lines, open store fronts, outdoor dining, ground floor transparency, streetscaping, preservation of historic & environmentally sensitive features

Include flexible parking standards and improves nonmotorized transportation

- Includes bicycle parking, pedestrian-scale lighting, traffic calming, public realm standards where appropriate
- Includes pedestrian connectivity ordinance
- Requires two or more: parking off street requirements, parking lot connectivity, shared parking, parking max, parking waivers, electric vehicle charging, bicycle parking, payment in lieu of parking, complementary use accommodation

Include standards for green infrastructure

- Requires one or more: low impact development techniques, green roofs, pervious pavement, native species, existing tree protection
- Requires street trees & parking lot landscaping

Creating a user-friendly ordinance

- Portrays clear definitions & requirements
- Provide electronic format
- Convenient hard copies
- Accessible online

Include flexible tools to encourage development & redevelopment

- Define special land use & conditional rezoning requirements
- Allow for compatible uses that serve new economy businesses in commercial and industrial districts

Allow for a variety of housing options

- Requires two or more: accessory dwelling units, attached single family units, stacked flats, live/work, co-housing, corporate temp housing, cluster, micro units

THREE DEVELOPMENT REVIEW PROCESS

DEVELOPMENT REVIEW PROCEDURES

Zoning articulates a thorough site plan review process

- Provide clear roles & responsibilities for all bodies

Define & offer conceptual site plan review meetings for applicants

- Defined expectations online

Joint site plan review team

- Define the joint site plan team, include multiple disciplines

A clearly documented internal staff review policy

- Define clear roles, responsibilities, & timelines
- Define development review standards

Qualified intake professional

- Identify a point person for receiving applications, documenting contact, explaining procedures, facilitating meetings, processing approvals, & excellent customer service

Encourage developers to seek input from neighboring residents & businesses at the onset of the application process

- Assist the developer in soliciting input from the public

Promptly act on development requests

- Allow permitted uses to be administratively reviewed
- Adhere to procedures & timelines
- Provide development process flowchart with timeline
- Coordinate among community development, permitting, & inspections

Create method to track development projects

- Develop a tracking mechanism for projects during development, permitting, and inspection process

Annually review successes & challenges with the development review process

- Obtain customer feedback & integrate changes
- Capture lessons learned from joint site plan review team

GUIDE TO DEVELOPMENT

Annually review the fee schedule

- Cover the community's true cost
- Accept credit card payment

Maintains guide to development, explaining policies, procedures & steps to obtain approvals

- Provide: contact information, meeting schedules & procedures, flowcharts of development processes, relevant ordinances, site plan review requirements & application, administrative approval requirements, process & applications for rezoning, variances, & special uses, fee schedule, financial assistance tools, design guidelines & processes, building permit requirements & applications
- Available online

FOUR RECRUITMENT & EDUCATION

RECRUITMENT & ORIENTATION

Set expectations for board & commission positions

- Outline expectations & desired skill sets defined
- Available online

Provide orientation packets to all appointed & elected members of development related boards & commissions

- Include all relevant planning, zoning & development information

EDUCATION & TRAINING

A dedicated source of funding for training

- Allocate budget for elected & appointed officials & staff

Identify training needs & track attendance for elected & appointed officials & staff

- Manage tracking mechanisms: training needs & attendance
- Identify trainings which relate to stated goals & objectives

Encourage elected & appointed officials to attend trainings & share information

- Notify elected & appointed officials & staff about training opportunities
- Hold collaborative work sessions & joint trainings
- Prepare annual report

FIVE REDEVELOPMENT READY SITES

Identify & prioritizes redevelopment sites

- Maintain updated list of sites

Gather basic information for prioritized redevelopment sites

- Require photo/rendering, desired outcomes, owner contact, community contact, zoning, lot & building sizes, SEV, & utilities

Create a vision for priority redevelopment sites

- Include desired development outcomes
- Identify community champions
- Require public engagement with high controversy sites

Identify potential resources & incentives for prioritized redevelopment sites

- Identify negotiable development tools, financial incentives and/or in-kind support linked to desired outcomes

Assemble property information packages for prioritized sites

- Include financial incentives, deed restrictions, tax assessment, survey, past uses, existing conditions, known environmental and/or contamination conditions, soils, demographics, amenities, planned infrastructure improvements, GIS, natural features, traffic studies, target market analysis, feasibility studies

Prioritize redevelopment sites and actively market

- Available online

SIX COMMUNITY PROSPERITY

ECONOMIC DEVELOPMENT STRATEGY

An approved economic development strategy

- May be part of the master plan or annual budget
- Connects to the master plan & capital improvements plan
- Identify opportunities & challenges within the community
- Incorporate recommendations for implementation
- Coordinate with a regional economic development strategy
- Available online

Annually review the economic development strategy

- Report progress on economic development strategies annually

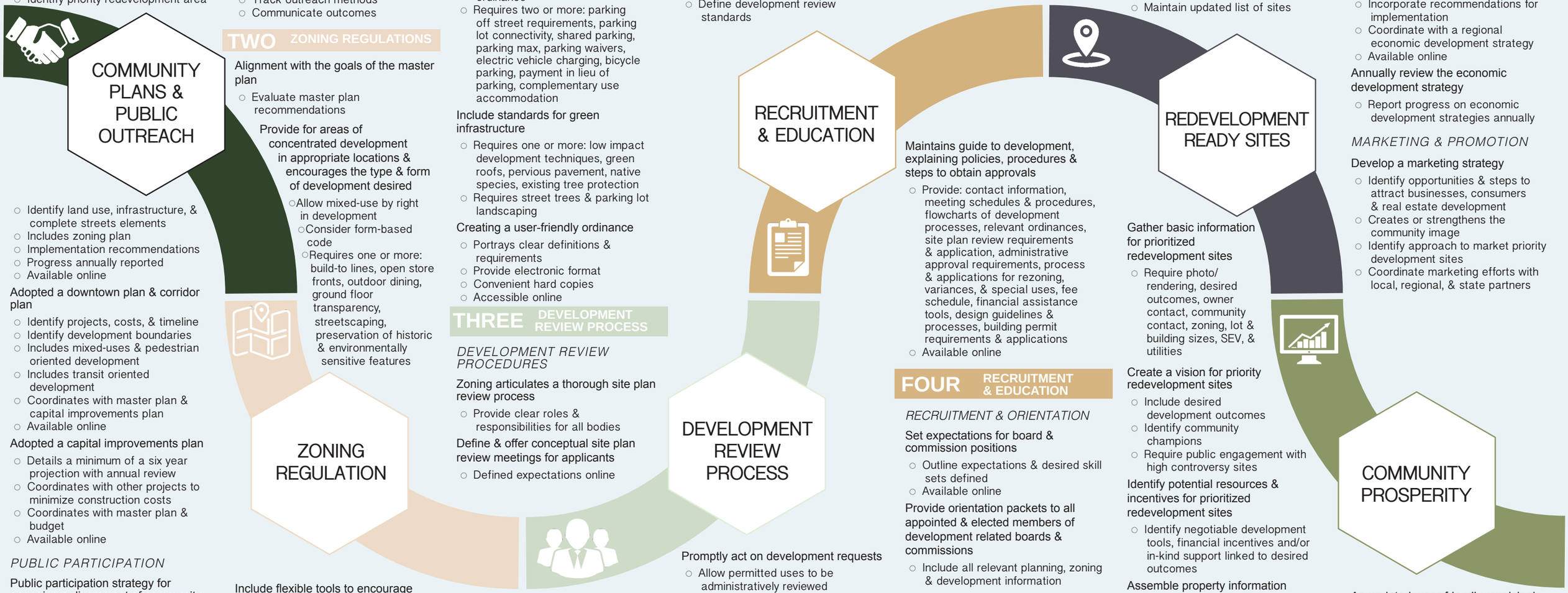
MARKETING & PROMOTION

Develop a marketing strategy

- Identify opportunities & steps to attract businesses, consumers & real estate development
- Creates or strengthens the community image
- Identify approach to market priority development sites
- Coordinate marketing efforts with local, regional, & state partners

An updated, user-friendly municipal website

- Link to master plan, downtown plan, corridor plan, capital improvements plan, zoning ordinance, development guide, online payment, partner organizations, board & commission applications, property information packages, & economic development strategy
- Easy to navigate



APPENDIX E

PUBLIC PARTICIPATION

Appendix E

Part 1: Public Hearing Advertisement

Appendix E

Part 2: Public Hearing Transcript

Appendix E

Part 3: Comments

Appendix E

Part 4: Adoption of the Project Plan

APPENDIX F

MAPS (FULL SIZE)

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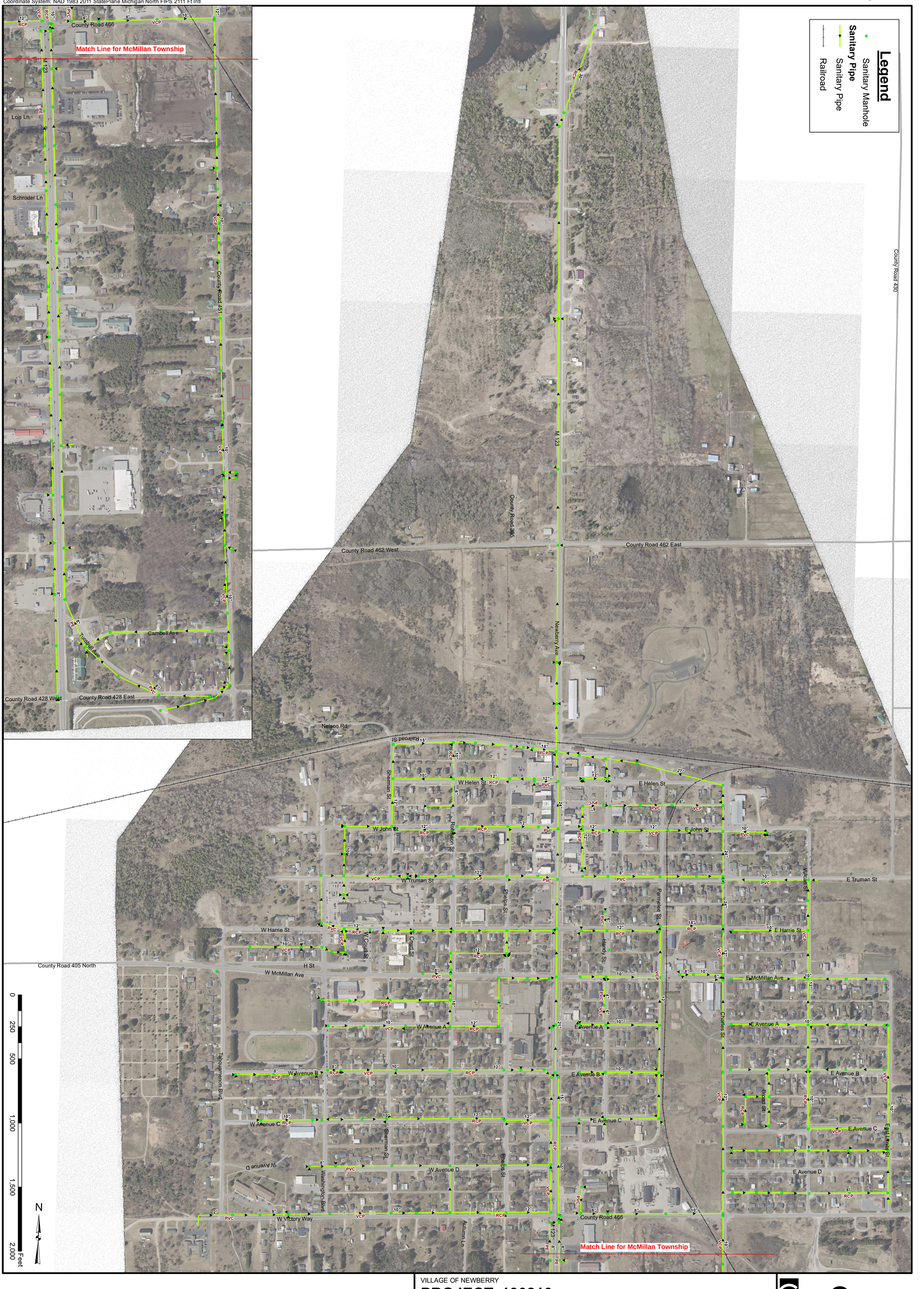

WASTEWATER COLLECTION SYSTEM

VILLAGE OF NEWBERRY

PROJECT: 130210
SAW ASSET MANAGEMENT

LUCE COUNTY, MICHIGAN

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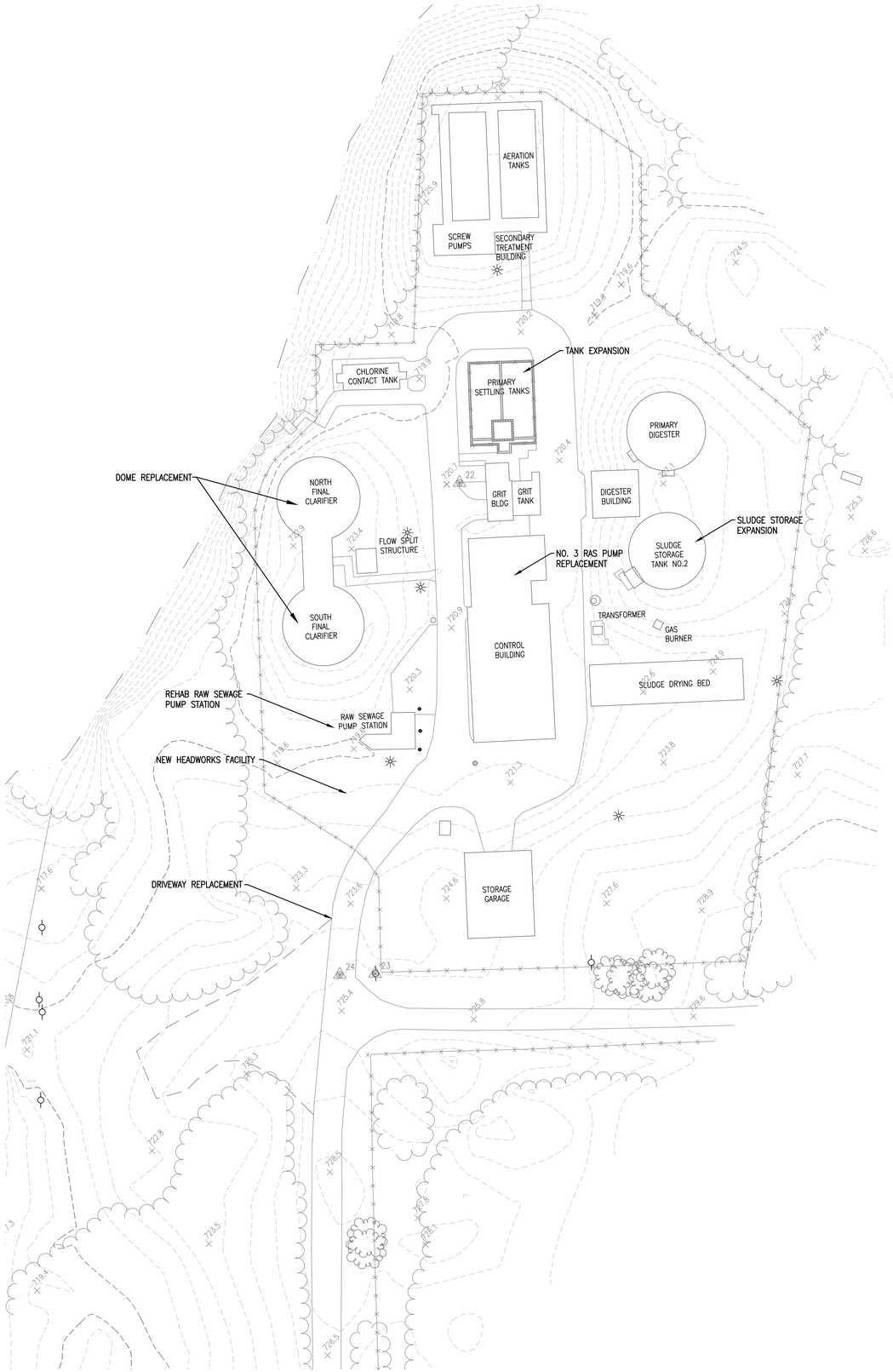

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XREFS ATTACHED:

DESIGNED BY: - APPROVED BY: -
CHECKED BY: -

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VILLAGE OF NEWBERRY, MICHIGAN
CWSRF PROJECT PLAN
LUCE COUNTY, MICHIGAN

FIGURE 9.
PROPOSED WASTEWATER TREATMENT PLANT SITE IMPROVEMENTS

REVISIONS

REV	DESCRIPTION	DATE

PROJ. #: 210321
DATE: FEBRUARY 2022
SHEET 2

PRELIMINARY SUBMITTAL

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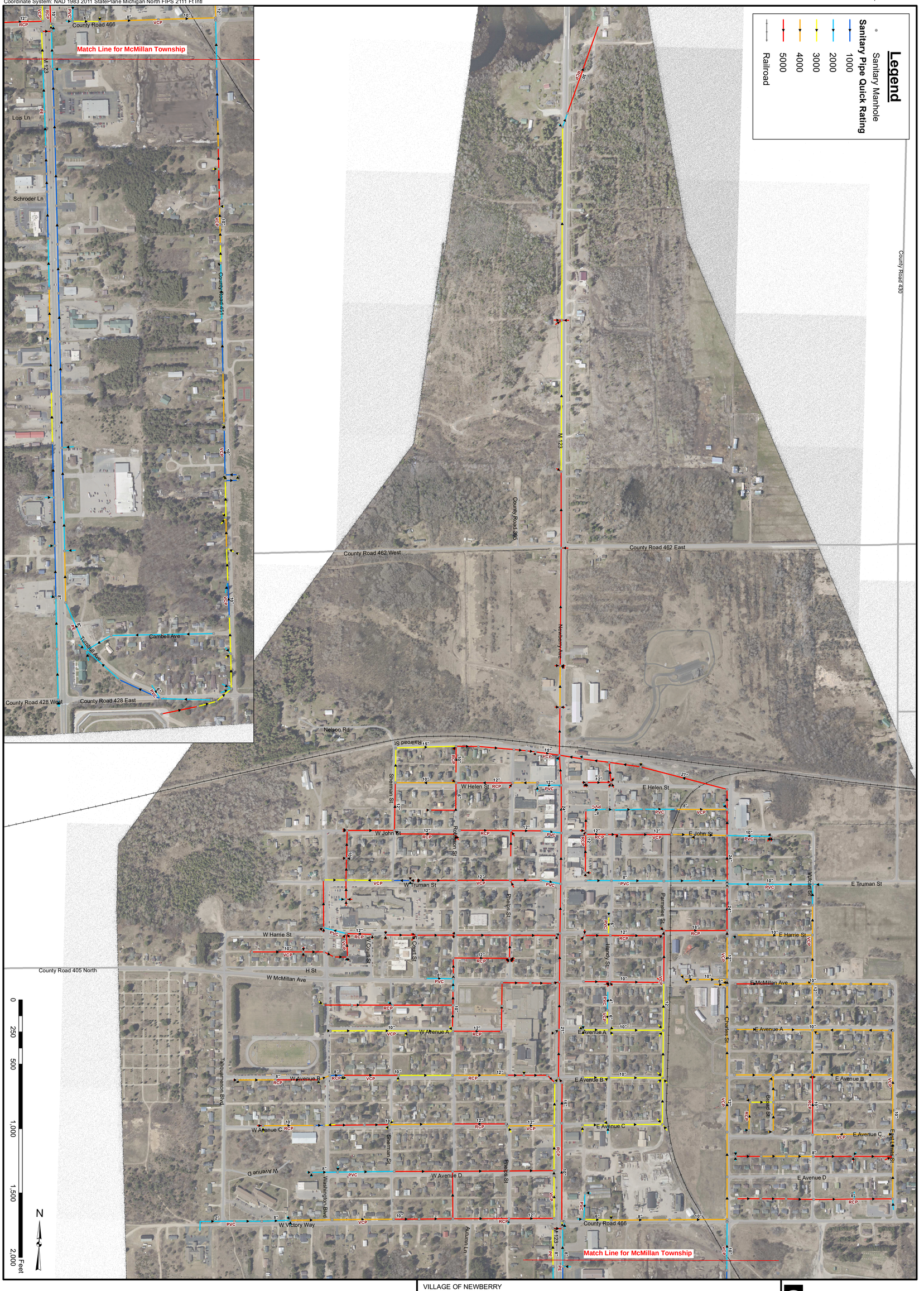

WASTEWATER COLLECTION SYSTEM
QUICK RATING, OVERALL

VILLAGE OF NEWBERRY
PROJECT: 130210
SAW ASSET MANAGEMENT
LUCE COUNTY, MICHIGAN

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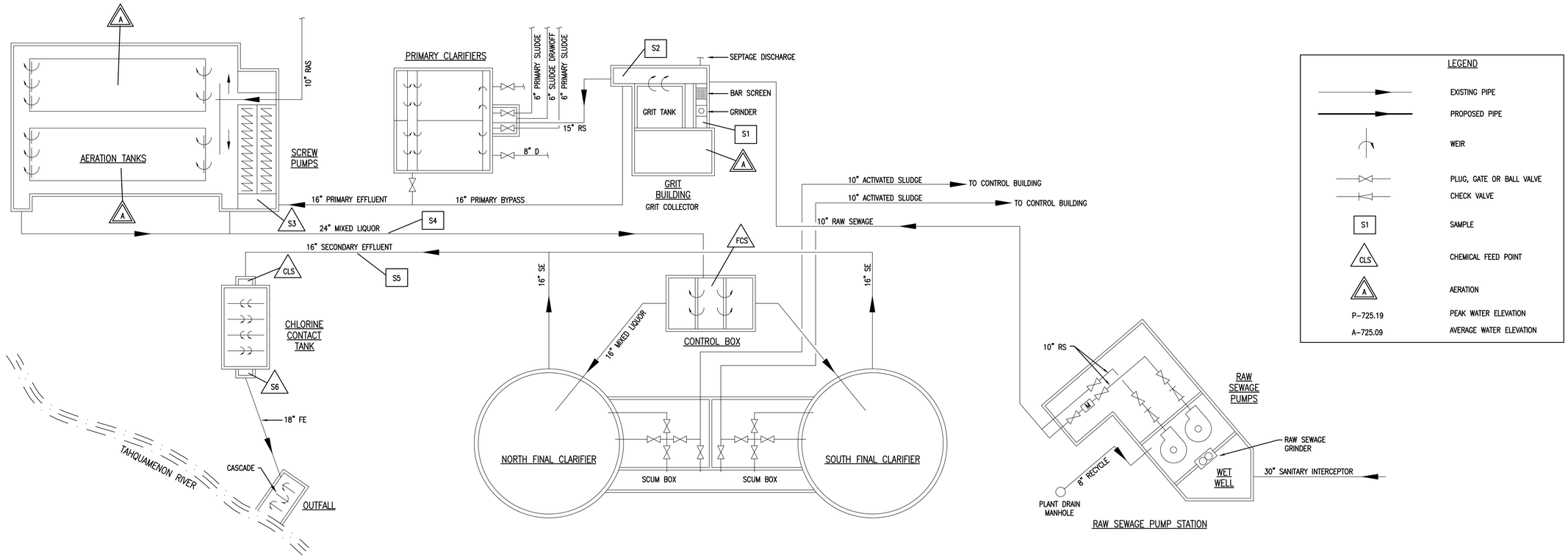

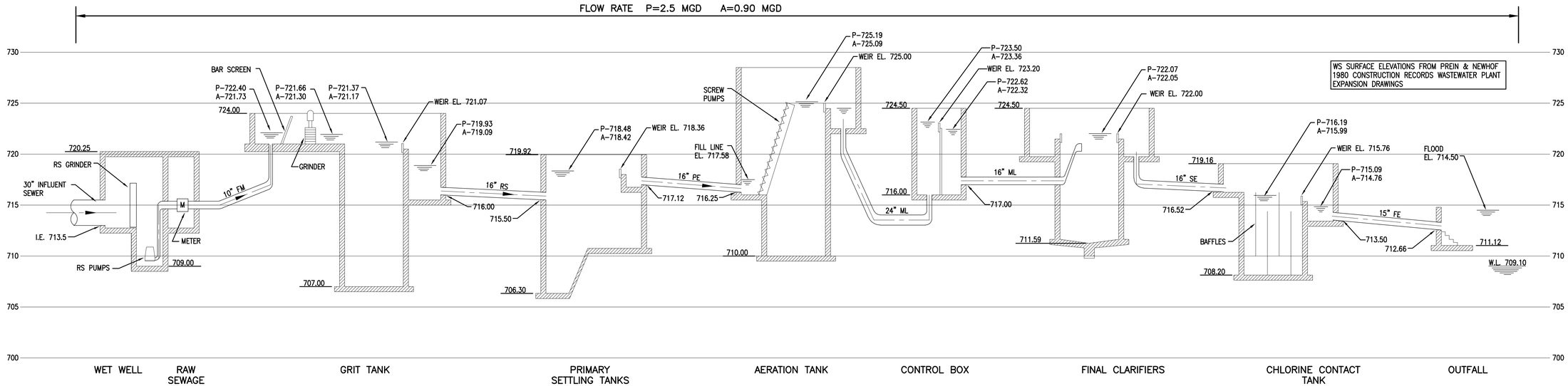

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VILLAGE OF NEWBERRY, MICHIGAN

WASTEWATER TREATMENT PLANT IMPROVEMENTS

LUCE COUNTY, MICHIGAN

WASTEWATER FLOW SCHEMATIC & HYDRAULIC PROFILE

REVISIONS

SCALE: NO SCALE

PROJ. #: 12-0010

DATE: 6/4/2014

SHEET

G-003

ISSUED FOR BIDDING

PLOTTED BY: DERDUIN, JILL 6/3/2014 2:14 PM
DESIGNED BY: - APPROVED BY: -
DRAWN BY: - DWG'S MOD BY: -
CHECKED BY: -
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