Dunlap Lake Annual Meeting 2016
Silt Update

As promised at last year's annual meeting, the Silt Committee has been working with Horner & Shifrin Engineering to find the best option for dredging and improving the south end silt retention basin to keep the lake from refilling. Here's some key points from their presentation.

The use of the land in the lake's watershed has changed significantly in the last 50 years. Slides on the next pages are:

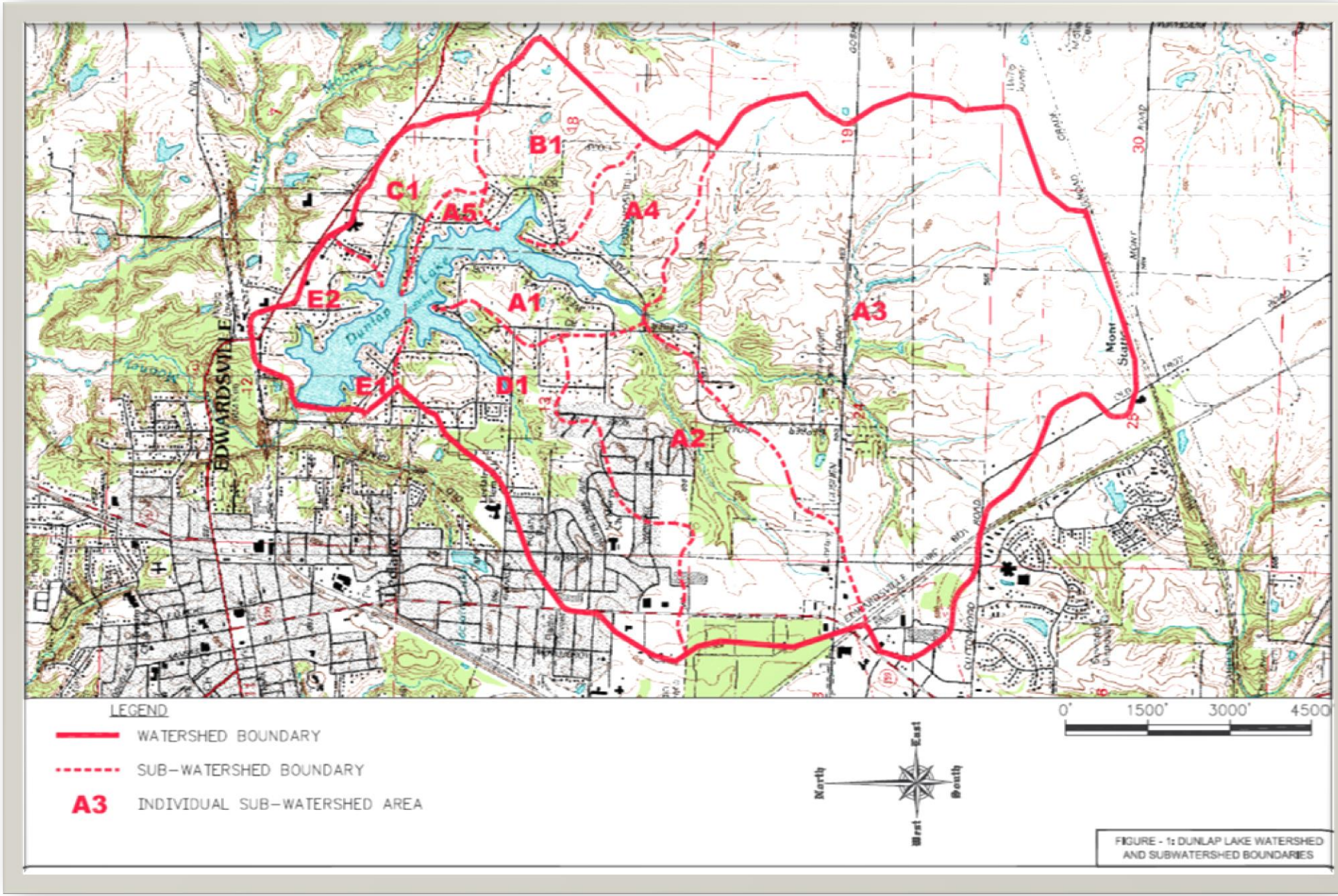
Page 02 – Lake watershed, the parts of Edwardsville that have surface water flowing into Dunlap Lake

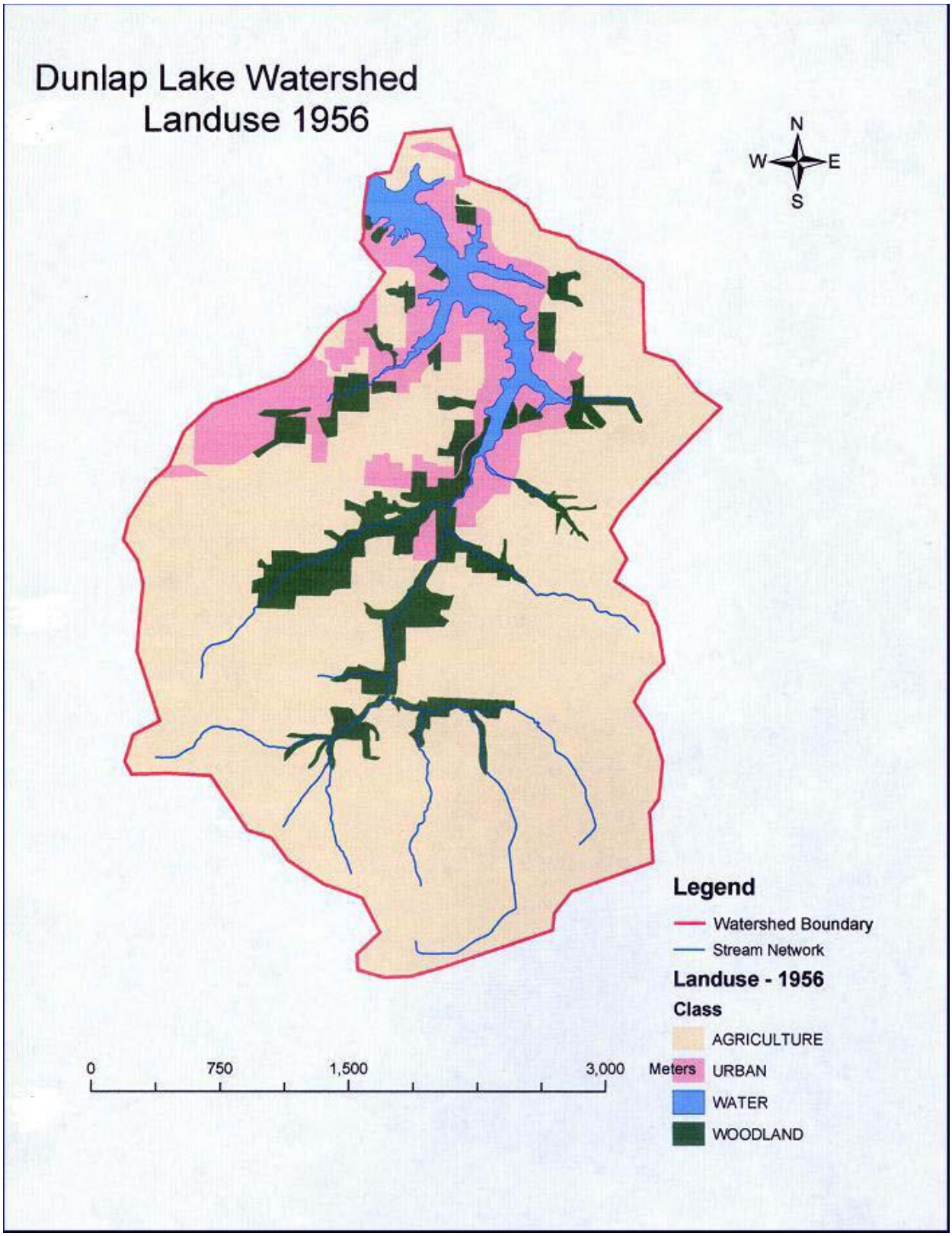
Page 03 – The land use of our watershed in 1956 (primary agricultural)

Page 04 – The land use of our watershed in 2004 (significant urban development with significant sections remaining to be developed, which could add more silt to the lake).

Dunlap Lake Watershed

The area where surface water from rain, snow and melting ice would flow into our lake




Dunlap Lake Watershed
Landuse 1956
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Landuse - 1956
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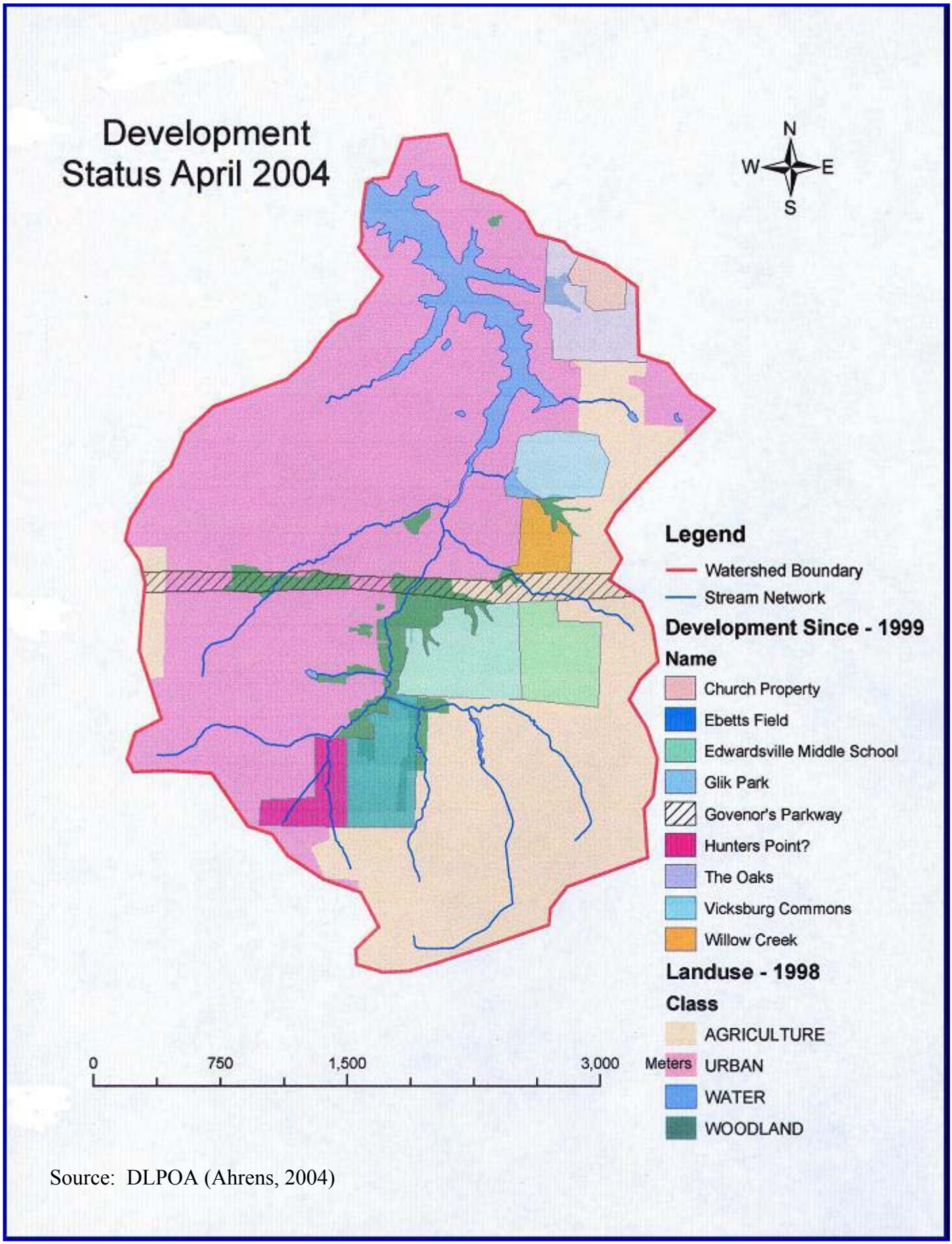
URBAN
WATER
WOODLAND



Source: DLPOA (Ahrens, 2004)

Figure 4. Watershed Land Use and Development Status Map, April 2004

Silt Accumulation by Area

- The areas in red mark the coves with the most significant silt accumulation The amount the areas had filled in by 2005 is on the next page
- The amount they had filled in by 2015 in on pages 6-8 with a chart of changes 2005 to 2015 on page 9

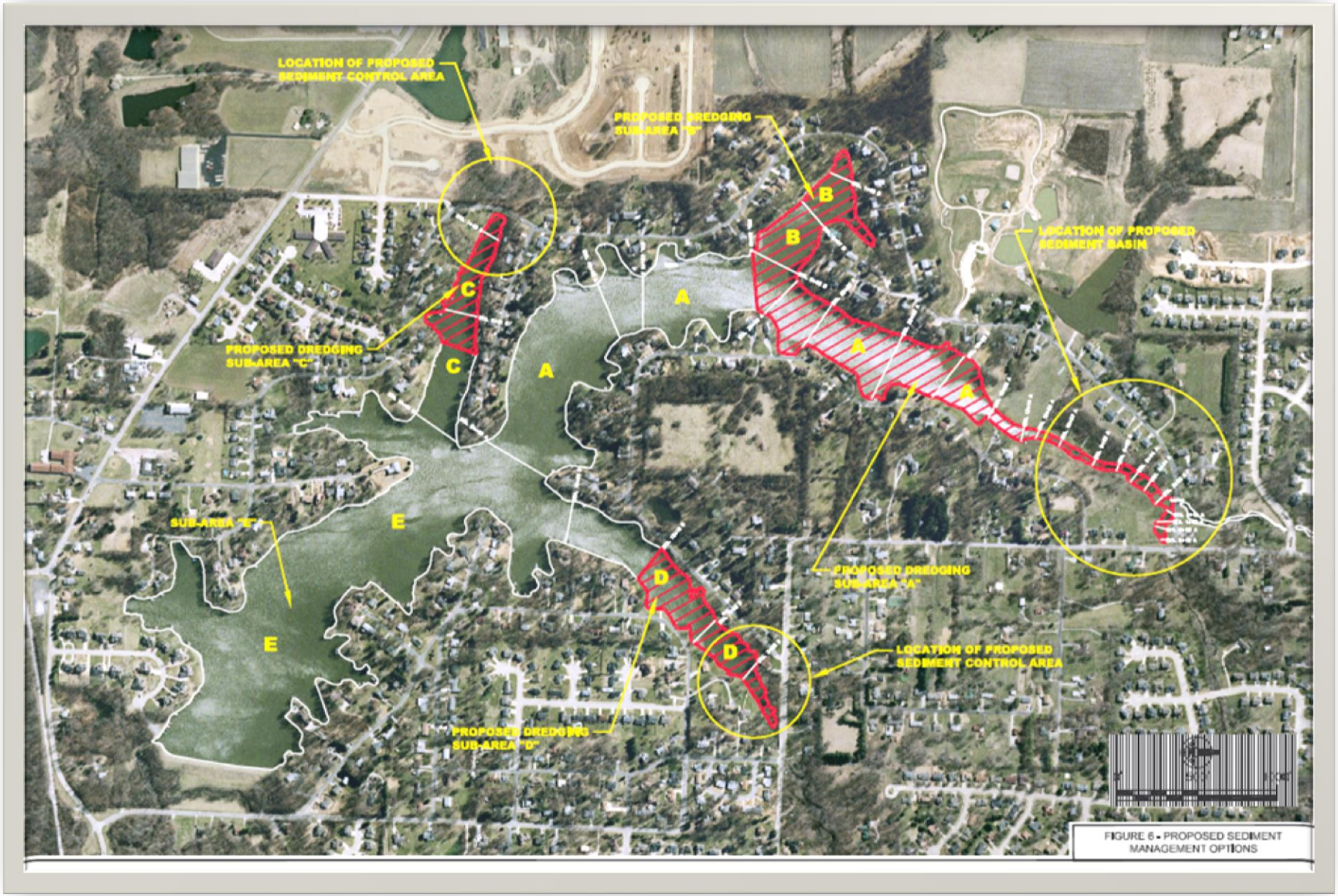
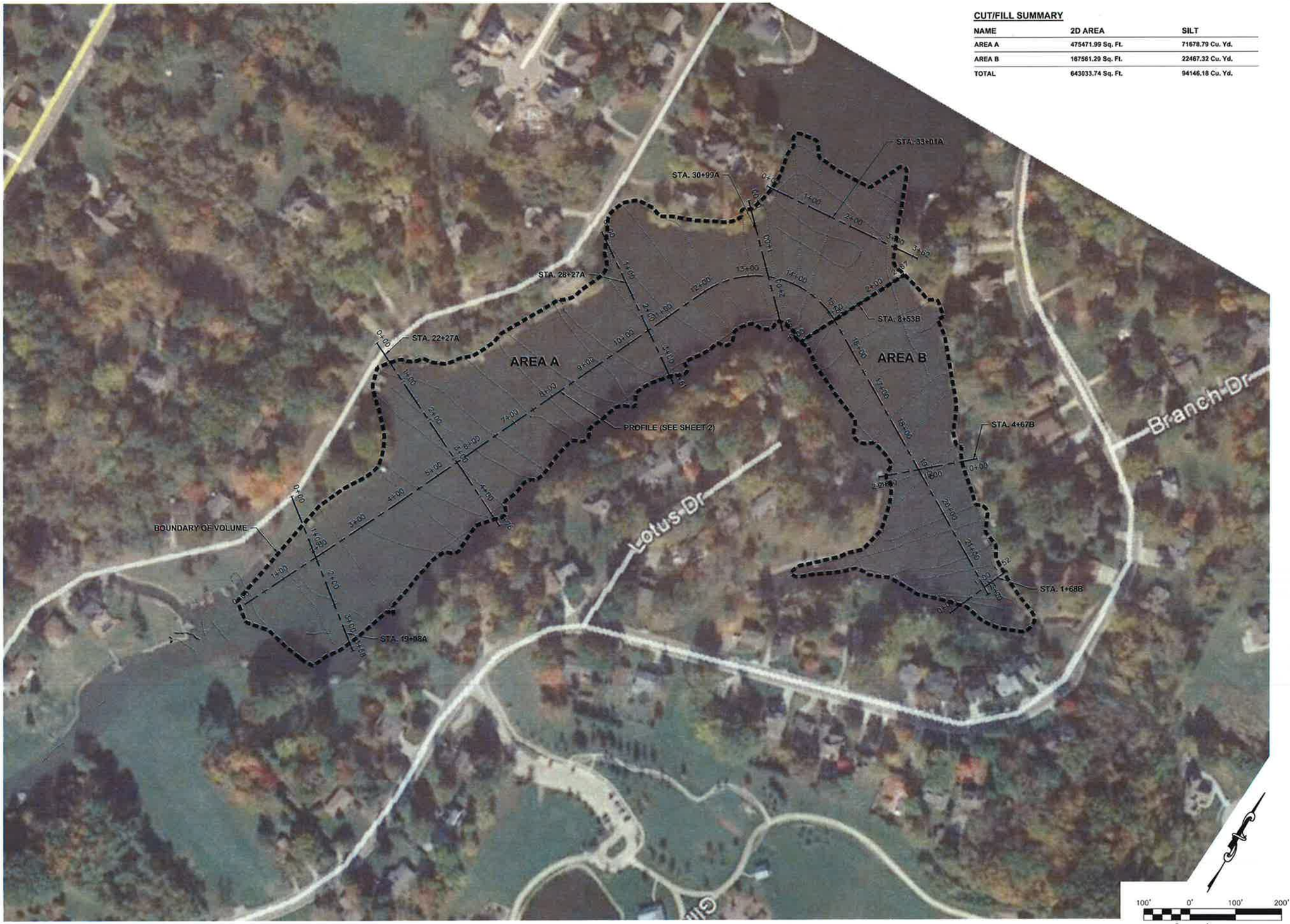


Table 2. Dunlap Lake Sedimentation Survey Results

Lake Segment	Original Lake Volume or Capacity (cubic yards)	Existing Lake Volume or Capacity (cubic yards)	Volume of Sediment (cubic yards)	Percent Capacity Loss as a Result of Sediment Deposition
		Lake Sub-Area A		
1	36	22	14	38.9%
2	543	275	268	49.4%
3	589	259	330	56.0%
4	745	300	445	59.7%
5	1,213	612	601	49.5%
6	1,502	763	739	49.2%
7	1,083	450	633	58.4%
8	1,014	456	558	55.0%
9	1,175	576	599	51.0%
10	1,744	786	958	54.9%
11	1,079	474	605	56.1%
12	1,482	664	818	55.2%
13	4,847	2,178	2,669	55.1%
14	17,081	8,583	8,498	49.8%
15	41,045	21,567	19,478	47.5%
16	64,752	35,442	29,310	45.3%
17	31,874	19,166	12,708	39.9%
18	26,941	16,878	10,063	37.4%
19	103,160	69,876	33,284	32.3%
20	39,451	28,185	11,266	28.6%
21	265,074	192,468	72,606	27.4%
Subtotal Area A	**606,430**	**399,980**	**206,450**	**34.0%**
		Lake Sub-Area B		
22	2,349	1,954	395	16.8%
23	11,489	8,776	2,713	23.6%
24	28,471	19,493	8,978	31.5%
Subtotal Area B	**42,309**	**30,223**	**12,086**	**28.6%**
		Lake Sub-Area C		
25	1,530	1,255	275	18.0%
26	20,560	15,379	5,181	25.2%
27	73,753	59,926	13,827	18.7%
Subtotal Area C	**95,843**	**76,560**	**19,283**	**20.1%**
		Lake Sub-Area D		
28	4,376	2,702	1,674	38.3%
29	13,883	9,096	4,787	34.5%
30	36,005	26,614	9,391	26.1%
31	58,658	46,158	12,500	21.3%
Subtotal Area D	**112,922**	**84,570**	**28,352**	**25.1%**
Subtotal Areas A - D	**857,504**	**591,333**	**266,171**	**31.0%**
		Lake Sub-Area E		
Total Surface Area = 53.0 acres; Avg. Sediment Thickness (ft.) = 2.4'; 1.0 acre-ft = 1,613.3 cubic yards				
Subtotal E			**205,216**	**< 20.0%**
Total Sediment Volume for Whole Lake			**471,387**	



CUT/FILL SUMMARY

NAME	2D AREA	SILT
AREA A	475471.99 Sq. Ft.	71678.79 Cu. Yd.
AREA B	167561.29 Sq. Ft.	22467.32 Cu. Yd.
TOTAL	643033.74 Sq. Ft.	94146.18 Cu. Yd.

NO.	DATE	REVISION

PRELIMINARY
NOT FOR CONSTRUCTION

Name: GILBERT E. SEWING
Discipline: ENGINEER
License No. E 23310
Expiration Date: 12/31/2015

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DISCIPLINE: PROFESSIONAL ENGINEERING
CERTIFICATE OF AUTHORITY: 000159
EXPIRATION DATE: DECEMBER 31, 2016

DUNLAP LAKE
EDWARDSVILLE, ILLINOIS

BATHYMETRY PLAN AND PROFILE

DATE: 7/16/15

DESIGNED:
DRAWN:
CHECKED:

HS JOB NO. 1318800

SHEET 1 OF 3

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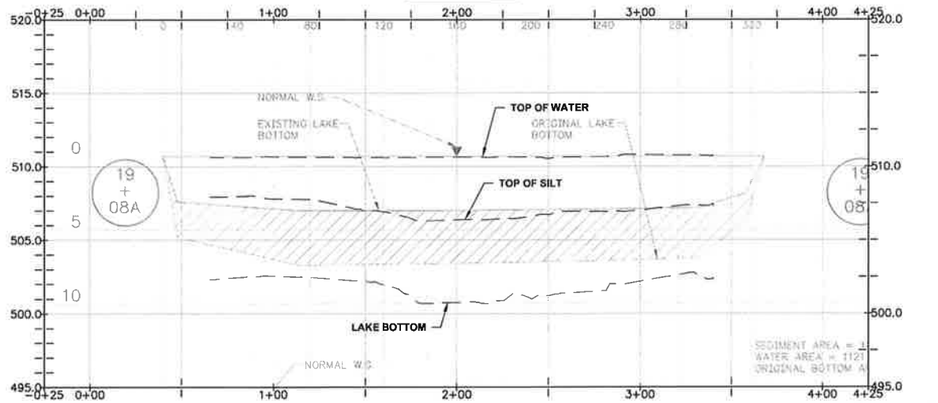

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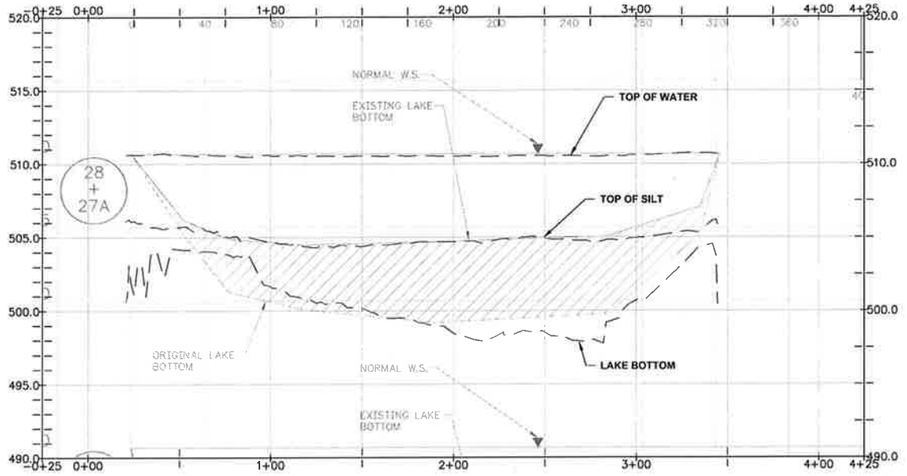

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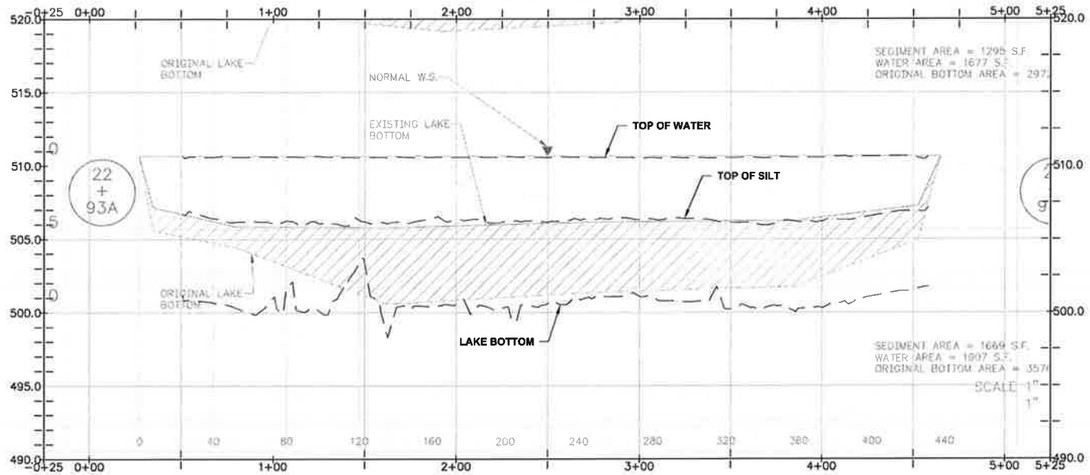

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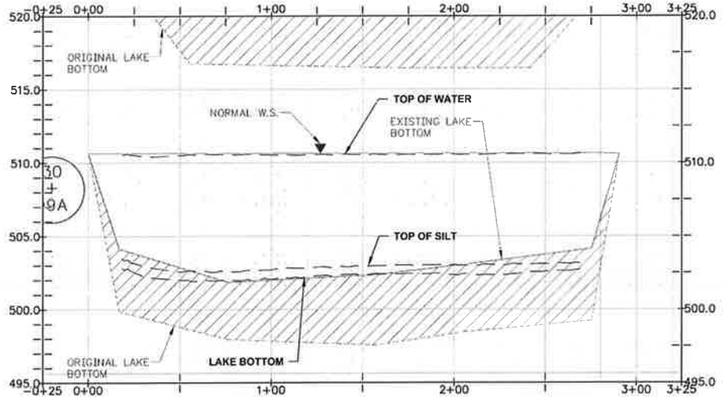

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CROSS SECTIONS

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HS JOB NO. 1318800

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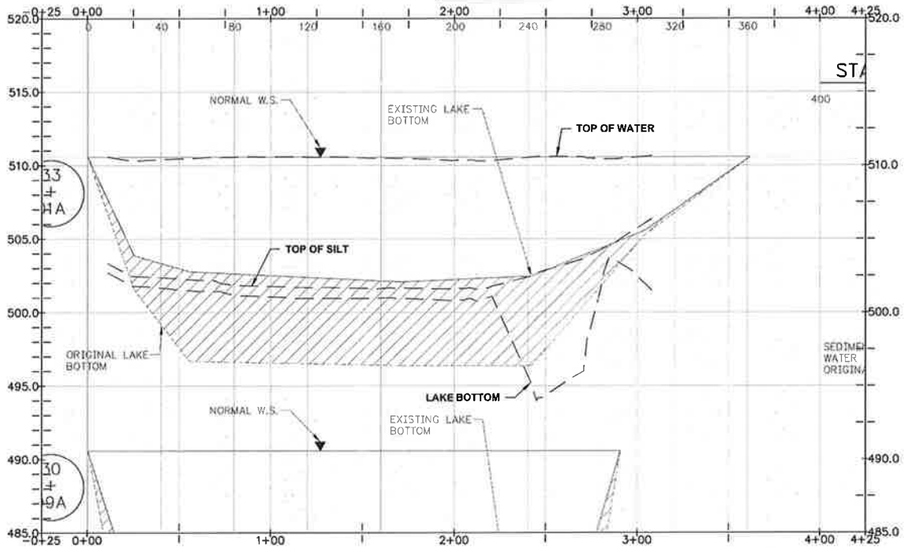

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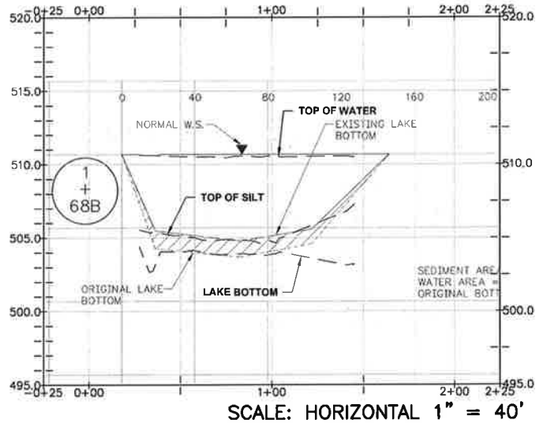

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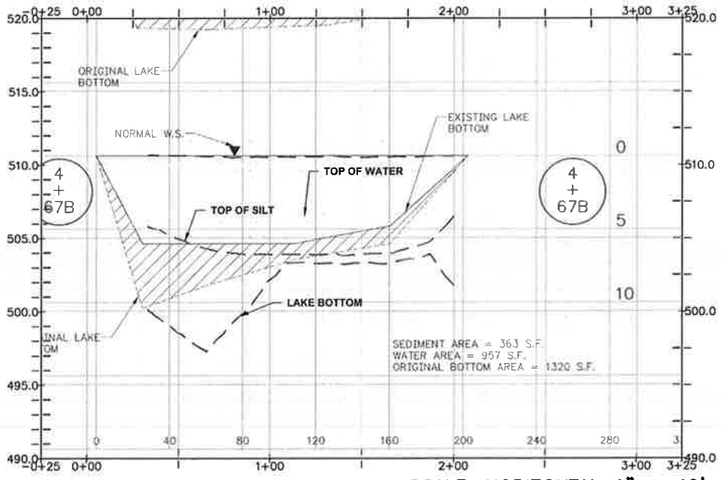

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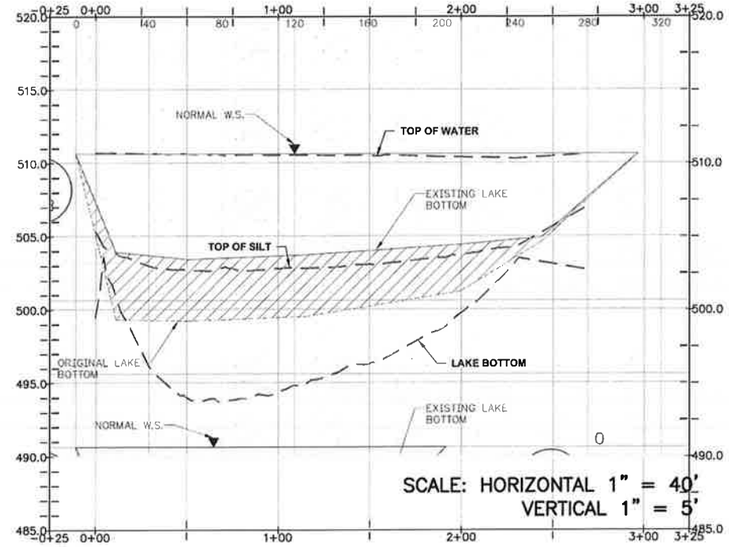

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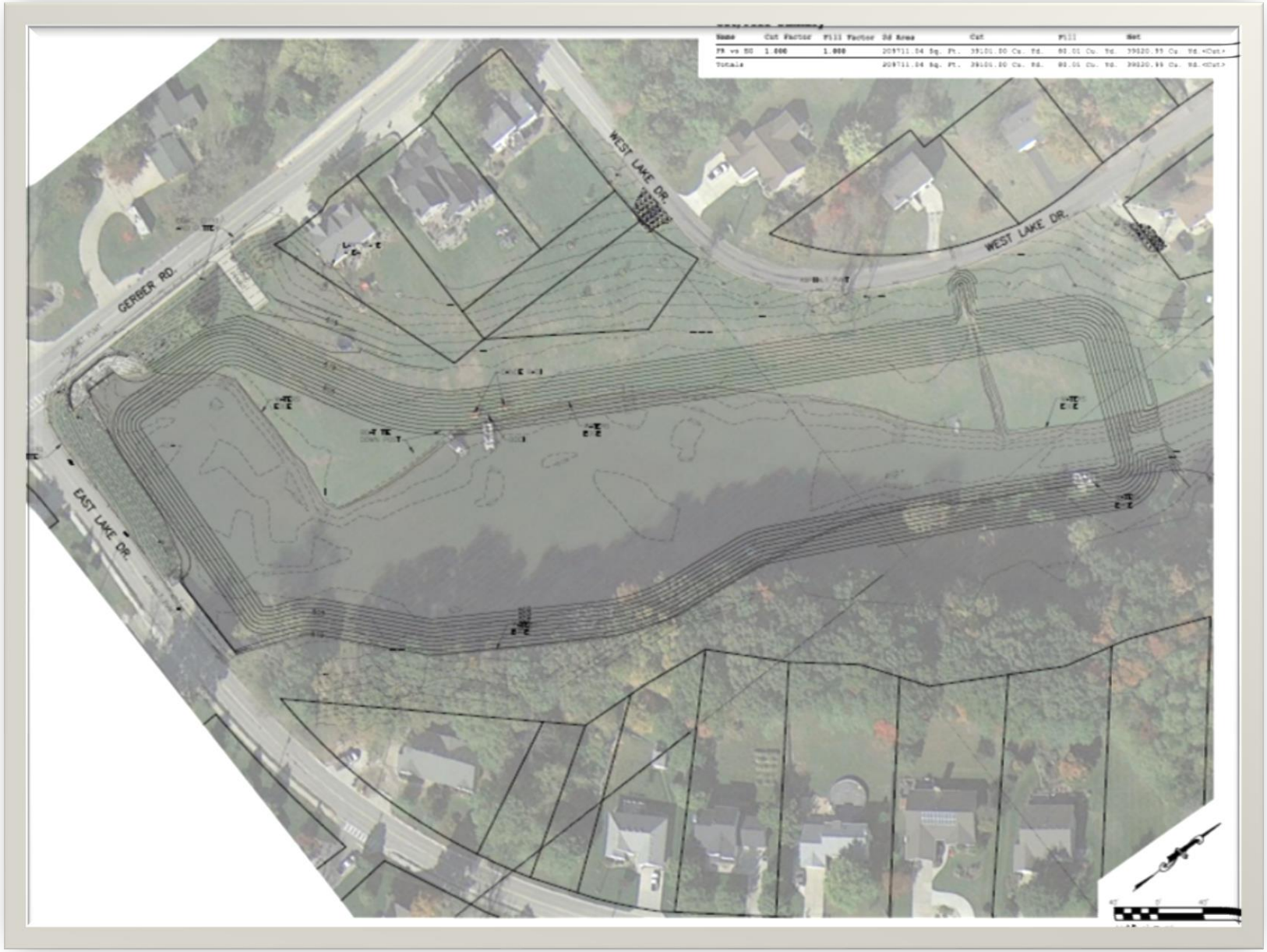
DUNLAP LAKE
SILT ACCUMULATION VOLUME COMPARISON
2005 VS 2015

VALIDATION - REPLICATION OF 2005 NUMBERS					2015 Silt Survey					
Section	Silt section area, sf	Dist. Bet. Sections	Sect vol, cy	Cum vol, cy	Section	Silt section area, sf	Dist. Bet. Sections	Sect vol, cy	Cum vol, cy	DELTA
15+55A	237				15+55A	237				
19+08A	1,065	353	8,511	8,511	19+08A	1,451	353	11,037	11,037	
22+93A	1,669	385	19,492	28,004	22+93A	2,322	385	26,902	37,939	
28+27A	1,295	534	29,311	57,314	28+27A	1,265	534	35,472	73,411	
30+99A	1,228	272	12,708	70,023	30+99A	1,228	272	12,558	85,969	
33+01A	1,462	202	10,063	80,085	33+01A	1,462	202	10,063	96,031	15,946
0+00B	-				0+00B	-				
1+68B	127	168	395	395	1+68B	127	168	395	395	
4+67B	363	299	2,713	3,108	4+67B	409	299	2,969	3,364	
8+53B	893	386	8,978	12,086	8+53B	1,430	386	13,145	16,509	4,422
			TOTAL (A+B)	92,172					112,540	20,369

Initial site drawing for a silt dewatering basin at 840 W. Lake Drive

Drawing for a silt retention basin at Gerber and West Lake Drive



The Board is working to further define project scope and pricing.

There will be a membership meeting to present scope, costs and financing options.