



# Cost Benefit of Pre-Dredging Investigations

By Keith Gray

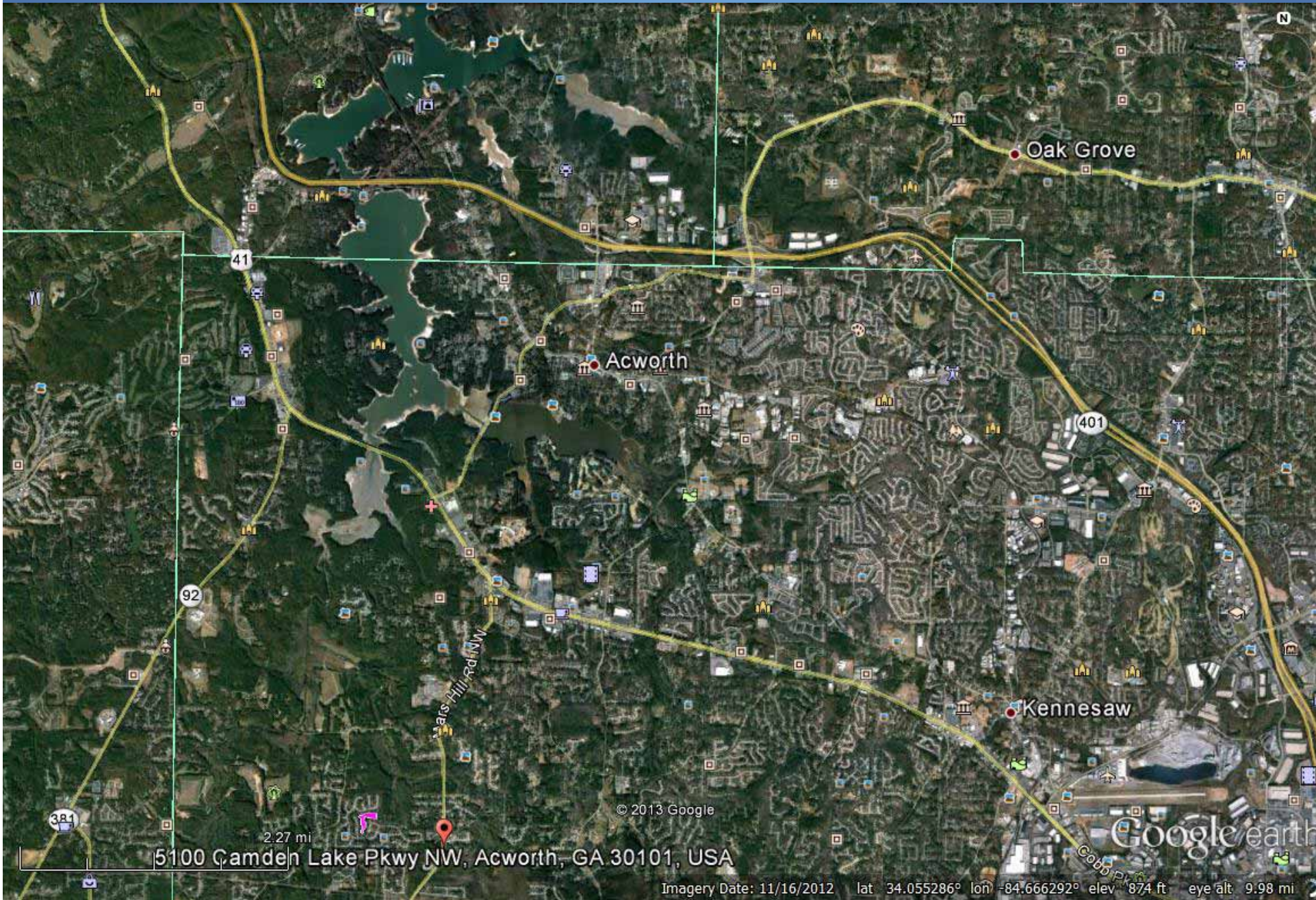
April 5, 2012



“An expert is a person who has made all the mistakes in a very narrow field.”

Niels Bohr



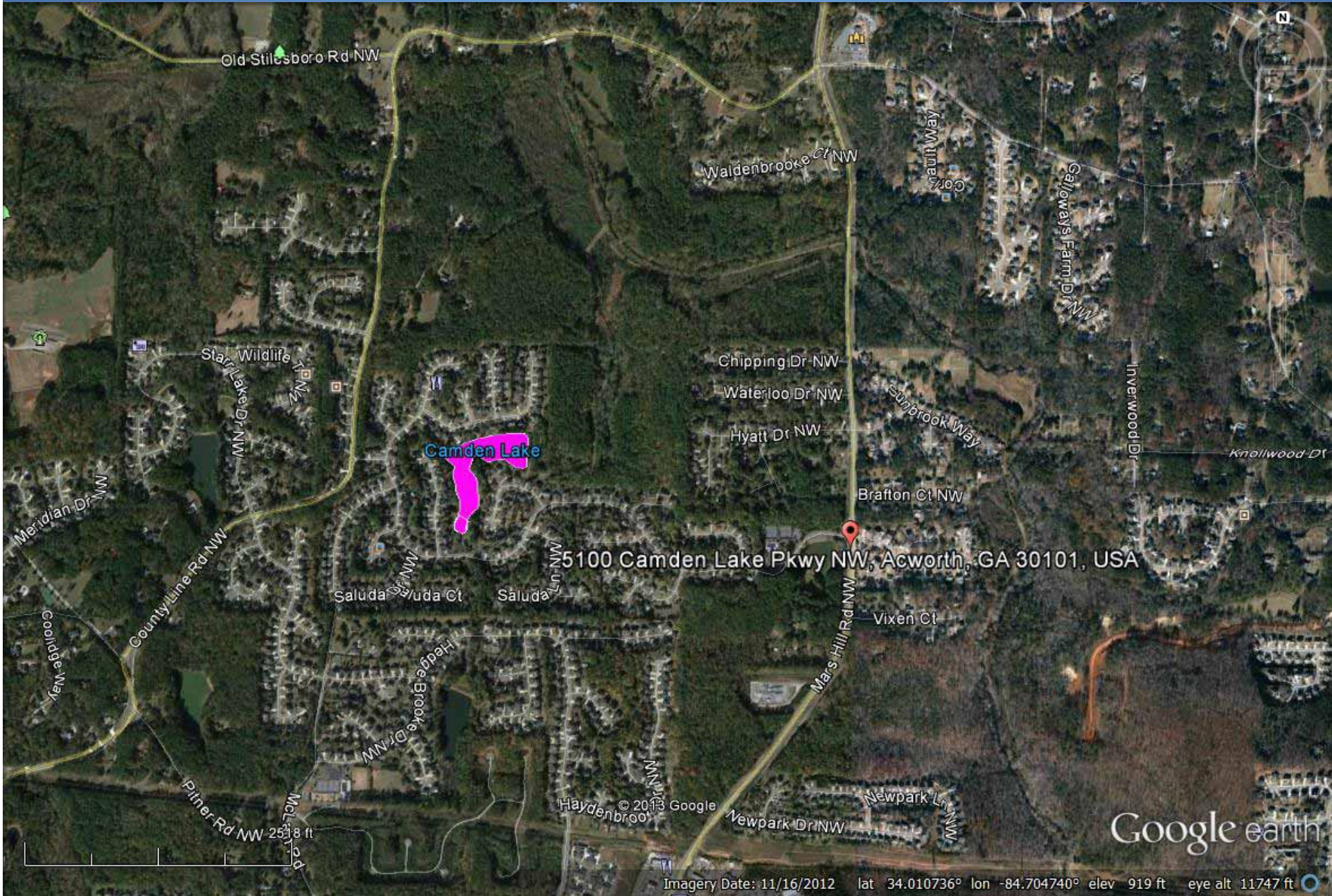


2.27 mi  
5100 Camden Lake Pkwy NW, Acworth, GA 30101, USA

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Imagery Date: 11/16/2012 lat 34.055286° lon -84.666292° elev 874 ft eye alt 9.98 mi

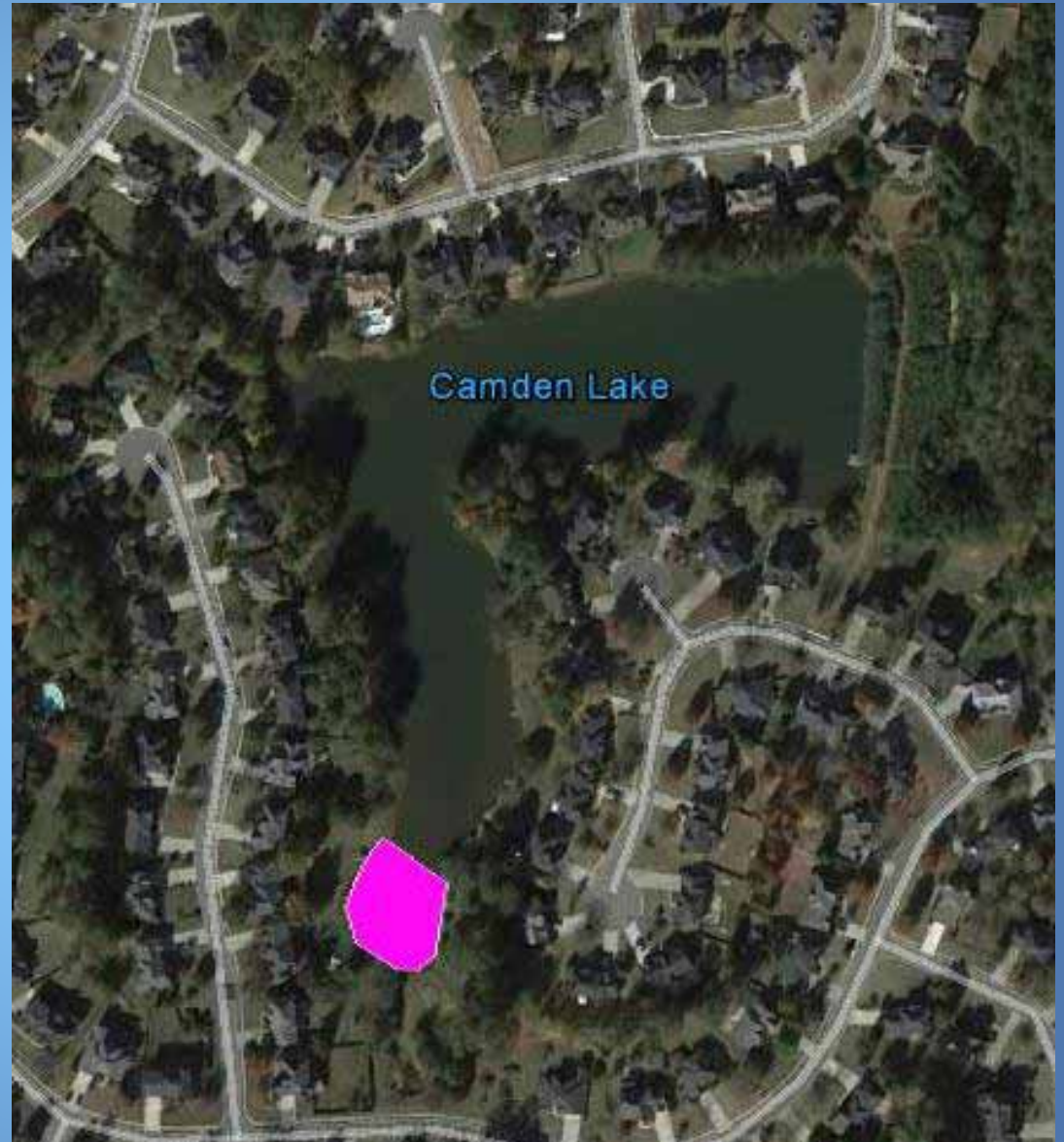




Imagery Date: 11/16/2012 lat 34.010736° lon -84.704740° elev 919 ft eye alt 11747 ft



“All we have  
in the budget  
is \$7,500 –  
Do what you  
can.”



# Budget

- Operator \$75/hr. X 9 hrs. → \$675
- Labor \$55/hr. X 9 hrs. → \$495
- Machine (Day rate) → \$900
- Dewatering bag → \$400/day
- Total → \$2,470/day

No mob/de-mob

Let sediment dry, spread it,  
seed it

3 Days!

















Truxor: 3 days @ \$2,500/day =  
\$7,500

**What did it cost us beyond 3 days  
of activity?**



• Labor to cut bag and spread	\$200
• Bobcat rental	\$300
• Tow truck for bobcat	\$140
• Silt fence	\$200
• <u>Labor</u>	<u>\$300</u>
Total	\$1,140



• Bobcat rental (Day 2)	\$300
• Labor	\$300
• <u>Grass / cover crop seed</u>	<u>\$60</u>
Total	\$660

• Top soil	\$200
• Seed	\$60
• <u>Labor</u>	<u>\$260</u>
Total	\$520





• Goose protection fencing	\$160
• Seed	\$60
• <u>Labor</u>	<u>\$280</u>
Total	\$500



• 1 <sup>st</sup> try by hand	\$200
• 2 <sup>nd</sup> try (Bobcat)	\$1,140
• 3 <sup>rd</sup> try (Bobcat V-2)	\$660
• 4 <sup>th</sup> try (Top soil)	\$520
• <u>5<sup>th</sup> try (Goose fencing)</u>	<u>\$500</u>
Total	\$3,020



# Spring 2013



“I thought you’d  
have removed a lot  
more than that for  
\$7,500!”





# Mistakes Made

- Understand the material you are working with:
  - Removal rate
  - Material handling
  - Wet vs. dry volumes

# Mistakes Made

- Consider secondary use & associated costs:
  - Will it support growth?
  - Will it dry?
  - Will it erode easily?
  - Contaminated?



# Mistakes Made

- Establish realistic client expectations:
  - Volume
  - Appearance
  - Project duration



“Learn from  
others mistakes.  
You don’t live  
long enough to  
make them all  
yourself.”

Eleanor Roosevelt



How much to dredge my pond?

# Dredging Feasibility Study

\$1,500 to \$10,000

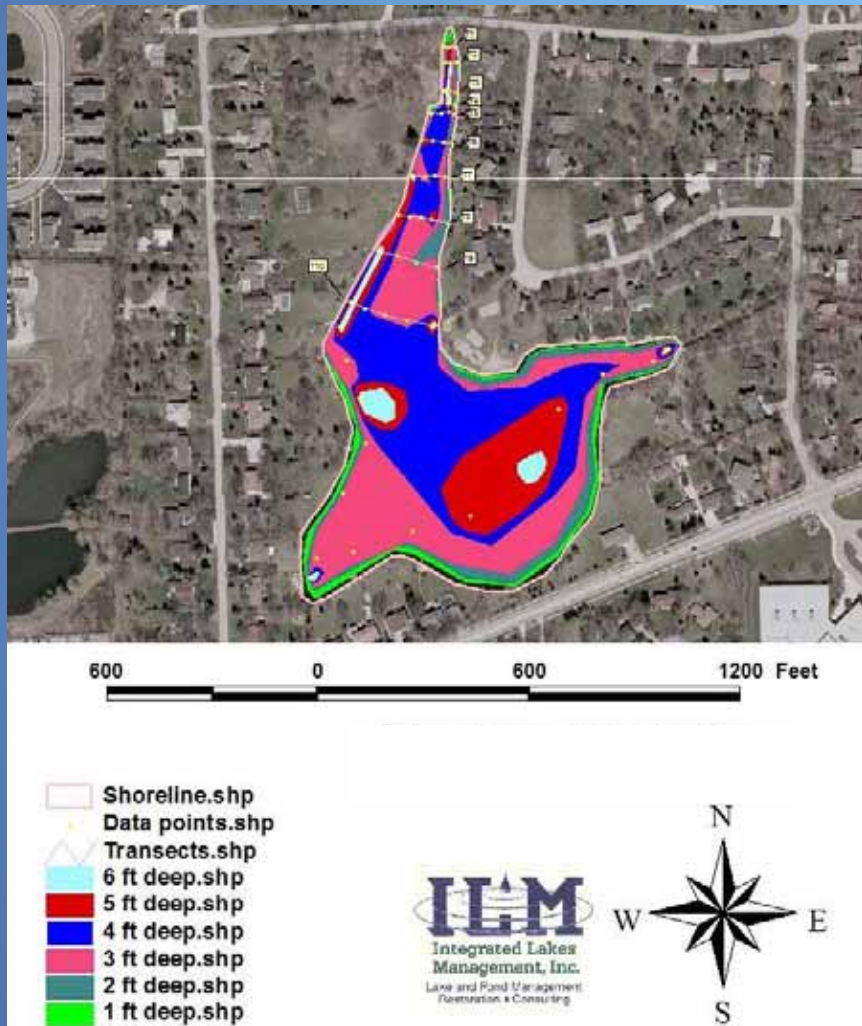


“Just tell me how much sediment I have”

“We want as much of our money to go into removing sediment as possible.”



# Bathymetric Map



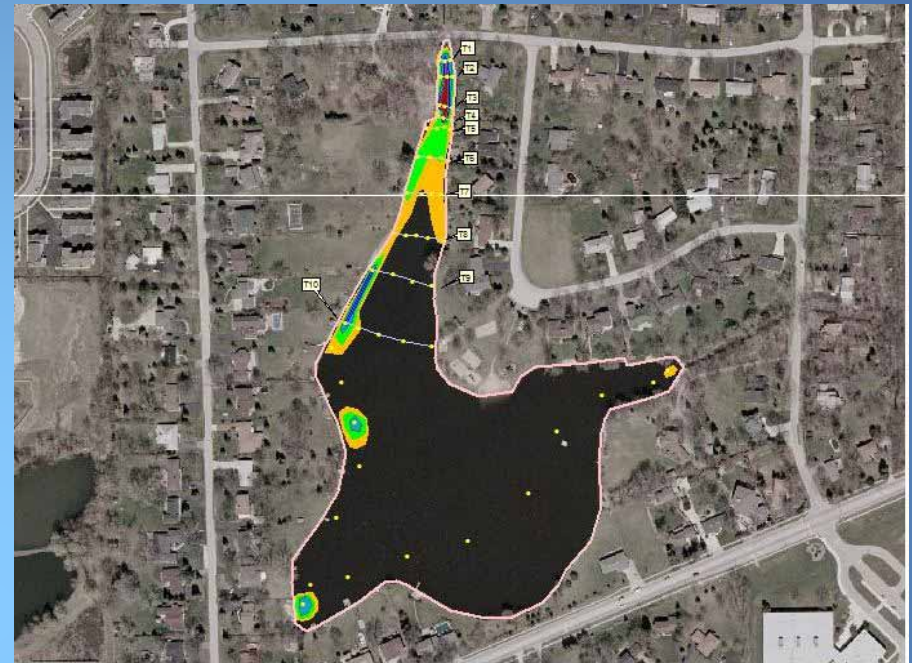






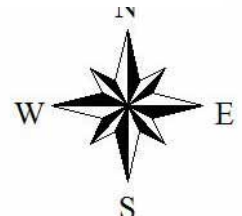
600 0 600 1200 Feet

- Shoreline.shp
- Data points.shp
- Transects.shp
- 6 ft deep.shp
- 5 ft deep.shp
- 4 ft deep.shp
- 3 ft deep.shp
- 2 ft deep.shp
- 1 ft deep.shp



600 0 600 1200 Feet

- Shoreline.shp
- Data points.shp
- Transects.shp
- 5 ft sediment.shp
- 4 ft sediment.shp
- 3 ft sediment.shp
- 2 ft sediment.shp
- 1 ft sediment.shp



15,600 CY

$$15,600 \text{ CY} \times \$20 - \$40/\text{CY} =$$
$$\$300,000 \text{ to } \$600,000$$





## Other Costs:

- Disposal
- Loading
- Analysis
- Repair to work areas
- Permits
- Bonding



# Dredging Feasibility Study:

- Understand the goals/needs of the client.
- Evaluate the options to achieve clients needs.
  - I. Recreation
    - Boating
    - swimming
  - II. Water Quality
    - Plants
    - Algae
    - clarity
  - III. Fishery
    - Habitat
    - Depth





<b>Main Inlet</b>		<b>2.8 acres</b>			
Sediment thickness	Mapped Area ft <sup>2</sup>	Avg. thickness ft	Volume ft <sup>3</sup>	Percent of volume	
5 ft +	2,049	5.3	10,858	8.2%	
4 - 5 ft	929	4.5	4,181	3.2%	
3- 4 ft	2,122	3.5	7,428	5.6%	
2 - 3 ft	10,157	2.5	25,394	19.2%	
1 - 2 ft	29,967	1.5	44,950	34.0%	
0 - 1 ft	78,516	0.5	39,258	29.7%	
			132,069	total volume ft <sup>3</sup>	
			4,891	cubic yards	

47,861 ft<sup>3</sup> = 1,773 CY @ \$50/CY = \$88,000

+ Hauling and disposal

\$160/load x 90 loads = \$14,400

~ \$100,000



# Pre-Dredging Investigation Benefits:

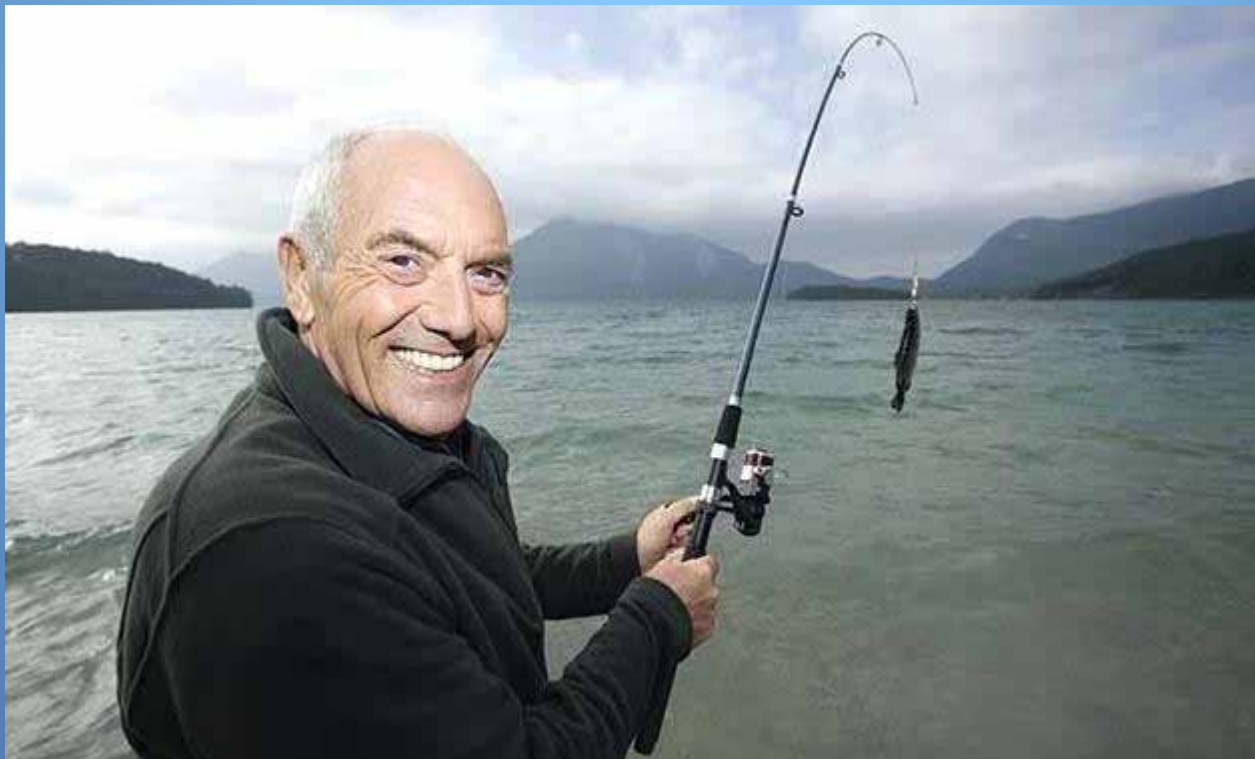
- Determine sediment distribution
- Determine sediment type
  - secondary use
  - Disposal
  - compaction
- Identify high priority areas
- Identify source of sediment

# Pre-Dredging Investigation Benefits:

- Determine the most effective method of removal (hydraulic, wet mechanical, dry mechanical).
- Identify qualified contractors and use information gathered to create a bid package.
- Options for removed sediment.

# “Dredging Feasibility Study”

A good investment.





# Questions?

Keith Gray

Integrated Lakes Management

847-244-6662

[kgray@lakesmanagement.com](mailto:kgray@lakesmanagement.com)

