dredgeSMART.

the dredging equation, solved.

What the Muck!?
Removing the Mystery from the Muck

Presented by Trent Lewis, FPC

PondMedics Family of Brands

Pond Medics

FAMILY OF BRANDS

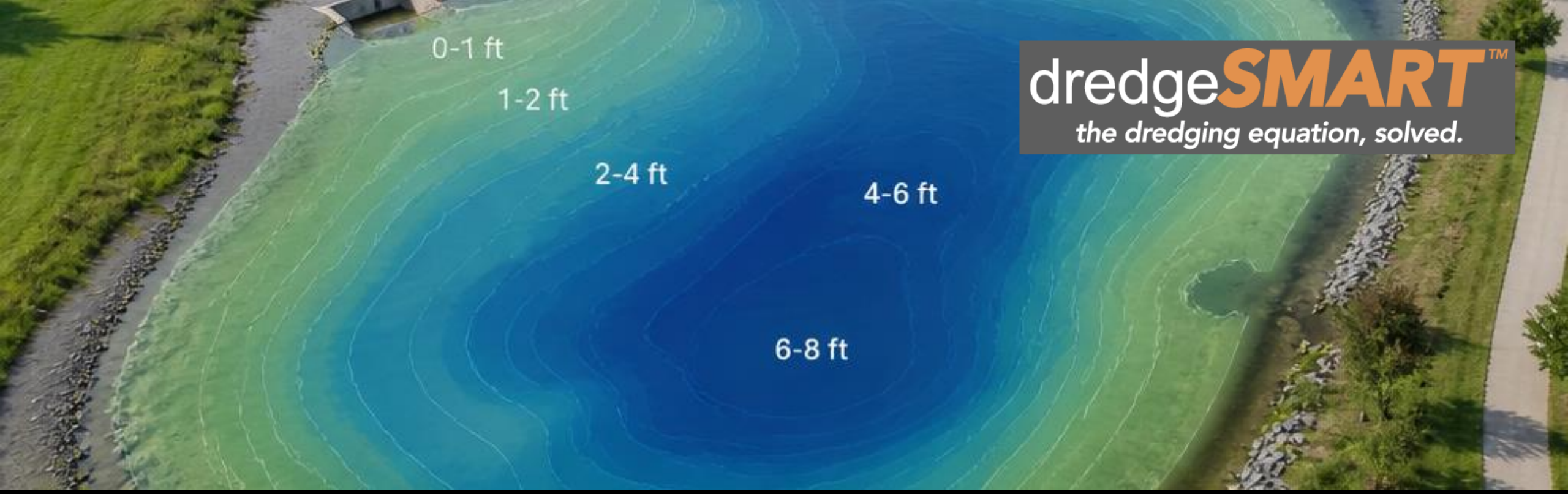
dredgeSMART™
the dredging equation, solved.

FOUNTAIN FREEDOM™
SET YOURSELF FREE FROM FOUNTAIN STRESS

PondCure

Simple PondCare

Aquainject



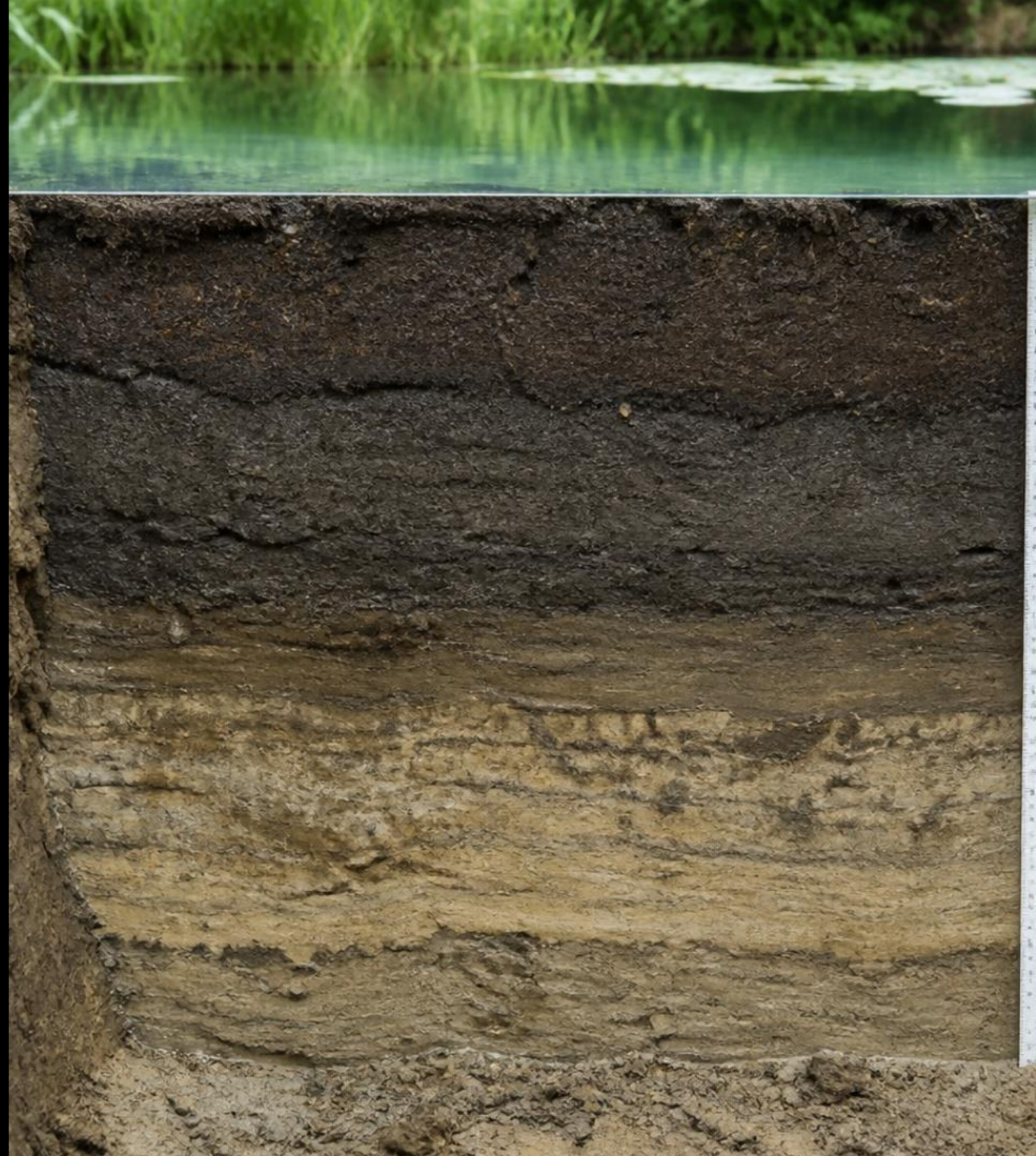
The Hidden Liability Beneath The Surface

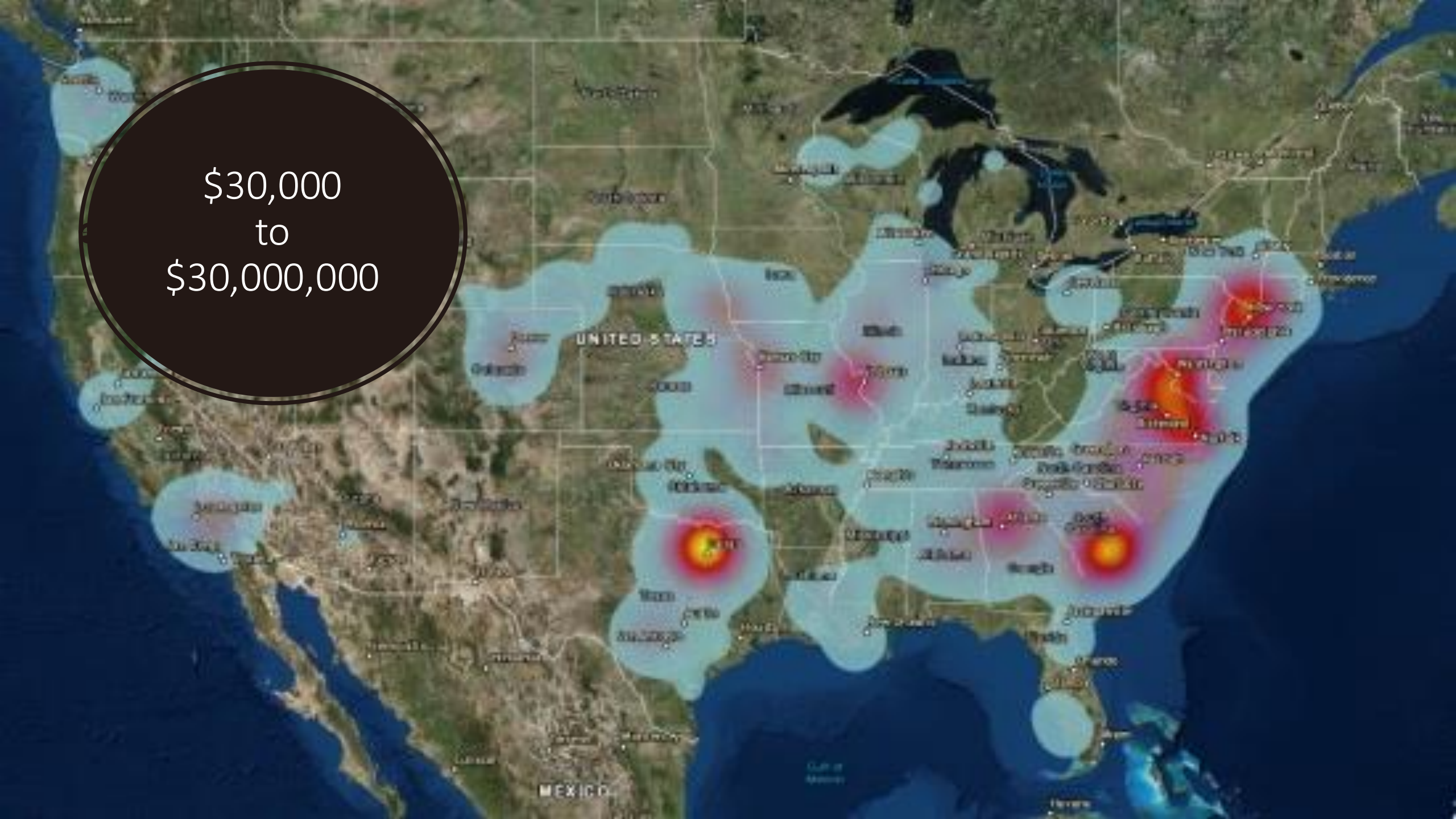
Why Every HOA Will Eventually Dredge — and Why Most Are Financially Unprepared

Process Overview

A Lifecycle of Gradual Accumulation

- **The Inevitable Process:** Every pond experiences a continuous, vertical accretion of sediment over time.
- **Capacity Reduction:** As the sediment floor rises, the total water storage volume decreases proportionally.
- **The Binary Reality:**
  - **Filling In:** The natural progression where organic and inorganic matter accumulates.
  - **Failing:** The eventual loss of hydrological utility as the pond depth diminishes.




$30,000
to
$30,000,000
UNITED STATES
MEXICO

Teamwork Makes The Dream Work

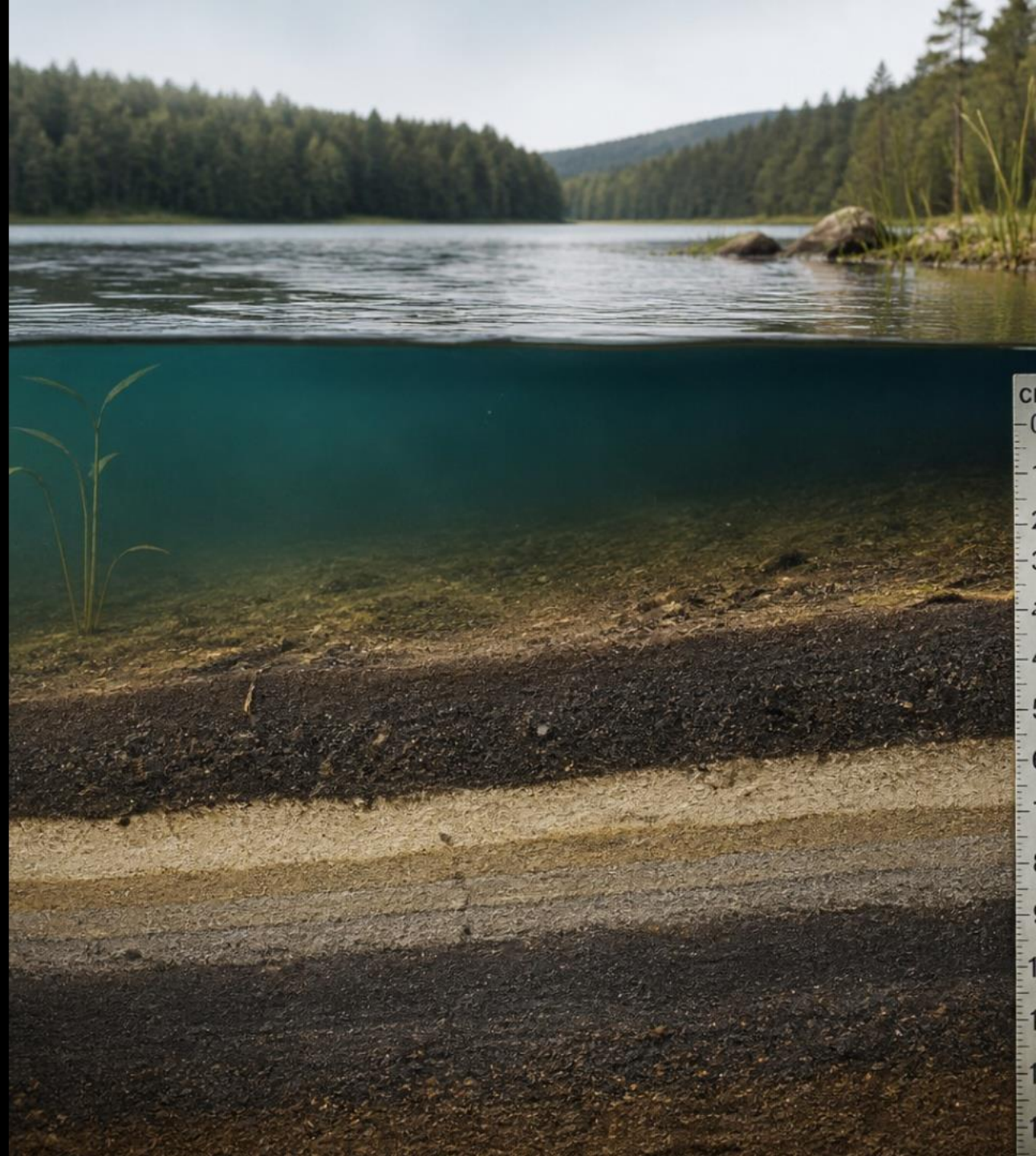
- Engineers
- Hydrologists
- Hydrographers
- Surveyors
- Biologists
- Attorneys
- Geotechnical
- GIS/CAD Technical
- Robotics/Autonomy
- Laboratories
- Agencies
- Dredging Contractors
- General Contractors
- Project Administration

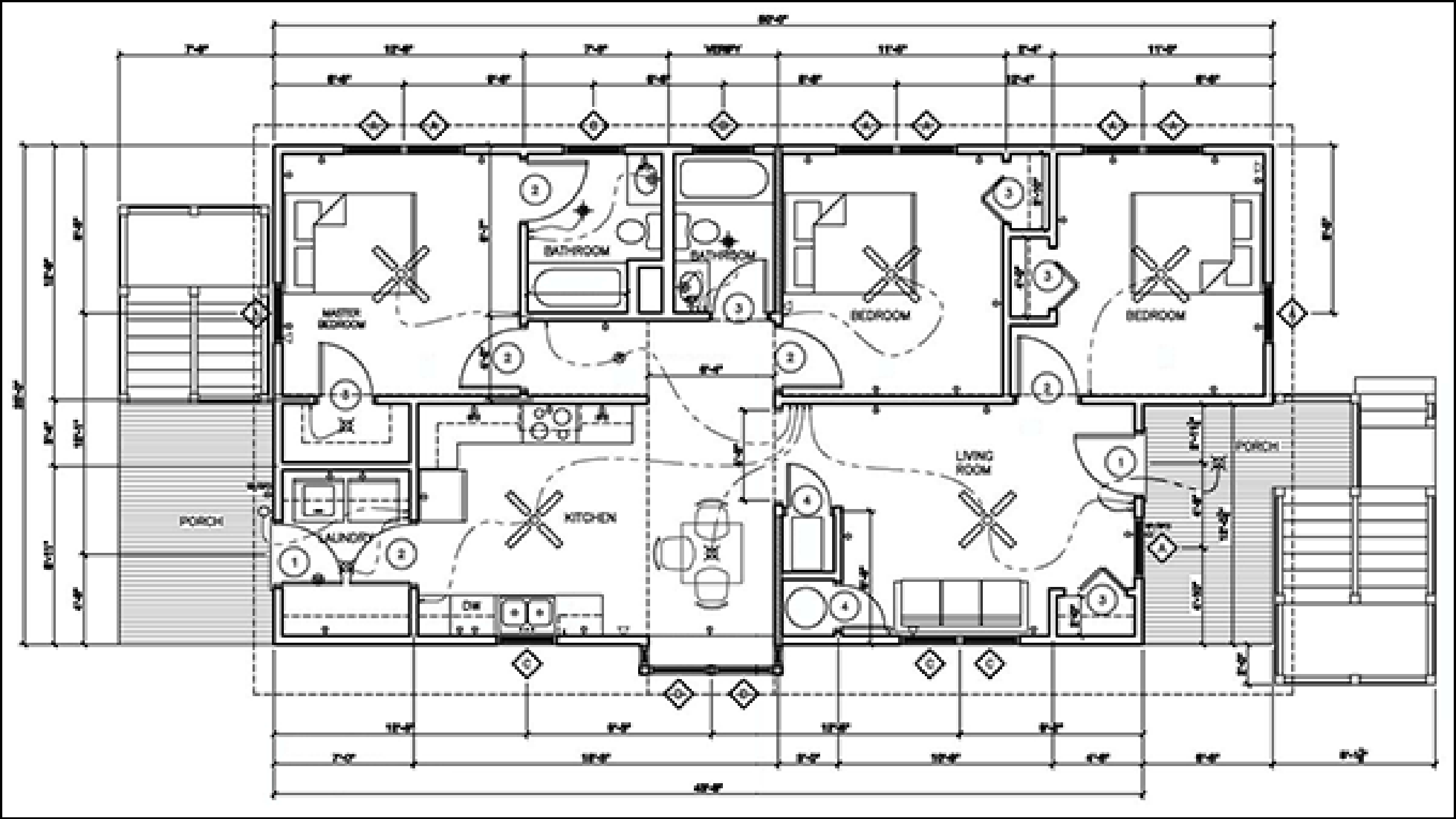
DEFINING DREDGING SUCCESS

Strategic Risk Management

The Invisible Asset

- **Beyond the Surface:** Standard visual inspections only capture the symptoms, not the root cause.
- **The Measurement Gap:** You cannot reserve-plan or optimize what you cannot objectively measure.
- **Strategic Imperative:** Transition from reactive visual assessment to proactive, data-driven telemetry.




BATHROOM
BATHROOM
BEDROOM
BEDROOM
MASTER BEDROOM
KITCHEN
LAUNDRY
LIVING ROOM
PORCH
PORCH

1. DREDGING QUANTITIES TAKE OFF

Item	Description	Unit	Quantity	Assumptions / Notes
1.1	Dredge Area (Surface Area)	Acres	5.20	Surveyed surface area
1.2	Average Sediment Thickness	Feet	4.10	From bathymetric survey
1.3	Total Sediment Volume (In-Place)	CY	74,006	Acres x 43,560 SF x Avg. Depth / 27
1.4	Dredge Overdepth (15%)	CY	11,101	For grade tolerance and variability
1.5	**TOTAL DREDGE VOLUME (LOOSE)**	**CY**	**85,107**	In-place x 1.15 overdepth

2. COST ESTIMATE (DETAILED TAKE OFF)

Item No.	Description	Unit	Quantity	Unit Cost	Total Cost	Notes / Assumptions
A. MOBILIZATION / DEMOBILIZATION						
A.1	Mobilization (Barge, Equipment, Crew)	LS	1	$45,000	$45,000	Includes tug, barge, equipment
A.2	Demobilization	LS	1	$25,000	$25,000	At completion of project
		Subtotal A			**$70,000**	
B. DREDGING OPERATIONS						
B.1	Hydraulic Dredging (Production)	CY	85,107	$5.75	$489,866	Includes labor, fuel, equipment
B.2	Pipeline / Booster Pumping	LS	1	$60,000	$60,000	Equipment and operation
B.3	Dewatering (Geotextile Tubes)	CY	102,128	$1.85	$189,941	Dewatered volume
		Subtotal B			**$739,807**	
C. DISPOSAL						
C.1	Disposal (Land Application Site)	CY	102,128	$1.10	$112,341	Haul, place, grading
		Subtotal C			**$112,341**	
D. SITE RESTORATION						
D.1	Grading / Final Cleanup	LS	1	$25,000	$25,000	Pond bottom and access areas
D.2	Erosion Control / Seeding	LS	1	$18,000	$18,000	Re-establish disturbed areas
		Subtotal D			**$43,000**	
E. PERMITTING & MONITORING						
E.1	Permitting (State / Local)	LS	1	$12,000	$12,000	Application & fees
E.2	Turbidity / Water Quality Monitoring	LS	1	$10,000	$10,000	During dredging operations
		Subtotal E			**$22,000**	
F. CONTINGENCY						
F.1	Contingency (15%)	LS	1	$130,602	$130,602	For unknowns and risks
		Subtotal F			**$130,602**	

PROJECT SUMMARY	
Total Dredge Volume (Loose)	85,107 CY
Dewatering Factor	20%
Total Dewatered Volume	102,128 CY
Estimated Project Cost	**$1,002,750**
Cost Per Dewatered CY	$9.81
Contingency	15%
OPINION OF PROBABLE COST	**$1,000,000**

KEY ASSUMPTIONS

- Dredging method: Hydraulic
- Dewatering method: Geotextile tubes
- Disposal: Approved upland site within 20 miles
- Working days: 40 days
- Dewatering factor: 20%
- Prices include labor, equipment, fuel
- Does not include bypass pumping (if required)
- Does not include tree removal or utility relocations (if required)

QUANTITY SUMMARY	
Dredge Area	5.20 Acres
Avg. Sediment Thickness	4.10 Feet
Total Volume (Loose)	85,107 CY
Dewatered Volume	102,128 CY

COST SUMMARY	
Construction Subtotal	$852,750
Contingency (15%)	$130,602
TOTAL PROJECT COST	**$1,002,750**

DEFINING DREDGING SUCCESS

Questions to Ask Your Team When Considering A Dredging Project

- Why do we need to dredge?
- What symptoms are we trying to cure?
- What is our approximate budget to accomplish the project?
- When do we need to accomplish the project?
- Who do we need on our team?
- Who is in control of the project?
- Who will be our success advocate?
- By what measure will we define success?

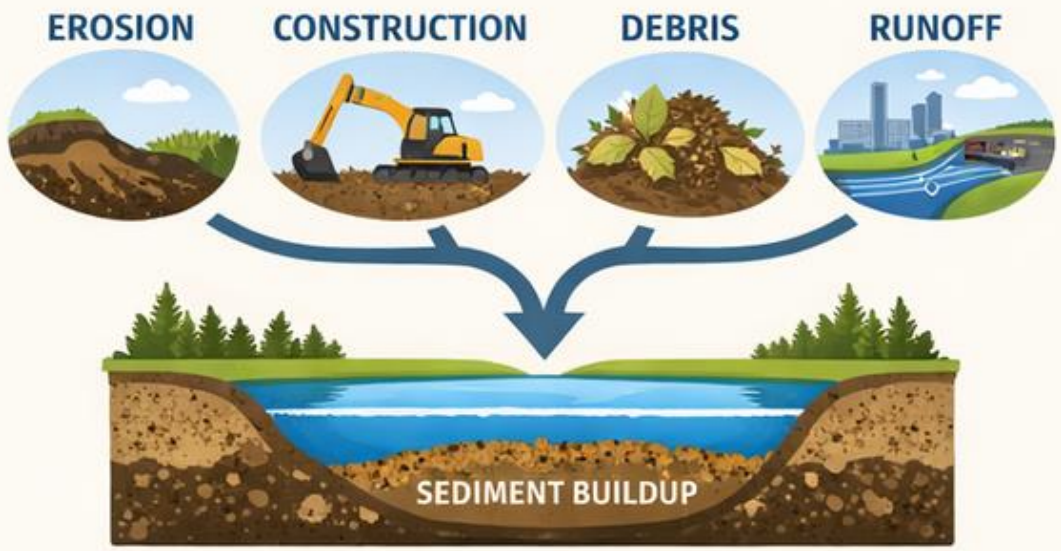
How did we get here?

Sediment Loading

- Internal
- External
- Organic
- Inorganic

UNDERSTANDING POND SEDIMENTATION

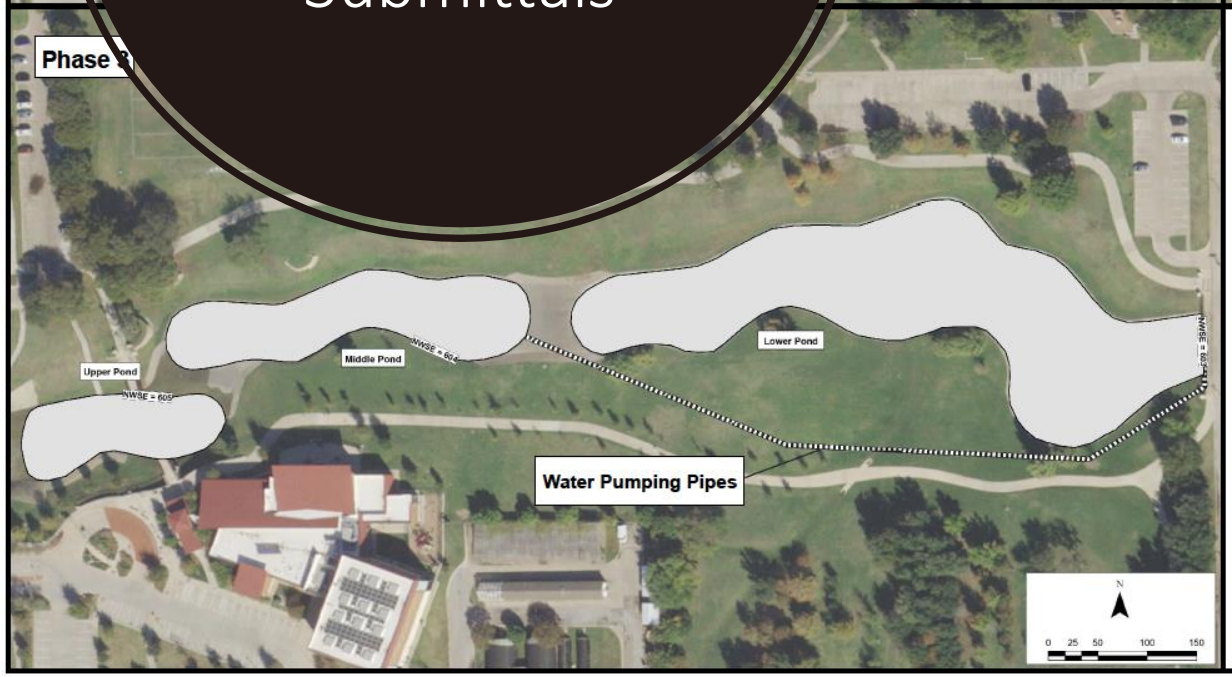
Sediment Sources



Reduced Capacity & Infilling

Sediment Accumulation Over Time

Competitive & Comparative Bid Submittals



DEWATERING PROCESS

Phase 1: The Upper Pond will be drained and excavated first. Water will be pumped into the Middle Pond. Any storm water accumulation will be pumped into the Middle Pond.

Phase 2: The Middle Pond will be drained and excavated second. Water will be pumped from the Middle Pond to the Lower Pond. The Upper Pond will remain drained while the Middle Pond is excavated. This will allow for storage of potential strom water. Any nuisance water will be pumped into the Lower Pond.

Phase 3: The Lower Pond will be drained and excavated last. Water will be pumped downstream beyond the Lower Pond. The Upper and Middle Ponds will remain drained while the Lower Pond is excavated. This will allow for storage of potential storm water. Any nuisance water will be pumped downstream of the Lower Pond.

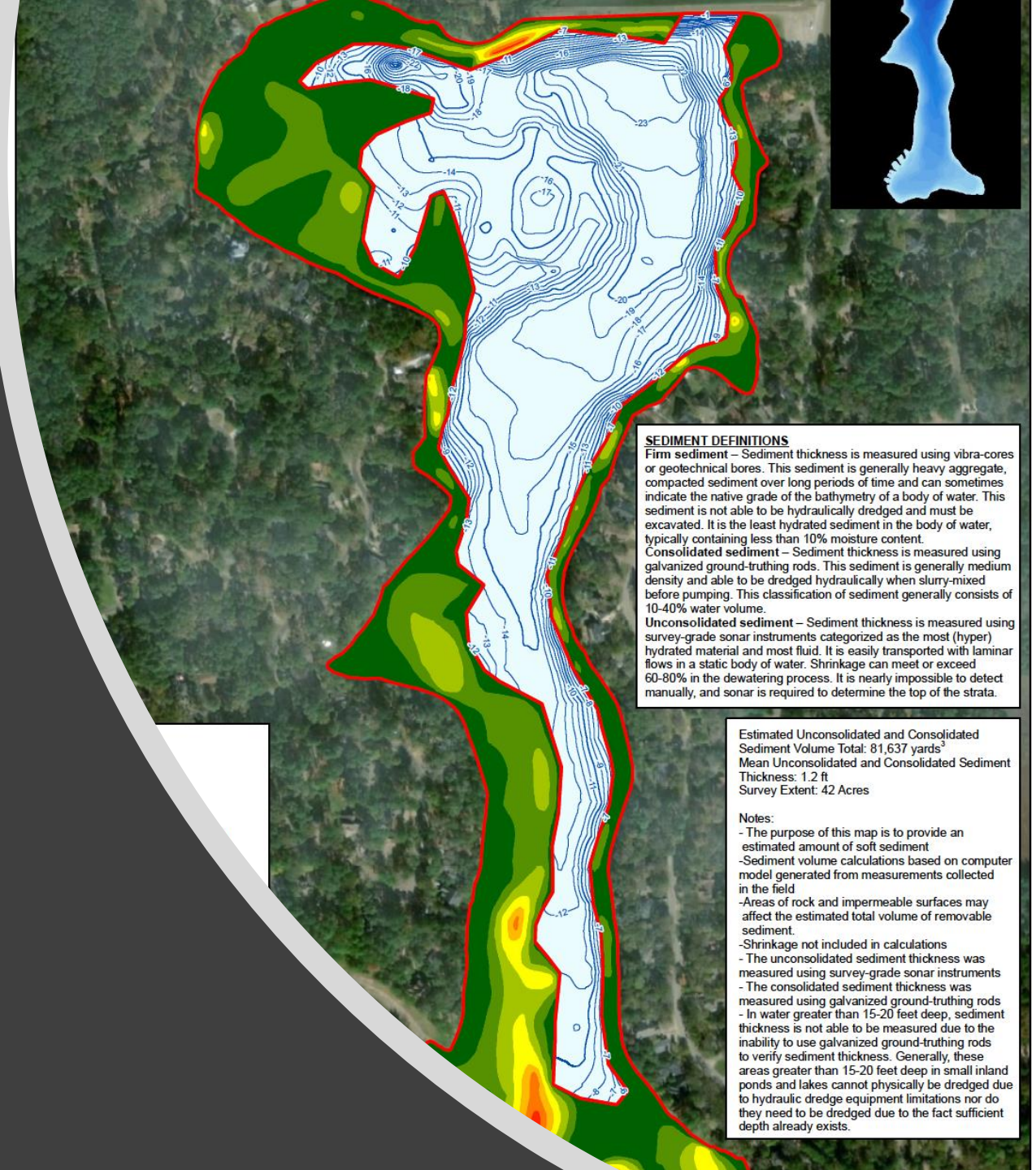
HUFFHINES PARK LAKE DREDGING PROJECT
CITY OF RICHARDSON CAPITAL PROJECTS
RICHARDSON, TEXAS
DEWATERING PLANS

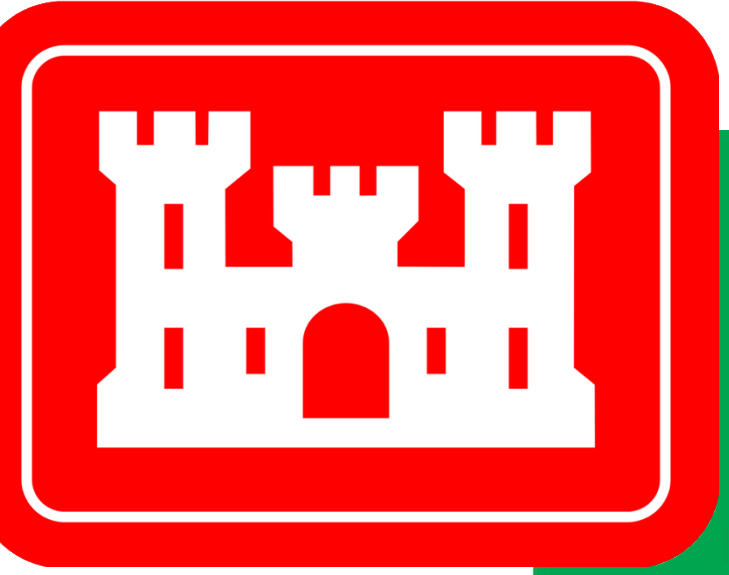
Pond Medics inc.

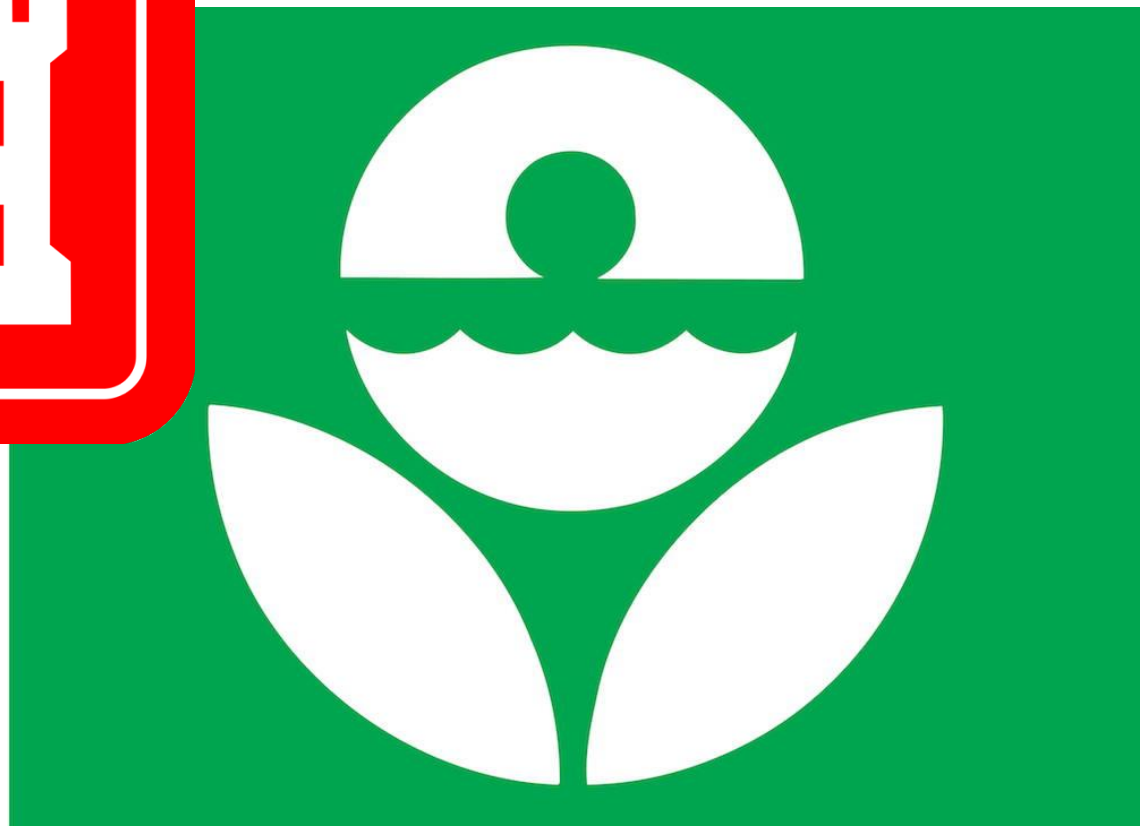
Legend
Water Pumping Pipes

Strategize

- Bathymetry/sediment
- Hydraulic dredging vs. excavation
- Accomplishing goals
- Surgical approach
- Unintended consequences
- Cost – benefit analysis
- Logistics
- Permitting



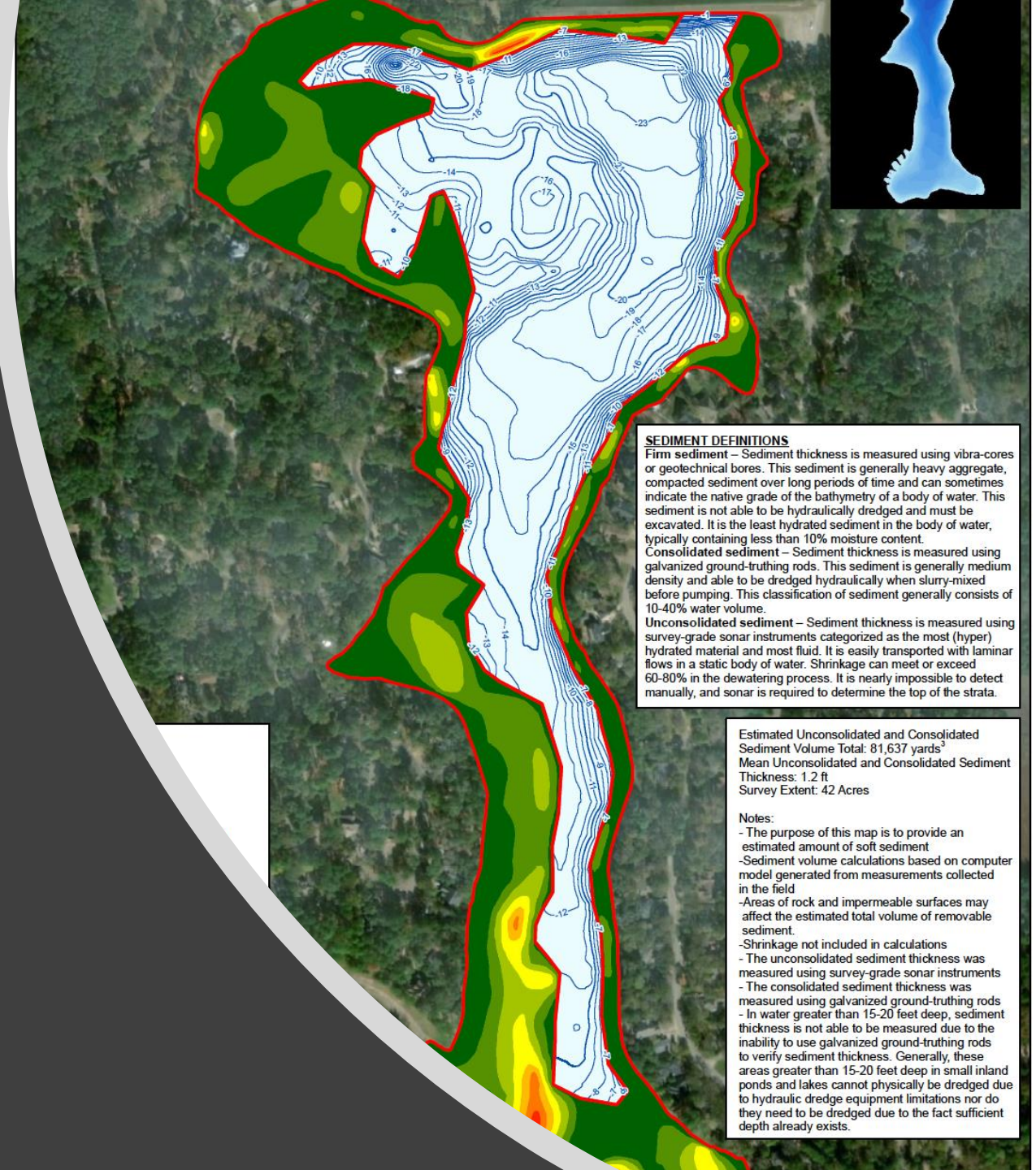




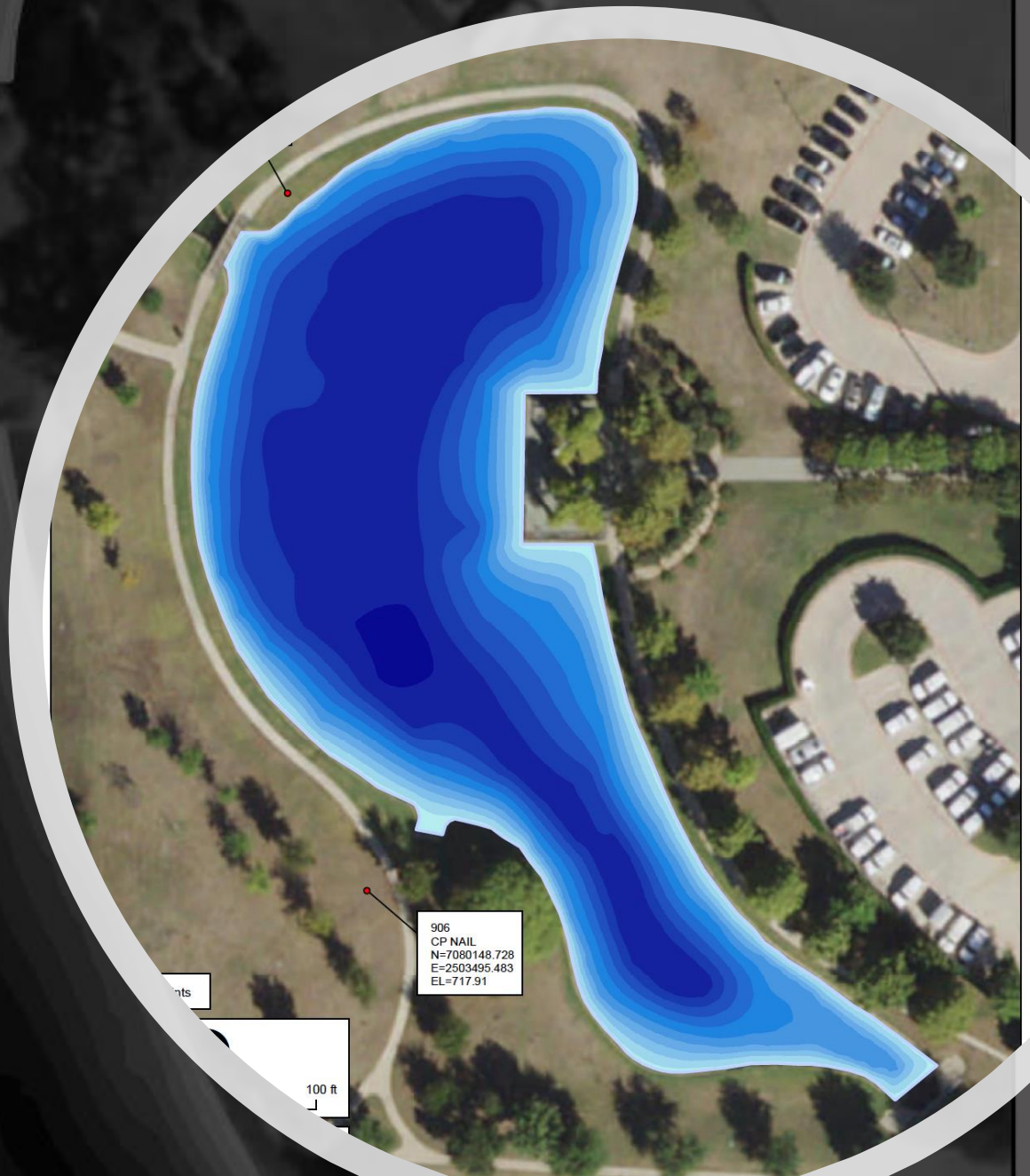
REPUBLIC
SERVICES

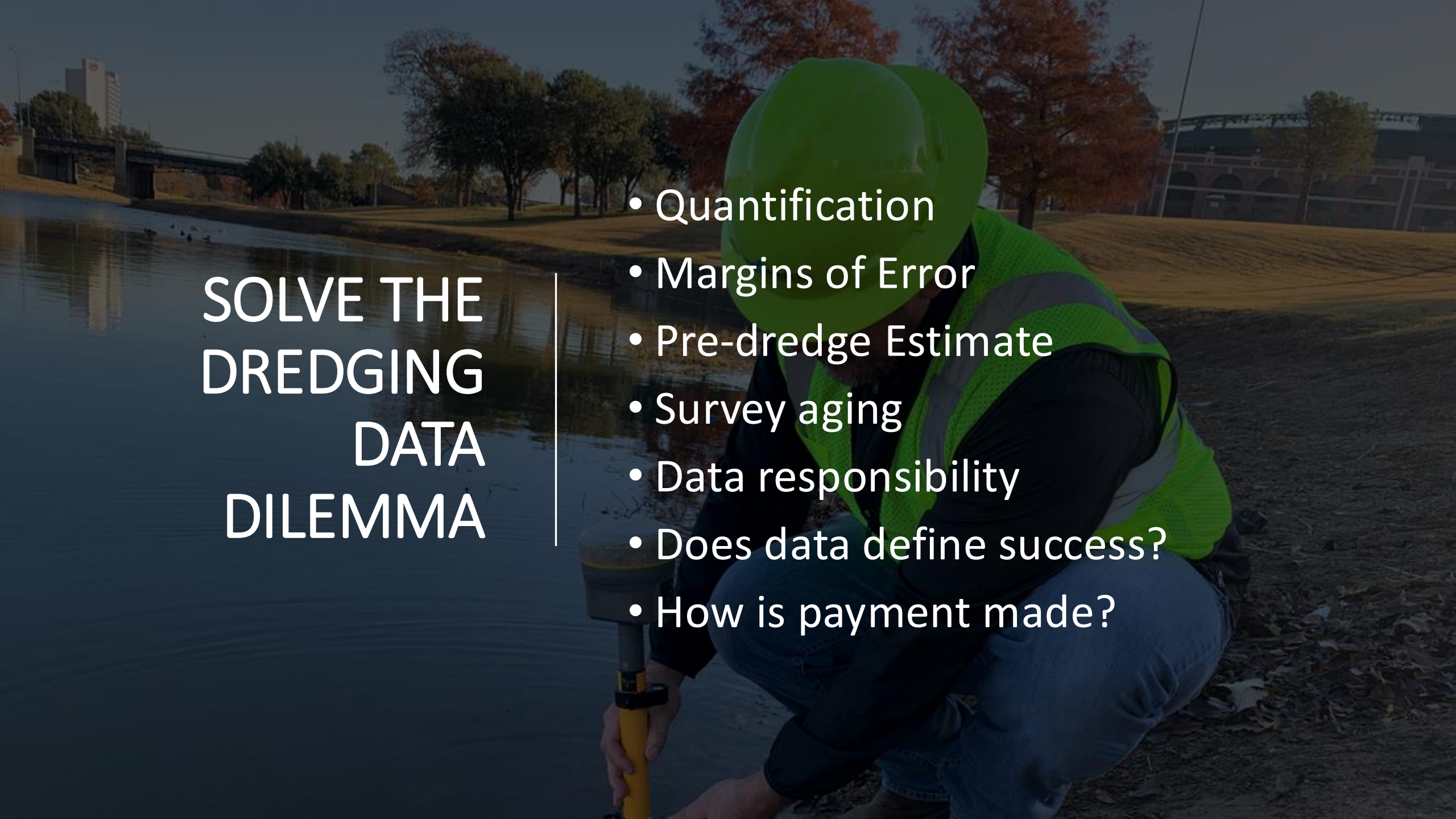
Creating an Opportunity for Comparable and Competitive Bid Submittals

- Planning is not left to the contractor
- Permitting and coordination is performed prior to RFP's
- Clear and concise plan set
- Leave nothing to contractor improvision
- Fresh in situ data sets



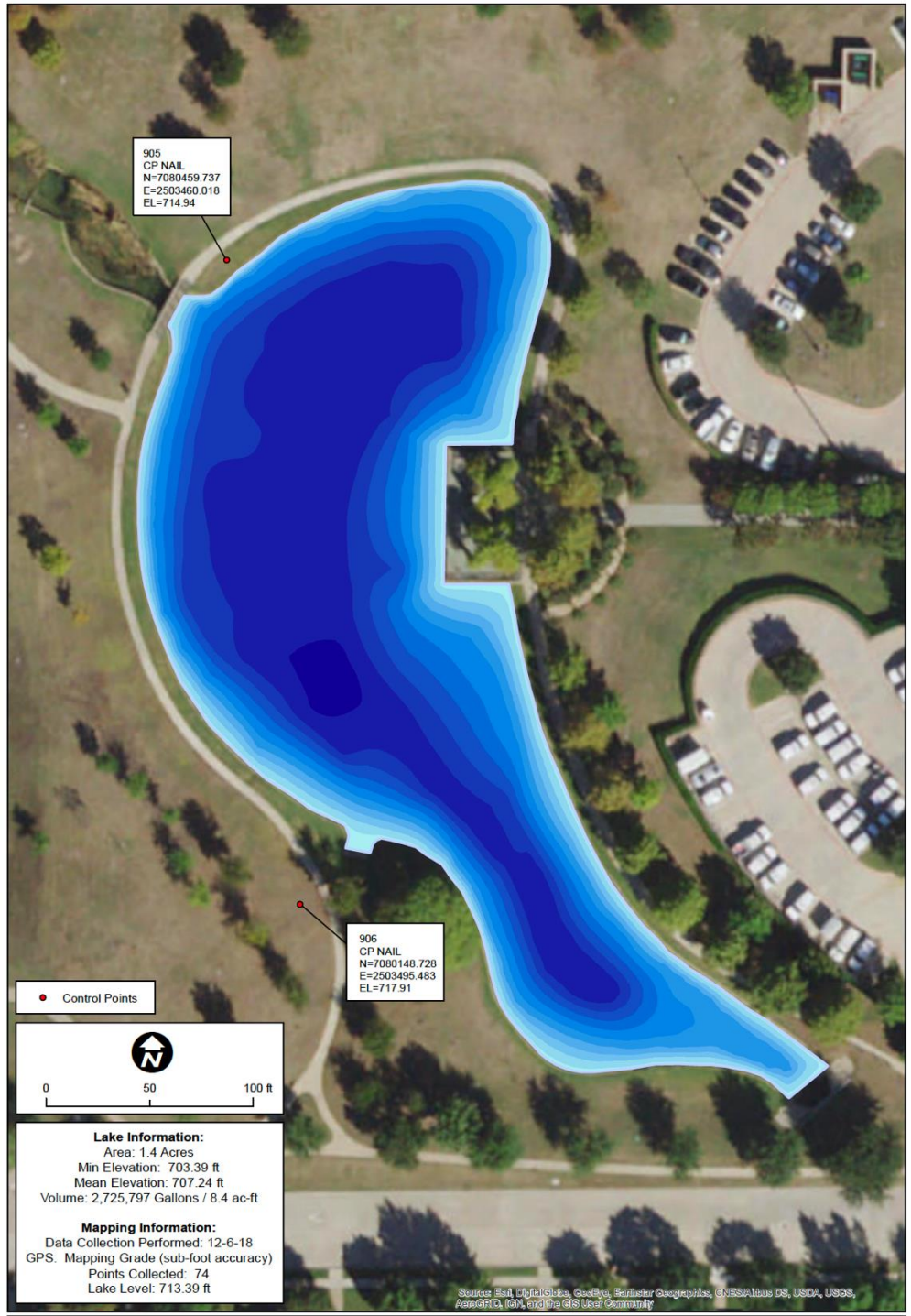
Data is Critical

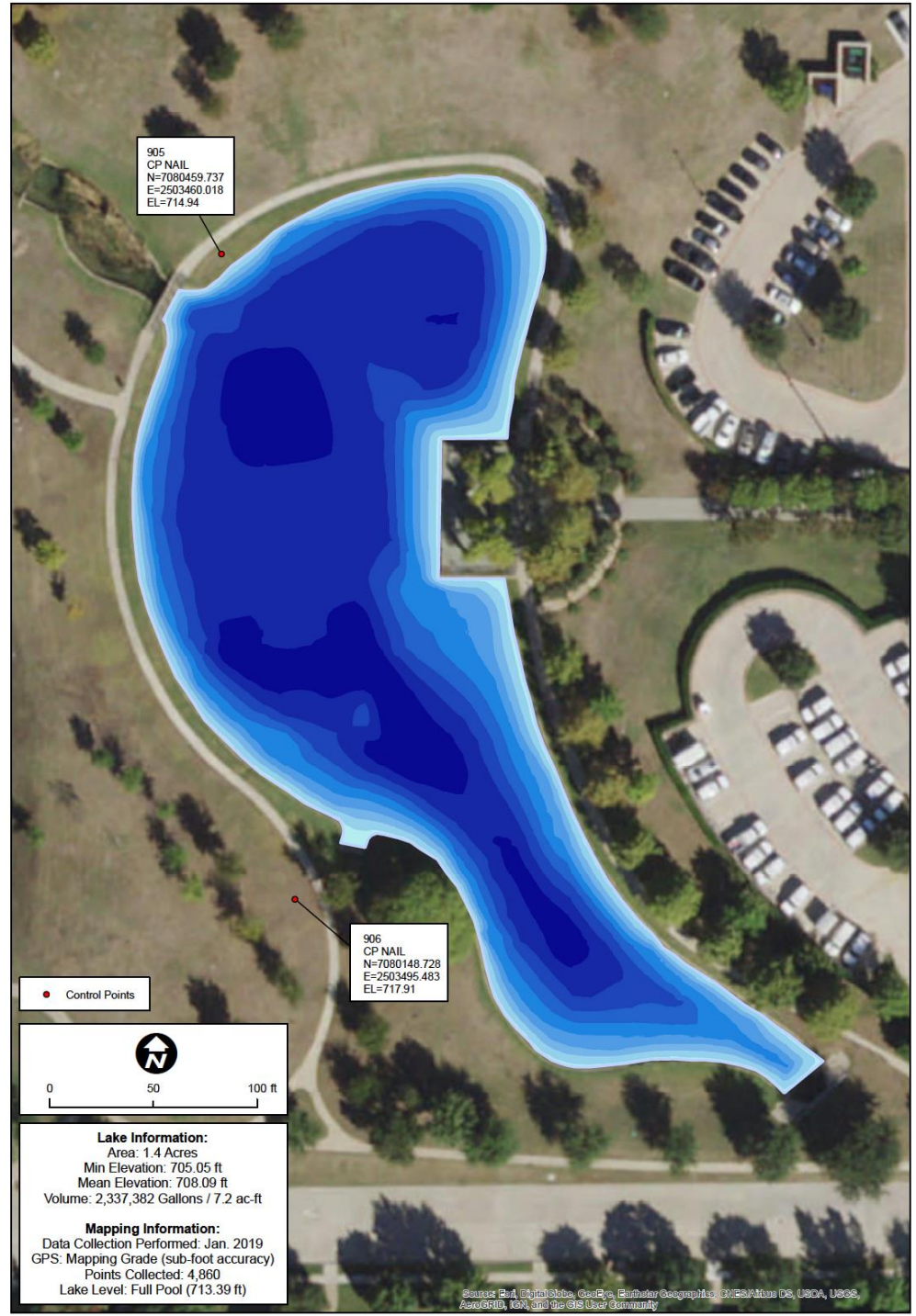




SOLVE THE DREDGING DATA DILEMMA

- Quantification
- Margins of Error
- Pre-dredge Estimate
- Survey aging
- Data responsibility
- Does data define success?
- How is payment made?


905
CP NAIL
N=7080459.737
E=2503460.018
EL=714.94
906
CP NAIL
N=7080148.728
E=2503495.483
EL=717.91
Control Points
0
50
100 ft
Lake Information:
Area: 1.4 Acres
Min Elevation: 703.39 ft
Mean Elevation: 707.24 ft
Volume: 2,725,797 Gallons / 8.4 ac-ft
Mapping Information:
Data Collection Performed: 12-6-18
GPS: Mapping Grade (sub-foot accuracy)
Points Collected: 74
Lake Level: 713.39 ft
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community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E=2503460.018
EL=714.94
906
CP NAIL
N=7080148.728
E=2503495.483
EL=717.91
Control Points
0
50
100 ft
Lake Information:
Area: 1.4 Acres
Min Elevation: 705.05 ft
Mean Elevation: 708.09 ft
Volume: 2,337,382 Gallons / 7.2 ac-ft
Mapping Information:
Data Collection Performed: Jan. 2019
GPS: Mapping Grade (sub-foot accuracy)
Points Collected: 4,860
Lake Level: Full Pool (713.39 ft)
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

NO SONAR

Lake Information:

Area: 1.4 Acres

Min Elevation: 703.39 ft

Mean Elevation: 707.24 ft

Volume: 2,725,797 Gallons / 8.4 ac-ft

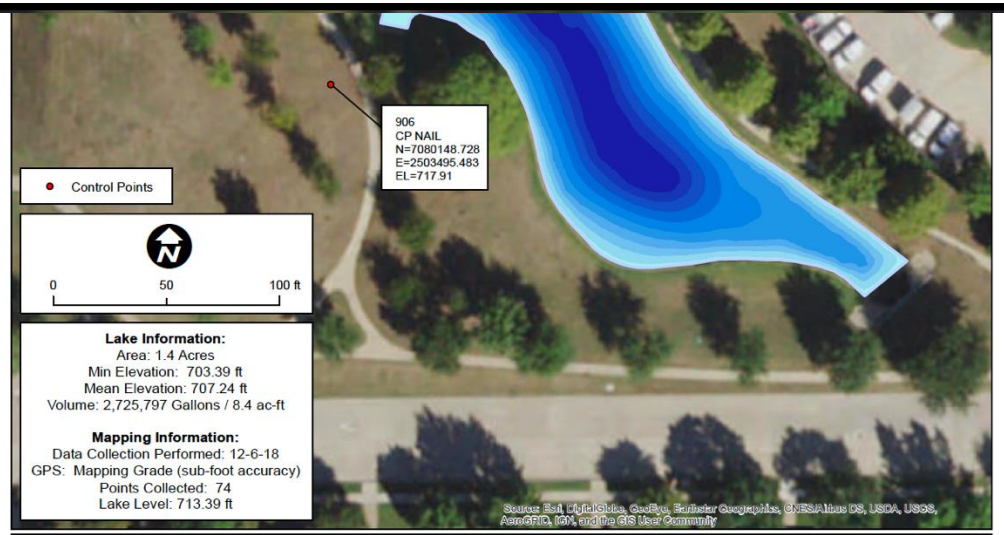
Mapping Information:

Data Collection Performed: 12-6-18

GPS: Mapping Grade (sub-foot accuracy)

Points Collected: 74

Lake Level: 713.39 ft



SONAR

Lake Information:

Area: 1.4 Acres

Min Elevation: 705.05 ft - 1.66 ft

Mean Elevation: 708.09 ft - 0.85 ft

Volume: 2,337,382 Gallons / 7.2 ac-ft

-1.2 ac ft

- 391,000 gal

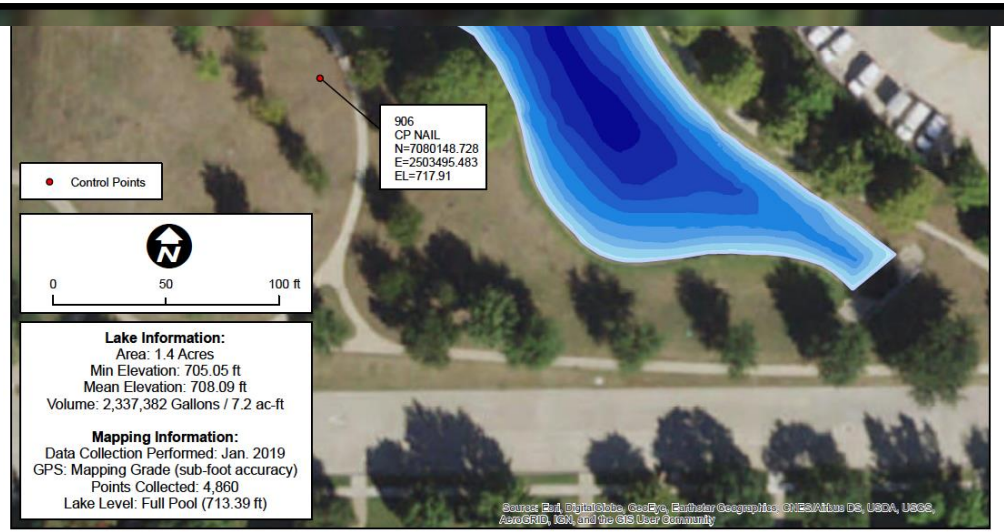
Mapping Information:

Data Collection Performed: Jan. 2019

GPS: Mapping Grade (sub-foot accuracy)

Points Collected: 4,860 +4,786

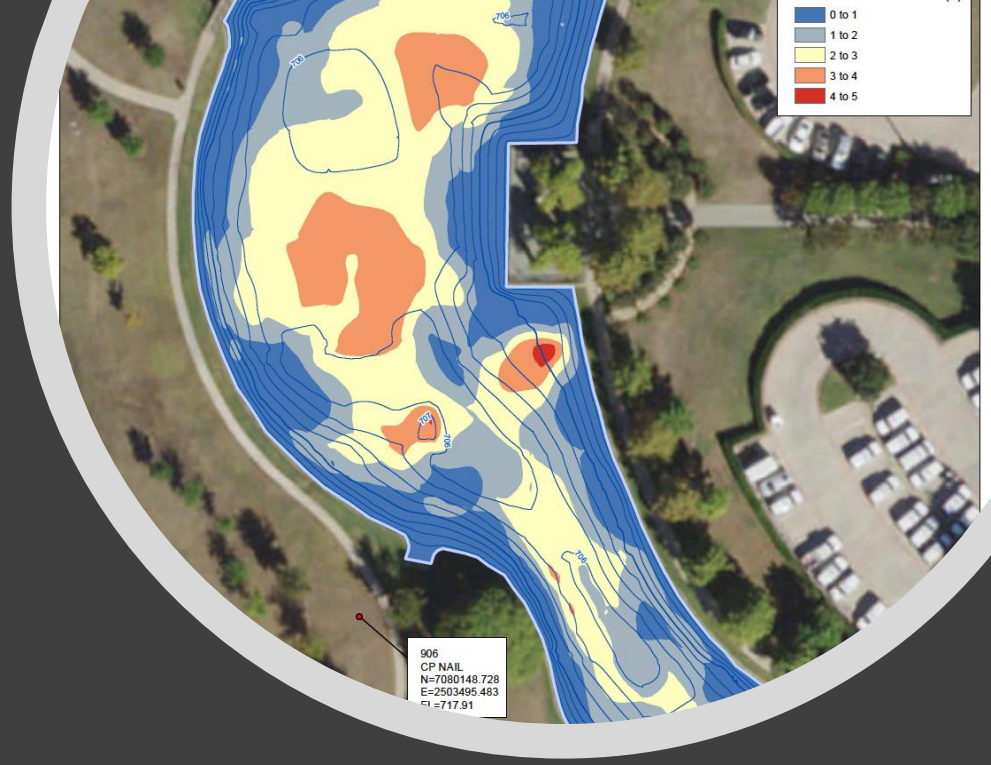
Lake Level: Full Pool (713.39 ft)

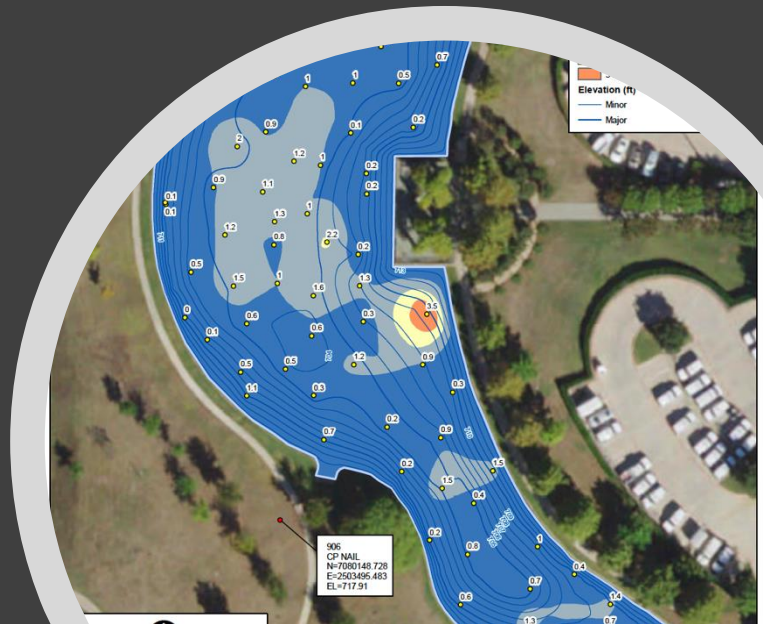


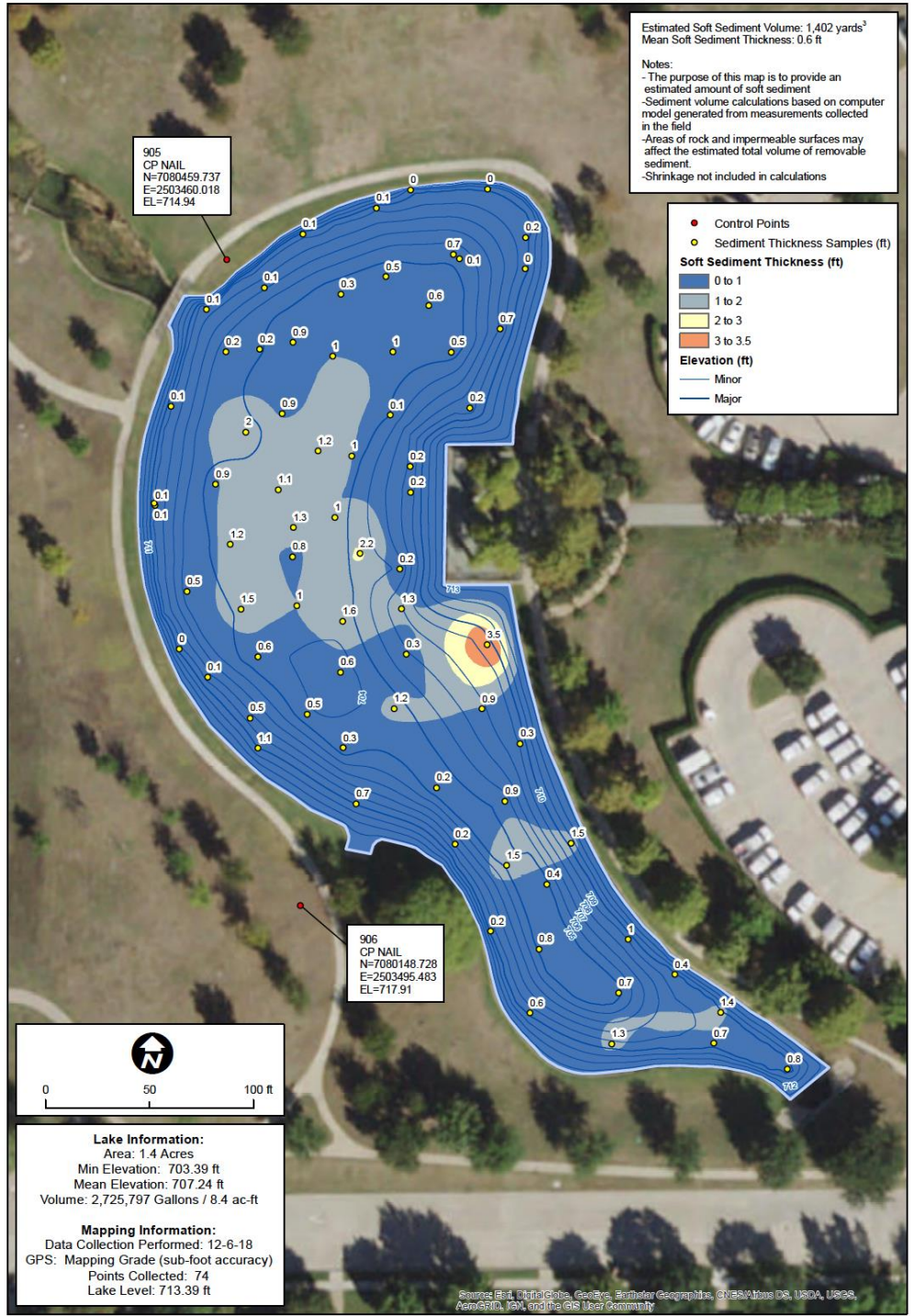
QUANTIFY

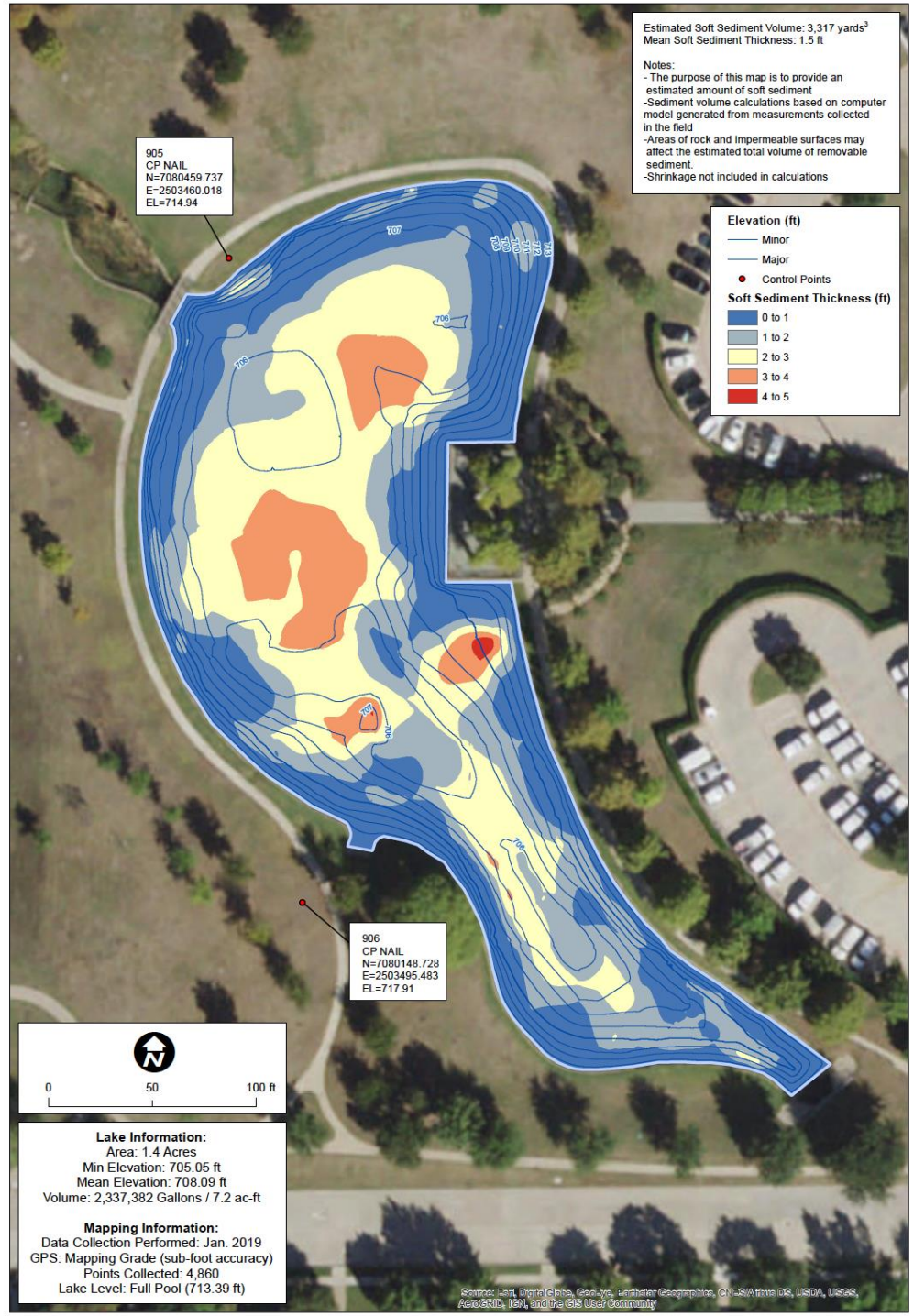
Misrepresented and inaccurate bathymetry

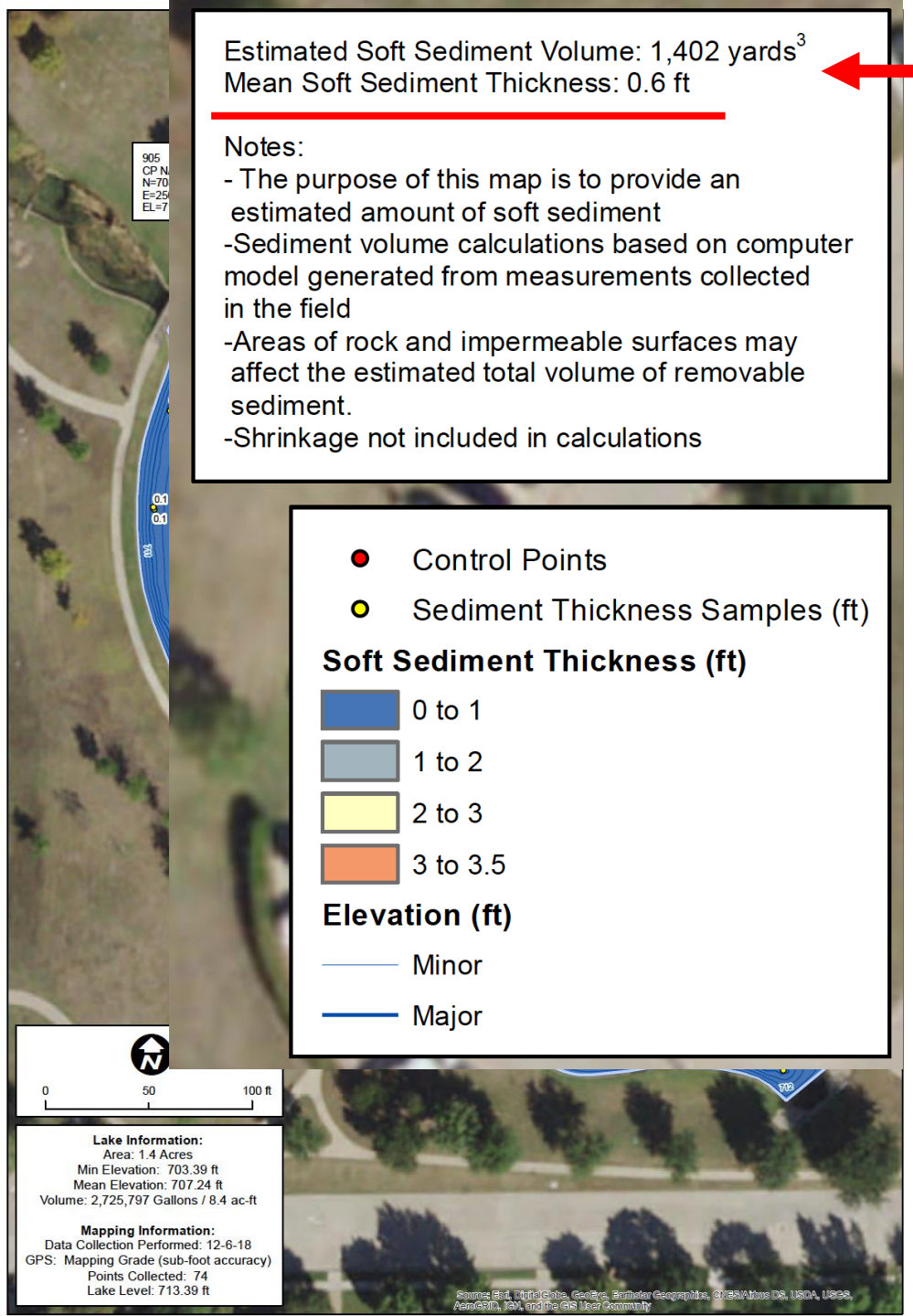
Manifests itself in inaccurate sediment volumes






Estimated Soft Sediment Volume: 1,402 yards³
Mean Soft Sediment Thickness: 0.6 ft
Notes:
- The purpose of this map is to provide an estimated amount of soft sediment
-Sediment volume calculations based on computer model generated from measurements collected in the field
-Areas of rock and impermeable surfaces may affect the estimated total volume of removable sediment.
-Shrinkage not included in calculations
905
CP NAIL
N=7080459.737
E=2503460.018
EL=714.94
906
CP NAIL
N=7080148.728
E=2503495.483
EL=717.91
Control Points
Sediment Thickness Samples (ft)
Soft Sediment Thickness (ft)
0 to 1
1 to 2
2 to 3
3 to 3.5
Elevation (ft)
Minor
Major
0
50
100 ft
Lake Information:
Area: 1.4 Acres
Min Elevation: 703.39 ft
Mean Elevation: 707.24 ft
Volume: 2,725,797 Gallons / 8.4 ac-ft
Mapping Information:
Data Collection Performed: 12-6-18
GPS: Mapping Grade (sub-foot accuracy)
Points Collected: 74
Lake Level: 713.39 ft
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community


Estimated Soft Sediment Volume: 3,317 yards³
Mean Soft Sediment Thickness: 1.5 ft
Notes:
- The purpose of this map is to provide an estimated amount of soft sediment
-Sediment volume calculations based on computer model generated from measurements collected in the field
-Areas of rock and impermeable surfaces may affect the estimated total volume of removable sediment.
-Shrinkage not included in calculations
905
CP NAIL
N=7080459.737
E=2503460.018
EL=714.94
906
CP NAIL
N=7080148.728
E=2503495.483
EL=717.91
Elevation (ft)
Minor
Major
Control Points
Soft Sediment Thickness (ft)
0 to 1
1 to 2
2 to 3
3 to 4
4 to 5
0
50
100 ft
Lake Information:
Area: 1.4 Acres
Min Elevation: 705.05 ft
Mean Elevation: 708.09 ft
Volume: 2,337,382 Gallons / 7.2 ac-ft
Mapping Information:
Data Collection Performed: Jan. 2019
GPS: Mapping Grade (sub-foot accuracy)
Points Collected: 4,860
Lake Level: Full Pool (713.39 ft)
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community


Estimated Soft Sediment Volume: 1,402 yards^3
Mean Soft Sediment Thickness: 0.6 ft
Notes:
- The purpose of this map is to provide an estimated amount of soft sediment
-Sediment volume calculations based on computer model generated from measurements collected in the field
-Areas of rock and impermeable surfaces may affect the estimated total volume of removable sediment.
-Shrinkage not included in calculations
Control Points
Sediment Thickness Samples (ft)
Soft Sediment Thickness (ft)
0 to 1
1 to 2
2 to 3
3 to 3.5
Elevation (ft)
Minor
Major
0
50
100 ft
Lake Information:
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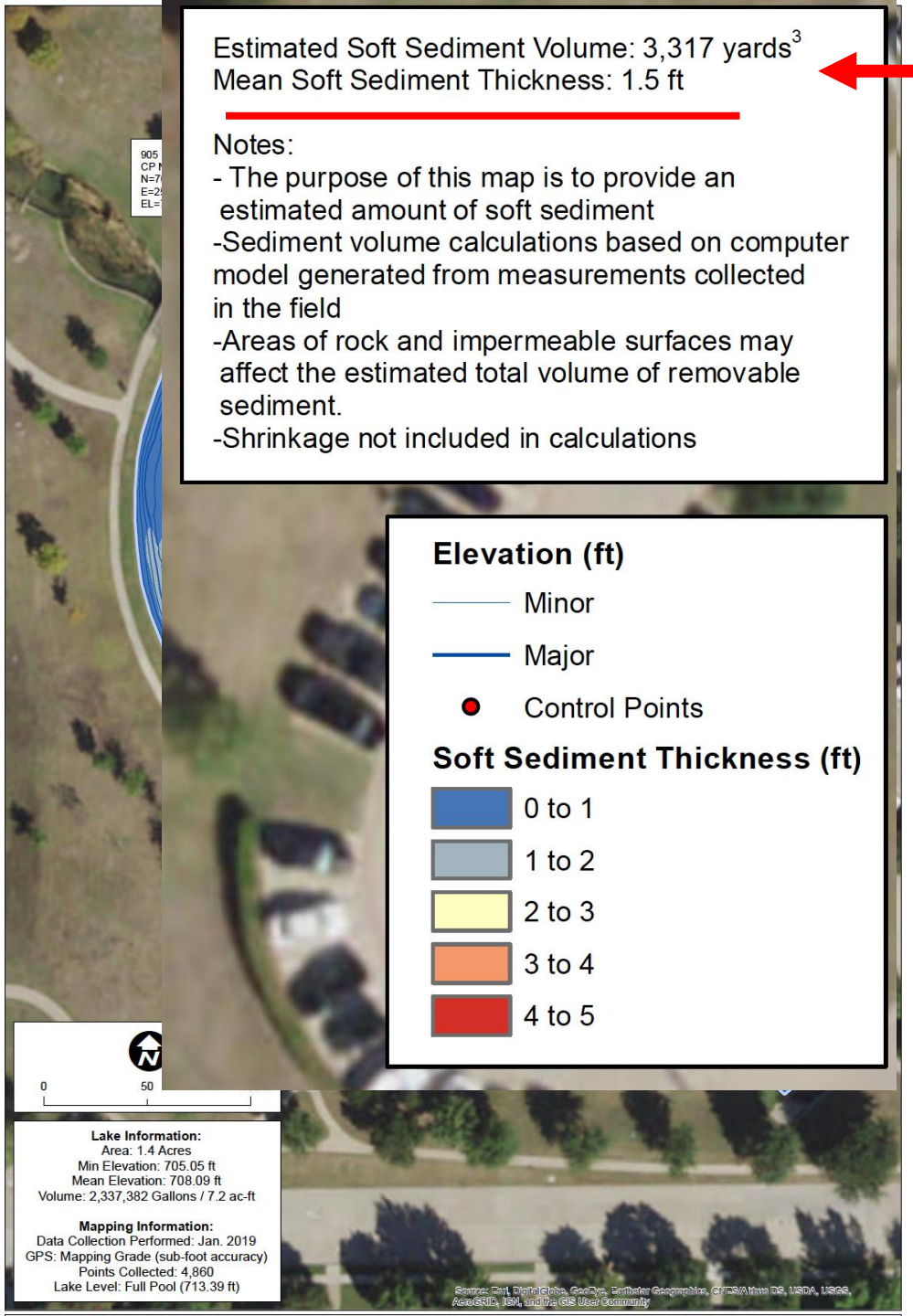
Mapping Information:
Data Collection Performed: 12-6-18
GPS: Mapping Grade (sub-foot accuracy)
Points Collected: 74
Lake Level: 713.39 ft

1,915 cu yds


Estimated Soft Sediment Volume: 3,317 yards^3
Mean Soft Sediment Thickness: 1.5 ft
Notes:
- The purpose of this map is to provide an estimated amount of soft sediment
-Sediment volume calculations based on computer model generated from measurements collected in the field
-Areas of rock and impermeable surfaces may affect the estimated total volume of removable sediment.
-Shrinkage not included in calculations
Elevation (ft)
Minor
Major
Control Points
Soft Sediment Thickness (ft)
0 to 1
1 to 2
2 to 3
3 to 4
4 to 5
0
50
Lake Information:
Area: 1.4 Acres
Min Elevation: 705.05 ft
Mean Elevation: 708.09 ft
Volume: 2,337,382 Gallons / 7.2 ac-ft
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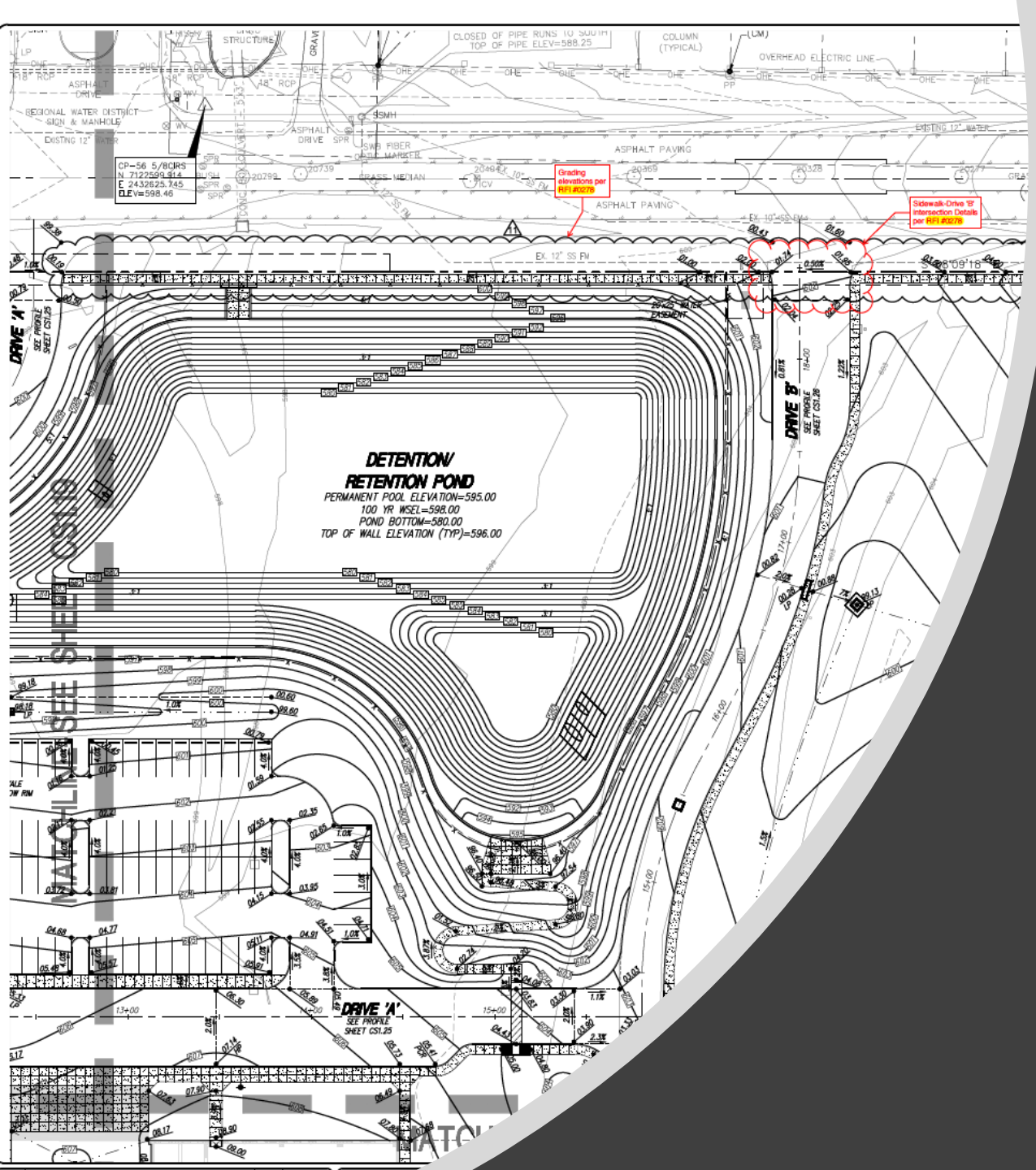
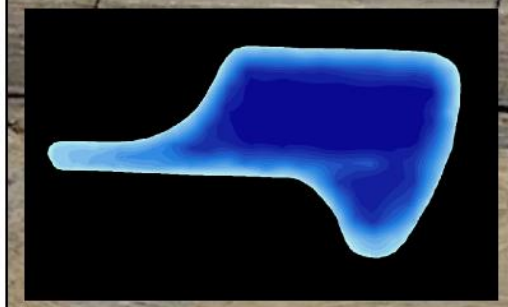


Record As-Built Drawings



Amount of Material Change (ft)

- No Change
- 0 - 1
- 1 - 2
- 2 - 3
- 3 - 4
- 4 - 4.8

0 40 80 Feet

Lake Information:
Area: 1.8 Acres
Max Depth: -13.9 ft
Mean Depth: -9.2 ft
Volume: 5,452,278 Gallons / 16.7 ac-ft

Mapping Information:
Data Collection Performed: 10-13-17
GPS: Mapping Grade (sub-foot accuracy)
Points Collected: 138
Lake Level: Full Pool

Estimated Soft Sediment Volume: 4,028 yards^3
Mean Soft Sediment Thickness: 1.3 ft

Notes:
- The purpose of this discovery study is to provide an estimated amount of soft sediment
-Sediment volume calculations based on computer model generated from measurements collected in the field
-Areas of rock and impermeable surfaces may affect the estimated total volume of removable sediment.
-Shrinkage not included in calculations


Accomplish

Monitor

IN-PROJECT

- PROGRESS and POST-DREDGE Surveys

POST-PROJECT

- Bathymetry only
- Autonomous
- Reduced cost
- Real time decision making

Pond Overview

Blue Haven

Springfield, IL Added on: 11/11/2026

Next Action: Sediment Removal

Area	Capacity	Sediment	Erosion	Risk Profile
2.5 Acres	**3,118,500.85 gal**	**High**	**Moderate**	**Medium**

Survey

Download Report 12/12/2025

Main Survey | Historical Survey | Erosion Heat Map | Shoreline Change Analysis | Aquatic Vegetation Map

Water Levels

Depth	Current Volume
Mean Depth **4.31 ft**	**2.49M gal**
Max Depth **9.2 ft**	**7.52 ac-ft**

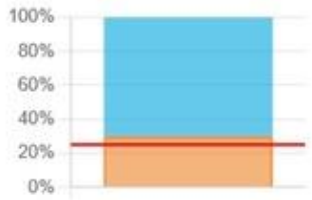
Hard Pan

Depth	Current Volume
Mean Depth **6.19 ft**	**3.51M gal**
Max Depth **13.2 ft**	**10.78 ac-ft**

Sediment

Sediment Thickness
Mean Thickness **1.88 ft**
Max Thickness **5.22 ft**

Pond Composition
Sediment Level **30%**
Action Threshold **25%**



Recommend Actions

- **Sediment removal urgent** - current capacity at 70% (below threshold)
- **Next survey due in 14 days** - schedule appointment

Maintain

Getting ahead of the curve

- FEASIBILITY: Discover the options
- ENGINEER: Plan the path
- RFQ: Who can take the journey
- RFP: Who can deliver success
- PROJECT MANAGEMENT: Ensuring success
- MONITOR: Post-project data streams
- MAINTAIN: Perform smaller tasks, more often

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the dredging equation, solved.

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