

Memorandum

To: Programs, Projects and Operations Subcommittee

Subject: City of Papillion Request for Walnut Creek Water Quality Basin
(17.42 Lake Dredging Program)

Date: April 29, 2009

From: Gerry Bowen

The District has received a request from the City of Papillion for financial assistance in the dredging of a water quality basin at Walnut Creek Recreation Area. The basin is located immediately north of the caretaker's residence, west of the main lake (see attached map). The water quality benefits of the basin have been significantly reduced by the sedimentation. The basin was constructed in 1996.

An investigative report prepared by Mr. Art Beccard, Thompson, Dreessen & Dörner, indicates that the average depth of the basin has decreased from 4-6 feet to less than 2 feet. The City proposes to excavate (dredge) approximately 13,000 cubic yards of accumulated sediment. They propose to store the material in perforated, plastic tubes that allow water to drain away, and eventually dry out the sediment. The estimated cost of this alternative is \$312,035. The City has not specified a cost share amount in their request.

According to the Lake Dredging Program, the District could pay 50% of the estimated cost up to a maximum of \$100,000. There is a possibility of funding from the Department of Environmental Quality which could reduce the local share of the costs, thus reducing the District's share proportionately.

- **Management recommends that the Subcommittee recommend to the Board that the City of Papillion's request for assistance to dredge a water quality basin at Walnut Creek Lake and Recreation Area be approved under the District's Lake Dredging Program up to a maximum District cost share amount of \$100,000.**

DRAFT!

April 23, 2009

City of Papillion
c/o Mr. Tony Gowan, Parks Director
122 East Third Street
Papillion, NE 68046

RE: Walnut Creek Pond Silt Removal
TD² File No. 181-539.

The existing Walnut Creek pond next to the campground is nearly full of sediment. It is not functioning as desired as significant silt has been observed passing through the pond and ending up in the main Walnut Creek lake. Measurements made on April 1, 2009 in the pond indicate the mean water depth is only 1.4 feet. The original construction plans show most of the pond area graded to provide 4 to six feet of water depth. It is our opinion that the pond silt storage capacity is needed to be restored into to maintain the water quality in the main Walnut Creek lake. We have determined that a reasonable amount of silt to remove and restore the water quality benefits is an average of about 2 feet throughout the 4 acre pond. This volume of silt to be removed is approximately 13,000 CY. We have research various options to remove the silt including temporary diversion of stormwater/drying out/ silt removal with excavators; construction of permanent peninsulas/silt removal with excavators; and hydraulic dredging with spoil disposal in geotextile dewatering tubes (geotubes) or a large sediment basin. The proposed project based upon hydraulic dredging with spoil disposal in dewatering bags has been determined to be the least disruptive to the environment and the park users. The spoil in the dewatering bags has potential value as a future topsoil material that would be convenient to handle due to the nature of the bagged material.

The following is an Engineer's Estimate of Probable Construction Costs in connection with the proposed Walnut Creek Pond Silt Removal project:

Description

Hydraulic dredging (Remove approx. 2 feet of silt from approximately 4-acre Walnut Creek West Silt Basin estimated at 13,000 CY by Engineer); Discharge location to west of basin, using geotubes and polymer; Mobilization of equipment.

Estimated Construction Costs (13,000 CY x \$22/CY + \$15,000 Mobilization)	\$281,500
Estimated Engineering Design / Permitting Costs	\$ 22,090
Estimated Construction Staking / Observation Costs (3%)	<u>\$8,445</u>
Estimated Total Costs	\$312,035

Mayor and City Council Members
City of Papillion
April 29, 2009
Page 2

An alternate budget cost estimate was requested from two different hydraulic dredging companies based upon potential less upfront cost. This alternate is to use a large sediment basin rather than the geotubes for the spoil storage. This alternate is not recommended due to the large extent of disturbed area needed, significant disruption to the park and its users, along with significant future cost to remove the spoil from the sediment basin and restore the basin area.

Alternate

Hydraulic dredging (Remove approx. 2 feet of silt from approximately 4-acre Walnut Creek West Silt Basin estimated at 13,000 CY by Engineer); Discharge to an uphill sediment basin location to west of basin; Sediment basin including excavation, temporary fencing, turbidity curtain, piping for water return and final grade; Mobilization of equipment. Does not include removal of dried out spoil or restoration of sediment basin.

Estimated Construction Costs (13,000 CY x \$12/CY + \$15,000 Mobilization + \$47,640 for Basin)	\$218,640
Estimated Engineering Design / Permitting Costs	\$22,090
Estimated Construction Staking / Observation Costs (4%)	<u>\$8,750</u>
Estimated Total Costs (Does Not Include Dried Silt Removal and Basin Restoration)	\$249,480

I have enclosed a copy of the lake water depth measurements, silt removal plan along with a catalog sheet for geotextile dewatering tubes for your use in reviewing this information. Please contact me if your have further questions.

Sincerely,

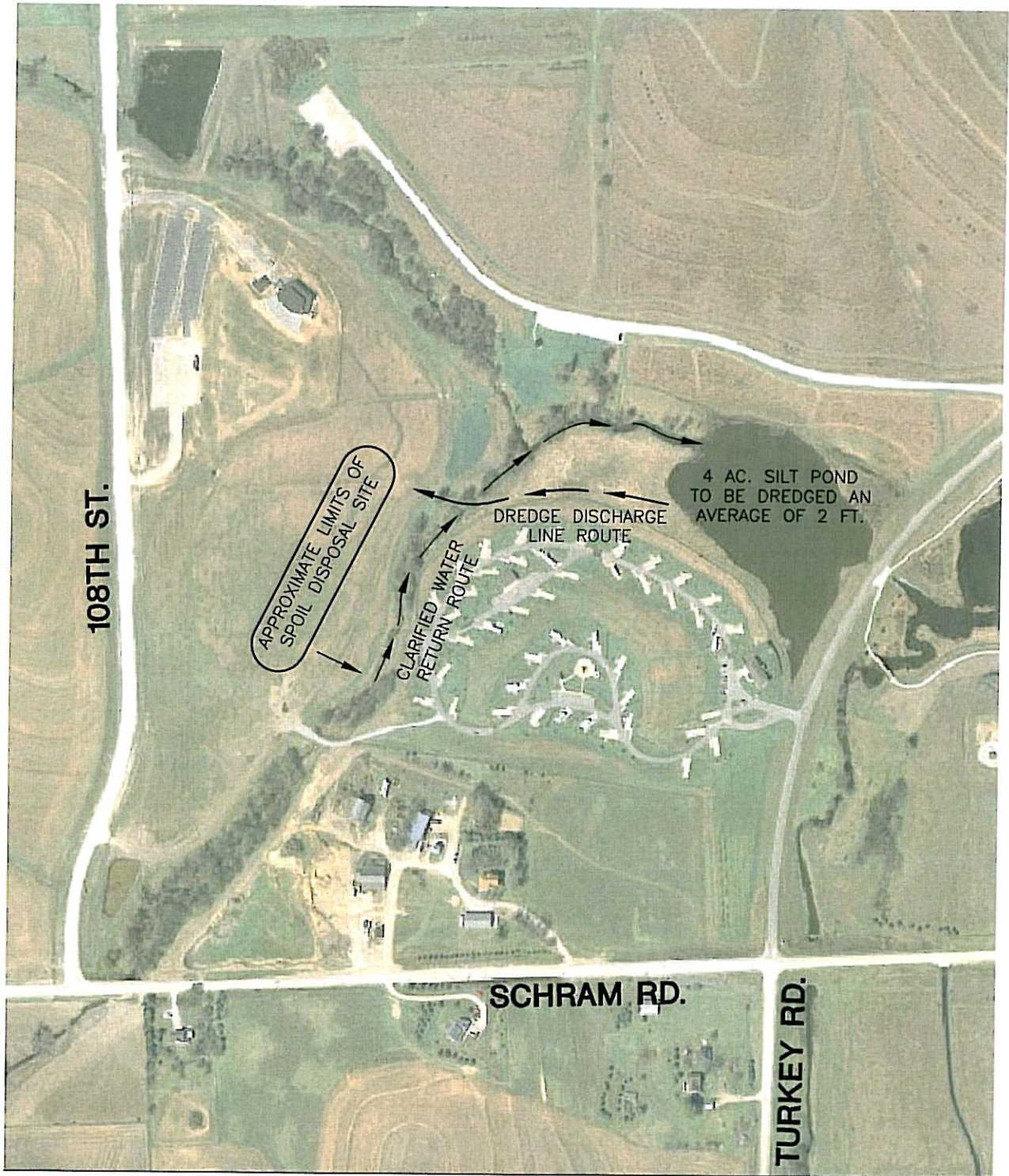
THOMPSON, DREESSEN & DORNER, INC.

Arthur D. Beccard, P.E.

ADB/jlf

Enclosures

Cc w/enclosures Papio-Missouri River NRD – Gerry Bowen



THOMPSON, DREESSEN & DÖRNER, INC.
 Consulting Engineers & Land Surveyors
 10836 OLD MILL ROAD OMAHA, NEBRASKA 68154
 PHONE: 402.330.8860 FAX: 402.330.5566 EMAIL: TD2MAIL@TD2CO.COM
 WEBSITE: WWW.TD2CO.COM

WALNUT CREEK POND SILT REMOVAL

CITY OF PAPIILLION

SILT REMOVAL PLAN

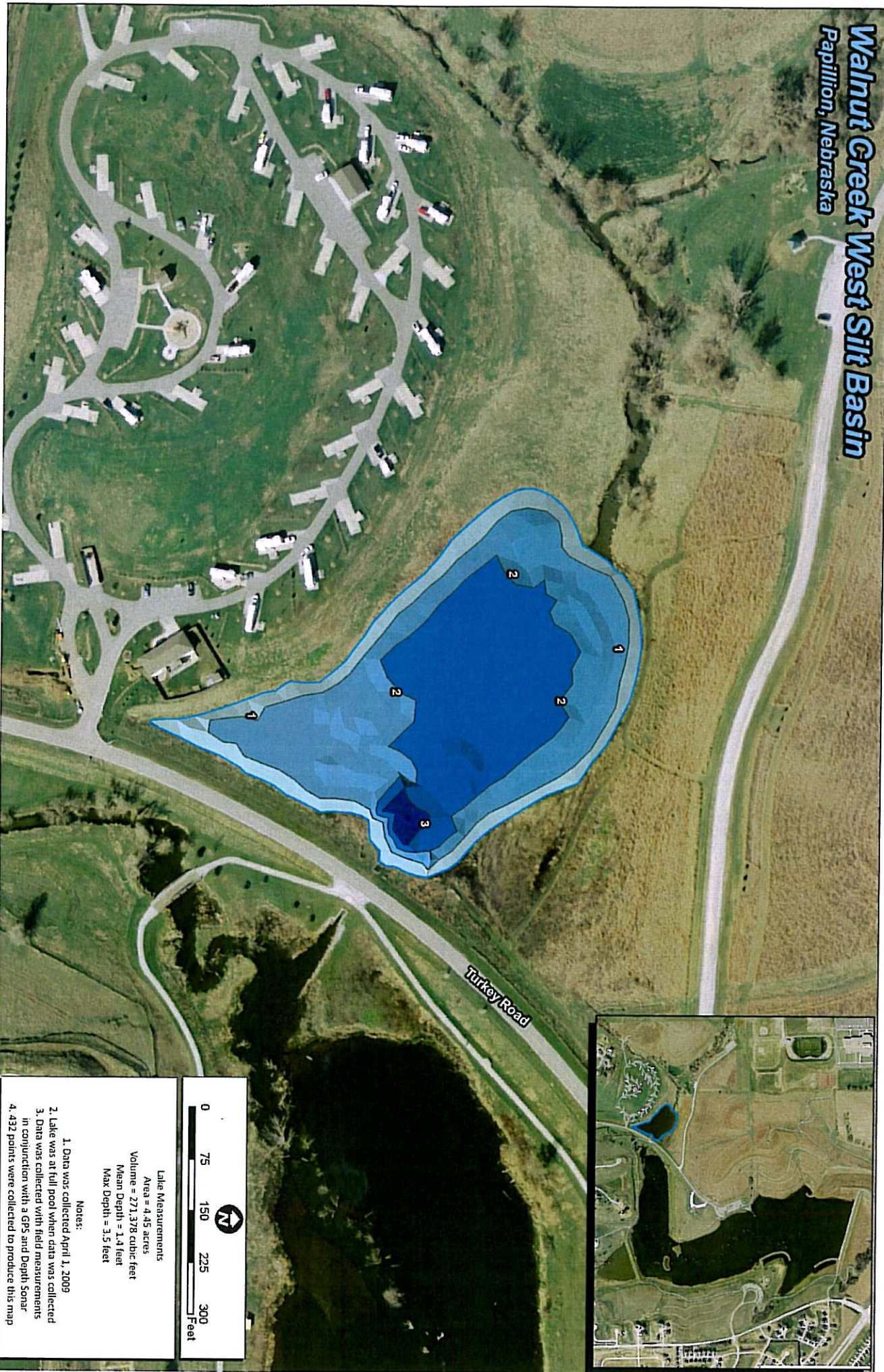
scale:	1" = 400'
date:	4-23-09
drawn by:	ASB
checked by:	ADB
revision:	

JOB NO: 181-539

181539_CN.dwg

Walnut Creek West Silt Basin

Papillion, Nebraska



Lake Measurements
Area = 4.45 acres
Volume = 271,378 cubic feet
Mean Depth = 1.4 feet
Max Depth = 3.5 feet

- Notes:
- 1. Data was collected April 1, 2009
 - 2. Lake was at full pool when data was collected
 - 3. Data was collected with field measurements in conjunction with a GPS and Depth Sonar
 - 4. 432 points were collected to produce this map



Erosion & Pollution

TELEPHONE: +1 (772) 646-0597

FAX: +1 (772) 589-3343

[Home](#)[CONTACT US](#)[Quote Request](#)[Hot Deals](#)[eNewsletter](#)[FAQ](#)[PORTABLE TANKS](#)[SILT Barrier](#)[Dewatering Bags](#)[Trash & Debris](#)[Oil Spill Cleanup](#)[Oil Booms](#)[Second Containment](#)[Small Incinerators](#)[Geotextiles](#)[Accessories](#)[ErosionPollution Cycle](#)[Resources](#)[EROSION-DIRT.TV](#)[POLLUTION BLOG](#)[Translation Tool](#)[Policies](#)

Geotextile Dewatering Tubes

dewatering tubes in action

Geotextile Dewatering Tubes, **Also referred to as Sludge Tubes, Geo-Tubes (short for geotextile), Dewatering Tubes**, are ideal for filtering materials on projects and are used extensively on Water Treatment projects (WWTP's), agricultural ponds, aquaculture facilities, pulp and paper mills and numerous industrial lagoons for consolidation of media.

**Subscribe for
our monthly
eNewsletter -
Enter your
email address
HERE**

**Enter your First
Name
(optional)**

Then**Subscribe**

Don't worry --
your e-mail
address is totally

Our Granite Environmental team is standing
by
to help you. Click to chat.



**I'm
online.
Chat now.**

Type your question
here and click
below...