BIRCH LAKE.....

PLAN FOR.....

DREDGING.....

AND.....

RESTORATION.....

BIRCH LAKE...DREDGING & RESTORATION PLAN

..... TABLE OF CONTENTS.....

.....ATTACHMENTS.....

BIRCH LAKE & BIRCH LAKE DAM.....NARRATIVE DESCRIPTION & PROPOSAL

Birch Lake is located in Iowa County in the SW1/4, sec4,T16N,R5E along County Highway T North, just beyond the village limits of Barneveld. Also known technically as TP7, the dam that forms the lake originated as a result of the Twin Parks Watershed Program initiated in 1961 under Public Law 566. It was one of eleven flood control dams built in this 123 square mile area. The higher than average drop in land elevations throughout the watershed results in a rapid discharge of high volumes of water during heavy rainfalls, more than the streams in the valleys can tolerate. Prior to the construction of the flood control dams, this caused excessive flooding, resulting in damage or destruction to croplands and both private and public property. After nearly fifty years of service the Birch Lake Dam TP7, along with the other like flood control structures of the Twin Parks Watershed Program remain in good condition and continue to provide the flood control protection just as they were originally intended to do . Originally TP7, being a multiuse facility with the formation of Birch Lake, provided a sandy beach and an excellent boat launching area. Through the years this has not been maintained and therefore, has deteriorated to such an extent as to be in an almost useless condition. Furthermore because the dam has done its job well, holding back the flood waters thus allowing the soil to be filtered out and dropping to the lake bottom, the water depth in half the lake has been reduced to a point as to making boating difficult. This shallow water depth also promotes in abundance the growth of aquatic plants, adding to the problems in navigation of small water craft and recreational fishing. Although the lake now falls short of providing all the pleasures it once did, it is still is an excellent fishery for Crappies, Bluegills, Bass & Northern Pike. Fishermen often pick up the challenge to launch their boats and struggle through the excessive plant growth to deeper water in hopes of catching their limit in small fish or a trophy Bass or Northern. During the winter months, when access to the deep water is not a problem , ice fishing on Birch Lake becomes very popular and people come from far and wide to enjoy the sport. It is the "Friends of the Lake" who have set a goal to generate a reasonable plan, with reasonable costs for a reasonable chance of achievement to restore Birch Lake to its original condition for all to once more enjoy...

BIRCH LAKE & BIRCH LAKE DAM.....REASONS FOR RESTORATION`

In the last ten years several plans have been prepared which would address the deteriorating condition of Birch Lake. All failed due to being impractical, too costly or were rejected by the community.. With climate change, in this day, being more of a known than an unknown, the importance of TP7 to be maintained as a flood control structure now matches its value as a dam which forms a recreational lake. Confirmation to this statement can be easily made by talking to any of the folks who reside within the Twin Parks Watershed. It is without a doubt, that any effort/plans to remove or modify TP7 would be strongly rejected. It is with these statements in consideration, the "Friends of the Lake" are proposing that, at this time, dredging is the best alternative to restoration of Birch Lake & maintaining the dam as a flood control structure, for the purpose for which it was planned & constructed nearly 50 years ago.

OTHER REASONS WHICH JUSTIFY THIS ACTION ARE.....

---Lake depth would be restored

---Boating access to deep water would be restored

--- Unrestricted navigation of all small recreational watercraft throughout the lake

---Waterdepth in beach area restored

---Deeper waters throughout the lake would increase fish population

---Reduction of & less difficulty in managing aquatic growth

---Due the requirement of sediment trapping ponds in the locality of any subdivisions within the Birch Lake watershed & the institution of more intense soil conserving farming practices, over the last 27 years the rate of sediment build up in the lake has reduced from .9 acre feet to .3 acre feet.

---The Birch Lake Dam would remain & be maintained as a flood control structure

---Restoration of the beach & swimming area, the boat launch,construction of an estuary walkway & unrestricted lake navigation would again provide the recreational activities that at one time was enjoyed by all.

LAKE DRAW DOWN.....METHOD AND WATER LEVEL CONTROL

(see attachment .... 2 plan)

Presently one half of Birch Lake has a depth of from seven to thirteen feet. To conserve the fish population and expose one half of the lake bed for sediment removal the level of the water in the lake would be lowered six feet. Although a six inch brass steam valve was initially installed to drain or control the level of the lake, its current state of functioning properly is in question therefore, without taking a chance on the valve to possible fail in controlling the lake level Rule Construction has proposed to use one or more flexible plastic conduits to siphon down and maintain the minimum six foot depth of lake draw down . Rule has stated they have experience in similar project exercises and have the necessary equipment to siphon down the lake and maintain the proper level.

TEMPORARY STREAM & SPRING DIVERSION & EROSION CONTROL MEASURES

(see attachment....2 PLAN)

---SPRING DIVERSION....As shown in the attachment a six inch plastic conduit will be connected to the steel culvert which carries the water from the spring under County Trunk T and be of such a length as to divert the flow from the spring out of the dredging area.

---STREAM DIVERSION....Two methods or possibly a combination of both are proposed to divert the main stream from the dredging area. The first is the construction of a berm to carry the stream away from the dredging area. Note as such detailed on the attachment. The second is the use of an agricultural silage bag. These are currently a familiar sight in agricultural areas. They consist of an extruded 7ml plastic tube up to nine feet in diameter and lengths up to five hundred feet long. To incorporate the use of the silage bag proposal one end would be attached to a "D" shaped steel frame and placed and anchored in the stream bed at a selected place just upstream from the dredging area. The water would then flow through the bag to the lowered lake level. The silage bag would be placed immediately once the lake level is lowered thus preventing any erosion from the exposed lake level by the stream into the remaining body of water. The success of using the silage bag to control the stream flow and erosion will will be determined once the dredging operation is started . A decision as to the need of a berm or to move the silage bag into the bed of the bern or possibly the silage bag may be found to be easily moved and can be moved away from the area being dredged or back into an area of which the dredging operation is complete, thus eliminating the need for the earthen berm. Another advantage, if only the silage bag was used it could be easily removed once the original lake level was restored. Recontouring the berm, after the original lake level is restored, to match existing shorelines would be more difficult exposing fresh soil and temporary erosion concerns,

---SILT FENCING...Note the attachment specifies the placement of a silt fence along the lowered lake shoreline to stop erosion from the exposed lake bed or area dredged or being dredged into the remaining body of water,

SEDIMENT REMOVAL.....LAKE BED LOCATION & QUANTITY

(see attachment...1 PLAN)

---To briefly explain: The amount of sediment to be removed from any point on the exposed lake bed, including an area of the present stream delta , shall be that quantity as to match the grade level at the lowered lake shoreline.

---The dredging operation will leave a slope of 3:1 from the original shoreline to the restored lake bottom

---The selected contractor, "Rule Construction LTD" will use conventional equipment as listed in their "Proof of Responsibility" statement (see attachment...rule.proof of responsibility) to mechanically excavate and transfer the lake sediment to the disposal site.

---The length of time for the exposed lake bed to dry down will determine when Rule can start the dredging operation. Rule has stated they may option to do the main part of the operation during the winter months.

---Rule has estimated a four week period for completion of the project .

---The amount of material to be removed is estimated to be 24,000 cubic yards '

SEDIMENT TRANSFER AND DISPOSAL AREA

(see attachments .....THONI QUARRY)

---The "Thoni Quarry" which is located off County ID just east of the Village of Barneveld ,which has been in existence since the early 1930`s, is our present selection as the site for transfer and disposal of the lake sediment.

---" Bard Materials" the present owner and operator of the facility have given us preliminary approval to use a large, enclosed and evacuated area of the quarry for the lake sediment disposal site.

---Formal terms and conditions of the agreement are being prepared. These will be available for DNR review.

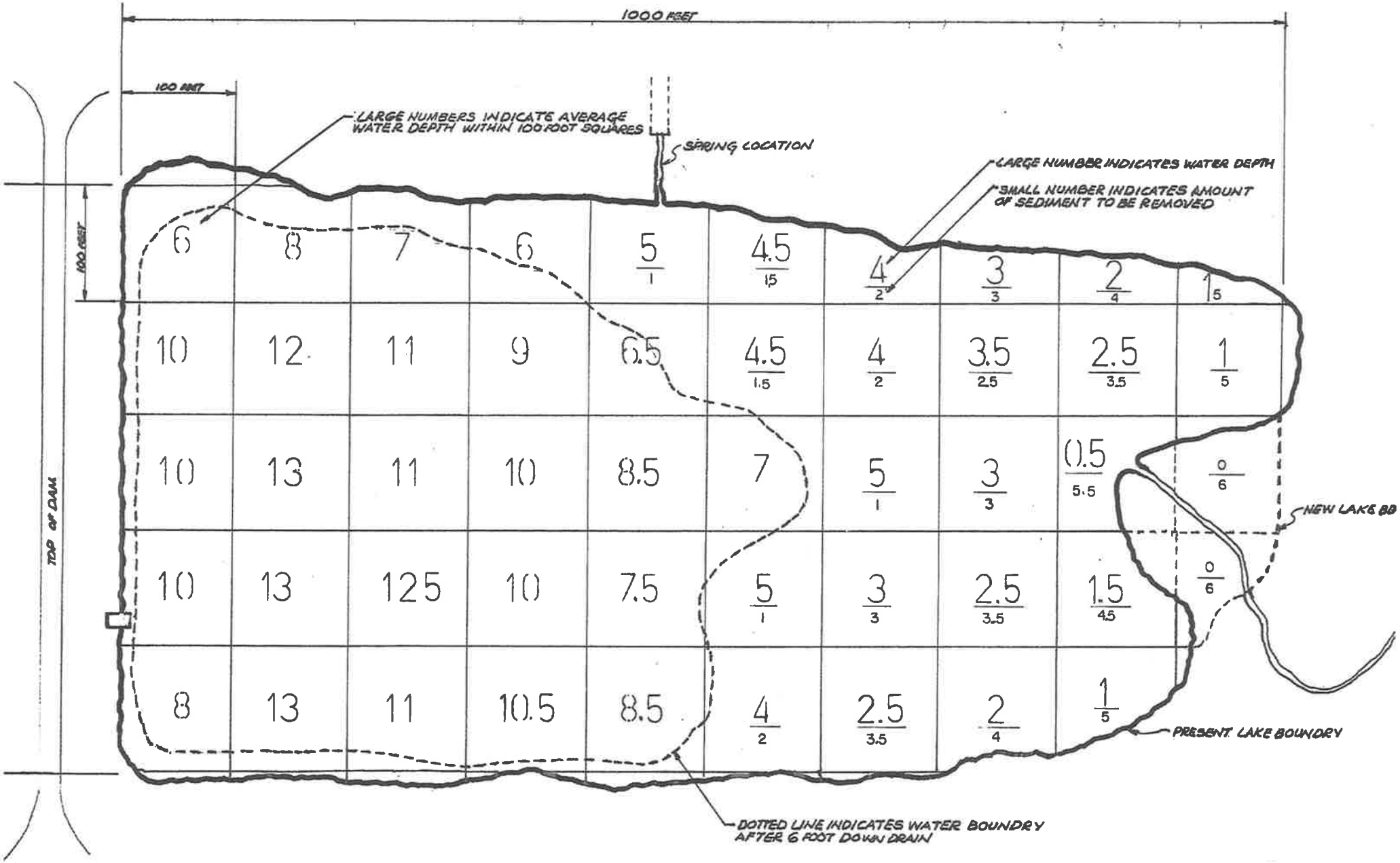
DESCRIPTION OF COMPOSITION AND TESTING OF LAKE SEDIMENT

(see attachment .....SEDIMENT TESTING & COMPOSITION)

---Sediment testing was done by the NRCS on the Twin Parks Watershed Structure tp7 (Birch Lake) in April of 2002.

---The conclusions were that the sediment trapped behind Twin Parks Structures tp7 (Birch Lake) shows overall moderate quality and does not pose a health threat to humans.

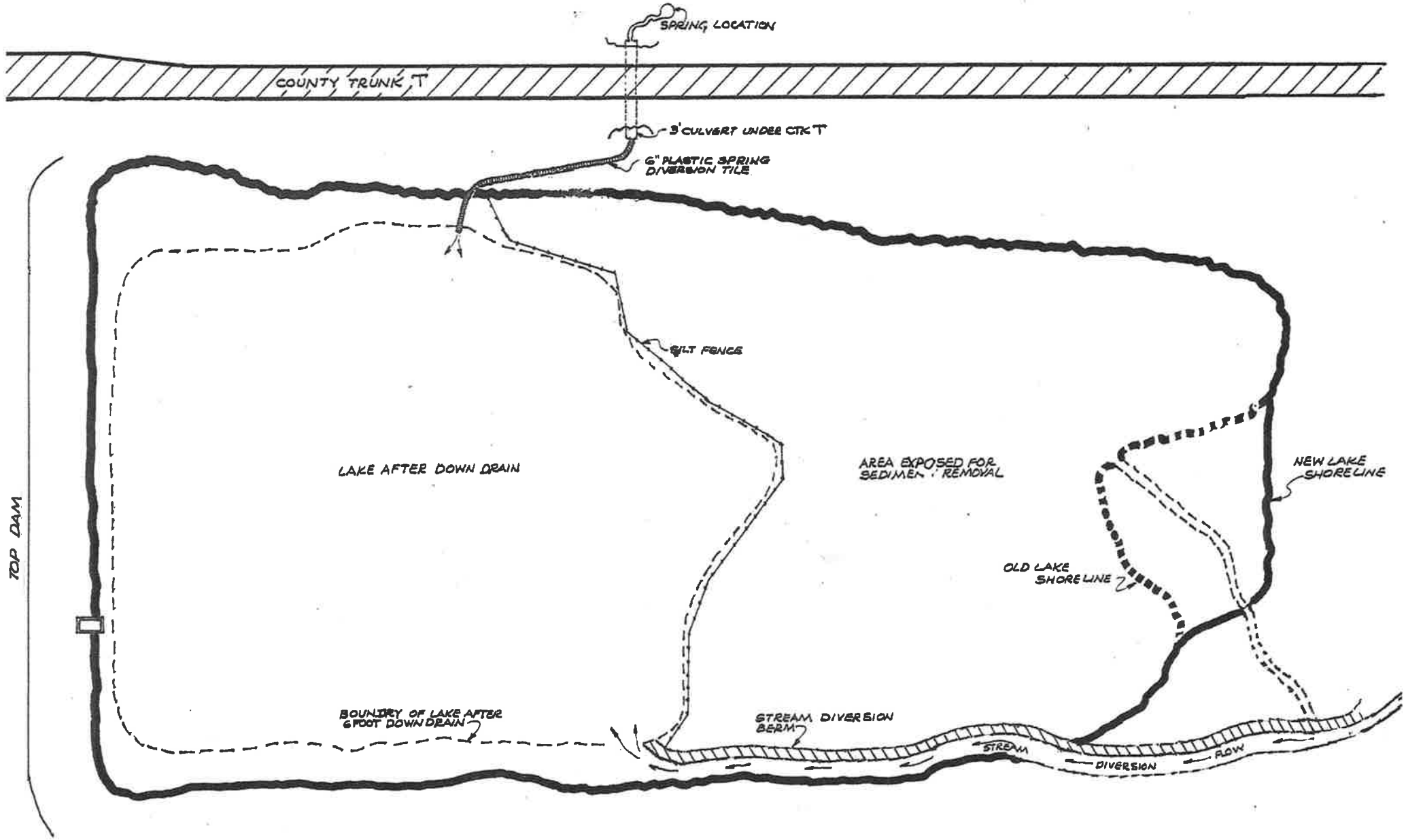
---A survey of bottom sediments took in 1975 reveal a composition of 34% sand, 52% silt , and 11% clay. Organic material averaged 3%

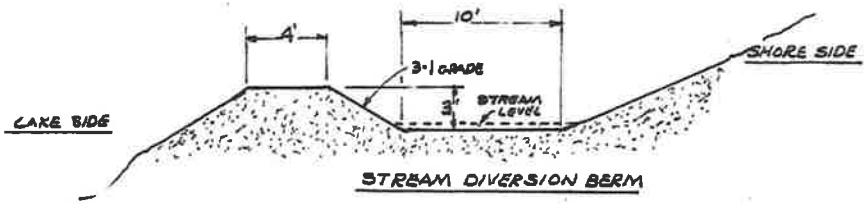


1

PLAN: SEDIMENT REMOVAL; LOCATION & DEPTH

- LOWER LAKE LEVEL 6 FEET
- REMOVE SEDIMENT AMOUNT IN 100 FOOT SQUARES AS INDICATED
- MAINTAIN 3:1 SLOPE FROM PRESENT LAKE BOUNDRY TO DEPTH OF SHORELINE.
- TOTAL AMOUNT OF SEDIMENT TO BE REMOVED APPROXIMATELY 24,000





STREAM DIVERSION BERM

2

PLAN; SPRING & STREAM DIVERSION

- CONSTRUCT STREAM DIVERSION BERM; DIVERT STREAM
- LAY 6" SPRING DIVERSION TILE
- PLACE SILT FENCE

Google Maps

THONI QUARRY.....BARNEVELD,WIS

BARD MATERIALS.....BEN SCHROEDER bens@hardmaterials.com

SEDIMENT DISPOSAL AREA LOWER RIGHT

Google Maps

THONI QUARRY.....BARNEVELD,WIS

BARD MATERIALS.....BEN SCHROEDER bens@hardmaterials.com

SEDIMENT DISPOSAL AREA ENLARGED

10

PROOF

OF

RESPONSIBILITY

Rule Construction, Ltd.
3696 State Road 23 Dodgeville, WI 53533

RULE CONSTRUCTION, LTD.

3696 State Road 23
Dodgeville, WI 53533
PHONE (608) 935-2701 · FAX (608) 935-2383

Submitted To: **Wisconsin DNR**

Submitted By: Rule Construction, Ltd.
3696 State Road 23
Dodgeville, WI 53533

Years in Business: 39 Years

Type of Business: Corporation
Date of Incorporation: 9/6/91 **State of Incorporation:** Wisconsin
President: Kurt S. Rule
Secretary: David J. Rule
Vice President: David J. Rule

We are qualified to do business in the State of Wisconsin.

Our company has never failed to complete any work that has been awarded to us. We are currently banking with Farmers Savings Bank and you may reach Matt Staver at 608-987-3321 at the Mineral Point office.

ATTACHED INFORMATION:
List of References
Experience List
List of Contracts, Awarded, Completed, and In Progress
Major Equipment List

The Information above and attached hereto is true and correct.

RULE CONSTRUCTION, LTD.

Tonya Kadousek
Tonya Kadousek, Accounts Specialist

7-7-16
Date

Rule Construction, Ltd.
3696 State Road 23
Dodgeville, WI 53533

List of Project References

City of Darlington
627 Main Street
P O Box 207
Darlington, WI 53530

Jeremy Williams - 608/776-4970

City of Dodgeville
100 E. Fountain Street
Dodgeville, WI 53533

Mr. Greg Lee – 608/930-1011

City of Platteville
75 North Bonson Street
Platteville, WI 53818

Howard Crofoot - 608/348-9741

City of Mineral Point
137 High Street
Mineral Point, WI 53565

Pat O'Flarity 608/987-2960

Bank Reference: Farmers Savings Bank, 1113 N. Johns St. Dodgeville, WI 53533
Matt Staver 608-935-9988

Rule Construction, Ltd.
Equipment List

7/7/201

year	make	vin
used	Allied Hy-Ram Hydraulic Rock Hammer	Model # 785
03	Angle Broom 84"	231411898
2004	Angle Broom 84"	231412120
2004	Auto Level	369172
	Bedding Box/Trench Box	
1999	Bomag BW213DH-2	109400890120T
2004	Briggs & Stratton Generator	
	Cargo container 40' vault style	
	Carter 36"x100' stacking conveyor	100-36-1274
1990	Case 821	JAK0023925
1994	Case 580SL	JJG0200899
	Case 1221E Wheel Loader	NBUE10178
	Case 9040-B Excavator	DAC0402013
	CAT 3306 GenSet	66D9325
2003	CAT 938G	B00273
2000	CAT 950G	2JS01016
1979	CAT 980C (L4)	63X1141
1980	CAT 980C (L3)	63X02474
1999	CAT 980G (L5)	2KR02811
1988	CAT 980C (L6)	63X07862
1992	CAT 988-B	50W11126
	CAT D353E Power Unit	461304231
2007	Cat D6N LGP	DYJ00202
1999	CAT D5M XL FTC	6GN01296
2002	CAT D6M LGP	CAT00D6MC4JN02956
1969	CAT D8H Dozer	SN#46A12620
	Channel conveyor 36x27	
	Chisel Plow	
	Clark UT60D lift truck	227-3475
	Cole Vise and Drill	
	Conveyors - Kolberg /Norberg 250	Norberg - 366005
1997	Crane, Electrobar	
	Crimp Master, Ferguson	Model # SC-72F
	Cummins Engine V-12 GenSet	
	Cummins 500KW Generator	500KW
	Diesel Generator 6500	06052965 - PQDE6500
2010	DitchWitch Locator 910R	8296570
2008	DitchWitch Locator 950	8275041
2007	Dorsey Trailer for Sandpit Generator	31654
2000	Easy Lawn Hydro Seeder	HD12003T
	El-Jay 54" Cone Crusher	183
2005	Estate Rake	29494
2010	Flygt Submersible Pump	2610-171-1010340
1972	Fruehauf trailer	HPN347015
	Fuel Tank (Portable) AFAB Fuel Jobber	SPF6047
1980	GME trench box	
	Gorman Rupp 2" pump	699590
1968	Great Dane trailer	35260
	Hendrix H24EXL Compaction Wheels	WH-643
	Hewitt Robins 84" x 21" Grizzly Feeder	EF17304
2001	Honda ATV TRX500	478TE260014012413
	Honda 8 hp motor 6000	13231
	Honda water Pump	EZCH-1054912
	Husqvarna cut off saw 14"	7480270
	Husqvarna 272K-14 Saw	7480262
2008	Husqvarna cut saw 375K 14"	1600075
2008	Husqvarna cut saw 375K 14"	2400043
2008	Husqvarna cut saw 3120K 16"	73700017
	Hydra boom	CL24790
	International IH 186 Tractor	269001701
	IR AS-900 Dust Collector	9402-4649
	IR JH40	
1991	IR P185WJD Compressor	190169
1993	JD 770BH	DW770BH541252
	Kasco 72' Vari-Slice & 6" Mud Scraper	
	Knight Pro Screen 1605	1605-053
2007	Kawasaki Loader 95ZV-2	97C5-5091
1989	Kobelco SK200LC	YOU3708
	Kobelco SK480	YS06U0162
	Kolman 101	631583050
2005	Kubota RTV900W-H Utility Vehicle	39588
2006	Kubota RTV900R6A Utility	K52764
1999	Takeuchi TB070 mini excavator	1705212

year	make	vin
	Landscape Harrow	
2003	Landscape Rake	A004339
2004	Linkbelt 460 LX	K7J4-8192
2011	Linkbelt 460LX	ELCKI-4683
2013	Linkbelt 235X3	ECBK3-6971
2014	Linkbelt 235X3	ECBK4-8431
2006	Linkbelt 330LX Excavator	K6J6-1479
1999	Linkbelt 5800 quantum	LE319-0674
	30" Bucket for Linkbelt 5800	Lot #2593
1990	Lippmann Jaw Crusher	900101
2002	Magnum Light Tower Model #4060I-MH	21275
	Marvix Wire Feed Roll Welder	
	Metrotech 9810	5542
	Metrotech 9810	8533
	Mobile Drill B30H	622202
	Mobile Storage Unit	FBXU100572
	Mobile Storage Unit	FBXU100337
1981	New Allied Hole Hog #70464	3529
2015	New Holland L225	NEM479283
2006	New Holland L185 Skidsteer	N6M435640
2016	New Holland L228 skidsteer	NFM411053
	New Holland TC33 Tractor	G104247
2010	Palmer 3036 Pro	VIN #103509103036
	Pioneer Crusher Plant	4339-SE-114
	Portabel Hopper/Conveyor	
1999	Powerscreen Cheiftian 10 x 5 screens	5014372
	Powerscreen Commander	5701783
	50-Ton Shop Press	600614
2000	Pro-Tech 4 x 24 - 6" Trench Box	13438
used	PWCE Lrg. Arm Attachmentw/60" Bucket	
	Rake 60" ER 360	
1998	Remax 4000 Asphalt Reclaiming Machine	98312628
	Rex Vibrator Roll Compactor	85HX917
1966	Rex Pulva Mixer	HK531
1975	Stanley MB1975 breaker	
	Stanley MB30EX hammer	2920
	Stihl TD 3600 Pipe saw	115027136
	Stihl TD 3600 Pipe saw	115027127
	Stihl TS 510 pipe saw	123530910
	Stihl TS 760 Pipe saw	24094412
	Stow Walk Behind Cement Saw	9008246
	Straw Mulcher - Finn BMS 24	400
	Surstrike Impact hammer	model # RC 10
	Sweeper 72" Bob Cat	783700968
2004	Takeuchi Loader	21501242
	Takeuchi TB070 mini excavator	1705212
1998	Tanaka Chainsaw ESC 506	E114030
1993	Terex 2766B	A4731080
2014	Topcon RLSV2S RB Laser	GC4356
	Topcon RL-H1Sa Laser	UZ5439
	Topcon TP-L3A Laser	LY0292
2010	Topcon TP-L4B	VG-8949
	Towable Light Tower	21275
	Toyota Skidsteer	25DK7-14067
	Tramac TR21 Compactor	
	Trench Box (5) Protec 8' x 20' Double Wall	14837 & 15284
	Trencher (Portable) for Skidsteer	
1999	Trencor 1260	206
	Tsurumi 2" water pump	B666397
2008	Tsurumi 2" Pump LB3-750 (2)	10385422/ 10385424
	Tsurumi 3" water pump	B610716
	Tsurumi 3" water pump	B611676
1980	Tuffy Trailer	80TGM80001201
	Usemco Bedding Box (2)	BB1014444460
	Usemco Fuel Tanks - Upgraded 4/2009	
	Usemco 4000 Gallon Tank	AT10400842
	Vermeer BP 7000	790
2004	Vermeer RTM-003 Mole	107036
2006	Volvo Generator	2016006447
	Wacker Pump Model PT6L	5167806
	Wacker PT3A, 3" Trash Pump	5479975
	Water main test pump- RP-2	338
1989	Yutani 320	YC00320
2015	Takeuchi rubber track skidsteer	S/N 201002013

Sediment Testing at Twin Parks Watershed Structures 7, 8 and 10

Iowa County, Wisconsin


Twin Parks Watershed Structure 7
(Birch Lake)


Sediment Sampling
Twin Parks


Pool Area at Twin Parks Watershed Structure 8

By
Barbara Lensch, P.G.
Geologist
USDA, Natural Resources Conservation Service

NRCS Natural Resources Conservation Service

Conclusions

Sediment trapped behind Twin Parks Structures 7, 8 and 10 shows overall moderate quality. Alachlor (Lasso), Metolachlor (Dual) and Cyanazine (Bladex) are not present or are present in such small amounts they are undetectable. Atrazine, DDE, DDT and DDD are present only at Structure 10. Arsenic is present in sediment at all three structures. Nitrogen in the form of ammonia is present at detectable levels at Birch Lake only. Nitrate and Nitrite Nitrogen is soluble in water and is below the laboratory's detection limit of 54 mg/kg for samples at all sites. Total Phosphorus levels in sediment at Birch Lake are average to one fourth of average of soils in Iowa while Total Phosphorus levels in sediment at Twin Parks Watershed Structures 8 and 10 range from average to 1.6 times the average of soils in Iowa. The level of phosphorus in the sediment poses little danger to human health but may decrease water quality through eutrophication of Birch Lake.

EPA risk based screening levels show that DDE and arsenic are both present at levels which would be carcinogenic to one person in a million who is exposed to the sediment for a period of 30 years. The EPA levels apply to those who regularly work outdoors during the day or who live for at least 30 years at a home built on this soil. The Wisconsin Department of Health and Social Services has stated that even a level of 30 mg/kg of arsenic in sediment does not pose a health threat to humans. This is based on the soil being covered with vegetation or by some other means so that soil is not ingested, inhaled and does not come in contact with the skin. In assessing the human health risk of this sediment it should be kept in mind that the average level of arsenic in soil in Wisconsin (5ppm) is above the EPA levels. The maximum arsenic level found at any of the three structures is one sixth that which would adversely affect macroinvertebrates such as small worms that live in sediment.

PROJECT PERSONAL…BIRCH LAKE RESTORATION

"FRIENDS of the LAKE"

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------Treasurer……..MARCIA THOMPSON marcia@mhtc.net

WISCONSIN...DNR

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