

Bois de Sioux Watershed District
Expenses by Vendor Summary (No Employees)
 June 17 through July 21, 2022

	Jun 17 - Jul 21, 22
Bartz Collision and Glass	198.34
Bois de Sioux Watershed	0.00
Braun Intertec	4,565.00
Bremer Bank	-1,474.45
Campbell-Tintah School District #852	1,100.49
City of Wendell	125.00
City of Wheaton	52.87
Elan Financial Services	219.57
Frontier	218.68
Grant County	-301,868.47
Grant County SWCD	6,801.82
Herman Community	550.00
Hormann Works LLC	14,765.00
Jamie Beyer	4,237.90
Larson Oil Company	69.00
League of MN Cities Insurance Trust P & C	445.00
Michael Backman	-81.98
Minnesota Assoc. of Drainage Inspectors	50.00
MN PEIP	873.19
Moore Engineering, Inc.	119,419.27
Ohnstad Twichell, PC	10,622.79
Olson Tile & Excavating, LLC	4,752.50
Otter Tail Power Company	137.12
Purchase Power	950.95
QuickBooks Payroll Service	7.00
RRWMB	128,707.10
Runestone Telecom Association	99.95
Sag's Hardware Hank, Inc.	4.98
Star Bank	-99.88
Sturdevant's Auto Parts	3.20
Summit Companies	77.00
Traverse County SWCD	1,634.68
Traverse Electric Cooperative Inc	42.75
Tri County Coop	584.60
Twin Valley Tire	26.00
Valley Office Products, Inc.	441.68
Wagner Company, Inc.	263,076.71
Wilkin County Hwy Dept	6,220.00
Willy's Super Valu	147.20
Xerox Corporation	398.02
TOTAL	268,100.58

Bois de Sioux Watershed District
CHECKS TO APPROVE - VENDORS & EMPLOYEES
 June 17 through July 21, 2022

Date	Num	Type	Memo	Account	Split	Class	Amount
Bartz Collision and Glass							
07/21/2022	1219	Check	SEAT SWITCH	54500 · Vehicle Maint & Repair	10700 · Star Bank Checking	Administrative Fund:General Cash	-198.34
Total Bartz Collision and Glass							-198.34
Bois de Sioux Watershed							
06/17/2022	WBIF 01...	General Journal	WBIF 01-13: ADMINISTRATION/COORDINATION	61100 · Admin/Coord	-SPLIT-	Construction Fund:JCWMP/1W1Plan Imp.:BWSR WBIF C2...	-2,173.02
06/17/2022	WBIF 01...	General Journal	WBIF 01-13: ADMINISTRATION/COORDINATION	61100 · Admin/Coord	61100 · Admin/Coord	Construction Fund	2,173.02
06/17/2022	WBIF 01...	General Journal	WBIF 01-13: TRACKIN/EVALUATION	61800 · Tracking & Evaluation	61100 · Admin/Coord	Construction Fund:JCWMP/1W1Plan Imp.:BWSR WBIF C2...	-1,870.00
06/17/2022	WBIF 01...	General Journal	WBIF 01-13: TRACKIN/EVALUATION	61800 · Tracking & Evaluation	61100 · Admin/Coord	Construction Fund	1,870.00
Total Bois de Sioux Watershed							0.00
Braun Intertec							
07/21/2022	1218	Check	TCD #35 TESTING	53890 · Contracted Repairs and Maintena	10700 · Star Bank Checking	Construction Fund:Redpath Imp. & Mustinka Rehab.:Ph 1 T...	-4,565.00
Total Braun Intertec							-4,565.00
Campbell-Tintah School District #852							
07/21/2022	1220	Check	RIVERWATCH TEACHER EXPENSES	51400 · River Watch/Expense	10700 · Star Bank Checking	Construction Fund	-1,100.49
Total Campbell-Tintah School District #852							-1,100.49
City of Wendell							
07/05/2022	1213	Check	NORTH OTTAWA PROJECT TEAM MEETING 8/31	52800 · Meeting Expense	10700 · Star Bank Checking	Construction Fund:North Ottawa Impoundment:N.O. Dev an...	-125.00
Total City of Wendell							-125.00
City of Wheaton							
07/05/2022	1209	Check	W/S/G	53440 · Utility Expense	10700 · Star Bank Checking	Administrative Fund:General Cash	-52.87
Total City of Wheaton							-52.87
Elan Financial Services							
07/21/2022	1221	Check	ADOBE SUB	55130 · Website	10700 · Star Bank Checking	Administrative Fund:General Cash	-33.65
07/21/2022	1221	Check	ZOOM SUB	52800 · Meeting Expense	10700 · Star Bank Checking	Administrative Fund:General Cash	-32.04
07/21/2022	1221	Check	DROPBOX SUB - TF	55130 · Website	10700 · Star Bank Checking	Administrative Fund:General Cash	-119.88
07/21/2022	1221	Check	FREFIND SEARCH UPDATE	55130 · Website	10700 · Star Bank Checking	Administrative Fund:General Cash	-19.00
07/21/2022	1221	Check	CARWASH	54300 · Vehicle Expense	10700 · Star Bank Checking	Administrative Fund:General Cash	-15.00
Total Elan Financial Services							-219.57
Frontier							
07/21/2022	1222	Check	TELEPHONE	53450 · Telephone Expense	10700 · Star Bank Checking	Administrative Fund:General Cash	-218.68
Total Frontier							-218.68
Grant County							
07/15/2022		Deposit	PROPERTY TAXES	42020 · Grant County	10700 · Star Bank Checking	Administrative Fund:General Cash	27,671.04
07/15/2022		Deposit	PROPERTY TAXES	42020 · Grant County	10700 · Star Bank Checking	Construction Fund	128,707.09
07/15/2022		Deposit	PROPERTY TAXES FOR RRWMB	42020 · Grant County	10700 · Star Bank Checking	RRWMB	128,707.10
07/15/2022		Deposit	DITCH ASSESSMENTS	41190 · Ditch Assessments	10700 · Star Bank Checking	Ditch Fund:TCD #4	131.52
07/15/2022		Deposit	DITCH ASSESSMENTS	41190 · Ditch Assessments	10700 · Star Bank Checking	Ditch Fund:TCD #23	125.51
07/15/2022		Deposit	DITCH ASSESSMENTS	41190 · Ditch Assessments	10700 · Star Bank Checking	Ditch Fund:JCD #14	16,526.21
Total Grant County							301,868.47
Grant County SWCD							
07/21/2022	1224	Check	WBIF 01-14: REIMB FOR PROJECT DEVELOPMENT	61600 · Project Development	10700 · Star Bank Checking	Construction Fund:JCWMP/1W1Plan Imp.:BWSR WBIF C2...	-595.14
07/21/2022	1224	Check	WBIF 01-14: REIMB FOR PROJECT DEVELOPMENT	61600 · Project Development	10700 · Star Bank Checking	Construction Fund:JCWMP/1W1Plan Imp.:BWSR WBIF C2...	-170.98
07/21/2022	1224	Check	WBIF 01-14: REIMB FOR PROJECT DEVELOPMENT	61300 · Technical/Engineering	10700 · Star Bank Checking	Construction Fund:JCWMP/1W1Plan Imp.:BWSR WBIF C2...	-6,035.70
Total Grant County SWCD							-6,801.82
Herman Community							
07/05/2022	1212	Check	8/11 RENTAL FEE	53200 · Miscellaneous Expenses	10700 · Star Bank Checking	Construction Fund	-350.00
07/05/2022	1212	Check	8/11 DAMAGE DEPOSIT	53200 · Miscellaneous Expenses	10700 · Star Bank Checking	Construction Fund	-200.00
Total Herman Community							-550.00
Hormann Works LLC							
07/21/2022	1243	Check	CLEAN DITCH	54100 · Repairs and Maintenance	10700 · Star Bank Checking	Ditch Fund:TCD #17	-11,880.00
07/21/2022	1243	Check	LEVEL	51020 · Buffers	10700 · Star Bank Checking	Construction Fund:Buffer Strips	-1,850.00
07/21/2022	1243	Check	DEBRIS REMOVAL	54100 · Repairs and Maintenance	10700 · Star Bank Checking	Ditch Fund:TCD #52	-572.50
07/21/2022	1243	Check	SITE 9 SNOW REMOVAL	53460 · Snow Removal Expenses	10700 · Star Bank Checking	Ditch Fund:TCD #41	-462.50
Total Hormann Works LLC							-14,765.00

Bois de Sioux Watershed District
CHECKS TO APPROVE - VENDORS & EMPLOYEES
 June 17 through July 21, 2022

Date	Num	Type	Memo	Account	Split	Class	Amount
Jamie Beyer							
07/21/2022	1246	Check	WEEK ENDING 06/17/22	51300 · Administration Expense	10700 · Star Bank Checking	Administrative Fund:General Cash	-1,068.75
07/21/2022	1246	Check	WEEK ENDING 06/24/22	51300 · Administration Expense	10700 · Star Bank Checking	Administrative Fund:General Cash	-832.50
07/21/2022	1246	Check	WEEK ENDING 07/01/22	51300 · Administration Expense	10700 · Star Bank Checking	Administrative Fund:General Cash	-1,327.50
07/21/2022	1246	Check	WEEK ENDING 07/08/22	51300 · Administration Expense	10700 · Star Bank Checking	Administrative Fund:General Cash	-641.25
07/21/2022	1246	Check	WEEK ENDING 07/15/22	51300 · Administration Expense	10700 · Star Bank Checking	Administrative Fund:General Cash	-326.25
07/21/2022	1246	Check	CARDSTOCK	53500 · Office Supplies	10700 · Star Bank Checking	Administrative Fund:General Cash	-28.84
07/21/2022	1246	Check	POINTER	53300 · Office Equip & Furniture	10700 · Star Bank Checking	Administrative Fund:General Cash	-12.81
Total Jamie Beyer							-4,237.90
Larson Oil Company							
07/21/2022	1225	Check	FUEL	54400 · Vehicle Fuel	10700 · Star Bank Checking	Administrative Fund:General Cash	-69.00
Total Larson Oil Company							-69.00
League of MN Cities Insurance Trust P & C							
07/21/2022	1238	Check	WORK COMP	51800 · District Insurance & Dues	10700 · Star Bank Checking	Administrative Fund:General Cash	-445.00
Total League of MN Cities Insurance Trust P & C							-445.00
Michael Backman							
07/01/2022		Deposit	Deposit	45000 · Miscellaneous Income	10700 · Star Bank Checking	Construction Fund	81.98
Total Michael Backman							81.98
Minnesota Assoc. of Drainage Inspectors							
07/21/2022	1226	Check	MADI MEMBERSHIP	53200 · Miscellaneous Expenses	10700 · Star Bank Checking	Administrative Fund:General Cash	-50.00
Total Minnesota Assoc. of Drainage Inspectors							-50.00
MN PEIP							
07/13/2022	21732	Liability Check	Troy	Health Insurance Expense	10000 · Bank of the West Checking	Administrative Fund:General Cash	-436.60
07/13/2022	21732	Liability Check	Wendy	Health Insurance Expense	10000 · Bank of the West Checking	Administrative Fund:General Cash	-436.59
Total MN PEIP							-873.19
Moore Engineering, Inc.							
07/21/2022	1240	Check	CULVERT SIZING	51900 · Engineering Services	10700 · Star Bank Checking	Ditch Fund:TCD #1E	-4,391.03
07/21/2022	1240	Check	CULVERT SIZING	51900 · Engineering Services	10700 · Star Bank Checking	Ditch Fund:TCD #1W	-3,600.65
07/21/2022	1240	Check	CULVERT	51900 · Engineering Services	10700 · Star Bank Checking	Ditch Fund:WCD #8	-222.50
07/21/2022	1240	Check	BERM ELEVATION	51900 · Engineering Services	10700 · Star Bank Checking	Ditch Fund:WCD #9	-385.00
07/21/2022	1240	Check	GENERAL SERVICES	51900 · Engineering Services	10700 · Star Bank Checking	Administrative Fund:General Cash	-947.50
07/21/2022	1240	Check	TILE PERMITS	50400 · Tile Drainage	10700 · Star Bank Checking	Construction Fund	-10,998.75
07/21/2022	1240	Check	SURFACE PERMITS	50500 · Surface Drainage	10700 · Star Bank Checking	Construction Fund	-2,286.25
07/21/2022	1240	Check	PERMIT TRAINING	50300 · Other Permits	10700 · Star Bank Checking	Construction Fund	-310.00
07/21/2022	1240	Check	ESRI ARCGIS WEBMAP DEVELOPMENT	51900 · Engineering Services	10700 · Star Bank Checking	Construction Fund	-1,812.50
07/21/2022	1240	Check	DATA LOGGING	51900 · Engineering Services	10700 · Star Bank Checking	Ditch Fund:TCD #11	-97.50
07/21/2022	1240	Check	REDPATH - PHASE 1	51900 · Engineering Services	10700 · Star Bank Checking	Construction Fund:Redpath Imp. & Mustinka Rehab.:Ph 1 T...	-40,335.20
07/21/2022	1240	Check	REDPATH - PHASE 2 MUSTINKA RIVER	51900 · Engineering Services	10700 · Star Bank Checking	Construction Fund:Redpath Imp. & Mustinka Rehab.:Ph 2 M...	-14,350.50
07/21/2022	1240	Check	NORTH OTTAWA OPERATIONS	51900 · Engineering Services	10700 · Star Bank Checking	Construction Fund:North Ottawa Impoundment:N.O. Dev an...	-287.43
07/21/2022	1240	Check	JCWMP - STEERING COMMITTEE WORK	51900 · Engineering Services	10700 · Star Bank Checking	Construction Fund	-510.00
07/21/2022	1240	Check	JD #11 REPAIR	51900 · Engineering Services	10700 · Star Bank Checking	Ditch Fund:JCD #11	-413.75
07/21/2022	1240	Check	JD #6 REPAIR	51900 · Engineering Services	10700 · Star Bank Checking	Ditch Fund:JCD #6:Bond Proceeds (\$1,472,575)	-652.50
07/21/2022	1240	Check	DORAN CREEK	51900 · Engineering Services	10700 · Star Bank Checking	Construction Fund:Doran Creek Project(BdS Dir)	-3,787.50
07/21/2022	1240	Check	LTWQIP PHASE 2	51900 · Engineering Services	10700 · Star Bank Checking	Construction Fund:Lake Traverse WQ Improvement:Phase ...	-2,212.37
07/21/2022	1240	Check	LTWQIP PHASE 3	51900 · Engineering Services	10700 · Star Bank Checking	Construction Fund:Lake Traverse WQ Improvement:Phase ...	-25,455.26
07/21/2022	1240	Check	WCD #SUB-1	51900 · Engineering Services	10700 · Star Bank Checking	Ditch Fund:WCD #Sub-1	-3,000.00
07/21/2022	1240	Check	LIGHTNING LAKE	51900 · Engineering Services	10700 · Star Bank Checking	Construction Fund:Lightning Lake No. 1	-3,363.08
Total Moore Engineering, Inc.							-119,419.27
Ohnstad Twichell, PC							
07/21/2022	1237	Check	JD #6	52600 · Legal Fees	10700 · Star Bank Checking	Ditch Fund:JCD #6:Bond Proceeds (\$1,472,575)	-1,359.50
07/21/2022	1237	Check	REDPATH PROJECT - PHASE 2	52600 · Legal Fees	10700 · Star Bank Checking	RRWMB	-1,658.50
07/21/2022	1237	Check	RECODIFICATION	52600 · Legal Fees	10700 · Star Bank Checking	Administrative Fund:General Cash	-231.00
07/21/2022	1237	Check	TCD #35 IMPROVEMENT	52600 · Legal Fees	10700 · Star Bank Checking	RRWMB	-894.00
07/21/2022	1237	Check	GENERAL LEGAL WORK	52600 · Legal Fees	10700 · Star Bank Checking	Administrative Fund:General Cash	-1,137.00
07/21/2022	1237	Check	PERMITS	52600 · Legal Fees	10700 · Star Bank Checking	Construction Fund	-2,192.00
07/21/2022	1237	Check	LTWQIP PHASE 3	52600 · Legal Fees	10700 · Star Bank Checking	Construction Fund:Lake Traverse WQ Improvement:Phase ...	-168.00
07/21/2022	1237	Check	ANDERSON SUIT	52600 · Legal Fees	10700 · Star Bank Checking	Administrative Fund:General Cash	-2,982.79
Total Ohnstad Twichell, PC							-10,622.79
Olson Tile & Excavating, LLC							
07/21/2022	1244	Check	CULVERT REPAIR	54100 · Repairs and Maintenance	10700 · Star Bank Checking	Ditch Fund:JCD #2	-4,210.00
07/21/2022	1244	Check	BEAVER DAMS	53910 · Nuisance Beaver Control	10700 · Star Bank Checking	Ditch Fund:JCD #2	-542.50
Total Olson Tile & Excavating, LLC							-4,752.50
Otter Tail Power Company							
07/05/2022	1216	Check	ELECTRICITY	53430 · Electricity	10700 · Star Bank Checking	Administrative Fund:General Cash	-137.12
Total Otter Tail Power Company							-137.12

Bois de Sioux Watershed District
CHECKS TO APPROVE - VENDORS & EMPLOYEES
 June 17 through July 21, 2022

Date	Num	Type	Memo	Account	Split	Class	Amount
Purchase Power							
07/05/2022	1215	Check	POSTAGE	53610 · Postage	10700 · Star Bank Checking	Administrative Fund:General Cash	-301.50
07/21/2022	1242	Check	POSTAGE	53610 · Postage	10700 · Star Bank Checking	Administrative Fund:General Cash	-649.45
Total Purchase Power							-950.95
QuickBooks Payroll Service							
06/29/2022		Liability Check	Fee for 2 direct deposit(s) at \$1.75 each	53700 · Payroll Expenses	10000 · Bank of the West Checking	Administrative Fund:General Cash	-3.50
07/14/2022		Liability Check	Fee for 2 direct deposit(s) at \$1.75 each	53700 · Payroll Expenses	10000 · Bank of the West Checking	Administrative Fund:General Cash	-3.50
Total QuickBooks Payroll Service							-7.00
RRWMB							
07/21/2022	1227	Check	PORTION OF PROPERTY TAXES FOR RRWMB	54225 · Transfer of Funds RRWMB	10700 · Star Bank Checking	RRWMB	-128,707.10
Total RRWMB							-128,707.10
Runestone Telecom Association							
07/05/2022	1211	Check	INTERNET & EMAIL	53440 · Utility Expense	10700 · Star Bank Checking	Administrative Fund:General Cash	-99.95
Total Runestone Telecom Association							-99.95
Sag's Hardware Hank, Inc.							
07/21/2022	1228	Check	KEY BLANK	54100 · Repairs and Maintenance	10700 · Star Bank Checking	Administrative Fund:General Cash	-4.98
Total Sag's Hardware Hank, Inc.							-4.98
Sturdevant's Auto Parts							
07/05/2022	1217	Check	AIR FRESHENER	54500 · Vehicle Maint & Repair	10700 · Star Bank Checking	Administrative Fund:General Cash	-3.20
Total Sturdevant's Auto Parts							-3.20
Summit Companies							
07/21/2022	1230	Check	EXTINGUISHER INSPECTION	53420 · Maintenance	10700 · Star Bank Checking	Administrative Fund:General Cash	-77.00
Total Summit Companies							-77.00
Traverse County SWCD							
07/21/2022	1241	Check	SEEDING	51020 · Buffers	10700 · Star Bank Checking	Construction Fund:Buffer Strips	-1,634.68
Total Traverse County SWCD							-1,634.68
Traverse Electric Cooperative Inc							
07/05/2022	1210	Check	REDPATH SHED	53430 · Electricity	10700 · Star Bank Checking	Construction Fund:Redpath Imp. & Mustinka Rehab.:Ag Lan...	-42.75
Total Traverse Electric Cooperative Inc							-42.75
Tri County Coop							
07/21/2022	1232	Check	VEHICLE GAS	54400 · Vehicle Fuel	10700 · Star Bank Checking	Administrative Fund:General Cash	-438.37
07/21/2022	1232	Check	MEETING MEAL	53500 · Office Supplies	10700 · Star Bank Checking	Administrative Fund:General Cash	-71.70
07/21/2022	1232	Check	REPAIR	54500 · Vehicle Maint & Repair	10700 · Star Bank Checking	Administrative Fund:General Cash	-74.53
Total Tri County Coop							-584.60
Twin Valley Tire							
07/21/2022	1231	Check	TIRE SERVICE	54500 · Vehicle Maint & Repair	10700 · Star Bank Checking	Administrative Fund:General Cash	-26.00
Total Twin Valley Tire							-26.00
Valley Office Products, Inc.							
07/21/2022	1233	Check	ENVELOPES	53500 · Office Supplies	10700 · Star Bank Checking	Administrative Fund:General Cash	-321.92
07/21/2022	1233	Check	PAPER	53500 · Office Supplies	10700 · Star Bank Checking	Administrative Fund:General Cash	-119.76
Total Valley Office Products, Inc.							-441.68
Wagner Company, Inc.							
07/21/2022	1239	Check	PAY APPLICATION NO. 1	53890 · Contracted Repairs and Maintena	10700 · Star Bank Checking	Construction Fund:Redpath Imp. & Mustinka Rehab.:Ph 1 T...	-83,957.19
07/21/2022	1239	Check	PAY APPLICATION NO. 1	53890 · Contracted Repairs and Maintena	10700 · Star Bank Checking	Construction Fund:Redpath Imp. & Mustinka Rehab.:Ph 1 T...	-168,579.52
07/21/2022	1245	Check	GRAVEL CLASS 5 SERVICE ROAD	54100 · Repairs and Maintenance	10700 · Star Bank Checking	Construction Fund:North Ottawa Impoundment:N.O. Dev an...	-10,540.00
Total Wagner Company, Inc.							-263,076.71
Wilkin County Hwy Dept							
07/21/2022	1235	Check	SPOIL LEVELING - WCD #SUB-1	54100 · Repairs and Maintenance	10700 · Star Bank Checking	Construction Fund:Buffer Strips	-6,220.00
Total Wilkin County Hwy Dept							-6,220.00
Willy's Super Valu							
07/21/2022	1234	Check	NORTH OTTAWA PROJECT TEAM MEETING	52800 · Meeting Expense	10700 · Star Bank Checking	Administrative Fund:General Cash	-48.95
07/21/2022	1234	Check	CLEANING SUPPLIES	53400 · Office Operations	10700 · Star Bank Checking	Administrative Fund:General Cash	-98.25
Total Willy's Super Valu							-147.20

Bois de Sioux Watershed District
CHECKS TO APPROVE - VENDORS & EMPLOYEES
 June 17 through July 21, 2022

Date	Num	Type	Memo	Account	Split	Class	Amount
Xerox Corporation							
07/05/2022	1214	Check	COPIER LEASE	52100 · Equipment Lease & Rental	10700 · Star Bank Checking	Administrative Fund:General Cash	-149.66
07/05/2022	1214	Check	COPIER LEASE	52100 · Equipment Lease & Rental	10700 · Star Bank Checking	Administrative Fund:General Cash	-41.74
07/21/2022	1236	Check	COPIER LEASE	52100 · Equipment Lease & Rental	10700 · Star Bank Checking	Administrative Fund:General Cash	-206.62
Total Xerox Corporation							-398.02
Beyer, Jason W							
07/06/2022	21723	Paycheck		52700 · Manager Compensation	10000 · Bank of the West Checking	Administrative Fund:General Cash	-250.00
07/06/2022	21723	Paycheck		52800 · Meeting Expense	10000 · Bank of the West Checking	Administrative Fund:General Cash	0.00
07/06/2022	21723	Paycheck		52900 · Mileage Expense Board	10000 · Bank of the West Checking	Administrative Fund:General Cash	-80.02
07/06/2022	21723	Paycheck		52800 · Meeting Expense	10000 · Bank of the West Checking	Administrative Fund:General Cash	0.00
07/06/2022	21723	Paycheck		53200 · Miscellaneous Expenses	10000 · Bank of the West Checking	Administrative Fund:General Cash	0.00
07/06/2022	21723	Paycheck		53800 · Payroll Taxes	10000 · Bank of the West Checking	Administrative Fund:General Cash	-15.50
07/06/2022	21723	Paycheck		53800 · Payroll Taxes	10000 · Bank of the West Checking	Administrative Fund:General Cash	-3.62
Total Beyer, Jason W							-349.14
Brutlag, Benjamin							
07/06/2022	21724	Paycheck		52700 · Manager Compensation	10000 · Bank of the West Checking	Administrative Fund:General Cash	-250.00
07/06/2022	21724	Paycheck		52700 · Manager Compensation	10000 · Bank of the West Checking	Administrative Fund:General Cash	-500.00
07/06/2022	21724	Paycheck		52900 · Mileage Expense Board	10000 · Bank of the West Checking	Administrative Fund:General Cash	-116.65
07/06/2022	21724	Paycheck		52800 · Meeting Expense	10000 · Bank of the West Checking	Administrative Fund:General Cash	0.00
07/06/2022	21724	Paycheck		53800 · Payroll Taxes	10000 · Bank of the West Checking	Administrative Fund:General Cash	-46.50
07/06/2022	21724	Paycheck		53800 · Payroll Taxes	10000 · Bank of the West Checking	Administrative Fund:General Cash	-10.88
Total Brutlag, Benjamin							-924.03
Dahlen, Douglas C							
07/06/2022	21725	Paycheck		52700 · Manager Compensation	10000 · Bank of the West Checking	Administrative Fund:General Cash	-250.00
07/06/2022	21725	Paycheck		52900 · Mileage Expense Board	10000 · Bank of the West Checking	Administrative Fund:General Cash	-58.50
07/06/2022	21725	Paycheck		52800 · Meeting Expense	10000 · Bank of the West Checking	Administrative Fund:General Cash	0.00
07/06/2022	21725	Paycheck		52800 · Meeting Expense	10000 · Bank of the West Checking	Administrative Fund:General Cash	0.00
07/06/2022	21725	Paycheck		53200 · Miscellaneous Expenses	10000 · Bank of the West Checking	Administrative Fund:General Cash	0.00
07/06/2022	21725	Paycheck		53800 · Payroll Taxes	10000 · Bank of the West Checking	Administrative Fund:General Cash	-15.50
07/06/2022	21725	Paycheck		53800 · Payroll Taxes	10000 · Bank of the West Checking	Administrative Fund:General Cash	-3.62
Total Dahlen, Douglas C							-327.62
Deal, Jerome							
07/06/2022	21726	Paycheck		52700 · Manager Compensation	10000 · Bank of the West Checking	Administrative Fund:General Cash	-375.00
07/06/2022	21726	Paycheck		52900 · Mileage Expense Board	10000 · Bank of the West Checking	Administrative Fund:General Cash	-3.51
07/06/2022	21726	Paycheck		52800 · Meeting Expense	10000 · Bank of the West Checking	Administrative Fund:General Cash	0.00
07/06/2022	21726	Paycheck		53200 · Miscellaneous Expenses	10000 · Bank of the West Checking	Administrative Fund:General Cash	0.00
07/06/2022	21726	Paycheck		53800 · Payroll Taxes	10000 · Bank of the West Checking	Administrative Fund:General Cash	-23.25
07/06/2022	21726	Paycheck		53800 · Payroll Taxes	10000 · Bank of the West Checking	Administrative Fund:General Cash	-5.43
Total Deal, Jerome							-407.19
Fridgen, Troy J							
06/30/2022		Paycheck	Direct Deposit	54700 · Wages and Salaries	10000 · Bank of the West Checking	Administrative Fund:General Cash	-2,730.16
06/30/2022		Paycheck	Direct Deposit	54700 · Wages and Salaries	10000 · Bank of the West Checking	Administrative Fund:General Cash	-910.05
06/30/2022		Paycheck	Direct Deposit	53710 · PERA Expense	10000 · Bank of the West Checking	Administrative Fund:General Cash	-273.02
06/30/2022		Paycheck	Direct Deposit	53800 · Payroll Taxes	10000 · Bank of the West Checking	Administrative Fund:General Cash	-192.20
06/30/2022		Paycheck	Direct Deposit	53800 · Payroll Taxes	10000 · Bank of the West Checking	Administrative Fund:General Cash	-44.95
07/15/2022		Paycheck	Direct Deposit	54700 · Wages and Salaries	10000 · Bank of the West Checking	Administrative Fund:General Cash	-3,309.28
07/15/2022		Paycheck	Direct Deposit	54700 · Wages and Salaries	10000 · Bank of the West Checking	Administrative Fund:General Cash	-330.93
07/15/2022		Paycheck	Direct Deposit	53710 · PERA Expense	10000 · Bank of the West Checking	Administrative Fund:General Cash	-273.02
07/15/2022		Paycheck	Direct Deposit	53800 · Payroll Taxes	10000 · Bank of the West Checking	Administrative Fund:General Cash	-192.21
07/15/2022		Paycheck	Direct Deposit	53800 · Payroll Taxes	10000 · Bank of the West Checking	Administrative Fund:General Cash	-44.95
07/21/2022	1223	Check	DATA/CELL PLAN	53440 · Utility Expense	10700 · Star Bank Checking	Administrative Fund:General Cash	-70.00
Total Fridgen, Troy J							-8,370.77
Gillespie, Scott							
07/06/2022	21727	Paycheck		52700 · Manager Compensation	10000 · Bank of the West Checking	Administrative Fund:General Cash	-250.00
07/06/2022	21727	Paycheck		52800 · Meeting Expense	10000 · Bank of the West Checking	Administrative Fund:General Cash	0.00
07/06/2022	21727	Paycheck		52900 · Mileage Expense Board	10000 · Bank of the West Checking	Administrative Fund:General Cash	-53.59
07/06/2022	21727	Paycheck		52800 · Meeting Expense	10000 · Bank of the West Checking	Administrative Fund:General Cash	0.00
07/06/2022	21727	Paycheck		53200 · Miscellaneous Expenses	10000 · Bank of the West Checking	Administrative Fund:General Cash	0.00
07/06/2022	21727	Paycheck		53800 · Payroll Taxes	10000 · Bank of the West Checking	Administrative Fund:General Cash	-15.50
07/06/2022	21727	Paycheck		53800 · Payroll Taxes	10000 · Bank of the West Checking	Administrative Fund:General Cash	-3.63
Total Gillespie, Scott							-322.72

Bois de Sioux Watershed District
CHECKS TO APPROVE - VENDORS & EMPLOYEES
 June 17 through July 21, 2022

Date	Num	Type	Memo	Account	Split	Class	Amount
Kapphahn, John M.							
07/06/2022	21728	Paycheck		52700 · Manager Compensation	10000 · Bank of the West Checking	Administrative Fund:General Cash	-500.00
07/06/2022	21728	Paycheck		52800 · Meeting Expense	10000 · Bank of the West Checking	Administrative Fund:General Cash	0.00
07/06/2022	21728	Paycheck		52900 · Mileage Expense Board	10000 · Bank of the West Checking	Administrative Fund:General Cash	-86.70
07/06/2022	21728	Paycheck		53200 · Miscellaneous Expenses	10000 · Bank of the West Checking	Administrative Fund:General Cash	0.00
07/06/2022	21728	Paycheck		53800 · Payroll Taxes	10000 · Bank of the West Checking	Administrative Fund:General Cash	-31.00
07/06/2022	21728	Paycheck		53800 · Payroll Taxes	10000 · Bank of the West Checking	Administrative Fund:General Cash	-7.25
Total Kapphahn, John M.							-624.95
Schmidt, Steven							
07/06/2022	21729	Paycheck		52700 · Manager Compensation	10000 · Bank of the West Checking	Administrative Fund:General Cash	-375.00
07/06/2022	21729	Paycheck		52900 · Mileage Expense Board	10000 · Bank of the West Checking	Administrative Fund:General Cash	-33.70
07/06/2022	21729	Paycheck		52800 · Meeting Expense	10000 · Bank of the West Checking	Administrative Fund:General Cash	0.00
07/06/2022	21729	Paycheck		53200 · Miscellaneous Expenses	10000 · Bank of the West Checking	Administrative Fund:General Cash	0.00
07/06/2022	21729	Paycheck		53800 · Payroll Taxes	10000 · Bank of the West Checking	Administrative Fund:General Cash	-23.25
07/06/2022	21729	Paycheck		53800 · Payroll Taxes	10000 · Bank of the West Checking	Administrative Fund:General Cash	-5.44
Total Schmidt, Steven							-437.39
Sullivan, Wendy M							
06/30/2022		Paycheck	Direct Deposit	54700 · Wages and Salaries	10000 · Bank of the West Checking	Administrative Fund:General Cash	-1,557.69
06/30/2022		Paycheck	Direct Deposit	54700 · Wages and Salaries	10000 · Bank of the West Checking	Administrative Fund:General Cash	-36.65
06/30/2022		Paycheck	Direct Deposit	54700 · Wages and Salaries	10000 · Bank of the West Checking	Administrative Fund:General Cash	-18.33
06/30/2022		Paycheck	Direct Deposit	53710 · PERA Expense	10000 · Bank of the West Checking	Administrative Fund:General Cash	-120.95
06/30/2022		Paycheck	Direct Deposit	53800 · Payroll Taxes	10000 · Bank of the West Checking	Administrative Fund:General Cash	-63.35
06/30/2022		Paycheck	Direct Deposit	53800 · Payroll Taxes	10000 · Bank of the West Checking	Administrative Fund:General Cash	-14.82
07/15/2022		Paycheck	Direct Deposit	54700 · Wages and Salaries	10000 · Bank of the West Checking	Administrative Fund:General Cash	-1,026.24
07/15/2022		Paycheck	Direct Deposit	54700 · Wages and Salaries	10000 · Bank of the West Checking	Administrative Fund:General Cash	-146.61
07/15/2022		Paycheck	Direct Deposit	54700 · Wages and Salaries	10000 · Bank of the West Checking	Administrative Fund:General Cash	-439.82
07/15/2022		Paycheck	Direct Deposit	53710 · PERA Expense	10000 · Bank of the West Checking	Administrative Fund:General Cash	-120.95
07/15/2022		Paycheck	Direct Deposit	53800 · Payroll Taxes	10000 · Bank of the West Checking	Administrative Fund:General Cash	-63.36
07/15/2022		Paycheck	Direct Deposit	53800 · Payroll Taxes	10000 · Bank of the West Checking	Administrative Fund:General Cash	-14.82
07/21/2022	1229	Check	MEAL MILEAGE	53100 · Mileage Expense Staff	10700 · Star Bank Checking	Administrative Fund:General Cash	-19.31
Total Sullivan, Wendy M							-3,642.90
Vavra, Linda J							
07/06/2022	21730	Paycheck		52700 · Manager Compensation	10000 · Bank of the West Checking	Administrative Fund:General Cash	-1,375.00
07/06/2022	21730	Paycheck		52800 · Meeting Expense	10000 · Bank of the West Checking	Administrative Fund:General Cash	0.00
07/06/2022	21730	Paycheck		52900 · Mileage Expense Board	10000 · Bank of the West Checking	Administrative Fund:General Cash	-200.07
07/06/2022	21730	Paycheck		52800 · Meeting Expense	10000 · Bank of the West Checking	Administrative Fund:General Cash	0.00
07/06/2022	21730	Paycheck		53200 · Miscellaneous Expenses	10000 · Bank of the West Checking	Administrative Fund:General Cash	0.00
07/06/2022	21730	Paycheck		53800 · Payroll Taxes	10000 · Bank of the West Checking	Administrative Fund:General Cash	-85.25
07/06/2022	21730	Paycheck		53800 · Payroll Taxes	10000 · Bank of the West Checking	Administrative Fund:General Cash	-19.94
Total Vavra, Linda J							-1,680.26
Wold, Allen L							
07/06/2022	21731	Paycheck		52700 · Manager Compensation	10000 · Bank of the West Checking	Administrative Fund:General Cash	-500.00
07/06/2022	21731	Paycheck		52700 · Manager Compensation	10000 · Bank of the West Checking	Administrative Fund:General Cash	0.00
07/06/2022	21731	Paycheck		52800 · Meeting Expense	10000 · Bank of the West Checking	Administrative Fund:General Cash	0.00
07/06/2022	21731	Paycheck		52900 · Mileage Expense Board	10000 · Bank of the West Checking	Administrative Fund:General Cash	-35.80
07/06/2022	21731	Paycheck		52800 · Meeting Expense	10000 · Bank of the West Checking	Administrative Fund:General Cash	0.00
07/06/2022	21731	Paycheck		53200 · Miscellaneous Expenses	10000 · Bank of the West Checking	Administrative Fund:General Cash	0.00
07/06/2022	21731	Paycheck		53800 · Payroll Taxes	10000 · Bank of the West Checking	Administrative Fund:General Cash	-31.00
07/06/2022	21731	Paycheck		53800 · Payroll Taxes	10000 · Bank of the West Checking	Administrative Fund:General Cash	-7.25
Total Wold, Allen L							-574.05
No name							
06/30/2022		Check	Service Charge	53200 · Miscellaneous Expenses	10010 · Bremer Bank Checking	Administrative Fund:General Cash	-2.00
06/30/2022		Deposit	Interest	43000 · Interest Income	10210 · Bremer Bank Money Market	Construction Fund	273.24
06/24/2022		Check	Service Charge	53200 · Miscellaneous Expenses	10700 · Star Bank Checking	Administrative Fund:General Cash	-4.00
06/24/2022		Deposit	Interest	43000 · Interest Income	10700 · Star Bank Checking	Construction Fund	103.88
06/30/2022		Deposit	Interest	43000 · Interest Income	10610 · Bremer Bank CD's	Construction Fund	1,203.21
Total no name							1,574.33
TOTAL							-285,761.60

Bois de Sioux Watershed District
2022 CONSTRUCTION FUND BUDGET
 January through December 2022

	Jan - Dec 22	Budget
Income		
49450 · Internal Transfer In	745,000.00	
44510 · RRWMB Base Funding Grant	0.00	100,000.00
44505 · RRWMB WQ Project Grant	0.00	507,000.00
44500 · Project Grant	800,000.00	3,687,396.00
Ditch Revenues	160,000.00	
41100 · Riparian Aid MN DOR	54,172.50	110,000.00
Investment Income	2,511.79	
47100 · Storage Building Rental Income	0.00	800.00
42000 · General Property Taxes	496,255.77	831,315.00
44000 · Land Rental Income	875,166.52	800,000.00
45000 · Miscellaneous Income	2,303.39	1,500.00
Total Income	<u>3,135,409.97</u>	<u>6,038,011.00</u>
Gross Profit	3,135,409.97	6,038,011.00
Expense		
54955 · Internal Transfer Out	745,000.00	
60000 · State Grant Expense Activities	75,824.76	2,025,808.00
51675 · Clean Water Cost Share Policy	0.00	0.00
51670 · Culvert Szng Cost Share Policy	0.00	0.00
51020 · Buffers	3,526.68	110,000.00
50100 · Stream Gaging Expense	860.00	5,000.00
Permits	66,537.10	150,000.00
51010 · Boundary Redetermination	0.00	0.00
55110 · Programs with SWCDs	5,000.00	10,000.00
51100 · Accounting Services	0.00	3,500.00
51300 · Administration Expense	0.00	168,700.00
51400 · River Watch/Expense	1,640.49	2,500.00
51500 · Advertising Expense	1,154.75	8,000.00
51900 · Engineering Services	568,333.71	1,515,251.00
52100 · Equipment Lease & Rental	0.00	700.00
52500 · Land	54,446.00	
52600 · Legal Fees	45,003.92	100,000.00
52700 · Manager Compensation	0.00	15,000.00
52800 · Meeting Expense	596.54	1,500.00
52900 · Mileage Expense Board	0.00	150.00
53100 · Mileage Expense Staff	0.00	500.00
53200 · Miscellaneous Expenses	3,088.32	2,700.00
53300 · Office Equip & Furniture	0.00	1,000.00
53400 · Office Operations	789.19	1,500.00
53500 · Office Supplies	404.00	2,500.00
53600 · Other Supplies	9.16	100.00
53800 · Payroll Taxes	0.00	125,000.00
53900 · Property Taxes	109,860.62	
54100 · Repairs and Maintenance	322,579.02	1,680,602.00
54400 · Vehicle Fuel	0.00	1,000.00
Total Expense	<u>2,004,654.26</u>	<u>5,931,011.00</u>
Net Income	<u><u>1,130,755.71</u></u>	<u><u>107,000.00</u></u>

Bois de Sioux Watershed District
2021 DITCH FUND BUDGET
January through December 2022

	<u>Jan - Dec 22</u>	<u>Budget</u>
Income		
Ditch Revenues	386,443.38	2,625,030.00
Investment Income	0.00	1,000.00
42000 · General Property Taxes	2,490.33	
45000 · Miscellaneous Income	327,369.86	5,000.00
Total Income	<u>716,303.57</u>	<u>2,631,030.00</u>
Gross Profit	716,303.57	2,631,030.00
Expense		
54956 · Intergovernmental Expense	13,246.40	
60000 · State Grant Expense Activities	0.00	320,000.00
51300 · Administration Expense	0.00	25,000.00
51500 · Advertising Expense	645.00	4,500.00
51900 · Engineering Services	41,809.21	250,000.00
52500 · Land	0.00	88,000.00
52600 · Legal Fees	8,454.61	40,000.00
52700 · Manager Compensation	0.00	1,500.00
52800 · Meeting Expense	0.00	100.00
53200 · Miscellaneous Expenses	0.00	125,000.00
53300 · Office Equip & Furniture	846.00	1,100.00
53400 · Office Operations	16,462.50	
54100 · Repairs and Maintenance	73,115.71	1,767,330.00
54600 · Viewers Expense	0.00	8,500.00
Total Expense	<u>154,579.43</u>	<u>2,631,030.00</u>
Net Income	<u>561,724.14</u>	<u>0.00</u>

Bois de Sioux Watershed District
2022 GENERAL FUND BUDGET
 January through December 2022

	<u>Jan - Dec 22</u>	<u>Budget</u>
Income		
Investment Income	0.00	3,000.00
42000 · General Property Taxes	107,244.21	178,700.00
45000 · Miscellaneous Income	2,660.78	3,000.00
49000 · Project Administration	0.00	204,950.00
49300 · State Credits & Ag M H Credits	0.00	4,000.00
Total Income	<u>109,904.99</u>	<u>393,650.00</u>
Gross Profit	109,904.99	393,650.00
Expense		
51000 · Annual Report	1,437.00	1,750.00
55130 · Website	680.68	800.00
55140 · Mileage Expense Advisory Com	24.15	100.00
59150 · Education	750.75	
51100 · Accounting Services	14,457.53	18,500.00
51300 · Administration Expense	31,045.00	58,500.00
51400 · River Watch/Expense	275.53	
51500 · Advertising Expense	1,623.54	3,800.00
51600 · Building and Structures	0.00	500.00
51800 · District Insurance & Dues	9,128.00	34,000.00
51900 · Engineering Services	12,504.18	20,000.00
52100 · Equipment Lease & Rental	2,227.64	5,500.00
52200 · Fringe Benefits	6,112.33	10,500.00
52600 · Legal Fees	22,053.21	35,000.00
52700 · Manager Compensation	12,375.00	25,000.00
52800 · Meeting Expense	1,099.04	2,500.00
52900 · Mileage Expense Board	3,030.41	5,000.00
53100 · Mileage Expense Staff	38.62	350.00
53200 · Miscellaneous Expenses	1,449.65	4,700.00
53300 · Office Equip & Furniture	12.81	750.00
53400 · Office Operations	6,233.57	10,000.00
53500 · Office Supplies	1,790.12	3,000.00
53600 · Other Supplies	1,965.39	3,000.00
53700 · Payroll Expenses	2,630.33	9,500.00
53800 · Payroll Taxes	5,149.30	9,800.00
54100 · Repairs and Maintenance	651.95	1,200.00
54300 · Vehicle Expense	15.00	
54400 · Vehicle Fuel	2,532.13	2,400.00
54500 · Vehicle Maint & Repair	965.25	2,000.00
54700 · Wages and Salaries	68,287.44	125,500.00
Total Expense	<u>210,545.55</u>	<u>393,650.00</u>
Net Income	<u>-100,640.56</u>	<u>0.00</u>

Bois de Sioux Watershed District APPROVE GRANT TRANSACTIONS

June 18 through July 21, 2022

Type	Date	Num	Name	Memo	Account	Debit	Credit	Amount
Construction Fund								
JCWMP/1W1Plan Imp.								
BWSR WBIF C21-9685 (\$1,064,522)								
Check	07/21/2022	1224	Grant County SWCD	WBIF 01-14: REIMB FOR PROJECT DEVELOPME...	61600 · Project Development	595.14		595.14
Check	07/21/2022	1224	Grant County SWCD	WBIF 01-14: REIMB FOR PROJECT DEVELOPME...	61600 · Project Development	170.98		170.98
Check	07/21/2022	1224	Grant County SWCD	WBIF 01-14: REIMB FOR PROJECT DEVELOPME...	61300 · Technical/Engineering	6,035.70		6,035.70
Total BWSR WBIF C21-9685 (\$1,064,522)						6,801.82	0.00	6,801.82
Total JCWMP/1W1Plan Imp.						6,801.82	0.00	6,801.82
Redpath Imp.& Mustinka Rehab.								
Ph 1 TCD #35 Relocate								
RRWMB Grant 2022FA-02 (\$1 M)								
Check	07/21/2022	1218	Braun Intertec	TCD #35 TESTING	53890 · Contracted Repairs and M...	4,565.00		4,565.00
Check	07/21/2022	1240	Moore Engineering, Inc.	REDPATH - PHASE 1	51900 · Engineering Services	40,335.20		40,335.20
Total RRWMB Grant 2022FA-02 (\$1 M)						44,900.20	0.00	44,900.20
DNR Grant FHM 2021 (\$800,000)								
Check	07/21/2022	1239	Wagner Company, Inc.	PAY APPLICATION NO. 1	53890 · Contracted Repairs and M...	168,579.52		168,579.52
Total DNR Grant FHM 2021 (\$800,000)						168,579.52	0.00	168,579.52
BWSR Grant C22-6082 (\$320,000)								
Check	07/21/2022	1239	Wagner Company, Inc.	PAY APPLICATION NO. 1	53890 · Contracted Repairs and M...	83,957.19		83,957.19
Total BWSR Grant C22-6082 (\$320,000)						83,957.19	0.00	83,957.19
Total Ph 1 TCD #35 Relocate						297,436.91	0.00	297,436.91
Ph 2 Mustinka Rehab/Corridor								
RRWMB Grant (\$507,000)								
Check	07/21/2022	1240	Moore Engineering, Inc.	REDPATH - PHASE 2 MUSTINKA RIVER	51900 · Engineering Services	14,350.50		14,350.50
Total RRWMB Grant (\$507,000)						14,350.50	0.00	14,350.50
Total Ph 2 Mustinka Rehab/Corridor						14,350.50	0.00	14,350.50
Total Redpath Imp.& Mustinka Rehab.						311,787.41	0.00	311,787.41
Lake Traverse WQ Improvement								
Phase 3								
DNR Grant CPL 212726 (\$400,000)								
Check	07/21/2022	1237	Ohnstad Twichell, PC	LTWQIP PHASE 3	52600 · Legal Fees	168.00		168.00
Check	07/21/2022	1240	Moore Engineering, Inc.	LTWQIP PHASE 3	51900 · Engineering Services	25,455.26		25,455.26
Total DNR Grant CPL 212726 (\$400,000)						25,623.26	0.00	25,623.26
Total Phase 3						25,623.26	0.00	25,623.26
Phase 2								
RRWMB Grant (\$367,765)								
Check	07/21/2022	1240	Moore Engineering, Inc.	LTWQIP PHASE 2	51900 · Engineering Services	2,212.37		2,212.37
Total RRWMB Grant (\$367,765)						2,212.37	0.00	2,212.37
Total Phase 2						2,212.37	0.00	2,212.37
Total Lake Traverse WQ Improvement						27,835.63	0.00	27,835.63
Total Construction Fund						346,424.86	0.00	346,424.86
TOTAL						346,424.86	0.00	346,424.86

Bois de Sioux Watershed District
CURRENT GRANT BALANCES
 As of July 21, 2022

	Jul 21, 22
Construction Fund	
JCWMP/1W1Plan Imp.	
BWSR WBIF C21-9685 (\$1,064,522)	173,628.28
Total JCWMP/1W1Plan Imp.	173,628.28
Redpath Imp.& Mustinka Rehab.	
Ph 1 TCD #35 Relocate	
RRWMB Grant 2022FA-02 (\$1 M)	-79,578.46
DNR Grant FHM 2021 (\$800,000)	-233,979.96
BWSR Grant C22-6082 (\$320,000)	76,042.81
Total Ph 1 TCD #35 Relocate	-237,515.61
Ph 2 Mustinka Rehab/Corridor	
BWSR Grant C22-8116 (\$800,000)	400,000.00
RRWMB Grant (\$507,000)	-154,290.34
Total Ph 2 Mustinka Rehab/Corridor	245,709.66
Total Redpath Imp.& Mustinka Rehab.	8,194.05
Lake Traverse WQ Improvement	
Phase 3	
DNR Grant CPL 212726 (\$400,000)	-25,623.26
BWSR Grant C22-0499 (\$800,000)	400,000.00
Total Phase 3	374,376.74
Phase 2	
RRWMB Grant (\$367,765)	-238,628.71
BWSR Grant C21-1051 (\$418,235)	-41,823.00
Total Phase 2	-280,451.71
Phase 1	
BWSR Grant C20-7176 (\$336,775)	336,775.00
Total Phase 1	336,775.00
Total Lake Traverse WQ Improvement	430,700.03
Total Construction Fund	612,522.36
Ditch Fund	
JCD #6	
BWSR Grant C21-5196 (\$356,359)	-35,635.00
Total JCD #6	-35,635.00
JCD #11	
BWSR Grant C20-7182 (\$327,000)	294,300.00
Total JCD #11	294,300.00
Total Ditch Fund	258,665.00
TOTAL	871,187.36

TREASURER'S REPORT

JUNE 2022

BANK ACCOUNT BALANCES FROM BANK STATEMENTS

Bank of the West - Checking, No Interest	\$ 1,469,365.30
Star Bank - Checking, Interest	\$ 2,399,697.95
Bremer Bank - Checking, No Interest	\$ 3,784.00
Bremer Bank - Money Market, Interest	\$ 5,573,618.42
Bremer Bank - CD's, Interest	\$ 1,759,500.93
END OF MONTH AMOUNT IN BANK ACCOUNTS:	\$ 11,205,966.60

ACCOUNTING FUND BALANCES FROM QUICKBOOKS

	Beginning Balance from Quickbooks 12/31/2021	2022 YTD Revenue 6/30/2022	2022 YTD Expenses 6/30/2022	Current Fund Balance 6/30/2022	
Payroll Liabilities	0.00	0.00	(1,819.40)	(1,819.40)	
General Fund(*)	390,550.64	82,233.95	(184,313.16)	288,471.43	TROY
Ditch Fund					If nothing else was done this year...
Total BdSWD #3	87,234.30	0.00	0.00	87,234.30	87,234.30
Total JCD #2	140,890.24	0.00	(6,750.00)	134,140.24	134,140.24
Total JCD #3	20,765.70	2,016.47	(300.00)	22,482.17	23,215.70
Total JCD #6	341,430.19	471.07	(14,666.68)	327,234.58	326,763.51
Total JCD #7	23,255.69	2,763.93	0.00	26,019.62	28,555.69
Total JCD #11	(42,443.74)	292,450.50	(19,317.21)	230,689.55	(2,286.95)
Total JCD #12	117,881.20	13.20	(4,167.50)	113,726.90	113,713.70
Total JCD #14	(178,028.59)	76,378.85	(150.00)	(101,799.74)	(60,978.59)
Total TCD #1E	(26,287.94)	43,047.80	(2,835.00)	13,924.86	(19,122.94)
Total TCD #1W	18,131.38	3,273.82	0.00	21,405.20	23,131.38
Total TCD #2	26,824.89	3,414.73	(1,120.00)	29,119.62	30,704.89
Total TCD #4	39,033.64	3,643.41	(740.00)	41,937.05	43,293.64
Total TCD #7	24,878.92	3,004.61	0.00	27,883.53	29,278.92
Total TCD #8	(6,214.94)	6,650.02	(1,545.00)	(1,109.92)	240.06
Total TCD #9	5,549.92	11,626.05	(34,275.00)	(17,099.03)	(12,475.08)
Total TCD #10	19,879.86	8,072.87	0.00	27,952.73	33,479.86
Total TCD #11	32,510.24	3,533.18	(185.00)	35,858.42	37,325.24
Total TCD #13	7,932.76	2,447.43	0.00	10,380.19	12,032.76
Total TCD #15	4,587.56	3,024.66	0.00	7,612.22	8,587.56
Total TCD #16	(12,605.22)	6,105.25	0.00	(6,499.97)	(2,905.22)
Total TCD #17	(36,955.44)	4,797.35	0.00	(32,158.09)	(28,705.44)
Total TCD #18	(1,192.93)	3,072.41	0.00	1,879.48	2,807.07
Total TCD #19	3,012.05	459.97	0.00	3,472.02	3,712.05
Total TCD #20	3,596.99	2,688.48	0.00	6,285.47	8,096.99
Total TCD #22	(5,668.48)	2,476.18	0.00	(3,192.30)	(668.48)
Total TCD #23	(80,453.52)	7,880.87	0.00	(72,572.65)	(70,203.52)
Total TCD #24	6,447.31	2,422.87	(832.50)	8,037.68	8,214.81
Total TCD #26	20,404.60	6,977.26	0.00	27,381.86	30,404.60
Total TCD #27	(16,952.78)	40,521.96	0.00	23,569.18	43,047.22
Total TCD #28	6,632.48	3,597.15	0.00	10,229.63	13,332.48
Total TCD #29	14,524.70	888.55	0.00	15,413.25	16,024.70
Total TCD #30	(4,667.76)	5,915.86	0.00	1,248.10	4,332.24
Total TCD #31	6,715.98	3,913.93	(1,320.00)	9,309.91	12,395.98
Total TCD #32	7,028.41	1,855.42	0.00	8,883.83	10,028.41
Total TCD #33	13,723.44	811.54	0.00	14,534.98	15,123.44
Total TCD #35	19,473.95	584.96	(645.00)	19,413.91	18,828.95
Total TCD #36	8,426.36	5,878.78	0.00	14,305.14	18,426.36
Total TCD #37	(380,788.18)	20,303.15	(42.00)	(360,527.03)	(340,450.18)
Total TCD #38	5,877.46	1,758.52	0.00	7,635.98	8,377.46
Total TCD #39	6,734.28	527.13	0.00	7,261.41	7,734.28
Total TCD #40	20,249.88	2,973.14	(1,757.00)	21,466.02	23,392.88
Total TCD #41	(37,378.38)	10,552.37	0.00	(26,826.01)	(21,378.38)
Total TCD #42	16,148.35	2,091.60	(595.00)	17,644.95	18,953.35

Total TCD #43	21,799.97	2,849.11	0.00	24,649.08	26,299.97
Total TCD #44	(257.11)	3,586.93	0.00	3,329.82	5,442.89
Total TCD #46	13,219.55	1,648.97	0.00	14,868.52	15,519.55
Total TCD #48	(10,662.89)	1,834.78	0.00	(8,828.11)	(7,262.89)
Total TCD #50	2,485.23	307.79	0.00	2,793.02	2,985.23
Total TCD #51	27,805.50	5,754.97	0.00	33,560.47	37,805.50
Total TCD #52	2,113.34	16,235.59	(150.00)	18,198.93	26,963.34
Total TCD #53	58,449.86	1,420.02	0.00	59,869.88	60,449.86
Total TCD #55	3,848.78	1,815.54	0.00	5,664.32	6,348.78
Total WCD #Sub-1	20,623.64	11,184.03	(7,534.21)	24,273.46	32,189.43
Total WCD #8	134,567.21	0.00	(350.00)	134,217.21	212,016.21
Total WCD #9	304,954.00	13,246.40	(13,791.40)	304,409.00	453,506.60
Total WCD #18	5,426.46	9,826.27	0.00	15,252.73	22,726.46
Total WCD #20	23,547.47	10,210.87	(170.00)	33,588.34	39,227.47
Total WCD #25	37,996.47	4,209.63	(5,295.00)	36,911.10	39,201.47
Total WCD #35	13,552.47	2,254.77	(1,015.00)	14,792.24	16,287.47
Total WCD #39	1,788.34	8,247.36	0.00	10,035.70	15,038.34
Total Ditch Fund - Other	0.00	0.00	(3,241.00)	(3,241.00)	(3,241.00)
Total Ditch Fund	901,403.12	699,520.33	(122,789.50)	1,478,133.95	
<hr/>					
Construction Fund(*)	7,686,714.42	3,006,620.90	(1,610,618.97)	9,082,716.35	
<hr/>					
RRWMB Fund	0.00	212,775.21	(212,775.21)	0.00	
<hr/>					
TOTAL Funds	8,978,668.18	4,001,150.39	(2,132,316.24)	10,847,502.33	

RECONCILE BANK STATEMENTS TO QUICKBOOKS

Bank Statement Total From Top:	11,205,966.60
<u>Enter</u> Quickbooks Bank Account Balance Total Assets:	10,847,502.33
+ <u>Enter</u> Uncleared Transactions Bank of the West:	277,815.56
+ <u>Enter</u> Uncleared Transactions Star Bank:	80,648.71
+ <u>Enter</u> checks written 06/24/22 - 06/30/22	0.00
- <u>Enter</u> Deposits received 06/24/22 - 06/30/22	0.00
Quickbooks Total:	11,205,966.60

<u>Enter</u> Quickbooks Total from Fund Balances Income/Expense Report:	10,849,321.73
<u>Enter</u> Quickbooks Total from Balance Sheet Current Payroll Liabilities:	(1,819.40)
Total:	10,847,502.33
<u>Enter</u> Quickbooks Total Assets from Bank Balances Report:	10,847,502.33

STATE OF MINNESOTA
Before the
BOIS DE SIOUX WATERSHED DISTRICT

In the Matter of:

**the Petition to Improve
Grant County Ditch No. 21**

**PRELIMINARY FINDINGS AND
ORDER APPOINTING ENGINEER**

Grant County Ditch No. 21 (“GCD #21”) is under the drainage authority jurisdiction of Grant County. These improvement proceedings are being filed with the Bois de Sioux Watershed District Board of Managers (the “Board”) in accordance with Minn. Stat. § 103D.625, subd. 4. As a result, the Board convened on July 21, 2022, at 8:00 AM at the Bois de Sioux Watershed District Office, 704 Hwy 75 South, Wheaton, Minnesota 56296. Based on the record and proceedings, Manager _____ moved, seconded by Manager _____ to adopt the following Findings and Order:

FINDINGS:

1. A PETITION FOR IMPROVEMENT AND SEPARABLE MAINTENANCE REQUEST was filed on Friday, July 15, 2022, (the “Petition”) with the Administrator of the Bois de Sioux Watershed District (the “District”), on behalf of its Secretary, requesting to improve GCD #21 pursuant to Minn. Stat. § 103E.215. Included in the Petition was a request for separable maintenance in accordance with Minn. Stat. § 103E.215, subd. 6.
2. GCD #21 is under the jurisdiction of Grant County, sitting as drainage authority of GCD #21; however, the Petition must be filed with the Board in accordance with Minn. Stat. § 103D.625, subd. 4, because it consists of the improvement to GCD #21.
3. Upon filing of the Petition with the Board, the Board will follow the proceedings for an improvement project outlined under Chapter 103 of Minnesota Statutes.
4. Attorney Lukas Croaker reviewed the petition and bond (personal checks in the sum of \$60,000) filed with the District and determined that the Petition and bond met the requirement of the proceedings for the improvement of GCD #21.
5. The District Administrator will deposit the personal checks in a separate account to be held in the event these proceedings are dismissed or a contract is not awarded for this project.
6. The Board finds that it has jurisdiction over these proceedings and, pursuant to Minn. Stat. § 103E.241, subd. 1, desires to appoint an engineer to make a preliminary survey report.

ORDER:

Based on the foregoing Findings and the entire record of proceedings before the Board, the Board, via authority granted under Minn. Stat. § 103D.625, subd. 4, hereby orders as follows:

1. That Chad Engels, Moore Engineering, Inc. (the “Engineer”), is hereby appointed as the project engineer for these proceedings and shall make a preliminary survey and preliminary survey report pursuant to Minn. Stat. § 103E.245.
2. Prior to commencing any work, the Engineer must subscribe to an oath to faithfully perform the assigned duties in the best manner possible and file a bond (certificate of commercial general liability and professional liability insurance) with the District Administrator within ten (10) days after being appointed.
3. The Engineer may appoint assistant engineers and hire help necessary to complete the Engineer’s duties. The Engineer shall be responsible for the assistant engineers and may remove them.
4. The Engineer shall make an expense report every two (2) weeks after the beginning of the Engineer’s work until the construction of the contract is awarded. The report must show costs incurred by the Engineer and expenses incurred under the Engineer’s direction relating to the proceeding, and include the names of the Engineer, engineer assistants, and employees, the time each was employed, and every item of expense incurred by the Engineer. The Engineer must file this report with the District Administrator as soon as possible and may not incur expenses for the proceeding greater than the petitioners’ bond.
5. The Engineer shall review whether separable maintenance exists or if the improvement proceedings will eliminate the need for the repair to the portion of the existing drainage system proposed to be improved.
6. Upon filing of the preliminary survey report, the District Administrator shall promptly notify the Board and shall set a time, by order, not more than thirty (30) days after the date of the order, for a hearing on the preliminary survey report.

[Remainder of page left blank intentionally.]

After discussion, the President called the question. The question was on the adoption of the foregoing Findings and Order, and there were _____ yeas, _____ nays, _____ absent, and _____ abstentions as follows:

	Yea	Nay	Absent	Abstain
Vavra	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Schmidt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wold	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gillespie	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kapphahn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Beyer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Deal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dahlen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Brutlag	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Upon vote, the President declared the motion passed and the Findings and Order adopted.

Date: _____, 2022

Linda Vavra, President

Attest:

Date: _____, 2022

Jamie Beyer, Administrator

* * * * *

I, Jamie Beyer, Bois de Sioux Watershed District Administrator, do hereby certify that I have compared the above motion, findings, and order with the original thereof as the same appears of record and on file with the Bois de Sioux Watershed District and find the same to be a true and correct transcript thereof. The above order was filed with me, Jamie Beyer, Bois de Sioux Watershed District Administrator, on _____, 2022.

IN TESTIMONY WHEREOF, I hereunto set my hand this ____ day of _____, 2022.

Jamie Beyer, Administrator

STATE OF MINNESOTA
Before the
BOIS DE SIOUX WATERSHED DISTRICT

In the Matter of:

**the Petition to Improve
Grant County Ditch No. 21**

ENGINEER'S OATH AND BOND

Chad Engels, Moore Engineering, Inc., (the "Engineer"), having been appointed by the Bois de Sioux Watershed District Board of Managers as the drainage engineer for the improvement of GCD #21 pursuant to Minn. Stat. § 103E.241, does hereby swear or affirm to faithfully perform the assigned duties in the best manner possible and to diligently and honestly perform the Engineer's duties as set forth in Minn. Stat. Ch. 103E and according to the professional standards required of professional engineers.

In lieu of providing a bond, the Engineer will maintain commercial general liability and professional liability coverage limits, per occurrence and per claim, respectively, in amounts sufficient to cover the Engineer's scope of services during the entire term of the Engineer's appointment, to pay on any proven claim by any person or the District for damages and injuries resulting from negligence of the Engineer while the Engineer is acting in the proceedings or construction for the improvement of GCD #21. The Engineer agrees to provide a certificate of insurance to the District documenting the respective insurance coverages and naming the District as an additional insured.

Signed this _____ day of _____, 2022.

MOORE ENGINEERING, INC.

Chad Engels, Professional Engineer

CONSTRUCTION PROGRESS UPDATE

Bois de Sioux Watershed District

REPORTING DATE: 06/16/2022 – 07/21/2022

Project Traverse County Ditch 35 Improvements
Location Redpath Township, Traverse County
Client Bois de Sioux Watershed District

Moore Project No. 18325A

Project Field Contacts Noel B. 701-799-4748
Brady W. 218-790-0790

General Contractor Wagner Companies

Other Contractors Riley Bros. Construction

RUNNING TIMELINE

03/15/2022 Bid Opening

03/24/2022 Project Awarded to Wagner Companies.

04/21/2022 Signed Contracts and Notice to Proceed.

05/25/2022 Construction initiated. Topsoil stripping and excavation.

06/08/2022 Channel excavation and embankment construction.

RECENT ACTIVITY

06/22/2022 Completion of channel excavation and embankment on mile 2.

07/14/2022 Completion of channel excavation and embankment on mile 3, beginning work on mile 4.

UPCOMING TENTATIVE

08/01/2022 Begin mile 5 excavation.

08/08/2022 Begin road crossing installations.

08/23/2022 Begin side inlet culvert install.

09/01/2022 Begin mile 1 excavation.

09/12/2022 Begin CSAH 13 excavation.

11/25/2022 Contract Substantial Completion Date.

06/30/2023 Contract Final Completion Date.

ITEMS TO DISCUSS N/A

CONSTRUCTION PROGRESS UPDATE

Bois de Sioux Watershed District



06/20/22: Embankment Placement Along Mile 2.



07/07/22: Topsoil Stripping from the Existing Channel along Mile 3

CONSTRUCTION PROGRESS UPDATE

Bois de Sioux Watershed District



07/14/22: Excavated Channel and Placed Embankment Along Mile 3



07/14/22: Embankment and Spread Topsoil on Mile 2

**WATERSHED BASED IMPLEMENTATION FUNDS
Budget & Expense Report
2021 - 2023**

WBIF GRANT ACTIVITY	SOURCE	SUM OF ACTUAL					
		6/22 AMENDED GRANT BUDGET	SUM OF REQUESTS	EXPENDITURES PAID TO DATE	REQUESTS + ACTUAL	REQUIRED MATCH	BUDGET REMAINING
Agricultural Practices	WBIF State Grant	\$118,722.00	\$ 24,263.35	\$ -	\$ 24,263.35	\$ -	\$ 94,458.65
BMP Construction (JD #6)	WBIF State Grant	\$148,000.00	\$ -	\$ 148,000.00	\$ 148,000.00	\$ -	\$ -
Project Development (Doran Creek)	WBIF State Grant	\$115,000.00	\$ -	\$ 115,000.00	\$ 115,000.00	\$ -	\$ -
Administration/Coordination*	WBIF State Grant	\$25,000.00	\$ -	\$ 10,026.70	\$ 10,026.70	\$ -	\$ 14,973.30
Non-Structural Management Practices	WBIF State Grant	\$87,000.00	\$ 21,888.00	\$ 25,671.95	\$ 47,559.95	\$ -	\$ 39,440.05
Progress Tracking and Evaluation	WBIF State Grant	\$10,000.00	\$ 1,900.00	\$ 2,750.00	\$ 4,650.00	\$ -	\$ 5,350.00
Project Development	WBIF State Grant	\$194,000.00	\$ 1,860.00	\$ 51,475.59	\$ 53,335.59	\$ -	\$ 140,664.41
Project Installation/Const. (LTWQIP)	WBIF State Grant	\$325,000.00	\$ -	\$ -	\$ -	\$ -	\$ 325,000.00
Project Installation/Const. (LTWQIP Cost Share)	Local Fund Match	\$106,452.00	\$ -	\$ -	\$ -	\$106,452.00	\$ -
Technical/Engineering	WBIF State Grant	\$41,000.00	\$ -	\$ 4,908.48	\$ 4,908.48	\$ -	\$ 36,091.52
<u>Well Sealing</u>	<u>WBIF State Grant</u>	<u>\$800.00</u>	<u>\$ -</u>	<u>\$ 800.00</u>	<u>\$ 800.00</u>	<u>\$ -</u>	<u>\$ -</u>
TOTAL		\$ 1,170,974.00	\$ 49,911.35	\$ 358,632.72	\$ 408,544.07	\$ 106,452.00	\$ 655,977.93

#1 - Ag Practices \$118,722.00 Budget | \$ 24,263.35 Request/Actual

Planning Region(s): Rabbit River & Lake Traverse BdS River

Locations: PTMApp and best professional judgement

Funding Priority: Filtration, storage, or protection practices within directly contributing catchments to TCD #52, JD #6, any laterals, or private systems.

Description: 19 filtration practices and
1 storage practice or protection practice

Planning Region Outcomes: Progress towards ST & LT Goals will depend on where the practices are located
Reductions: 16.3 tons/yr sediment; 11.6 lbs/yr TP; 6 ac-ft storage
1.45% - 7.24% of short-term sediment goal | 0.06% - 0.27% of long-term
0.24% - 0.49% of short-term storage goal | 0.04% - 0.31% of long-term
3.63% - 6.11% of short-term phosphorous goal | 0.01% - 0.06% of long-term

#5 - Non-Structural Management Practices Rabbit River \$33,000.00 Budget | Combined below w/#5

Planning Region(s): Rabbit River

Locations: PTMApp and best professional judgement

Funding Priority: Filtration, storage, or protection practices within directly contributing catchments to TCD #52, JD #6, any laterals, or private systems.

Description: 335 acres targeted for tillage reduction practices and cover crop utilization with 3-Year contract

Planning Region Outcomes: Reductions: 479 tons/yr sediment; 47 ac-ft storage; 47 lbs/yr TP
47.99% of short-term soil health goal | 0.73% of long-term
209.73% of short-term sediment goal | 7.87% of long-term
1.82% of short-term altered hydrology goal | 0.130 of long-term
24.32% of short-term nutrient loading goal | 0.23% of long-term

91 ACRES

**OTHER PLANNING REG:
114 ACRES LOWER MUSTINKA**

#5 - Non-Structural Management Practices Lake Traverse & BdS River \$67,000.00 Budget | \$ 47,559.95 Request/Actual

Planning Region(s): Lake Traverse & BdS River

Locations: PTMApp and best professional judgement

Funding Priority: Filtration, storage, or protection practices within directly contributing catchments to TCD #52, JD #6, any laterals, or private systems.

Description: 165 acres targeted for tillage reduction practices and cover crop utilization with 3-Year contract

Planning Region Outcomes: Reductions: 236 tons/yr sediment; 23 ac-ft storage; 23 lbs/yr TP
48.10% of short-term soil health goal | 0.54% of long-term
20.97% of short-term sediment goal | 0.88% of long-term
1.87% of short-term altered hydrology goal | 1.21% of long-term
7.22% of short-term nutrient loading goal | 0.03% of long-term

293 ACRES

#11 - Well Sealing \$800.00 Budget | \$ 800.00 Request/Actual

Planning Region(s): Any

Locations: PTMApp and best professional judgement

Planning Region Outcomes: 8.33% of yearly goal

2 WELLS

#7 - Project Development		\$194,000.00	\$ 53,335.59	Request/Actual
Planning Region(s):	Rabbit River & Lake Traverse			
Location:	Areas of ongoing BdSWD capital improvement projects			
Description:	Project development = landowner meetings, project mailings, identifying priority projects, early coordination with permitting agencies, developing agreements/contracts			
Planning Region(s):	50% of funds for project identification, promotion, and landowner outreach			
Outcomes:	50% of funds for education and contracting			
	75% of landowners/producers in Rabbit River & Lake Traverse targeted			
	5% of landowners/producers contacted in other planning regions			
	Focus: 50 landowner contacts to enroll 500 acres in non-structural practices			

#3 - Doran Creek Project Development		\$115,000.00	Budget \$ 115,000.00	Request/Actual
Planning Region(s):	Lake Traverse & BdS River			
Location:	Doran Creek			DONE
Description:	Project development			
Outcomes:	Channel design and regulatory coordination Outreach to landowners Eventual goal reductions: sediment, unstable channels, altered hydrology, nutrient loading and reductions for existing load for sediment and nutrients to Bois de Sioux River (-501)			

#2 - JD #6 Multipurpose Drainage Management Retrofit BMP Construction		\$148,000.00	Budget \$ 148,000.00	Request/Actual
Planning Region(s):	Rabbit River			
Location:	JD #6, 6.1 miles			DONE
Description:	25% Match Added to Existing 50% Grant			
Planning Region(s):	384 tons/yr sediment reduction			
Outcomes:	417 lbs/yr phosphorous reduction			
	170.67% of short-term sediment goal 6.40% of long-term			
	219.47% of short-term nutrient loading goal 2.12% of long-term			
	8.13% of ditch inadequacy goal 1.05% of long-term			
	8.13% of ditch instability goal 1.05% of long-term			
	5% of sediment reduction of existing load for Priority Resource Rabbit River (-512)			
	4% of nutrient reduction of existing load for Priority Resource Rabbit River (-512)			

#8 - Lake Traverse Water Quality Improvement Project Installation/Construction		\$325,000.00	Budget \$ -	Request/Actual
Planning Region(s):	Rabbit River			
Location:	Eroding Natural Drainageway & TCD #52			
Description:	25% Match Added to Existing 50% Grant			
Planning Region(s):	450 tons/yr sediment reduction (Phase 2 only)			
Outcomes:	113 lbs/yr phosphorous reduction (Phase 2 only)			
	40% of short-term sediment goal 1.68% of long-term sediment goal (all 3 phases)			
	35.31% of short-term nutrient loading goal 0.12% of long-term nutrient loading goal			

<u>Admin & Technical Costs</u>	<u>\$76,000.00</u>	<u>Budget</u>	<u> </u>	<u>\$</u>	<u>19,585.18</u>	<u>Request/Actual</u>
#4 - Grant and Meeting Coordination	\$25,000.00			\$	10,026.70	
#6 - Progress Tracking & Evaluation	\$10,000.00			\$	4,650.00	
#10 - Technical & Engineering Assistance	\$41,000.00			\$	4,908.48	

WATERSHED BASED IMPLEMENTATION FUNDS

Actual/Paid Expenses Only

2021 - 2023

Actual Expenses Only
(Encumbrances/Requests Not Included)

Partner LGU	#1 - Ag Practices			#5 - Non-Structural Mgmt Practices			#7 - Project Development			#10 - Technical/Engineering			Totals			
	Budget	Expenses	Balance	Budget	Expenses	Balance	Budget	Expenses	Balance	Budget	Expenses	Balance	Budget	Expenses	Match	Balance
Big Stone SWCD							\$ 17,460.00	\$ 196.00	\$ 17,264.00				\$ 17,460.00	\$ 196.00	\$ -	\$ 17,264.00
Grant SWCD							\$ 48,500.00	\$ 15,861.84	\$ 32,638.16				\$ 48,500.00	\$ 15,861.84	\$ -	\$ 32,638.16
Otter Tail SWCD				\$ 6,000.00	\$ -	\$ 6,000.00	\$ 23,280.00	\$ 11,930.05	\$ 11,349.95				\$ 29,280.00	\$ 11,930.05	\$ -	\$ 17,349.95
Stevens SWCD							\$ 25,220.00	\$ 196.00	\$ 25,024.00				\$ 25,220.00	\$ 196.00	\$ -	\$ 25,024.00
Traverse SWCD				\$ 45,000.00	\$ 13,672.00	\$ 31,328.00	\$ 52,380.00	\$ 9,500.30	\$ 42,879.70				\$ 97,380.00	\$ 23,172.30	\$ -	\$ 74,207.70
Wilkin SWCD	\$ 65,000.00	\$ -	\$ 65,000.00	\$ 36,000.00	\$ 11,999.95	\$ 24,000.05	\$ 27,160.00	\$ 13,791.40	\$ 13,368.60	\$ 13,000.00	\$ -	\$ 13,000.00	\$ 141,160.00	\$ 25,791.35	\$ -	\$ 115,368.65
Unallocated	\$ 53,722.00	\$ -	\$ 53,722.00							\$ 28,000.00	\$ 4,908.48	\$ 23,091.52	\$ 81,722.00	\$ 4,908.48	\$ -	\$ 76,813.52
Totals	\$ 118,722.00	\$ -	\$ 118,722.00	\$ 87,000.00	\$ 25,671.95	\$ 61,328.05	\$ 194,000.00	\$ 51,475.59	\$ 142,524.41	\$ 41,000.00	\$ 4,908.48	\$ 36,091.52	\$ 440,722.00	\$ 82,056.02	\$ -	\$ 358,665.98

BDSWD

#11 - Well Sealing (Unallocated)		\$ 800.00	\$ 800.00	\$ -	\$ -
#2 - BMP Construction JD #6 (BdSWD)		\$ 148,000.00	\$ 148,000.00	\$ -	\$ -
#3 - Project Development Doran Creek (BdSWD)		\$ 115,000.00	\$ 115,000.00	\$ -	\$ -
#8 - Project Installation/Construction LTWQIP (BdSWD)		\$ 325,000.00	\$ -	\$ -	\$ 325,000.00
#9 - Project Installation/Construction Match LTWQIP (BdSWD)		\$ 106,452.00	\$ -	\$ 106,452.00	\$ -
#4 - Administration (BdSWD)	\$ 339,973.30	\$ 25,000.00	\$ 10,026.70	\$ -	\$ 14,973.30
#6 - Progress Tracking/Evaluation (Unallocated)	0.290333773	\$ 10,000.00	\$ 2,750.00	\$ -	\$ 7,250.00
Total WBIF		\$ 1,170,974.00	\$ 358,632.72	\$ 106,452.00	\$ 705,889.28

WATERSHED BASED IMPLEMENTATION FUNDS

Disbursements Report

2021 - 2023

WBIF 01-01	\$ 21,824.84	BDSWD	DC, Admin, PD, T&E
WBIF 01-02	\$ 47,133.05	BDSWD	JD6, DC, Admin, T&E
WBIF 01-03	\$ 2,575.26	GRANT SWCD	PD, TA
WBIF 01-04	\$ 180,814.37	BDSWD	PD, JD6, DC, Admin
WBIF 01-05	\$ 800.00	TRAVERSE SWCD	Wells
WBIF 01-06	\$ 3,624.84	WEST OTTER TAIL SWCD	PD
WBIF 01-07	\$ 25,595.35	WILKIN SWCD	PD, Cover Crops/NS
WBIF 01-08	\$ 26,417.42	BDSWD	DC, Admin, T&E
WBIF 01-09	\$ 8,109.21	WEST OTTER TAIL SWCD	PD
WBIF 01-10	\$ 11,197.24	GRANT SWCD	PD, TA
WBIF 01-11	\$ 13,672.00	TRAVERSE SWCD	Cover Crops/NS
WBIF 01-12	\$ 6,024.30	TRAVERSE SWCD	PD
WBIF 01-13	\$ 4,043.02	BDSWD	Admin, T&E
WBIF 01-14	\$ 6,801.02	GRANT SWCD	PD

California went big on rooftop solar. Now that's a problem for landfills

Rachel Kisela

Thu, July 14, 2022 at 7:00 AM · 10 min read

Solar panels purchased for home use under incentive programs many years ago are nearing the end of their life cycle. Many are already winding up in landfills. (Jim Cooke / Los Angeles Times)

California has been a pioneer in pushing for rooftop solar power, building up the [largest](#) solar market in the U.S. More than 20 years and [1.3 million rooftops later](#), the bill is coming due.

Beginning in 2006, the state, focused on how to incentivize people to take up solar power, showered subsidies on homeowners who installed photovoltaic panels but had no comprehensive plan to dispose of them. Now, panels purchased under those programs are nearing the end of their typical 25-to-30-year life cycle.

Many are already winding up in landfills, where in some cases, they could potentially contaminate groundwater with toxic heavy metals such as lead, selenium and cadmium.

Sam Vanderhoof, a solar industry expert and chief executive of Recycle PV Solar, says that only 1 in 10 panels are actually recycled, according to estimates drawn from International Renewable Energy Agency data on decommissioned panels and from industry leaders.

The looming challenge over how to handle truckloads of waste, some of it contaminated, illustrates how cutting-edge environmental policy can create unforeseen problems down the road.

“The industry is supposed to be green,” Vanderhoof said. “But in reality, it’s all about the money.”

California came early to solar power. Small governmental rebates did little to bring down the price of solar panels or to encourage their adoption [until 2006](#), when the California Public Utilities Commission formed the California Solar Initiative. That granted \$3.3 billion in subsidies for installing solar panels on rooftops.

The measure exceeded its goals, bringing down the price of solar panels and boosting the share of the state's electricity produced by the sun. Because of that and other measures, such as requirements that utilities buy a portion of their electricity from renewable sources, solar power now [accounts](#) for 15% of the state's power.

But as California barreled ahead on its renewable-energy program, focusing on rebates and — more recently — a proposed solar tax, questions about how to handle the waste that would accrue years later were never fully addressed. Now, both regulators and panel manufacturers are realizing that they don't have the capacity to handle what comes next.

“This trash is probably going to arrive sooner than we expected and it is going to be a huge amount of waste,” said Serasu Duran, an assistant professor at the University of Calgary's Haskayne School of Business in Canada. “But while all the focus has been on building this renewable capacity, not much consideration has been put on the end of life of these technologies.”

Duran co-wrote a recent article in the Harvard Business Review that noted the industry's “capacity is woefully unprepared for the deluge of waste that is likely to come.”

It's not just a problem in California but also nationwide. A new solar project was installed every 60 seconds in 2021, according to a fact sheet published by the Solar Energy Industries Assn., and the solar industry is expected to [quadruple](#) in size between 2020 and 2030.

Although [80%](#) of a typical photovoltaic panel is made of recyclable materials, disassembling them and recovering the glass, silver and silicon is extremely difficult.

“There's no doubt that there will be an increase in the solar panels entering the waste stream in the next decade or so,” said AJ Orben, vice president of [We Recycle Solar](#), a Phoenix-based company that breaks down panels and extracts the valuable metals while disposing of toxic elements. “That's never been a question.”

The vast majority of We Recycle Solar's business comes from California, but the company has no facilities in the state. Instead, the panels are trucked to a site in Yuma, Ariz. That's because California's rigorous permitting system for toxic materials makes it exceedingly difficult to set up shop, Orben said.

Recycling solar panels isn't a simple process. Highly specialized equipment and workers are needed to separate the aluminum frame and junction box from the panel without shattering it into glass shards.

Specialized [furnaces](#) are used to heat panels to recover silicon. In most states, panels are classified as hazardous materials, which require [expensive](#) restrictions on packaging, transport and storage. (The vast majority of residential solar arrays in the U.S. are crystalline silicon panels, which can contain lead, although it's less prevalent in newer panels. Thin-film solar panels, which contain cadmium and selenium, are primarily used in utility-grade applications.)

Orben said the economics of the process don't make a compelling case for recycling.

Only about \$2 to \$4 worth of materials are recovered from each panel. The majority of processing costs are tied to labor, and Orben said even recycling panels at scale would [not](#) be more economical.

Most research on photovoltaic panels is focused on recovering solar-grade silicon to make recycling economically viable.

That skews the economic incentives against recycling. The National Renewable Energy Laboratory estimated that it costs roughly \$20 to \$30 to recycle a panel versus \$1 to \$2 to send it to a landfill.

Most experts assume that is where the majority of panels are ending up right now. But it's anyone's guess. Natalie Click, a doctoral candidate in materials science at the University of Arizona, said there is no uniform system "for tracking where all of these decommissioned panels are going."

The California Department of Toxic Substances collected its first data on panels recycled by universal waste handlers in 2021. For handlers that accepted more than 200 pounds or generated more than 10,000 pounds of panels, the DTSC counted 335 panels accepted for recycling, said Sanford Nax, a spokesman for the agency.

The department expects the number of installed solar panels in the next decade to exceed hundreds of millions in California alone, and that recycling will become even more crucial as cheaper panels with shorter life spans become more popular.

A lack of consumer awareness about the toxicity of materials in some panels and how to dispose of them is part of the problem, experts said.

"There's an informational gap, there's a technological gap, and there's a financial gap that we're working on," said Amanda Bybee, co-founder of

SolarRecycle.org, a website aimed at helping people understand how to recycle solar panels and how the process works.

Last year, new DTSC regulation came into effect that [reclassified the panels, changing](#) the way they can be collected and transported.

Previously, all panels were required to be treated as hazardous waste upon removal, which restricted transportation and storage.

Both business and residential consumers, or generators as they are called in the recycling industry, were supposed to transport the panels themselves to certified recycling or hazardous waste disposal facilities. With little tracking, it's unclear how frequently that occurred.

Solar panels are now classified as universal waste and can be collected at more than 400 universal waste handlers in California, where they are then assessed and transported to disposal, reuse or recycle facilities. Above, solar panels are installed on a roof. (Irfan Khan / Los Angeles Times)

Now, panels are classified as universal waste and can be collected at more than 400 universal waste handlers in California, where they are then assessed and transported to disposal, reuse or recycle facilities. (In cases where panels containing toxic materials are relegated to landfills, they are sent to facilities with extra safeguards against leakage.) The new regulations were intended to make it easier for people to turn in their panels, but it does not directly address the next step — recycling.

“What that [rule] does is really just changes how that material is handled, managed, stored, and transported,” said Orben of We Recycle Solar. “It doesn't change how that material is actually processed.”

In 2016, the Solar Energy Industries Assn., a nonprofit trade association for the U.S. solar industry, started a recycling program for panels. Robert Nicholson, the manager of PV Recycling at the association, said it aims to help the industry group's recycling partners — five so far — “develop compliant, cost-effective recycling services for end-of-life modules.”

“The majority of recyclers are already existing recyclers; they're primarily doing e-waste or they're doing glass,” said Evelyn Butler, the association's vice president of technical services. “So we have had to work with them to kind of take that leap, to say: ‘We believe that the processes you're using can accommodate the technology.’” The association also works with regulators to draft legislation that decreases the number of panels heading to landfills.

Government subsidies are one way to make solar panel recycling economically viable for the waste generators, who now bear much of the cost of recycling.

In Europe, a recently enacted regulation called the European Union Waste of Electrical and Electronic Equipment Directive places responsibility on producers for supporting their products through responsible end-of-life disposal. It requires all producers that manufacture panels for countries in the EU to finance end-of-life collection and recycling.

Similar legislation has been attempted in several U.S. states, including Washington, where the Photovoltaic Module Stewardship and Takeback Program will require solar panel manufacturers to finance end-of-life recycling. The initiative was passed in 2017 and will begin implementation in 2025. It's the [only](#) producer-responsibility law in the United States.

It's part of a larger strategy in the recycling industry [called](#) extended producer responsibility, in which the cost of recycling is built into the cost of a product at its initial purchase. Business entities in the product chain — rather than the general public — become responsible for end-of-life costs, including recycling costs.

In a 2020 [interview with PV Magazine](#), Jigar Shah, co-founder of Generate Capital, a fund that invests in sustainable infrastructure, said the problem can be addressed at the very start of the product chain — by manufacturers. Shah, who is now director of the Department of Energy's Loan Programs Office, said that policymakers need to require manufacturers to come up with a standard design that makes panels easier and cheaper to recycle.

“It's far more cost-effective for manufacturers to be forced to work together ... where they try to greatly reduce the cost of all that collectively. That happens through policy,” he said. “It doesn't happen through people opting in.”

Although 80% of a typical photovoltaic panel is made of recyclable materials, disassembling a panel and recovering the glass, silver and silicon is extremely difficult. (Jim Cooke / Los Angeles Times)

In April 2022, Santa Monica concluded a solar panel recycling pilot [program](#) in partnership with the California Product Stewardship Council, a public-private partnership. The stewardship council surveyed local residential solar owners and found that many, at a loss for what to do with end-of-life panels, called up installers for help.

“We did find that the solar installers were the best contact for us to learn about how many decommissioned panels were in our region,” said Drew Johnstone, a sustainability analyst for Santa Monica. “Some contractors did end up just having to pile them in their warehouses, because there’s no good solution for where to bring them.”

Johnstone says the universal waste reclassification has made a big difference, cutting down on cost and paperwork needed for handling modules, and more handlers can accept the panels from generators.

“It’s going to be a really large issue in a number of years,” Johnstone said. “So it would behoove local governments, county, state, and it can go federal too, to have a plan in place for all these panels that will reach their end of life in 10 to 15 years.”

Kisela is a special correspondent.

For the record:

7:13 p.m. July 15, 2022: *An earlier version of this article mischaracterized the environmental risk posed by heavy metals in consumer photovoltaic arrays. This story has been edited to clarify that panels containing toxic materials are routed for disposal to landfills with extra safeguards against leakage, and to note that panels that contain cadmium and selenium are primarily used in utility-grade applications.*

An earlier version of this article also misattributed a statement by Evelyn Butler, vice president of technical services at the Solar Energy Industries Assn., to Jen Bristol, the group’s senior director of communications. It also misidentified the group as the Solar Energy Industry Assn.

An earlier version of this article also failed to properly attribute quotes by Jigar Shah, director of the Department of Energy’s Loan Programs Office, to their source, a 2020 interview with PV Magazine. The article has also been updated to reflect Shah’s current professional affiliation as well as that of Sam Vanderhoof.

An earlier version of this article also stated that 25 years was the life cycle of photovoltaic panels; the text has been updated to reflect that 25 to 30 years is the typical service life but not a fixed limit. Additionally, in a discussion of transporting photovoltaic panels to recycling or hazardous waste disposal facilities, the word “cells” has been changed to “panels” for accuracy.

This story originally appeared in [Los Angeles Times](#).

If Solar Panels Are So Clean, Why Do They Produce So Much Toxic Waste?

Michael Shellenberger

Contributor

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May 23, 2018, 12:28pm EDT

This article is more than 4 years old.

- The problem of solar panel disposal “will explode with full force in two or three decades and wreck the environment” because it “is a huge amount of waste and they are not easy to recycle.”
- “The reality is that there is a problem now, and it’s only going to get larger, expanding as rapidly as the PV industry expanded 10 years ago.”
- “Contrary to previous assumptions, pollutants such as lead or carcinogenic cadmium can be almost completely washed out of the fragments of solar modules over a period of several months, for example by rainwater.”



Bell Labs, 1954. Solar Panel Waste, 2014

The last few years have seen growing concern over what happens to solar panels at the end of their life. Consider the following statements:

PROMOTED

- The problem of solar panel disposal “will explode with full force in two or three decades and wreck the environment” because it “is a huge amount of waste and they are not easy to recycle.”

- “The reality is that there is a problem now, and it’s only going to get larger, expanding as rapidly as the PV industry expanded 10 years ago.”
- “Contrary to previous assumptions, pollutants such as lead or carcinogenic cadmium can be almost completely washed out of the fragments of solar modules over a period of several months, for example by rainwater.”

Were these statements made by the right-wing Heritage Foundation? Koch-funded global warming deniers? The editorial board of the *Wall Street Journal*?

None of the above. Rather, the quotes come from [a senior Chinese solar official](#), [a 40-year veteran of the U.S. solar industry](#), and [research scientists](#) with the German Stuttgart Institute for Photovoltaics.

With few environmental journalists willing to report on much of anything other than the good news about renewables, it’s been left to environmental scientists and solar industry leaders to raise the alarm.

“I’ve been working in solar since 1976 and that’s part of my guilt,” the veteran [solar developer](#) told *Solar Power World* last year. “I’ve been involved with millions of solar panels going into the field, and now they’re getting old.”

The Trouble With Solar Waste

The International Renewable Energy Agency (IRENA) in 2016 estimated there was about 250,000 metric tonnes of solar panel waste in the world at the end of that year. [IRENA projected](#) that this amount could reach 78 *million* metric tonnes by 2050.

Solar panels often contain lead, cadmium, and other toxic chemicals that cannot be removed without breaking apart the entire panel. “Approximately 90% of most PV modules are made up of glass,” [notes](#) San Jose State environmental studies professor Dustin Mulvaney. “However, this glass often cannot be recycled as float glass due to impurities. Common problematic impurities in glass include plastics, lead, cadmium and antimony.”

Researchers with the Electric Power Research Institute (EPRI) [undertook a study](#) for U.S. solar-owning utilities to plan for end-of-life and concluded that solar panel “disposal in “regular landfills [is] not recommended in case modules break and toxic materials leach into the soil” and so “disposal is potentially a major issue.”

California is in the process of [determining how to divert solar panels](#) from landfills, which is where they currently go, at the end of their life.

California's Department of Toxic Substances Control (DTSC), which is implementing the new regulations, [held a meeting last August](#) with solar and waste industry representatives to discuss how to deal with the issue of solar waste. At the meeting, the representatives from industry and DTSC all acknowledged how difficult it would be to test to determine whether a solar panel being removed would be classified as hazardous waste or not.

The DTSC described building a database where solar panels and their toxicity could be tracked by their model numbers, but it's not clear DTSC will do this.

"The theory behind the regulations is to make [disposal] less burdensome," explained Rick Brausch of DTSC. "Putting it as universal waste eliminates the testing requirement."

The fact that cadmium can be washed out of solar modules by rainwater is increasingly a concern for local environmentalists like the Concerned Citizens of Fawn Lake in Virginia, where a [6,350 acre solar farm](#) to partly power [Microsoft data centers](#) is being proposed.

“We estimate there are 100,000 pounds of cadmium contained in the 1.8 million panels,” Sean Fogarty of the group told me. “Leaching from broken panels damaged during natural events — hail storms, tornadoes, hurricanes, earthquakes, etc. — and at decommissioning is a big concern.”

There is real-world precedent for this concern. A tornado in 2015 broke 200,000 solar modules at southern California solar farm Desert Sunlight.

"Any modules that were broken into small bits of glass had to be swept from the ground," Mulvaney explained, "so lots of rocks and dirt got mixed in that would not work in recycling plants that are designed to take modules. These were the cadmium-based modules that failed [hazardous] waste tests, so were treated at a [hazardous] waste facility. But about 70 percent of the modules were actually sent to recycling, and the recycled metals are in new panels today."

And when Hurricane Maria hit Puerto Rico last September, the nation's second largest solar farm, responsible for 40 percent of the island's solar energy, [lost a majority of its panels](#).



Destroys Solar Farm in Puerto Rico

Many experts urge mandatory recycling. The main finding promoted by IRENA's in its [2016 report](#) was that, "If fully injected back into the economy, the value of the recovered material [from used solar panels] could exceed USD 15 billion by 2050."

But IRENA's study did not compare the value of recovered material to the cost of new materials and admitted that "Recent studies agree that PV material availability is not a major concern in the near term, but critical materials might impose limitations in the long term."

They might, but today recycling costs more than the economic value of the materials recovered, which is why most solar panels end up in landfills. “The absence of valuable metals/materials produces economic losses,” [wrote a team of scientists in the *International Journal of Photoenergy* in their study of solar panel recycling last year](#), and “Results are coherent with the literature.”

Chinese and Japanese experts agree. “If a recycling plant carries out every step by the book,” a Chinese expert told [The South China Morning Post](#), “their products can end up being more expensive than new raw materials.”

Toshiba Environmental Solutions [told Nikkei Asian Review last year](#) that,

Low demand for scrap and the high cost of employing workers to disassemble the aluminum frames and other components will make it difficult to create a profitable business unless recycling companies can charge several times more than the target set by [Japan’s environment ministry].

Can Solar Producers Take Responsibility?

In 2012, First Solar [stopped putting a share of its revenues](#) into a fund for long-term waste management. “Customers have the option to use our services when the panels get to the end of life stage,” a spokesperson told *Solar Power World*. “We’ll do the recycling, and they’ll pay the price at that time.”

Or they won’t. “Either it becomes economical or it gets mandated. ” [said EPRI’s Cara Libby](#). “But I’ve heard that it will have to be mandated because it won’t ever be economical.”

Last July, Washington became the first U.S. state to require manufacturers selling solar panels to have a plan to recycle. But the legislature did not require manufacturers to pay a fee for disposal. “Washington-based solar panel manufacturer Itek Energy assisted with the bill’s writing,” [noted Solar Power World](#).

The problem with putting the responsibility for recycling or long-term storage of solar panels on manufacturers, says [the insurance actuary Milliman](#), is that it increases the risk of more financial failures like the kinds that afflicted the solar industry over the last decade.

[A]ny mechanism that finances the cost of recycling PV modules with current revenues is not sustainable. This method raises the possibility of bankruptcy down the road by shifting today's greater burden of 'caused' costs into the future. When growth levels off then PV producers would face rapidly increasing recycling costs as a percentage of revenues.

[Since 2016](#), Sungevity, Beamreach, Verengo Solar, SunEdison, Yingli Green Energy, [Solar World](#), and [Suniva](#) have gone bankrupt.

The result of such bankruptcies is that the cost of managing or recycling PV waste will be born by the public. "In the event of company bankruptcies, PV module producers would no longer contribute to the recycling cost of their products," [notes](#) Milliman, "leaving governments to decide how to deal with cleanup."

Governments of poor and developing nations are often not equipped to deal with an influx of toxic solar waste, experts say. German researchers at the Stuttgart Institute for Photovoltaics [warned](#) that poor and developing nations are at higher risk of suffering the consequences.



Maharashtra, India, 2014

Dangers and hazards of toxins in photovoltaic modules appear particularly large in countries where there are no orderly waste management systems... Especially in less developed countries in the so-called global south, which are particularly predestined for the use of photovoltaics because of the high solar radiation, it seems highly problematic to use modules that contain pollutants.

The attitude of some solar recyclers in China appears to feed this concern. “A sales manager of a solar power recycling company,” the [South China Morning News](#) reported, “believes there could be a way to dispose of China’s solar junk, nonetheless.”

“We can sell them to Middle East... Our customers there make it very clear that they don’t want perfect or brand new panels. They just want them cheap... There, there is lots of land to install a large amount of panels to make up for their low performance. Everyone is happy with the result.”

In other words, there are firms that may advertise themselves as "solar panel recyclers" but instead sell panels to a secondary markets in nations with less developed waste disposal systems. In the past, communities living near electronic waste dumps in Ghana, Nigeria, Vietnam, Bangladesh, Pakistan, and India have been [primary e-waste destinations](#).

According to [a 2015 United Nations Environment Program \(UNEP\) report](#), somewhere between 60 and 90 percent of electronic waste is illegally traded and dumped in poor nations. Writes UNEP:

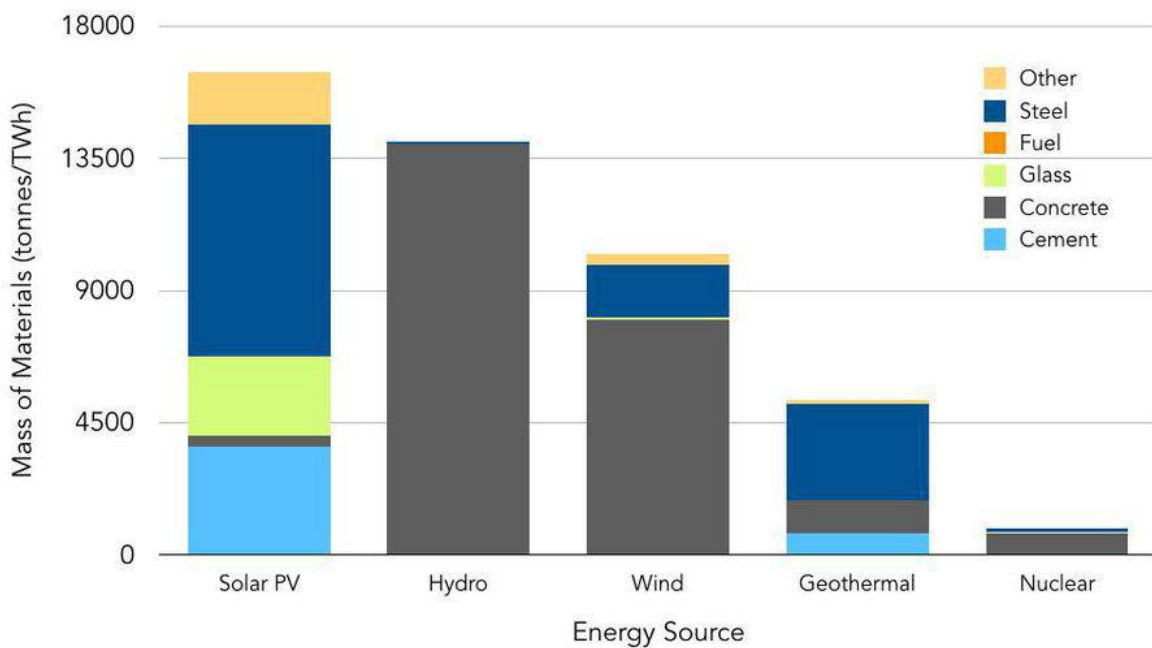
[T]housands of tonnes of e-waste are falsely declared as second-hand goods and exported from developed to developing countries, including waste batteries falsely described as plastic or mixed metal scrap, and cathode ray tubes and computer monitors declared as metal scrap.

Unlike other forms of imported e-waste, used solar panels can enter nations legally before eventually entering e-waste streams. [As the United Nation Environment Program notes](#), “loopholes in the current Waste Electrical and Electronic Equipment (WEEE) Directives allow the export of e-waste from developed to developing countries (70% of the collected WEEE ends up in unreported and largely unknown destinations).”

A Path Forward on Solar Panel Waste

Perhaps the biggest problem with solar panel waste is that there is so much of it, and that's not going to change any time soon, for a basic physical reason: [sunlight is dilute and diffuse](#) and thus require large collectors to capture and convert the sun's rays into electricity. Those large surface areas, in turn, require an order of magnitude more in materials — whether today's toxic combination of glass, heavy metals, and rare earth elements, or some new material in the future — than other energy sources.

Materials throughput by type of energy source



Sources: DOE Quadrennial Technology Review, Table 10.
Murray, R.L. and Holbert, K.E. 2015. Nuclear energy: an introduction to the concepts, systems, and applications of nuclear processes (7th ed.). Elsevier.

Solar requires 15x more materials than nuclear

All of that waste creates a large quantity of material to track, which in turn requires requires coordinated, overlapping, and different responses at the international, national, state, and local levels.

The local level is where action to dispose of electronic and toxic waste takes place, often under state mandates. In the past, differing state laws have motivated the U.S. Congress to put in place

national regulations. Industry often prefers to comply with a single national standard rather than multiple different state standards. And as the problem of the secondary market for solar shows, ultimately there needs to be some kind of international regulation.

The first step is a fee on solar panel purchases to make sure that the cost of safely removing, recycling or storing solar panel waste is internalized into the price of solar panels and not externalized onto future taxpayers. An obvious solution would be to impose a new fee on solar panels that would go into a federal disposal and decommissioning fund. The funds would then, in the future, be dispensed to state and local governments to pay for the removal and recycling or long-term storage of solar panel waste. The advantage of this fund over extended producer responsibility is that it would insure that solar panels are safely decommissioned, recycled, or stored over the long-term, even after solar manufacturers go bankrupt.

Second, the federal government should encourage citizen enforcement of laws to decommission, store, or recycle solar panels so that they do not end up in landfills. Currently, citizens have the right to file lawsuits against government agencies and corporations to force them to abide by various environmental laws, including ones that protect the public from toxic waste. Solar should be no different. Given the decentralized nature of solar energy production, and lack of technical expertise at the local level, it is especially important that the whole society be involved in protecting itself from exposure to dangerous toxins.

“We have a County and State approval process over the next couple months,” Fogarty of Concerned Citizens of Fawn Lake told me, “but it has become clear that local authorities have very little technical breadth to analyze the impacts of such a massive solar power plant.”

Lack of technical expertise can be a problem when solar developers like Sustainable Power Group, or sPower, [incorrectly claim](#) that the cadmium in its panels is not water soluble. That claim has been contradicted by the previously-mentioned Stuttgart [research scientists](#) who found cadmium from solar panels “can be almost completely washed out...over a period of several months...by rainwater.”

Third, the United Nations Environment Programme's [Global Partnership for Waste Management](#), as part of its [International Environmental Partnership Center](#), should more strictly monitor e-waste shipments and encourage nations importing used solar panels into secondary markets to impose a fee to cover the cost of recycling or long-term management. Such a recycling and waste management fund could help nations address their other e-waste problems while supporting the development of a new, high-tech industry in recycling solar panels.

None of this will come quickly, or easily, and some solar industry executives will resist internalizing the cost of safely storing, or recycling, solar panel waste, perhaps for understandable reasons. They will rightly note that there are other kinds of electronic waste in the world. But it is notable that some new forms of electronic waste, namely smartphones like the iPhone, have in many cases replaced things like stereo systems, GPS devices, and alarm clocks and thus reduced their contribution to the e-waste stream. And no other electronics industry makes being "clean" its main selling point.

Wise solar industry leaders can learn from the past and be proactive in seeking stricter regulation in accordance with growing scientific evidence that solar panels pose a risk of toxic chemical contamination. "If waste issues are not preemptively addressed," [warns Mulvaney](#), "the industry risks repeating the disastrous environmental mistakes of the electronics industry."

If the industry responds with foresight, Mulvaney notes, it could end up sparking clean innovation including "developing PV modules without hazardous inputs and recycled rare metals." And that's something everyone can get powered up about.

Six observations from six years of tile sampling for nitrates in southeast Minnesota

 blog-crop-news.extension.umn.edu/2022/07/six-observations-from-six-years-of-tile.html



By: Greg Klinger, assistant Extension educator, agricultural climate resilience

Since 2016, I've taken water samples from the outlets of tile lines draining fields across southeast Minnesota. The goal was to determine how much nitrate-nitrogen was leaching out of fields through drain tile. What started off as taking samples every two weeks from three field tiles in 2016 expanded to sampling 27 tiles biweekly by 2021. This project has yielded some interesting observations.

The sites

Most of the tile outlets (23 of 27) sampled drained fields that alternated between corn and soybeans every year. Of the other four sites, one had rotations that included corn/soybeans/grazed cool-season grasses/sweet corn, one (with just one year of sampling) was fallow after corn and soybeans, one was generally a multispecies hay mix (usually including clovers, alfalfa, grasses, and brassicas), and one rotated between corn, soybeans, and sweet corn. Only a few fields received manure applications during the sampling period. A couple other interesting aspects of the sampled sites were that a significant number of sites were strip- or no-tilled, and quite a few (nine of 23) of the corn/soybean fields were cover cropped for many or all of the studied years (spring 2016 through spring 2022).

Some observations

1. Sampled tiles often had nitrate concentrations that were lower than expected.

Figure 1 shows nitrate concentrations for the tiles sampled for this project. As a reference, the drinking water standard for nitrates is 10 milligrams per liter (mg/L). Above that level, water is not considered safe to drink, and isn't allowed to be used as a public water supply without treatment. Tile systems in this study were more often than not below this standard, which is good news. In many ways, it was surprising, though, as many studies and sources of data ([Purdue University](#), [Discovery Farms MN](#), [Minnesota Pollution Control Agency](#), [Minnesota Department of Agriculture](#)) would suggest that in a corn/soybean rotation (which is what most of the sampled sites were), nitrate concentrations of 15-20 mg/L is about average in tiles, although some other studies would peg that average slightly lower ([Iowa Soybean Association](#)). There are several reasons that might help explain why nitrate concentrations were so low- the wide use of cover crops (which have been shown to greatly lower nitrate losses) and the high prevalence of minimum/no-tillage (which has been shown to lower nitrate *concentrations*, if not total nitrate losses) come to mind. Another factor that likely comes into play is the high rainfall during the study time, which tends to lower the concentration of nitrates in drainage water. Lastly, there is some reason to suspect that not all the water coming into the tile system was coming from the drained field itself (more on this in observation #3 below)

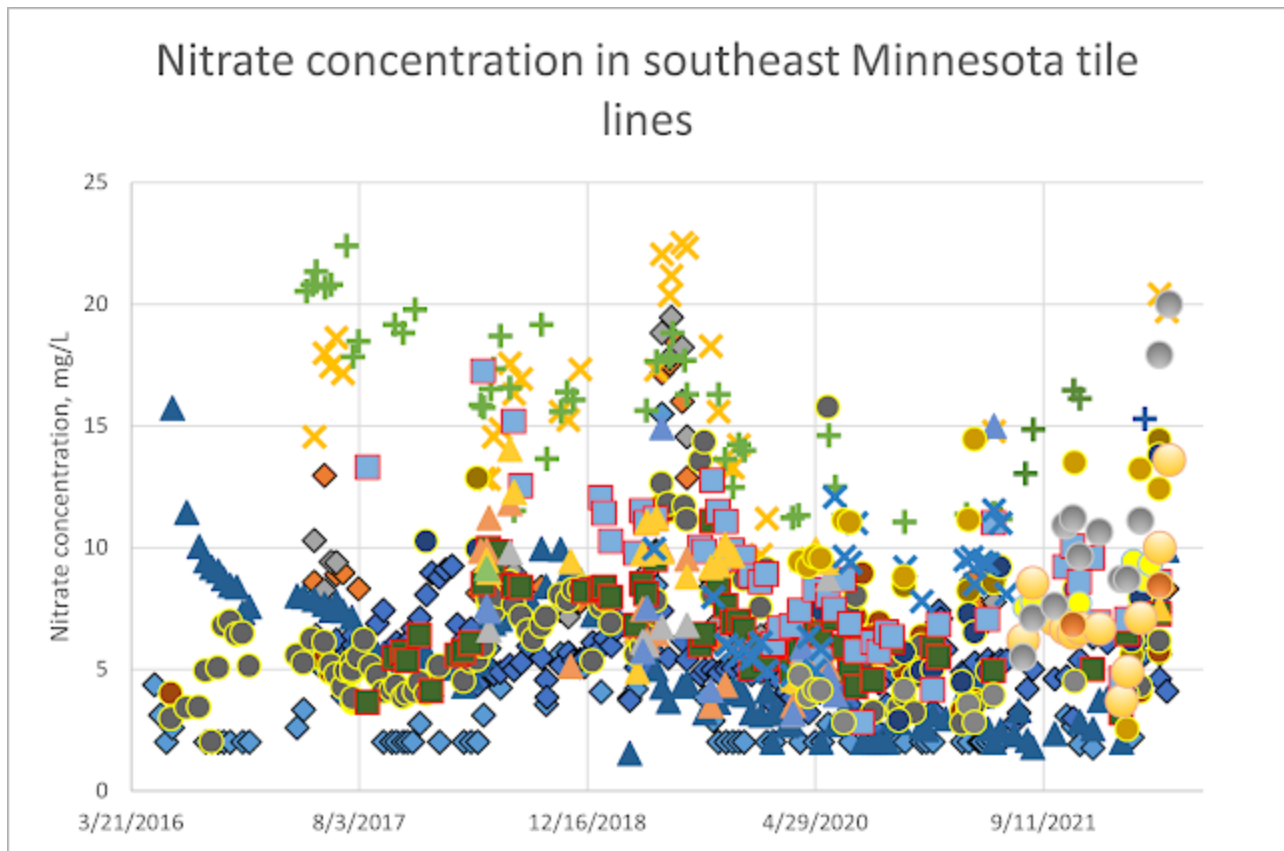


Figure 1. Nitrate concentrations for 27 southeast Minnesota tile lines over 6 years. Samples were collected ~biweekly, with exceptions during the winter of 2016, spring of 2020, and fall of 2021. While the amount of data in this graph can obscure some trends, I will note a few things. First, the majority of samples collected had nitrate concentrations lower than 10 mg/L, the drinking water standard. Second, there was a general trend of decreasing nitrate concentrations in tile lines from 2016 to 2020 (with one major exception being the spring of 2019), particularly at sites with higher overall nitrate concentrations. Nitrate concentrations appear to be rising since 2020. Neither the increasing nor decreasing trends appeared at every location. Nitrate concentrations represented as 2 mg/L on this graph may be lower than indicated, as that was the bottom end of detection for the method I used to get nitrate results.

2. Nitrate concentrations generally did not change rapidly over time.

They could fluctuate during and after rain events, and they tended to change somewhat across the growing season, but the main changes were across the years. *In general*, nitrate concentrations declined from 2016 to 2020, and appear to be increasing again since 2020. This is probably related to the high precipitation during 2016-2019 (which diluted nitrate concentrations in large volumes of tile flow) and the dry weather during the 2020 and 2021 growing seasons (which probably concentrated nitrates in the smaller volume of tile flow). These changes, however, were relatively minor. Based on flow measurements, overall nitrogen losses in tile were much higher in wet years than in dry, despite the lower concentrations. *The most consistent seasonal changes in nitrate concentration were the following:* A) an increase in nitrate concentrations during April and May and/or B) a gradual increase in nitrate concentration as flow rates declined over the growing season. Generally,

these changes in concentration were small (a few mg/L). *There were some intriguing exceptions to this general observation of small, gradual changes in concentration over time.* The most striking was during the spring of 2019, when a number of tile drains I was sampling suddenly had dramatic spikes in nitrate concentrations during late May (see **Figure 2**). *High nitrate losses through tile do not necessarily mean a field needed more nitrogen fertilizer than usual that year.* I make this comment not based specifically on the data from this project, but from on-farm nitrogen fertilizer trials I was involved with during the same time period. As an example, 2016 was a very high nitrate loss year in southeast Minnesota, but nitrogen research trials around the region generally showed that corn fields had relatively low needs for nitrogen fertilizer that year. We attributed this largely to the timing of nitrogen losses. Excessive rains (and nitrate leaching) occurred in July, August, and September of that year, while the spring had been normal-to-dry. Research has shown that high nitrogen losses in the early-to-mid season can reduce crop yields most. When losses occur later in the summer, high rates of nitrogen mineralization can generally compensate for high nitrogen losses due to excessive rains.

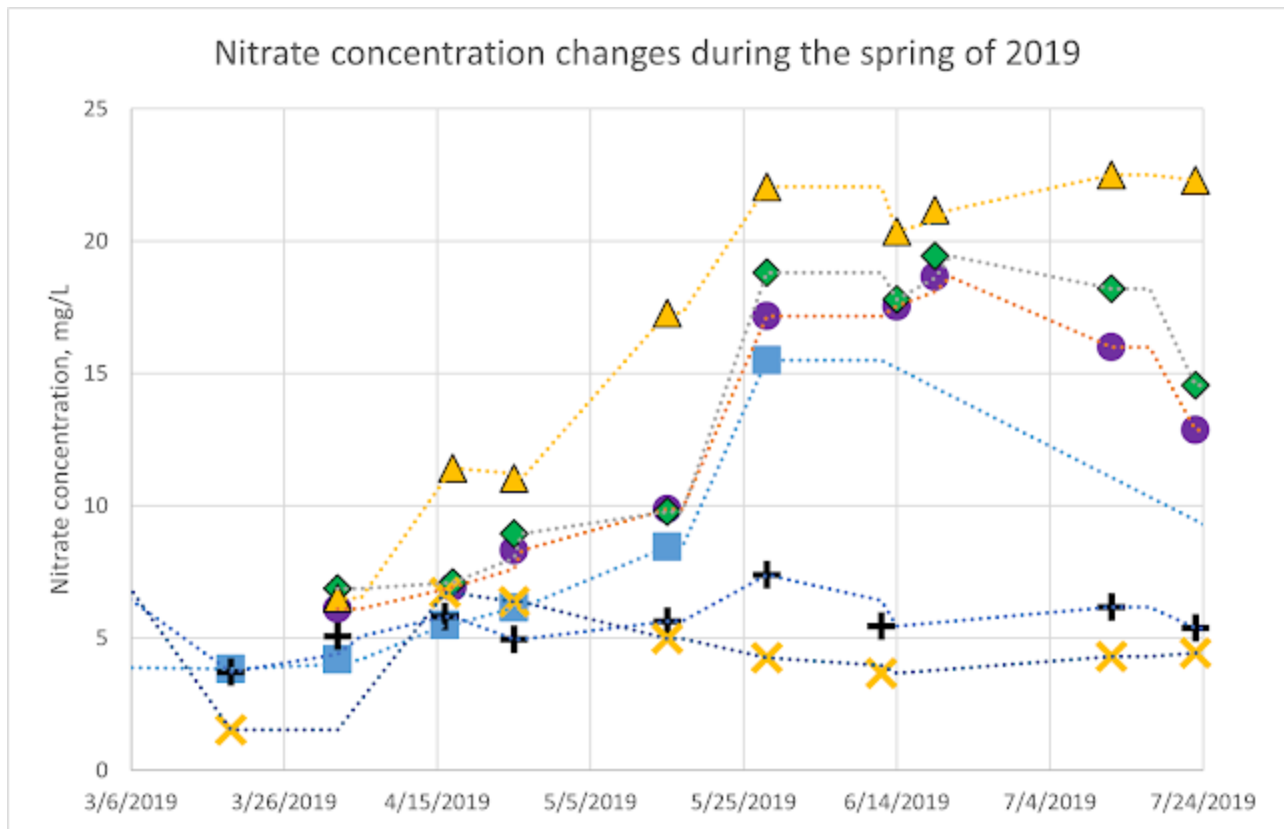


Figure 2. Nitrate concentrations during the spring of 2019 for a subset of tile sampling locations. All of these sites were close to one another (within 10 miles), and many exhibited a large rise in nitrate concentration during April and May (as much as 15 mg/L) that was otherwise never seen during the 6 year study period. I'll note that 2019 was the wettest year on record in the area (just west of Rochester) where these tiles were located. Also of interest is that, while all but one of these sites (the orange X's on the graph) were corn/soybean rotation, many normally had cover crops. The fall of 2018 was very wet and cold, with a delayed harvest that prevented most from being seeded with covers, and minimized cover crop growth in those that were seeded. Of the two locations that did not have large spikes in nitrate concentrations (black "pluses" and orange "X's"), the black pluses were from a field (discussed later) that is likely draining lots of water from outside the field boundary, and the orange X's were from a field that had September-harvested sweet corn and a well-established cover crop grown after it. Dotted lines connecting the sampling points are merely for visual clarity and do not represent any statistical trend analysis.

3. Flow rates and duration of tile flow can vary widely from drainage system to drainage system, even when tiled areas are similar in size.

Around 20% of the sites I sampled never or rarely stopped flowing, even during the 2021 drought. And while most sites showed a "typical" tile drainage pattern of flowing heavily during the spring and either tapering off or drying up during the summer, several sites flowed only sporadically- briefly during the spring or after significant rainfall events. In some cases tile systems appeared to be picking up water from outside of their drained area. In the most extreme example from this project, I took flow measurements for a specific 26-acre field for five years. This tile never stopped flowing during this time, and I measured an average flow of 1.73 gallons/second. If you accept that as its average flow rate during the five years, this tile drained a whopping 77.5 inches of water per year on average! That amounts to just over double the total precipitation average for this period of time. This field is directly downstream of a flood control reservoir, and is at the foot of some large upland areas, which leads me to believe groundwater from other sources is getting into the tile system.



Picture 1. Water continuing to flow out of a tile main on the second-coldest day of 2019.

4. There were greater winter flow rates than expected.

As I mentioned before, there were wide differences in the amount of water flowing through different tile systems. One thing that surprised me was how much winter tile flow I observed. *Generally, any tiles that were still flowing in late summer and autumn continued to flow all winter long, regardless of how cold the weather was or how deep the frost layer.* One of the more extreme examples comes from the winter of 2019. In late January, after a two-week period where average air temperatures were about -1°F , we had two days of deep freeze, where temperatures got down to near -40°F . On the second morning, I went out and checked several tiles. They were still flowing! (see **Picture 1**). Clearly, at least in southeast Minnesota, the paths water takes to get to these tile systems is somewhat shielded from weather conditions. The 2019 cold snap followed a wet fall, but a similar pattern of continual tile flow was observed during the coldest days of winter 2022, which followed a drought (the tiles that were flowing before the ground froze continued to flow all winter). **Figure 3** shows the breakdown of average flow rates from one tile during non-frozen conditions versus frozen ground times of year (these were approximated based on regional soil temperature data). While flow rates were higher during non-frozen seasons, the difference was less than I would have expected.

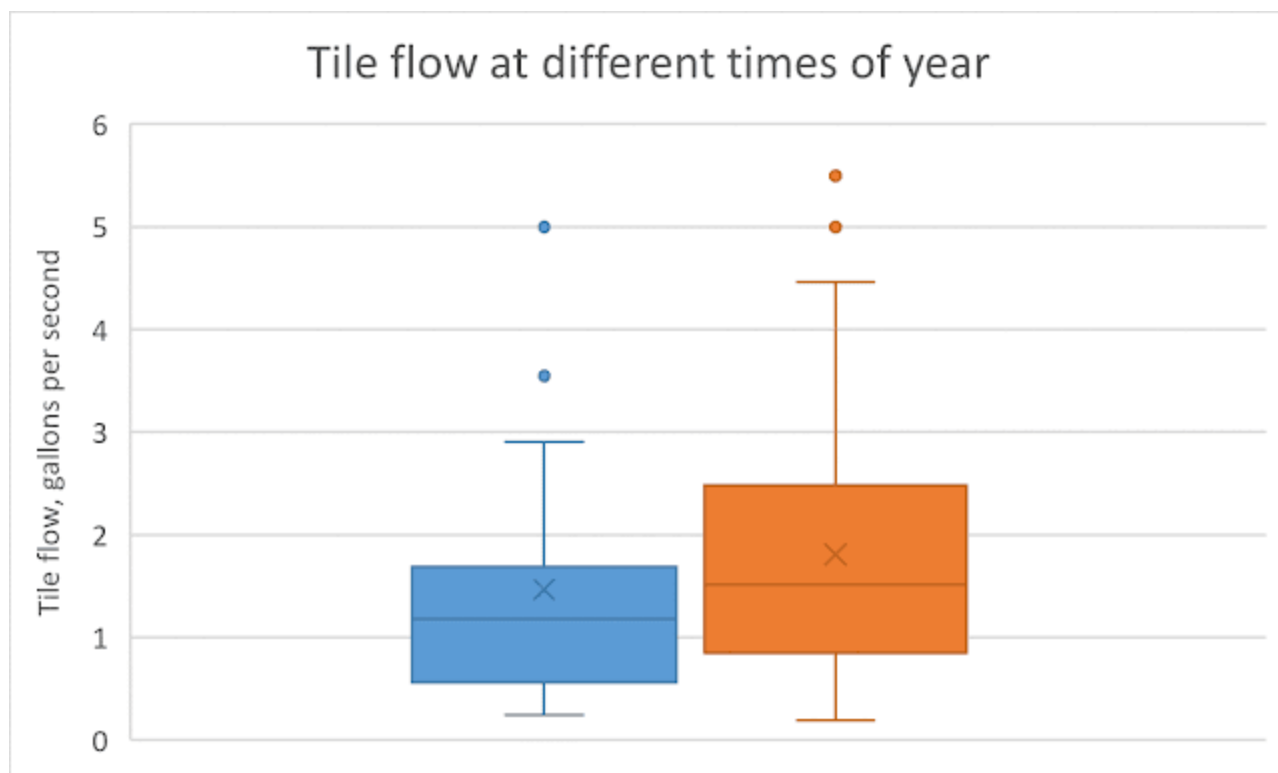


Figure 3. Tile flow at different times of year for one tile main, seen during the winter in Picture 1. The blue box and whisker shows the average, median, and range of tile flow during times of year when the ground was frozen during a 5 year period, while the orange box and whisker shows the same information during unfrozen conditions. While overall flows were higher during unfrozen conditions, the differences were less than expected between these two categories. It's worth noting that there were times where I could not obtain flow rate measurements (either because of too much ice accumulation during winter, or water being too high in the ditch). It's also worth noting that flows above ~5 gallon/second were less accurate than slower flows using my high-tech method of using a 5 gallon bucket and stopwatch to measure flow rate. Lastly, nitrate concentrations (not shown) were higher during frozen soil conditions, which further reduces the difference in overall nitrate losses between frozen and unfrozen conditions (since loss= flow times concentration).

5. Farm ponds can potentially remove a lot of nitrate from a tile system.

There was one farm I started taking limited samples from in July 2021 where two tiles entered a small (~1/10th acre) farm pond, which then flowed into a small creek (see **Picture 2**). I took water samples from the two tiles, as well as the pond outlet. During the height of summer, the flow into and out of the pond was slower, the water was warm, and there was a lot of vegetation in the pond, As seen in **Figure 4**, nitrate concentrations at the pond outlet were substantially lower (~ 70%) than in the tiles flowing into the pond during this time. This suggests that nitrate was being removed at high rates by the plants or microorganisms in the pond. This nitrate removal basically disappeared by late fall, when nitrate concentrations at the pond outlet were similar to concentrations at the tile outlets.



Picture 2. A small (~1/10th acre) farm pond that receives water from two tile systems (out of sight below the left-hand corner of the picture), and discharges water into a small stream on the far side of the pond (barely visible at the top of the picture as an area of rip-rap). This pond, despite its small size, had significant impacts on nitrate concentrations during ideal conditions for nitrate uptake/reduction.

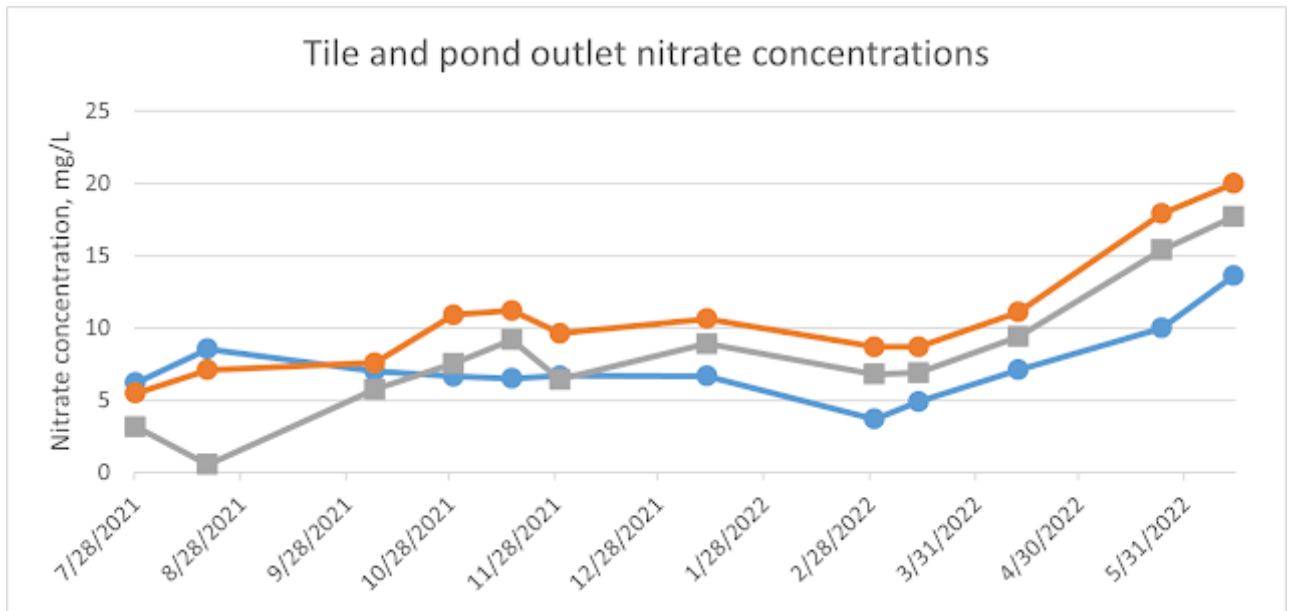


Figure 4. Nitrate concentrations in two tile outlets (orange and blue points/lines) that drain into a farm pond, as well as nitrate concentrations in the pond outlet (gray squares). For most of summer 2021, the reduction in nitrates at the pond outlet vs. the tile outlets was substantial, but during the fall, nitrate concentrations in the pond outlet appeared to revert to a largely unchanged mix of the tile water sources. During spring 2022, there hasn't appeared to be much nitrate reduction, and overall nitrate concentrations are rising substantially.

6. You can get fairly high-quality information, cheaply, about your average nitrate losses from these types of water samples.

Research from Discovery Farms Minnesota indicates that, for nitrate, sampling a tile every 2 weeks gives you similarly high quality data to expensive automated machines that conduct continuous flow monitoring. I would even go so far as to say that if you can grab a sample every month during the growing season, it can tell you a lot about your average field nitrate losses. There are also many places you can take water samples to get analyzed for nitrates. Many Soil and Water Conservation Districts have access to equipment for analyzing nitrates in water samples; and the Minnesota Agricultural Water Resources Center and other farm organizations occasionally put on events where they do this sort of analysis for farmers. If you prefer, there are also many relatively cheap options you can purchase for your own use (from test strips to handheld devices) that may give you good estimates of your tile's nitrate concentrations. While weather conditions and questions about where the water in a tile system is originating can complicate the interpretation of the nitrate data you get, they can help serve as a valuable benchmark. And you might be pleasantly surprised by what you find.

A sincere "thank you" to every farmer and landowner who participated in this project, as well as the Southeast Minnesota Water Analysis Laboratory and Fillmore Soil and Water Conservation District for access to equipment to conduct water analysis on. Lastly, thank you to the Minnesota Department of Agriculture for providing the sample analysis equipment to the labs.

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