elm creek
Watershed Management Commission

ADMINISTRATIVE OFFICE
3235 Fernbrook Lane
Plymouth, MN 55447
PH: 763.553.1144
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Email: judie@jass.biz
www.elmcreekwatershed.org

TECHNICAL OFFICE
Hennepin County
Dept. of Environment and Energy
701 Fourth Ave S Suite 700
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AGENDA
March 8, 2017
REVISED

1. Call Regular Meeting to Order.
   a. Approve Agenda.*
2. Consent Agenda.
   a. Minutes last Meeting.*
   b. Treasurer's Report and Claims.**
      1) Motion to encumber remaining funds in 2016 Studies/Project ID/SWA account totaling $28,515.80.
3. Open Forum.
4. Action Items.
   a. Project Reviews – *also see Staff Report.**
   b. 2017 Draft Work Plan.*
      a. 2016 Final Work Plan.*
   c. Select CAMP sites for 2017. *Cowley and Jubert were monitored in 2016. Two lakes are budgeted for in 2017.*
5. Watershed Management Plan.
   a. Report from Technical Advisory Committee.
   b. Updates to CIP.
6. Elm Creek Watershed-wide TMDL.
7. Grant Opportunities and Updates.
   a. Fish Lake Internal Phosphorus Loading Control.
   b. Rush Creek Headwaters Subwatershed Assessment.
8. New Business.
9. Communications.
   a. Stream Buffers 101.*
10. Education.
    a. WMWA Update.
11. Grant Opportunities.

*in meeting packet
**available at meeting

12. Other Business.

a. Election of officers. Nominees are

1) Doug Baines, Dayton, Chair
2) Liz Weir, Medina, Vice Chair
3) Bill Walraven, Champlin, Secretary
4) Fred Moore, Plymouth, Treasurer.

13. Project Updates – *see Staff Report.**

14. Adjourn.

Project Reviews. (See Staff Report.*)						
				a.	2013-046	Woods of Medina, Medina.
				b.	2014-015	Rogers Drive Extension, Rogers.
				c.	2015-004	Kinghorn Outlet A, Rogers.
			AR	d.	2015-006	Veit Building Expansion, Rogers.
			AR	e.	2015-013	Wayzata High School, Plymouth.
			AR	f.	2015-020	Strehler Estates, Corcoran.
			AR	g.	2015-030	Kiddiegarten Child Care Center, Maple Grove.
				h.	2016-002	The Markets at Rush Creek, Maple Grove.
				i.	2016-004	Park Storage Place, Corcoran.
				J	2016-005W	Ravinia Wetland Bank Plan, Corcoran.
			AR	k.	2016-014	Balsam Apartments, Dayton.
			AR	l.	2016-018	Cambridge Park, Maple Grove.
			AR	m.	2016-019	Just for Kix, Medina.
			AR	n.	2016-021	Diamond View Estates, Dayton.
			AR	o.	2016-022	AutoZone, Maple Grove.
			AR		2016-026	Faithbrook Church, Dayton.
				q.	2016-038	AutoMotor Plex, Medina.
			AR	r.	2016-039	The Fields at Meadow Ridge, formerly Sands Parcel, Plymouth.
				s.	2016-040	Kinghorn 4th Addition, Rogers.
				t.	2016-041	Bartus, Plymouth.
				u.	2016-047	Hy-Vee Maple Grove #1 (Hy-Vee Maple Grove North).
				v.	2016-049	Medina Senior Living, Medina.
A	**E**			w.	2016-052	The Woods at Rush Creek, Maple Grove.
		R		x.	2017-001	9715 Sundance Road Pond Excavation, Corcoran.
A	**E**			y.	2017-002	RDO Site Plan, Dayton.
	E	**R**		z.	2017-003	Brayburn Trail EAW, Dayton.
				aa.	2017-004W	Cartway Trail, Champlin.
				ab.	2017-005	Creekside Hills, Plymouth.
				ac.	2017-006	Summers Edge II, Plymouth.
				ad.	2017-007	D'town Corcoran Ditch Maint. and Cimarron Circle Drainage Maintenance, Corcoran.
A	**E**			ae.	2017-008	TH 169 Reconstruction, Champlin.

A = Action item E = Enclosure provided I = Informational update will be provided at meeting RPFI - removed pending further information
R = Will be removed RP= Information will be provided in revised meeting packet….. D = Project is denied AR = awaiting recordation

Z:\Elm Creek\Meetings\Meetings 2017\03 Agenda_REVISED.docx

*in meeting packet
**available at meeting

Elm Creek Watershed Management Commission 2017 Treasurer's Report

		2017 Budget	Jan 2017	Feb 2017	Mar 2017	2017 Budget YTD
EXPENSES						
Administrative		90,000	8,201.65	7,300.66	7,917.86	15,218.52
Watershed-wide TMDL 2016			126.20			
Grant Writing		5,000				0.00
Website		6,000	91.85	96.25	192.50	288.75
Legal		2,000	290.00			0.00
Audit		5,000				0.00
Insurance		3,800			200.00	200.00
Miscellaneous/Contingency		2,000				0.00
Project Reviews	HCEE	98,000		18,197.68		0.00
Project Reviews	Consult	15,000	3,157.50			0.00
Project Reviews	Admin	11,000	470.19	1,025.29	1,132.64	2,157.93
WCA-Technical	HCEE	12,000		4,199.12		0.00
WCA	Legal	500			149.96	149.96
WCA	Admin	2,000		165.39	85.06	250.45
Stream Monitoring		24,177				0.00
Extensive Stream Monitoring		7,000				0.00
DO Longitudinal Survey		500				0.00
Source Assessment		2,000				0.00
TMDL Follow-up - TRPD, Admin		10,000				0.00
Rain Gauge		220	16.35	15.38	14.48	29.86
Rain Gauge Network		100				0.00
Lakes Monitoring - CAMP		1,200	480.00			0.00
Lakes Monitoring - TRPD						
Sentinel Lakes		2,470				0.00
Additional Lake		618				0.00
Aquatic Vegetation Surveys		1,029				0.00
Wetland Monitoring (WHEP)		4,000		4,000.00		0.00
Education		4,000	93.45	1,403.97	101.74	1,505.71
WMWA General Activities		4,000		3,750.00		3,750.00
WMWA Educators/Watershed Prep		4,500		4,500.00		4,500.00
WMWA Special Projects		1,500		1,500.00		1,500.00
Rain Garden Workshops		2,000				0.00
Education Grants		2,000				0.00
Macroinvertebrate Monitoring-River Watch		6,000		3,000.00		0.00
Projects ineligible for ad valorem		50,000				0.00
Studies / Project ID / SWA		35,000	409.63	374.46	1,018.56	1,393.02
Plan Amendments		5,000				0.00
Local Plan Review		2,000				0.00
Transfer to (from) Encumbered Funds (see below)						*0.00*
Transfer to (from) Capital Projects (see CIP Tracking)					*21.18*	*21.18*
Transfer to (from) Cash Sureties (see below)						*0.00*
Transfer to (from) Grants (see below)			-	*17.00*	*150.93*	*150.93*
To Fund Balance						*0.00*
TOTAL - Month			**13,336.82**	**49,545.20**	**10,984.91**	**31,116.31**
TOTAL Paid in 2017, incl 2016 Expenses		**421,614.00**	**13,336.82**	**62,882.02**	**73,866.93**	**2017 Paid**
			2016 Activity			

Elm Creek Watershed Management Commission 2017 Treasurer's Report

	2017 Budget	Jan 2017	Feb 2017	Mar 2017	2017 Budget YTD
INCOME					
From Fund Balance					
Project Review Fee	100,000	3,705.00	6,460.00		10,165.00
Return Project Fee					0.00
Water Monitoring - TRPD Co-op Agmt	6,500				0.00
WCA Fees	8,000	150.00	3,650.00		3,800.00
Return WCA Fee/Surety			(2,550.00)		(2,550.00)
Reimbursement for WCA Expense					0.00
Member Dues	219,700	135,496.13	18,664.42		154,160.55
Interest/Dividends Earned	100	184.45	199.98		384.43
Transfer to (from) Capital Projects (see CIP Tracking)		*1,595.59*			0.00
Transfer to (from) Grants (see below)		-	-	-	
Misc Income					0.00
Total - Month		**141,131.17**	**26,424.40**	**0.00**	**165,959.98**
TOTAL Funds Rec'd in 2017, incl 2016 Income	**334,300.00**	**141,131.17**	**167,555.57**	**167,555.57**	**2017 Received**
CASH SUMMARY	**Balance Fwd**				
Checking					
4M Fund	570,930.25	698,724.60	675,603.80	664,618.89	
Cash on Hand		**698,724.60**	**675,603.80**	**664,618.89**	
CASH SURETIES HELD	**Balance Fwd**				**Activity 2017**
WCA Escrows Received	46,000.00				0.00
WCA Escrow Reduced	0.00				0.00
Total Cash Sureties Held	**46,000.00**	**46,000.00**	**46,000.00**	**46,000.00**	
RESTRICTED / ENCUMBERED FUNDS					
Restricted for CIPs	129,049			-21.18	129,027.39
Enc. Studies / Project Identification / SWA	62,831				62,831.34
Total Restricted / Encumbered Funds	**191,880**	**191,879.91**	**191,879.91**	**191,858.73**	
		2016 Activity			

		Jan 2017	Feb 2017	Mar 2017	2017 Budget YTD
GRANTS					
Fish Lake CWLA	200,000				
Revenue					-
Expense				71.10	71.10
Balance		-	-	(71.10)	(71.10)
Rush Creek SWA	50,280				
Revenue					-
Expense			17.00	79.83	96.83
Balance		-	(17.00)	(79.83)	(96.83)
TOTAL GRANTS					
Revenue		-	-	-	**-**
Expense		-	17.00	150.93	**167.93**
Balance		**-**	**(17.00)**	**(150.93)**	**(167.93)**

Elm Creek Watershed Management Commission 2017 Treasurer's Report

Claims Presented		General Ledger Account No	January	February	March	TOTAL
Campbell Knutson - Legal		521000				**149.96**
Legal - WCA		579200			149.96	
Connexus - Rain Gauge		551100			14.48	**14.48**
League of MN Cities - Insurance		513000			200.00	**200.00**
JASS						**10,620.47**
Administration		511000			6,538.87	
TAC Support		511000			1,303.99	
Annual Report		511000			75.00	
Website		581000			192.50	
Project Reviews		578100			1,132.64	
WCA		579000			85.06	
Education		590000			101.74	
CIPs General		563001			1,018.56	
CIPs Medina Tower Drive		563002				
CIPs Champlin Mill Pond Dam		563003				
CIPs Plymouth EC Restoration		563004				
CIPs Fish Lake Alum Trmt Ph 1		563009			21.18	
Grant Opportunities		511000				
Grant - Fish Lake CWLA		584001			71.10	
Grant - Rush Creek SWA		584002			79.83	
TOTAL CLAIMS						**10,984.91**

Elm Creek Watershed Management Commission
2017 Treasurer's Report - Capital Improvement Project Tracking

CIPs	Amount	%age	TOTAL 2014	TOTAL 2015	TOTAL 2016	JAN 2017	FEB 2017	MAR 2017	TOTAL 2017	TOTAL ALL YEARS
Ad Valorem 2014 - Medina Tower Drive	68,750	52.380								
Revenue			-	68,916.44	(37.13)				-	68,879.31
Expense			1,989.80	-	-				-	1,989.80
Balance			(1,989.80)	68,916.44	(37.13)				-	66,889.51
Ad Valorem 2014 - Champlin Mill Pond Dam	62,500	47.620								
Revenue			-	62,653.69	(33.75)				-	62,619.94
Expense			1,631.81	-	-				-	1,631.81
Balance			(1,631.81)	62,653.69	(33.75)				-	60,988.13
Ad Valorem 2015 - Plymouth Elm Creek Restoration	250,000.00	100.000								
Revenue				-	249,866.05				-	249,866.05
Expense				2,606.17	280.99				-	2,887.16
First Half Payment					122,112.84				-	122,112.84
Second Half Partial Payment					123,163.52				-	123,163.52
Balance				(2,606.17)	4,308.70				-	1,702.53
Ad Valorem 2016 - Fox Creek Phase 2 Bank Stabiliz	80,312.00	16.296								
Revenue				-	-				-	-
Expense				-	106.32				-	106.32
Balance				-	(106.32)	-	-	-	-	(106.32)
Ad Valorem 2016 - Miss Rvr Shore Repair/Stabilizat	75,000.00	15.219								
Revenue				-	-				-	-
Expense				-	106.32				-	106.32
Balance				-	(106.32)	-	-	-	-	(106.32)
Ad Valorem 2016 - EC Dam at Mill Pond	187,500.00	38.047								
Revenue				-	-				-	-
Expense				-	106.32				-	106.32
Balance				-	(106.32)	-	-	-	-	(106.32)
Ad Valorem 2016 - Rush Creek Main Stem Restorat	75,000.00	15.219								
Revenue				-	-				-	-
Expense				-	106.32				-	106.32
Balance				-	(106.32)	-	-	-	-	(106.32)
Ad Valorem 2016 - Fish Lake Alum Trmt Phase 1	75,000.00	15.219								
Revenue				-	-				-	-
Expense				-	106.32			21.18	21.18	127.50
Balance				-	(106.32)	-	-	(21.18)	(21.18)	(127.50)
TOTAL CIP										
Revenue			-	131,570.13	249,795.17	-	-	-	-	381,365.30
Expense			3,621.61	2,606.17	812.59	-	-	21.18	21.18	7,061.55
Payments					(245,276.36)				-	(245,276.36)
Balance			(3,621.61)	128,963.96	3,706.22	-	-	(21.18)	(21.18)	129,027.39

CAMPBELL KNUTSON
Professional Association
Attorneys at Law
Federal Tax I.D. #41-1562130
Grand Oak Office Center I
860 Blue Gentian Road, Suite 290
Eagan, Minnesota 55121
(651) 452-5000

January 31, 2017
Account # 1448G

Elm Creek Watershed Management Commission
c/o Judie A. Anderson, Exec. Secty.
3235 Fernbrook Lane
Plymouth MN 55447

SUMMARY STATEMENT

PREVIOUS BALANCE	FEES	EXPENSES	CREDITS	PAYMENTS	BALANCE
1448-000 RE: GENERAL MATTERS					
SERVICES RENDERED TO DATE:					
290.00	145.00	4.96	0.00	-290.00	$149.96

Amounts due over 30 days will be subject to a finance charge of .5% per month (or an annual rate of 6%). Minimum charge - 50 cents.

CAMPBELL KNUTSON
Professional Association
Attorneys at Law
Federal Tax I.D. #41-1562130
Grand Oak Office Center I
860 Blue Gentian Road, Suite 290
Eagan, Minnesota 55121
(651) 452-5000

January 31, 2017
Account # 1448-000G
198

Elm Creek Watershed Management Commission
c/o Judie A. Anderson, Exec. Secty.
3235 Fernbrook Lane
Plymouth MN 55447

RE: GENERAL MATTERS
SERVICES RENDERED TO DATE:

			HOURS	
01/25/2017	JJJ	Emails Judie, review and advise Ravinia LOC.	0.50	72.50
01/31/2017	JJJ	Lennar/Ravinia - Voicemail and emails Lennar re: LOC.	0.50	72.50
		AMOUNT DUE	1.00	145.00
01/20/2017		Photocopy expense.		3.60
01/20/2017		Postage expense.		1.36
		TOTAL DISBURSEMENTS		4.96
		TOTAL CURRENT WORK		149.96
		PREVIOUS BALANCE		$290.00
01/13/2017		Payment - thank you		-290.00
		TOTAL AMOUNT DUE		$149.96

Amounts due over 30 days will be subject to a finance charge of .5% per month (or an annual rate of 6%). Minimum charge - 50 cents.

CONNEXUS® ENERGY
Your Community Energy Partner

Account Number:
481113-238425
ELM CREEK WATERSHED MGMT ORG

Monthly Statement

Service Address
ELM CREEK RD
DAYTON MN

Total Amount Due	Due Date
$14.48	**March 13, 2017**

Billing Summary

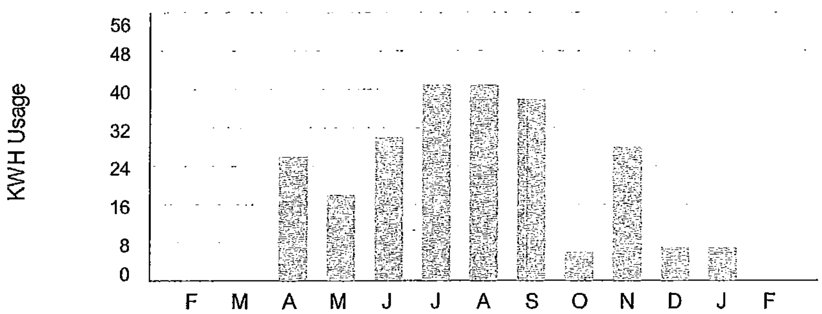
Billing Date: Feb 17, 2017

Previous Balance	$15.38
Payments - Thank You!	$15.38
Balance Forward	**$0.00**
New Charges	**$14.48**
Total Amount Due	**$14.48**

Payment must be received on or before March 13, 2017

Energy Comparison

Previous Months' Usage Current Month's Usage



How to contact us

Member Services / Moving - 763-323-2650
Outages and Emergencies - 763-323-2660
Hearing/Speech Impaired Call - 711 or 800-627-3529
Email: info@connexusenergy.com
www.connexusenergy.com
Gopher State One Call - 811
14601 Ramsey Boulevard, Ramsey, MN 55303

Message Center

Sign up for outage alerts
Power outage and restoration information is now at your fingertips. Sign up to get outage updates via text, email or both. Before you can sign up, you first need to register your account at connexusenergy.com.

Connexus Energy Annual Meeting & Board Elections
As a member of our cooperative, you have a vote in our annual elections. Your vote determines the directors on the Connexus Energy Board. Voting packets will be mailed in March. Election results will be announced at the Annual Meeting on April 12.

▼ *Please detach at perforation and return this portion with a check or money order made payable to Connexus Energy* ▼

TRA3-D-008693/001214 AGUE61 S1-ET-M1-C00003 1

CONNEXUS® ENERGY
Your Community Energy Partner

Account Number:	**481113-238425**
Total Amount Due	**$14.48**
Payment Due By	March 13, 2017

008693 1 AB 0.400 000626/008693/001214 033 01 AGUE61
ELM CREEK WATERSHED MGMT ORG
3235 FERNBROOK LN N
PLYMOUTH MN 55447-5325

Connexus Energy
PO Box 1808
Minneapolis, MN 55480-1808

00001448 0004811130238425 000000 00000 00000000000 0000009

LEAGUE OF MINNESOTA CITIES

CONNECTING & INNOVATING
SINCE 1913

Billing Statement

Account Name and Address
Elm Creek Watershed
Management Commission
3235 Fernbrook Commission
Minneapolis, MN 55447-

Statement Date
02/09/2017

Agent
Arthur J Gallagher Risk Management Services Inc
3600 American Blvd W Ste 500
Bloomington, MN 55431-4502
(952)358-7500

Account Number:	10002653		
Current Balance:	$	200.00	
Minimum Due:	$	200.00	
Due Date:	03/22/2017		

Summary of activity since last Billing Statement

See reverse side and attachments for additional information

Date	Activity	Account Balance	Minimum Due
	Previous Statement Balance	.00	
	Payments Received	-.00	
	Total of Transactions and Fees shown on reverse or attached	200.00	
	Current Balance	$ 200.00	$ 200.00

Detach and return this Payment Coupon with your payment

Account Number	Statement Date	Due Date	Current Balance	Minimum Due
10002653	02/09/2017	03/22/2017	$ 200.00	200.00

Amount Enclosed $ 200.00

Account Name Elm Creek Watershed Management Commission

BILLING STATEMENT - Return stub with payment - make checks payable to:

Mail payment 7 days before Due Date to ensure timely receipt

Berkley Risk Administrators Company
222 South Ninth Street, Suite 2700
Minneapolis, MN 55402

LEAGUE OF MINNESOTA CITIES

CONNECTING & INNOVATING
SINCE 1913

Billing Statement

		Transaction Amount		Minimum Due	
Detail of activity since last Statement	Volunteer Accident 1000926-1 Policy Period 01/22/2017 -01/22/2018				
	Policy Previous Balance	$	0.00		
	Policy Ending Balance	$	0.00	$	0.00
	Workers' Compensation 1000927-1 Policy Period 01/22/2017 - 01/22/2018				
	Policy Previous Balance	$	0.00		
	New Business - PR 02/08/2017	$	200.00		
	Policy Ending Balance	$	200.00	$	200.00
	Total Current Balance	$	200.00		
	Total Minimum Due			$	200.00

Your Virtual Administrator

3235 Fernbrook Lane
Plymouth MN 55447

Elm Creek Watershed Management Commission
3235 Fernbrook Lane
Plymouth, MN 55447

6-Mar-17

				Total by Project Area
Administrative		50.00	0.00	
Administrative	15.74	55.00	865.70	
Administrative	60.77	60.00	3,646.20	
Admin - Offsite	3.76	65.00	244.40	
Office Support	5.00	200.00	1,000.00	
Storage Unit	1.00	192.23	192.23	
File Management	1.42	60.00	85.20	
Archiving		60.00	0.00	
Admin - Reimbursable Expense	505.14	1.00	505.14	6,538.870
Admin - TAC support	0.42	55.00	23.10	
Admin - TAC support	20.26	60.00	1,215.60	
Admin - TAC support offsite		65.00	0.00	
TAC Support - Reimbursable Expense	65.29	1.00	65.29	1,303.990
Website	3.50	55.00	192.50	
Website		60.00	0.00	
Web Domain, hosting		1.00	0.00	192.500
Annual Reporting		55.00	0.00	
Annual Reporting	1.25	60.00	75.00	
Annual Report - Reimbursable Expense		1.00	0.00	75.000
Project Reviews - Secre	0.50	55.00	27.50	
Project Reviews - Admin	12.55	60.00	753.00	
Project Reviews - Admin - File Mgmt		55.00	0.00	
Project Reviews - Reimbursable Expense	352.14	1.00	352.14	1,132.640
WCA - Admin	1.37	60.00	82.20	
WCA - Reimbursable Expense	2.86	1.00	2.86	85.060
Education - Admin	0.61	60.00	36.60	
Education - Admin Offsite	0.63	65.00	40.95	
Education - Reimbursable Expense	24.19	1.00	24.19	101.740
CIPs - General - Secretarial	2.91	55.00	160.05	
CIPs - Administrative	13.17	60.00	790.20	
CIPs - reimbursables	68.31	1.00	68.31	1,018.560
Rush Creek SWA - Admin	1.25	60.00	75.00	
Rush Creek SWA - reimbursable expense	4.83	1.00	4.83	79.830
Fish Lake CWLA - Admin	1.17	55.00	64.35	
Fish Lake CWLA - Admin		60.00	0.00	
Fish Lake CWLA - Reimbursables	6.75	1.00	6.75	71.100
CIP Fish Lake Alum - Admin		55.00	0.00	
CIP Fish Lake Alum - Admin	0.33	60.00	19.80	
CIP Fish Lake Alum - reimbursables	1.38	1.00	1.38	21.180
		Invoice Total		**10,620.470**

ADMINISTRATIVE OFFICE
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TECHNICAL OFFICE
Hennepin County Public Works
Department of Environment and Energy
701 Fourth Ave. South, Suite 700
Minneapolis, MN 55415
PH: 612.596.1171
E-mail: ali.durgunoglu@hennepin.us

TH 169 Reconstruction
Champlin, Project #2017-008

Project Overview: The TH 169 Reconstruction Project will improve mobility and safety on TH 169 and at intersection roadways while supporting planned redevelopment. The project will reconstruct TH 169 between CSAH 121 (Hayden Lake Road) and West River Parkway, just south of the Anoka/Champlin Mississippi River Crossing Bridge. Two bridges over Elm Creek will be replaced. Local roadways will also be improved and pedestrian and bicycle facilities will be constructed. Elm Creek WMC will be reviewing the TH 169 Reconstruction Project as it applies to Rule F: Floodplain Alteration; and Rule H: Bridge and Culvert Crossings. All other rules pertaining to the Project will be reviewed by the West Mississippi WMC.

Applicant: City of Champlin (Tim Hanson, City Engineer), 11955 Champlin Drive, Champlin, MN 55316. Phone: 651-286-8459. Email: thanson@ci.champlin.mn.us.

Agent/Engineer: WSB & Associates, Earth Evans, 701 Xenia Ave. S, Suite 300, Minneapolis, MN 55416. Phone: 763-231-4877, Cell: 612-749-5816. Email: eevans@wsbeng.com.

Exhibits:

1) ECWMC Request for Plan Review and Approval Form received February 17, 2017.
2) Project review fee of $1,050.
3) Joint project application for Federal, state and local governments.
4) Project Layout
5) 100-Year Floodplain Impacts Figure
6) Flood Insurance Rate Maps
7) 100-Year Floodplain Mitigation Figure
8) 100-Year Floodplain Impact and Mitigation Volumes and Cross Sections
9) Elm Creek Hydraulic Analysis (HEC-RAS)
10) Existing and Preliminary Proposed Bridge Plans
11) 60% Construction Plans (unsigned).

Findings;

1) A complete application was received on February 17, 2017. The initial 60-day review period expires April 18, 2017.
2) Rule D. The project will take place in Elm Creek and West Mississippi Watersheds. Majority of the reconstruction is taking place outside the Elm Creek Watershed. The

WMWMC will review the stormwater plans, and Elm Creek WMC will review only the floodplain management plan within the ECWMC boundaries.

3) Rule G. Wetland Alteration. ECWMC is the LGU in charge of administering the MN Wetland Conservation Act in Champlin within its boundaries. The project does not involve work within jurisdictional wetlands. All the impacted wetlands and waters are within the jurisdiction of the DNR.

4) Rule I. Buffer Strip requirements. This rule is not applicable for this project.

5) Rule E. Erosion and sediment control plans will be reviewed by the WMWMC.

6) Rule F & Rule H. Elm Creek WMC will be reviewing the TH 169 Reconstruction Project as it applies to Rule F: Floodplain Alteration; and Rule H: Bridge and Culvert Crossings.

   a. Based on the CLOMR, Case No.: 13-05-8011R issued on 13 November 2104, the following Base Flood Elevations are effective for this site (NAVD 1988 datum):

      - Lower Mill Pond East (at the dam): 850.30’
      - Lower Mill Pond West (between Jefferson Bridge and TH 169 NB Bridge): 851.07’
      - Upper Mill Pond (west of TH 169 SB Bridge: 851.84’
      - OHW of Mill Pond = 847.3’ (NAVD 1988)

   b. The project will place 1,722 cubic yards of fill on the north side of the Lower Mill Pond, at the intersection of TH 169 and West River Road. Mitigation for Mill Pond will be done at the northeast and west side of the pond. The total Mill Pond mitigation will be 1,754 cubic yards, for an excess of 27 cubic yards of mitigation.

   c. The project will place 453 cubic yards of fill along the east and west sides of the TH 169 alignment. Mitigation also will be done along the TH 169 ditches for a total of 1,777 cubic yards (an excess mitigation volume of 1,324 cubic yards).

   d. Both Mill Pond and TH 169 floodplain storage compensations meet the standards.

   e. As a part of the bridge replacements, existing piers will be removed from the floodway and will be replaced by single-span bridges. This will eliminate the existing obstruction within the floodway. The new bridges’ low chorda will be slightly lower than the 100-yr base flood elevation (BFE). TH 169 NB bridge low chord will be 0.2’ below the BFE, while the SB bridge low chord will be 0.69’ below the BFE. Due to the removal of the existing piers and the expanded flow area, the flood flows will not be affected.

Recommendation: Approval with the condition that signed final plans are submitted when ready.

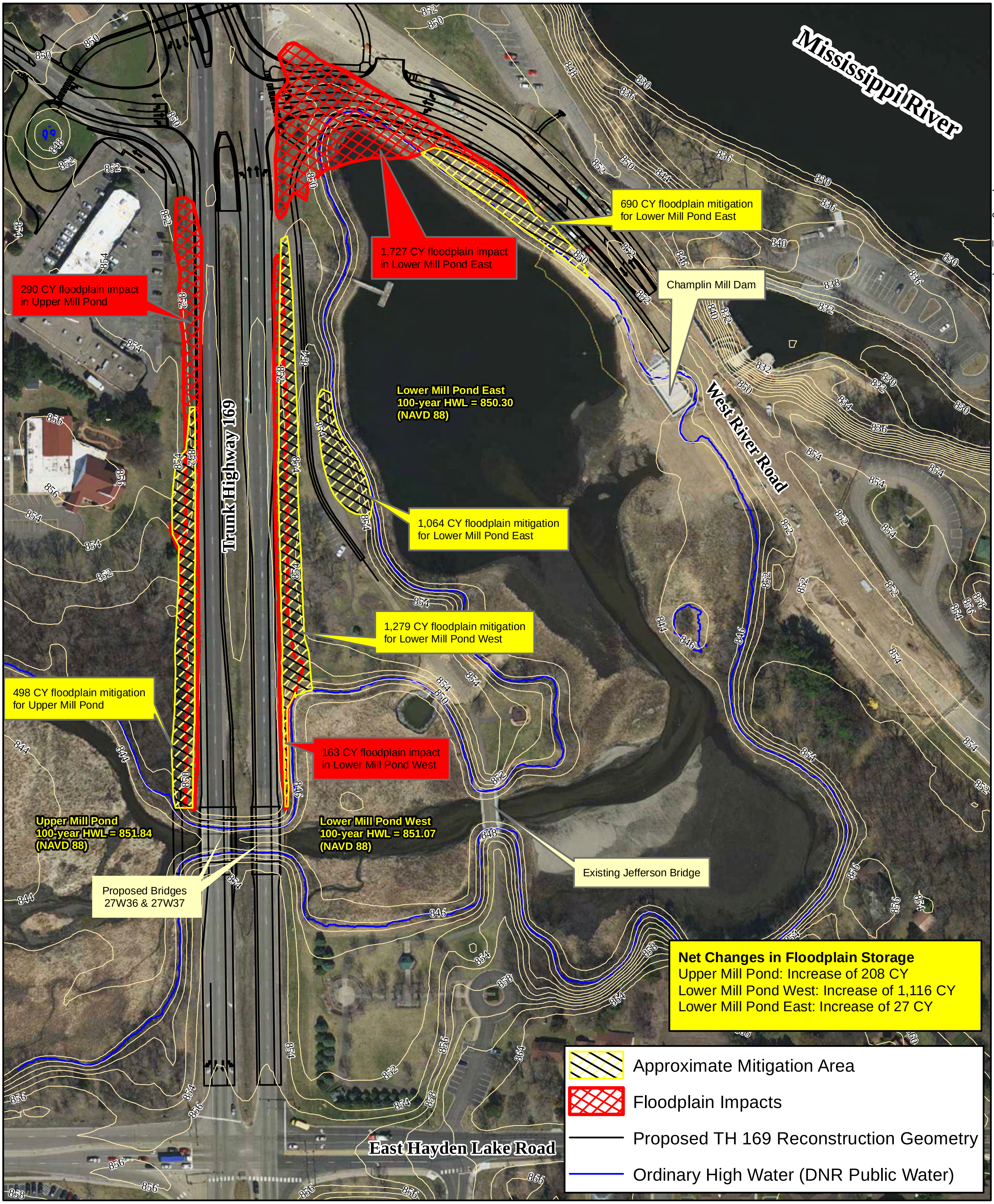
Hennepin County
Department of Environment and Energy

Ali Durgunoglu

March 2, 2017

Ali Durgunoglu
Technical Advisor to the Commission


N
MISSISSIPPI RIVER
DC Chandler Park
Doris A Kemp Park
MILL POND
ECWMC
WMWMC
BRIDGE REPLACEMENTS
Bradford Avenue North
West River Road
Yukon Avenue North
124th Lane North
Downs Road
Lowell Road
Ghostley Lane North
Dean Avenue East
169
12



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City of Champlin

Figure - Floodplain Impacts

TH 169 Reconstruction
SP 193-010-008 | SP 2750-88
City of Champlin

N

0 200 Feet
1 inch = 201 feet

Stream Buffers 101

Posted By Tom Hegemier On January 13, 2017 @ 10:40 am In Stormwater,Stormwater Weekly | No Comments

Stream buffers are natural areas adjacent to streams and waterways that remain free of development, construction, or other alterations and play an important role in maintaining predevelopment water quality. The riparian vegetation stabilizes stream channels, provides terrestrial and aquatic habitat, slows runoff rates, reduces runoff volume, and filters development runoff.

We can contrast stream buffers with stormwater management measures (SMMs). The North Carolina Forest Service defines SMMs as constructed measures designed to be an effective or practicable means of preventing or reducing the amount of pollution generated by nonpoint sources to a level compatible with water-quality goals or requirements.

Although stormwater control measure (SCM) is becoming the accepted term for a multitude of measures and replacing the term best management practice (BMP), from my viewpoint we do not "control" stormwater. Our country has experienced recent floods on the local and regional scale that far exceed engineered projects' ability to control floods and enhance water quality. Add in the issues of proper construction and effective long-term maintenance to further challenge the notion that these measures "control" stormwater. Instead, we attempt to "manage" stormwater through changing conditions and climate to produce public safety, economic, and environmental benefits. In this article, the term stormwater management measure is used to describe ponds, basins, filter systems, proprietary devices, etc., that are designed to manage stormwater rate, volume, and quality.

The Importance of Headwater Streams

The nation's rivers and lakes originate from a network of small and headwater streams that are known to significantly influence the quantity and quality of downstream waters. In addition to providing water-quality benefits, these small streams mitigate flooding, generate local recharge, recycle nutrients, provide habitat for plants and animals, and sustain the biological diversity of rivers, lakes, and estuaries. It is in this zone that stormwater runoff has the most contact with the land surface through shallow flow and where much of the streams' filtering processes take place. Often, surface and groundwater interact in this area, even in seasonal and intermittent streams.

It has been understood that the Clean Water Act will provide protection for all the waters of the United States. Regardless of this impression, many small streams have been destroyed, filled, or severely altered through mining, agricultural, and development practices.

From local and regional studies, we know that headwater streams make up at least 80% of the nation's stream network. This indicates the vital role they play, yet it is difficult to fully appreciate their widespread coverage because often they are not visible on maps used in regulatory practices, which can affect their ability to be protected. Changes, such as replacing the stream with a storm drain and filling the riparian area, eliminate the numerous stream benefits and increase the rate and volume of runoff onto downstream landowners. This hydrological change further scours the channel and accelerates stream velocities, which promote stream degradation, widening, extensive habitat loss, and further flooding. Increased sediment volumes from accelerated stream erosion impair water quality, affect navigation, and increase water filtration costs for municipalities. A transformation of the natural riparian system to a degraded gully can negatively affect recreational uses. Finally, land-use change directly adjacent to the stream further degrades the natural functions and can introduce invasive species that adversely affect the biological diversity in the riparian zone.

In summary, because small streams are the primary source of our nation's waters, changes that degrade these headwater systems affect rivers and lakes downstream, often requiring drainage improvement projects and other measures to protect the public, infrastructure, and the environment.

Development and Stormwater Management Design

Site and subdivision development designers have many options to select the SMMs to meet the local jurisdiction's stormwater management requirements. However, before one jumps right into the SMM toolbox to pull out the latest option or rely on the regulatory favorite, one should first consider the use of stream buffers to reduce construction disturbance, maintain the natural stream character, and minimize short- and long-term water-quality impacts. Stream buffers are a low-impact development (LID) approach because they cause the design of the development to minimize its impact to the terrestrial and aquatic systems, through such means as minimal cut and fill, preserving trees, and working with the natural topography and vegetation to maximize the natural system function. Buffers provide everyday ecosystem service benefits when compared to SMMs that function only during rainfall/runoff events. See Table 1 for a comparison.

Table 1. Comparison of Stormwater Management Measures and Stream Buffers

Management Component	Stormwater Management Measure	Stream Buffers
Design plan requirements	High	Minimal
Design engineer experience	High	Minimal
Plan reviewer experience	High	Minimal
Construction inspection	High	Minimal
Contractor experience	High	N/A
Construction quality	High	N/A
Maintenance requirements	High	Minimal to Moderate
Service life	Years to Decades	In perpetuity
Habitat benefits	Minimal	High
Appearance	Fair to moderate	High
Water supply benefits	Minimal	Moderate
Sustainability	Minimal to moderate	High
Floodplain management	Minimal to moderate	High
Resiliency	Minimal to moderate	High
Alternate transportation opportunities	N/A	Moderate
Land area requirement	Site dependent	Site dependent

[3]

There are many structural control measures and devices with intricate design, construction, and maintenance requirements that we designers and engineers know can be absorbed by the process. As we know, the best design plans without proper construction and maintenance execution can lead to years of costly improvements and/or non-performance in treating stormwater runoff. Buffer zones do not have these challenges because they are simple in design and they allow or help natural processes to manage stormwater. The helping comes from the use of volume controls (conventional, LID, green infrastructure) to manage the frequent storm events to maintain geomorphic equilibrium that protects the buffer zone from the impacts of hydrologic change generated by upland development.

As noted above, the design, permitting, and construction of common stormwater management measures requires significantly more design skills, local jurisdiction experience, and knowledgeable contractors to properly install these systems to ensure performance and minimize maintenance. The relative ease in establishing buffer zones along the riparian corridor allows this practice to be incorporated into development projects and offers the supplementary benefits of water supply enhancement, floodplain management, and alternative transportation options.

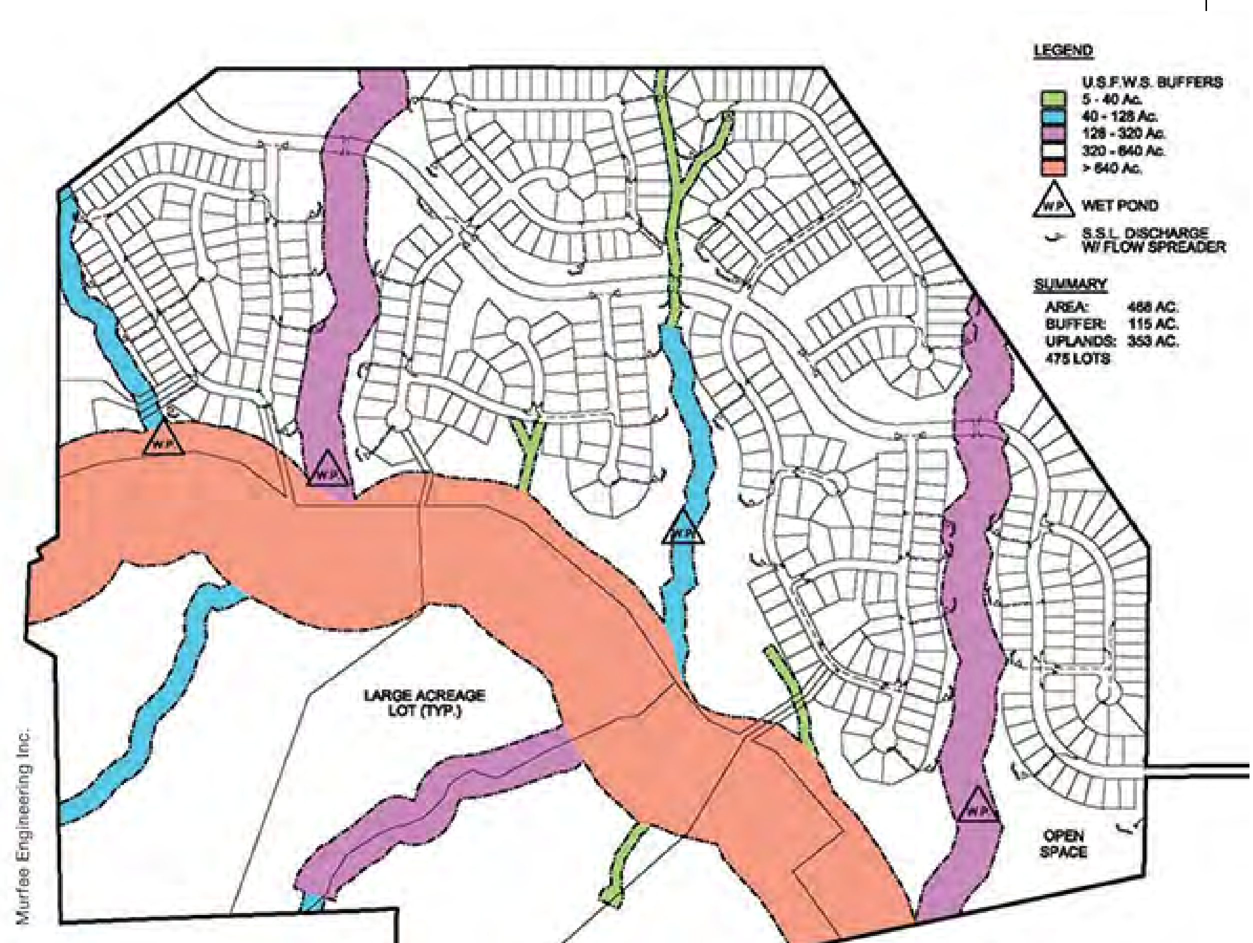
Central Texas Stream Buffers

In central Texas, stream buffers have been part of the regulatory requirements by the city of Austin since the 1980s and have served as the model for other regulatory programs that protect surface and groundwater supplies. The criteria define the buffer width based on the contributing drainage area at the point of interest. As the drainage area increases, the buffer zone also increases in size. The Lower Colorado River Authority's (LCRA) *Highland Lakes Watershed Ordinance* and the Texas Commission on Environmental Quality's Edwards *Aquifer Option Enhanced Measures* begin buffer zones at a drainage area of 5 acres, while the city of Austin buffer zones begin at a drainage area of 64 acres. The combination of these regulatory programs protects the drinking water supplies for Austin and surrounding communities.

[4]

Extended detention basin to enhance water quality and manage stream erosion

Michael Barrett, Ph.D., P.E., D.WRE, author of the Texas Commission on Environmental Quality (TCEQ) Optional *Enhanced Measures for the Protection of Water Quality* in the Edwards Aquifer, included measures that were targeted toward nondegradation to protect federally listed endangered or threatened species. Criteria components are stormwater quality treatment, stream buffer zones, and construction erosion controls to mitigate the impacts of urbanization on water quality. The TCEQ document guides the process to delineate creek buffers as the first step in the development process. An example of stream buffers in a planned development project is shown in Figure 1, which illustrates the varying buffer width based on the contributing drainage area.



[5]

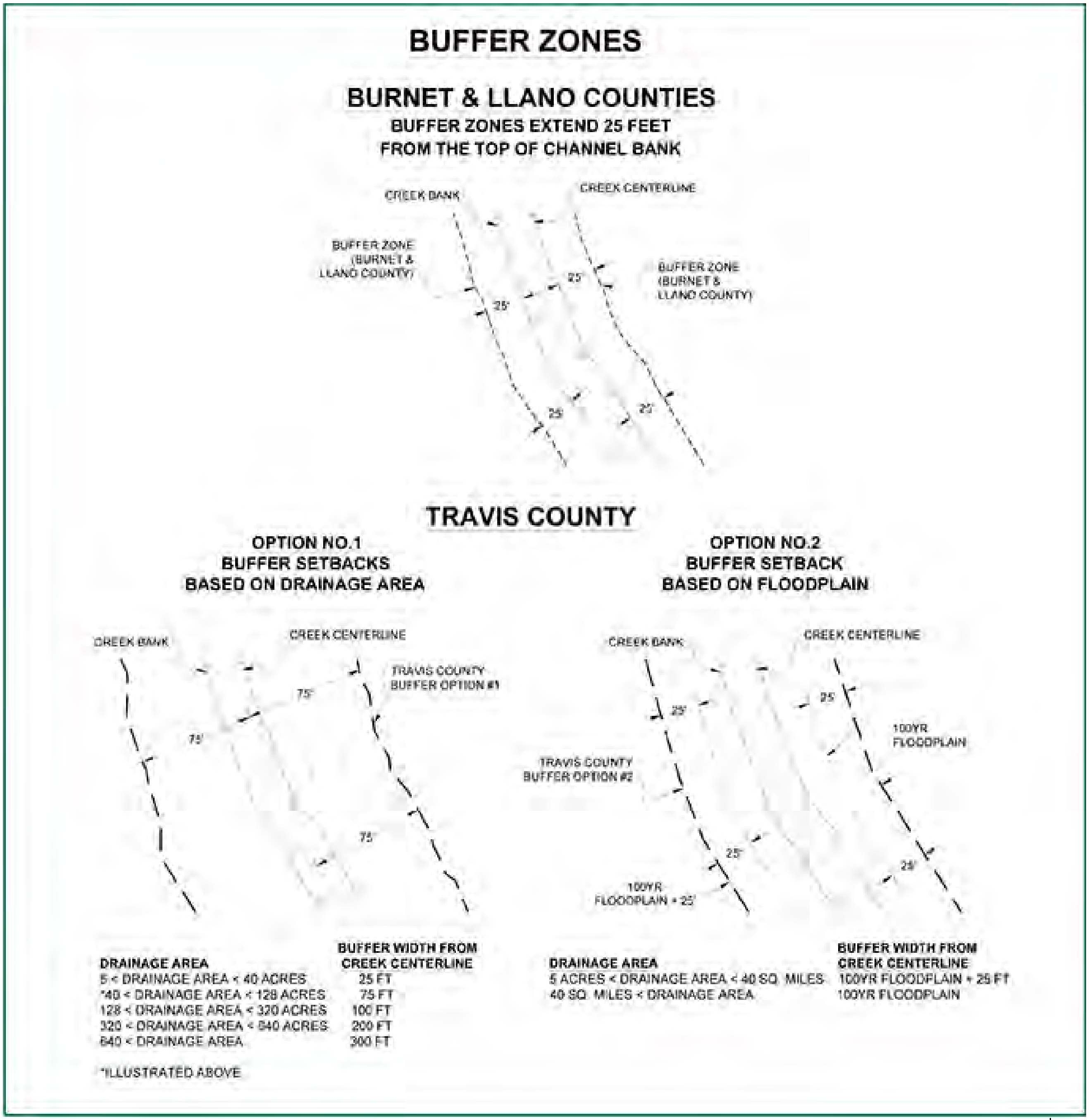
Figure 1. Stream buffer example in a single-family development

Barrett offers the following: “While stream buffers provide water-quality enhancement through filtering of urbanized runoff before it reaches the stream, the secondary benefits are significant and include floodplain management (keeping structures out of the floodplain), stream habitat protection, managing stream temperature, wildlife benefits, and providing a natural setting for hike and bike trails and other recreational features.”

Another central Texas regulatory program, the LCRA Highland Lakes Watershed Ordinance (HLWO), manages stormwater runoff from new development, quarries, and mines in portions of three central Texas counties (Figure 2). The HLWO encompasses an area of about 1,100 square miles in the watersheds contributing to the Highland Lakes. The Highland Lakes serve as a major recreational attraction and are the water supply for over one million people, including the city of Austin.

At 5 acres of drainage area, it can be difficult to determine if a waterway exists, so the LCRA defines a creek as a well-defined channel that can convey running water. Creeks are determined to begin where water concentrates, so in an area with gentle topography it could be 10, 15, or more acres until a defined channel is found. In this case, the creek buffer would not begin until this point is defined on the development plan. If needed, LCRA regulatory staff work with the designer through topographic maps and onsite review to define the start of a headwater stream, which then establishes the buffer width.

The HLWO was adopted in 2006 and went through an extensive public review process in 2014, resulting in no changes to buffer zone requirements. LCRA engineering supervisor Erik Harris, P.E., manages the HLWO program. “During the planning review process, site conditions may require our permit staff to meet the design engineer in the field to verify the beginning of a creek that then establishes the buffer zone,” says Harris. “This can be necessary in the upper headwaters or in areas of flatter terrain.”



[6]

Figure 2. LCRA buffer zones

Harris notes that it is important for the developer to define the creek buffer on the plat and have it recorded as part of the subdivision approval process. During construction, inspectors ensure that the buffer zones are protected from construction impacts and that permitted road or utility crossings receive additional erosion protection and enhanced restoration efforts.

Harris also says educational materials for developers and homebuilders are valuable tools used to inform landowners of the purpose and limitations of creek buffers. Inspectors work with landowners to maintain and enhance buffer zones rather than allowing landowners to “annex” the buffer zone behind their home to create a larger backyard. The HLWO allows homeowners to add low-impact enhancements in the buffer zone but prevents large-scale buffer zone modifications.

The buffer width is established from the creek centerline and varies based on the contributing drainage area. The LCRA offers a floodplain option as an alternative to prescribed setbacks at the choice of the design engineer/developer. The buffer can be established as the 100-year future land-use floodplain plus

25 feet; thus, for larger watersheds, the buffer zone can be significantly less than the prescribed setbacks in steeper topographic regions.Table 2 shows a comparison of buffer zones in central Texas (LCRA, city of Austin, and TCEQ).

Table 2. Central Texas Buffer Zone Comparison

Classification	LCRA*		City of Austin		TCEQ	
	DA (ac)	Setback (ft.)	DA (ac)	Setback (ft.)	DA (ac)	Setback (ft.)
Headwater	5-40	25			5-40	25
Minor	40-128	75	64-320	100	40-128	50
Intermediate	128-320	100	320-640	200	128-320	100
Major	320-640	200	>640	300	320-640	200
Watershed	>640	300			>640	300

[7]

* LCRA offers the floodplain alternative as described above.

To provide flexibility in development design, certain allowances are provided that generate minimal buffer zone impacts, such as a limited number of utility and roadway crossings that are perpendicular to the stream. Low impact development parks can be allowed and should be limited to trails, picnic facilities, and similar construction that do not significantly alter the existing vegetation. Parking lots and roads significantly alter existing vegetation, are not considered low impact, and should be placed outside the stream buffer.

Storm Drain Outfalls to Buffer Zones

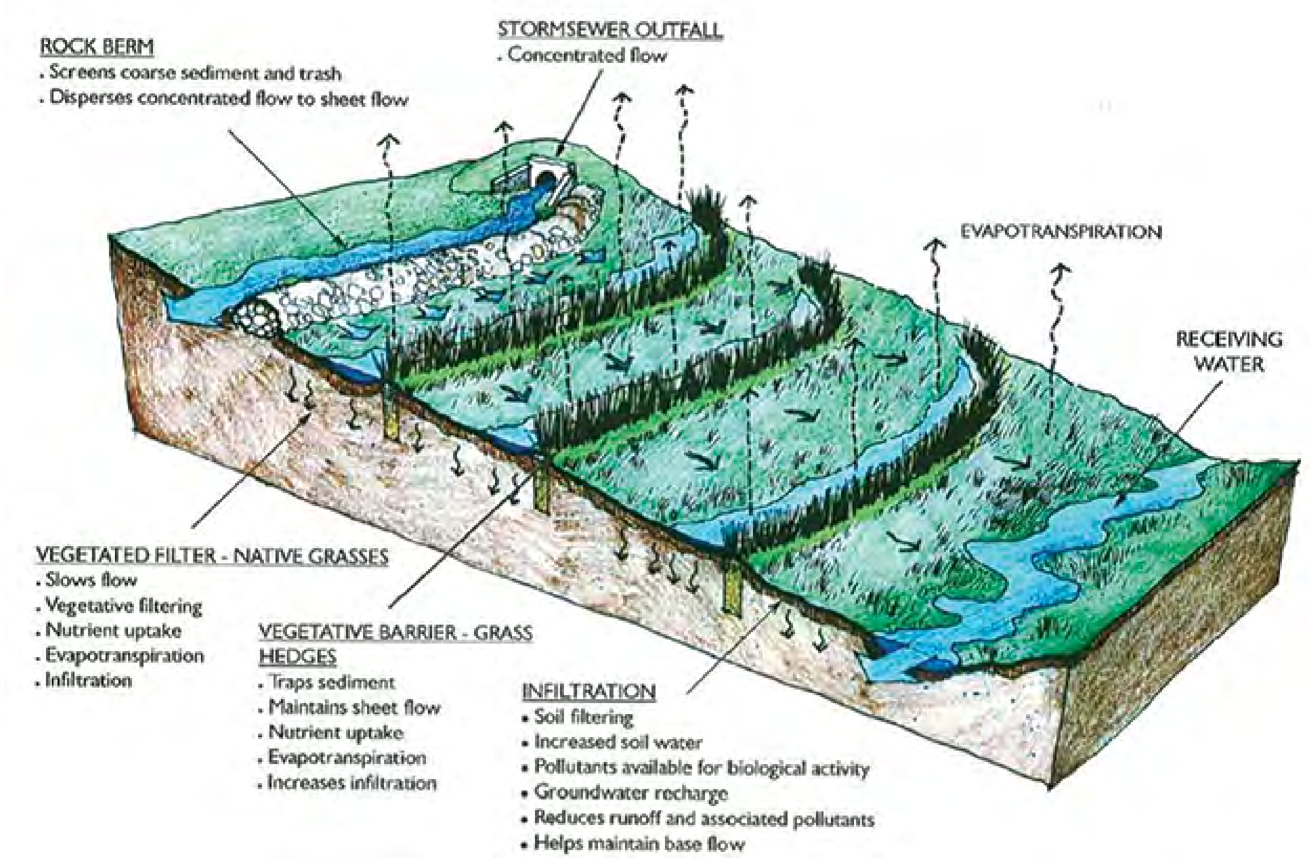
Traditional subdivision design relies on the street network with curb and gutter directing runoff to storm drain inlets that connect to the storm drain pipe system. The design philosophy has been to convey the stormwater runoff quickly and safely away from the subdivision. As the storm drain runs downstream, more and more area contributes to the system, increasing the pipe size. The stormwater is conveyed directly to the creek, which tends to generate localized erosion problems in the streambed and along the creek banks. If the storm drain line is terminated at the buffer zone, the erosion issues found at creek outfalls is translated to the buffer and leads to buffer degradation, including a new channel that directly connects the storm drain outfall to the natural stream, negating the buffer zone benefits.

[8]

Detention basin at a commercial site to manage peak flow rates

To maximize stormwater treatment, retain the upland development impervious cover disconnection, and ensure a healthy riparian corridor, it is important for storm drain outfalls to discharge in a sheet flow manner at or along the buffer's edge. This provides a challenge in development design as the storm drain exit velocities can be in excess of 10 feet per second, and typical riprap outfall measures are not sufficient to diminish the water energy and spread the flow to protect the vegetation and soils. To achieve this objective, the typical storm drainage design should be modified to decrease the size and corresponding depth of the storm drainpipes to increase the number of outfalls to the buffer. Thus, the more uniform distribution of subdivision runoff to the buffer begins in the storm drain design and does not rely only on end-of-pipe measures.

The next step is to convert the concentrated point discharge to sheet flow along the buffer and to maintain that sheet flow for the entire buffer width. Murfee Engineering Inc. in Austin, TX, developed an outfall design that discharges parallel to the contour and uses several levels of berms and vegetative barriers to promote infiltration and treatment as water slowly cascades toward the creek. Figure 3 illustrates how this approach capitalizes on the biological abilities and physical attributes of specific hedge-forming plants and native grasses in combination with rock berms and alternating strips of native grasses and stiff grass hedges. The stiff grass hedges form a vegetative barrier to impede the water, maintain sheet flow across the vegetative filter, and enhance sedimentation and infiltration. This approach requires less grading and disturbance of riparian vegetation than more traditional end-of-pipe treatment methods. Installation of the berm and hedges can be tailored to preserve existing trees and vegetation and maintain an aesthetically pleasing environment.



[9]

Figure 3. Vegetative barriers promote infiltration and treatment.

This system has been used for more than a decade in new subdivisions constructed within the sensitive Edwards Aquifer Recharge Zone and has demonstrated the ability to be a low-maintenance, self-sustaining SMM to enhance stream buffer performance. Finally, on some projects, the on-slope terrace treatment system has been approved as the primary water-quality treatment method to manage runoff and has reduced or eliminated the need for upstream sedimentation-filtration or retention-irrigation water-quality treatment basins.

Other Buffer Zone Benefits

Buffers are especially important in high-growth, developed, sprawling communities. Texas has many of the fastest-growing counties and cities in the US, which sometimes leads to complete creek channelization, as shown in the photographs of a creek north of San Antonio.

A development that converts a natural stream system to a concrete or trapezoidal channel shortens the time of concentration, creating more-rapid runoff, and therefore requires larger detention basins to manage peak flow rates. Thus, retaining the existing stream system to the headwaters can reduce the need for detention ponds and lower construction costs. In addition, this costly channel project increases evaporation, heats water in the stream, and prohibits recharge. Stream buffers play a key role in preventing the conversion of natural drainage ways to constructed systems that offer no habitat value and negatively affect community appearance.

[10]

Retention-irrigation system in Dripping Springs, TX, intended to meet nondegradation standards.

Community benefits of buffer zones also connect directly with economic growth in small cities. A recent article by the Initiative for Competitive Inner Cities (ICIC) highlighted a multi-year research effort by David Ivan of Michigan State University, at the National Main Streets Conference. One of the findings in laying the groundwork for sustainable economic futures is investing in “creative infrastructure,” making the community more attractive for residents and businesses as they compete for new and innovative job-producing entities. An important part of this process is creating a strong equality of place, where communities embrace their natural resource assets that are unlike those of any other community, leading to a unique and individual character that can be promoted to entrepreneurs.

Local governments can delineate stream buffer zones in their community and stormwater master planning processes that can connect directly with the parks and recreation trail planning to develop multi-objective benefits. When communities are considering hike and bike trail implementation, stream buffers can be an important component of alternative transportation routes to increase bike mobility and reduce automobile use. In areas of considerable topographic relief, there can be many creeks with headwater protection yielding multiple transportation routes to provide direct access to watershed residents, thus encouraging bike use and improving safety as bicyclists can use trails rather than roads.

[11]

Natural stream north of San Antonio

Stream buffers perform as an insurance policy during construction to limit construction-related discharges to receiving streams. Over the long term, the wider buffers produce groundwater well setbacks that reduce the potential for water withdrawals from the subsurface flow, which allows groundwater to flow downstream to help sustain habitat and the aquatic system.

As noted earlier, stream buffers effectively manage runoff rate and volume at minimal cost to the local jurisdiction, because maintenance is limited when compared to constructed channels. It’s possible that stream buffers’ floodplain management benefits equal water-quality treatment aspects of filtering. Storms can overwhelm and damage SMMs, while buffers resilience allows them to adapt and respond to major flood events. By keeping homes and businesses outside of the floodplain or high-energy flows of the floodway, stream buffers are an important consideration in sound floodplain management practices.

Stream Buffers As a Standalone Measure

Stream buffers cannot be the only stormwater management measure in a developing watershed due to hydrologic change caused by urbanization. New impervious cover and “efficient” storm drain systems have been proven to severely degrade natural stream systems through the increase in runoff volume, rate, and frequency of bankfull events. This leads to significant habitat loss, extensive channel adjustment affecting existing infrastructure, and large quantities of sediment conveyed to receiving rivers and lakes, further adversely affecting navigation, water supplies, and water quality. Research across the country has found that the channel-forming flow for streams in undeveloped watersheds is in the range of the one- to two-year storms. With urbanization, these storms can generate peak runoff rates five times greater than an undeveloped site, with bankfull events occurring numerous times throughout the year.

[12]

Same stream north of San Antonio replaced with a concrete channel

[13]

Shallow stormwater basin to manage small storms at a commercial site in Austin

In an effort to evaluate the stream protection benefits of its water-quality treatment ordinance, the city of Austin conducted a study to define the erosion potential based on volume control. Mike Kelly, P.E., managing engineer in the city's Watershed Protection Department, says, "The city water-quality volume requirements, of one-half inch of runoff volume plus 0.1 inch of runoff volume for each 10% increase in impervious cover greater than 20%, reduced the long-term stream power from developed conditions to levels found in undeveloped watersheds. Our criteria require that the water-quality volume be released over a 48- to 72-hour period. This extended detention helps protect urbanizing streams from accelerated and large-scale degradation and widening." It turns out that the water-quality design volume developed more than 20 years ago to improve runoff quality has the added benefit of managing the channel-forming flows.

Kelly also notes that stream buffers can generate significant benefits, even in existing urbanized areas. "Buffer zones can serve as a standalone protection measure in older urbanized areas where the channel erosion from development has mostly taken place," he says. "The buffer zone aids in the stabilization of incised creeks and can be enhanced through initiating [no-mow] grow zones to stabilize the creek banks. By allowing creekside vegetation to grow, the stream is protected from higher velocities due to the increased roughness provided by the vegetation. Additionally, since the vegetation is allowed to grow, the root systems are able to develop, holding the soil in place. We applied this approach while working with a neighborhood to avoid constructing a $1.5 million channel improvement project. The creekside residents were pleased with their stretch of native restored creek."

[14]

Landscaped stormwater basin in Austin

Summary

With the challenges of constructed stormwater management measures, this article describes the stream buffer approach to manage runoff and protect natural stream systems from excavation, filling, or conversion to constructed storm drain systems. SMMs must withstand the test of time including floods, droughts, poor maintenance, invasive plants, structural failures, and geotechnical challenges, while resilient buffer zones can recover through natural processes.

Stream buffers are the simplest measure to design and implement, and when combined with volume control for the channel-forming flow can serve as the foundation of a comprehensive stormwater protection approach that yields water supply, floodplain management, recreational, and habitat benefits.

So, designers, reach for the stream buffer tool first when laying out your projects to yield long-term stormwater management benefits. Regulators, consider stream buffers combined with simple runoff volume controls when designing new codes and criteria to protect water quality, keep homes and businesses out of harms' way, enhance recharge, and create attractive developments that work with the natural riparian zone while minimizing your community's stormwater management maintenance requirements.

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