Prepared for: **Keystone Pipeline Project** 



A Desktop Habitat Assessment of Potentially Suitable King Rail Habitat within the Proposed Keystone Mainline Right-Of-Way in Buchanan, Carroll, Chariton, Lincoln, and St. Charles Counties, Missouri

ENSR Corporation March 2007

Document No.: 10623-004

#### **Contents**

1.0	Introduction
2.0	Results1
3.0	Conclusion1
Lis	st of Appendices
App	endix A - Wetland Photographs
App	endix B - Wetland Data Sheets
App	endix C - Wetland Maps
Lis	st of Tables
Tabl	le 1 Desktop Habitat Assessment for Suitable King Rail Habitat in Buchanan, Carroll, Chariton, Lincoln, and St. Charles Counties, Missouri2

#### 1.0 Introduction

As requested by the Missouri Department of Conservation (MDC) during a conference call on January 4, 2007, ENSR conducted a desktop habitat assessment to determine the potential for occurrence of king rail along the proposed Keystone Mainline route. In accordance with guidance from the MDC, ENSR assessed wetland survey data collected during the summer and fall of 2006, in Buchanan, Carroll, Chariton, Lincoln, and St. Charles counties, Missouri. Wetland data was assessed for the following king rail habitat requirements:

- Diverse wetland complexes with open water; and
- Dominant vegetation consisting of sedges and cattails.

#### 2.0 Results

The desktop habitat assessment resulted in a total of 19 sites that may provide suitable king rail habitat. Eighteen sites were field-verified as potentially suitable habitat, while one site was not field-verified due to a land access denial. For this site, wetland/waterbody features were determined through the use of National Wetland Inventory and Environmental Systems Research Institute (ESRI) stream data. Farm ponds and forested wetlands were not considered suitable king rail habitat and were excluded from the desktop analysis. The results of the desktop assessment are presented in the table below (**Table 1**). Color photographs, wetland delineation sheets and maps of each wetland listed in **Table 1** can be found in Appendices A, B, and C, respectively.

#### 3.0 Conclusion

MDC will determine, based on their review of the desktop habitat assessment, whether occurrence surveys must be conducted. If so, then ENSR will develop survey protocols in accordance with MDC.

Table 1 Desktop Habitat Assessment for Suitable King Rail Habitat in Buchanan, Carroll, Chariton, Lincoln, and St. Charles Counties, Missouri

Wetland ID	County	Keystone MP	REX MP	Photo Available	Data Sheet Available	Dominant Vegetation	Open Water Present	Comments
W3ABC011	Buchanan	756.7	545.2	Yes	Yes	Typha latifolia, Carex atherodes, Phalaris arundinaacea	Yes	Poor to marginal habitat due to the surrounding tree line. Trees provide less than 30% cover.
S3ABC072	Buchanan	758.0	551.5	Yes	Yes	NA	Yes	Pond that corresponds to W3ABC011. Poor to marginal habitat.
W3ABC007	Buchanan	763.0		Yes	Yes	Salix nigra, Acer saccharinum, Carex atherodes	Yes	Poor to marginal habitat due to partly palustrine forested vegetation (PFO).
W3ABC007A	Buchanan	763.0	551.5	Yes	Yes	Salix nigra, Acer saccharinum, Carex atherodes	Yes	Poor to marginal habitat due to partly PFO.
S_ESRI_032	Carroll	819.0	607.5	No	No	DENIED ACCESS TO Identified	TRACT – UI on ESRI Ma	
W3ACR010	Carroll	831.2	618.3	Yes	Yes	Carya ovata, Phalaris arundinacea, Carex sp.		Poor to marginal habitat because site is mostly forested.
W4ACI029	Chariton	841.1	629.6	Yes	Yes	Carex atherodes, Eleocharis palustris	Yes	Floodplain along the Grand River.
W4ACI032	Chariton	841.7	630.2	Yes	Yes	Carex sp.	No	Floodplain along the Grand River.
S4ACI133	Chariton	842.0	630.5	Yes	Yes	Carex sp.	Yes	Part of the Grand River floodplain.
W4ACI021	Chariton	849.4	637.9	Yes	Yes	Typha angustifolia, Carex sp., Juncus sp.	Yes	Marginal habitat – portions of pond forested.
W4ACI020	Chariton	850.5	639.0	Yes	Yes	Typha latifolia, Phalaris arundinacea, Carex sp.	Yes	Open water and emergent vegetation.
W4ACI012	Chariton	858.4	656.9	Yes	Yes	Typha latifolia, Carex sp.	No	Poor to marginal habitat - no open water.

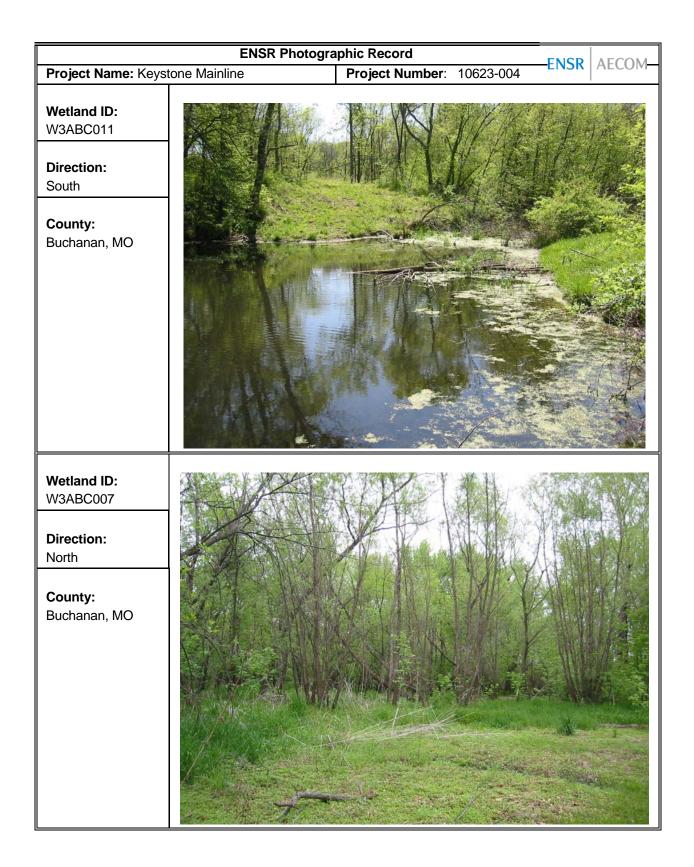
Table 1 Desktop Habitat Assessment for Suitable King Rail Habitat in Buchanan, Carroll, Chariton, Lincoln, and St. Charles Counties, Missouri

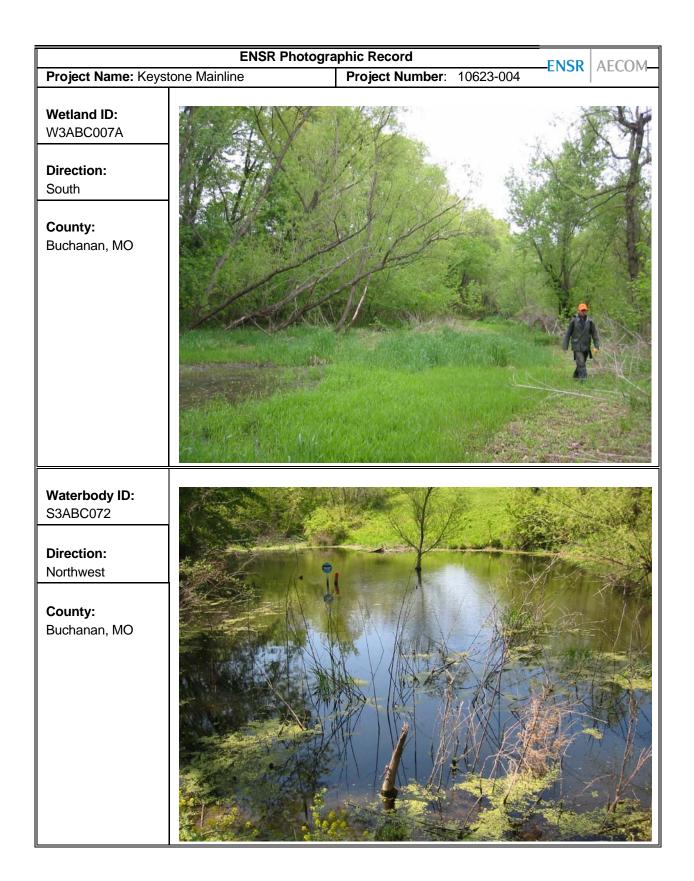
Wetland ID	County	Keystone MP	REX MP	Photo Available	Data Sheet Available	Dominant Vegetation	Open Water Present	Comments
W4ACI010	Chariton	859.8	648.3	Yes	Yes	Polygonum sp., Carex sp., Phalaris arundinacea	No	Route crosses fringing wetlands, no open water. Pond to the south.
WSCIMOLI001	Lincoln	973.8	N/A	Yes	Yes	Ludwigia alternifolia	Yes	Good potential king rail habitat. Open water and emergent vegetation.
WSCIMOLI002	Lincoln	973.8	N/A	Yes	Yes	Leersia oryzoides, Rumex altissimus	No	Poor to marginal habitat; no open water.
WSCIMOLI003	Lincoln	973.9	N/A	Yes	Yes	Leersia oryzoides, Rumex altissimus, Amaranthus luberculatus	Yes	Marginal habitat; adjacent to pond outside of ROW.
WSCIMOSC00 3	St. Charles	982.8	N/A	Yes	Yes	Cassia fasiculata, boltonia asteroides, carex spp., Juncus tenuis, Bidens frondosa, Cephalanthus occidentalis, Salix nigra	No	Poor to marginal habitat; no open water.
WSCIMOSC00 4B	St. Charles	982.8	N/A	Yes	Yes	Sagittaria latifolia, Leersia oryzoides, Polygonum hydropiperoides	Yes	Marginal habitat surrounded by trees and PFO.
WSCIMOSC00 7	St. Charles	984.9	N/A	Yes	Yes	Leersia oryzoides, Cephalanthus occidentalis, Salix nigra, Phyla lanceolata, Bidens frondosa	Yes	Marginal habitat adjacent to Peruche Creek.

Appendix A

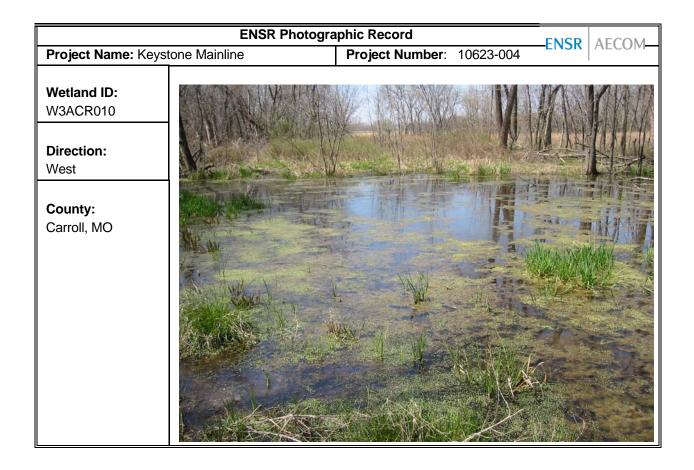
**Wetland Photographs** 

Buchanan County, MO Photographs



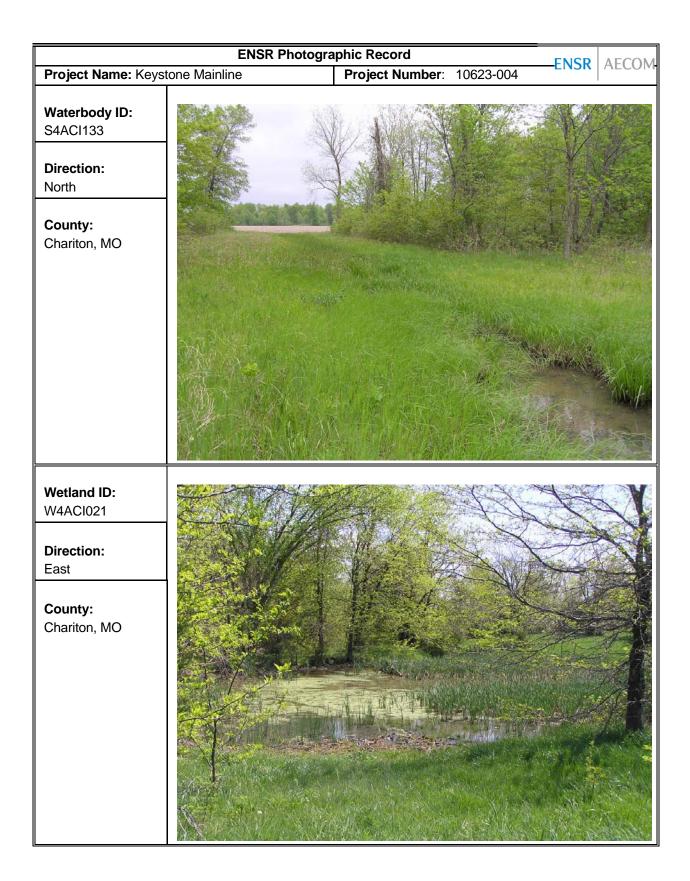


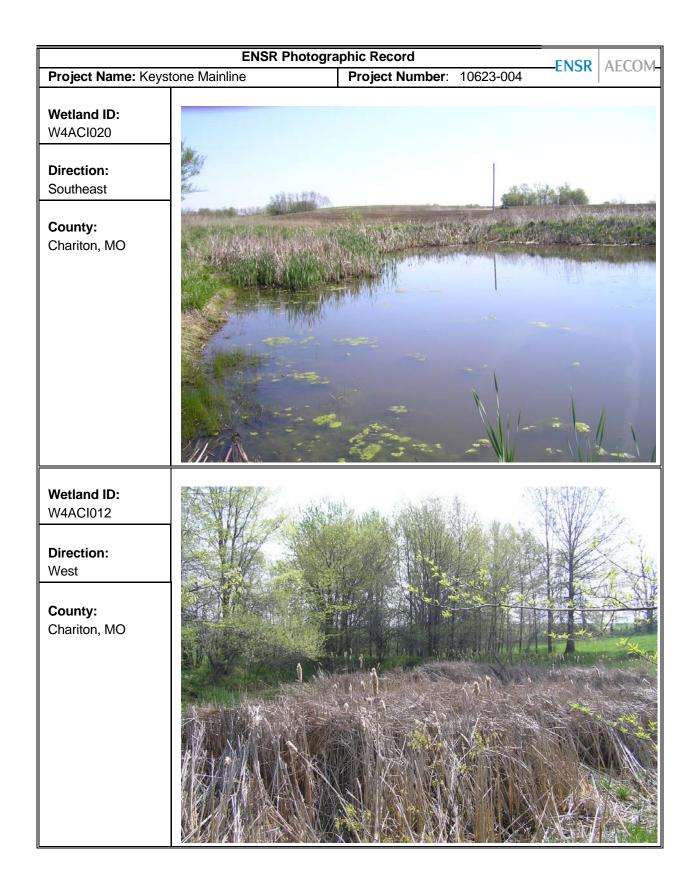
Carroll County, MO Photographs

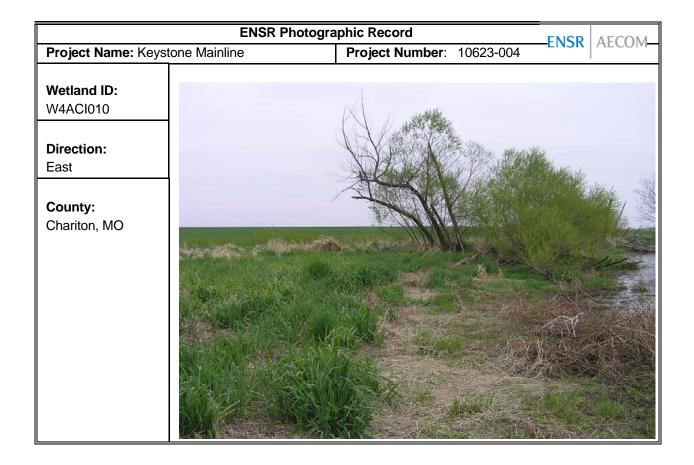


Chariton County, MO Photographs









Lincoln County, MO Photographs

**ENSR Photographic Record** 

Project Name: Keystone Mainline

Project Number: 10623-004

-ENSR | AECOM-

Wetland ID: WSCIMOLI001

**Direction:** S

County: Lincoln

Comments: Open water and emergent vegetation.
Located in Cuiver River watershed near Campbell Creek.



Wetland ID: WSCIMOLI001

**Direction: SW** 

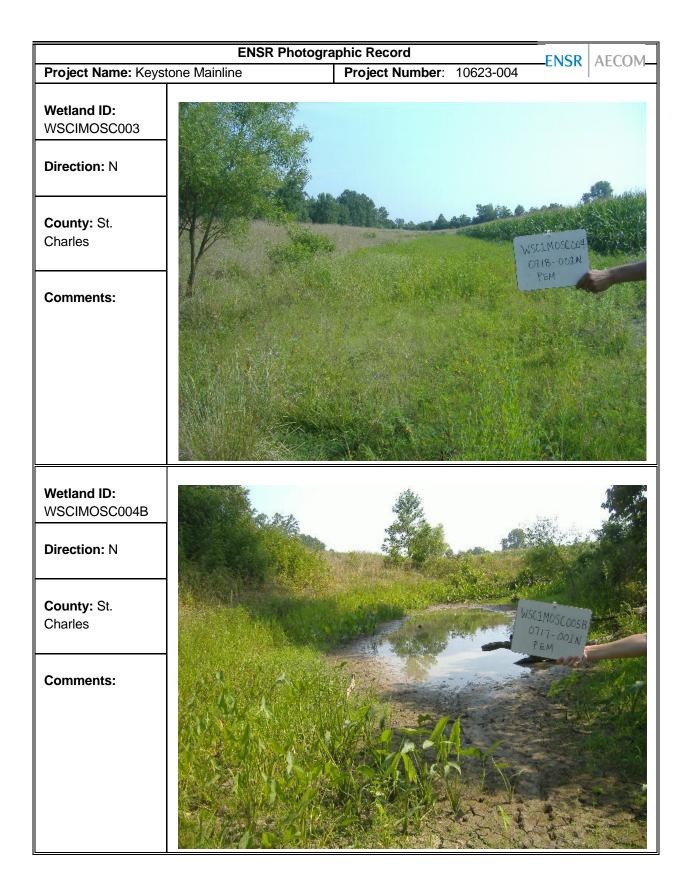
County: Lincoln

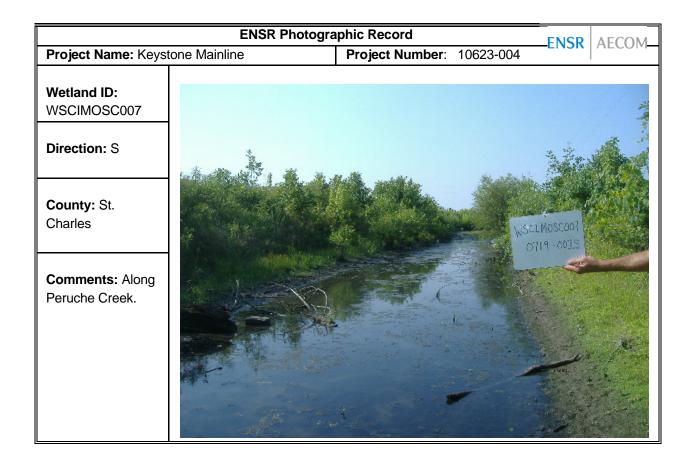
Comments: Open water and emergent vegetation.
Located in Cuiver River watershed near Campbell Creek.



**ENSR Photographic Record ENSR AECOM** Project Name: Keystone Mainline Project Number: 10623-004 Wetland ID: WSCIMOLI002 **Direction:** NE County: Lincoln Comments: Located near SC1MOUDAX 0713-001Mc Campbell Creek in the Cuiver River watershed. Wetland ID: WSCIMOLI003 **Direction:** SW County: Lincoln Comments: Located near Campbell Creek in the Cuiver River watershed.

St. Charles County, MO Photographs

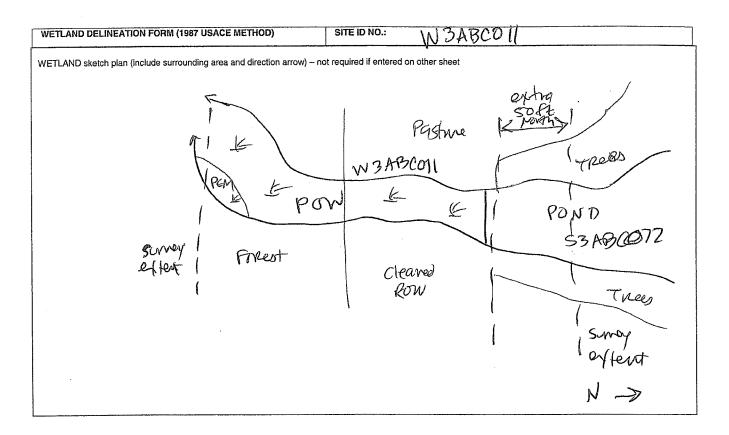




Appendix B

**Wetland Data Sheets** 

Table: A 27 OC GOS PLAN TO CONTROL TO CONTRO	WETLAND DELINEATION	FORM (1987 L	JSACE ME	THOD)	Site ID No.: N3	ABCOIL	Milepost::	5'45' 25'
Logorou Rigo Note: 1210 2-12   Broad Affect No. 15 C - 57   Photo Note: NOTAGOOI - 047-706   Interest Waterwesp: 5 2 MBCOT2   Waterwised: -   Desirate Basin: -   Desi	Date: 427/06		GPS FILE:	RO42		7.0001	I	277
Logorou Rigo Note: 1210 2-12   Broad Affect No. 15 C - 57   Photo Note: NOTAGOOI - 047-706   Interest Waterwesp: 5 2 MBCOT2   Waterwised: -   Desirate Basin: -   Desi	Staff: MAG R	DW	Client/Project	Name: Rockies	s Express Pipeline Projec	ot (REX-West) 04060-018-1	10	<del>~~</del>
Materiands	Logbook Page No's.: BIO 2 PC	120-121	······					42706
DOMINANT PLANT SPECIES (% Cover)  Stratum Indicator  Topho Loth Fortin H  Poll 2  Lown No. Sp.  Ny riop hyllurus Spiceton  Robert Sp.  Pollurus Spiceton  Robert Sp.  Robert S			Watershed:	-	- <del> </del>			
DOMINANT PLANT SPECIES IS Goven  Stratum  Indicator  In Ciphe Lach force  H OPEL  LACH force  H OPEL  LACH force  H OPEL  LACH force  H OPEL  LACH force  LACH force  H OPEL  LACH force	Loop/Facility:		State/County/l	Municipality:	Buchanam			
1. Tupple. Latti folia: 2. Lamina Special H. OBL 2. 3. My r. op Yill vm Spi Cafum H. OBL 2. 3. My r. op Yill vm Spi Cafum H. OBL 3. 4. Phallagine Carundularacea H. Facuut 4. 5. Eaclus H. Magra T. Facuut 5. 6. Eaclus H. Magra T. Facuut 5. 6. Eaclus H. OBL 6. 7. Invocation Cadenarus H. Facuut 5. 6. Eaclus H. OBL 6. 7. Invocation Cadenarus H. Facuut 5. 6. Eaclus H. OBL 6. 7. Invocation Cadenarus H. OBL Facuut 6. 6. Eaclus H. OBL 6. 7. Invocation Cadenarus H. OBL 7. 8. Cares Alherode H. OBL 7. 8. Magra 7. 8. Cares Alherode H. OBL 7. 8. Cares Alherode H. OBL 7.	DOMINANT DI ANT SPECIES (9), C	avart.		ark (1756)/183				
2 DeWANDA Sec.  A PARIGHE CHANNEL HE SECRET HE						IN I SPECIES (% Cover)	Stratum	Indicator
a. My Find Pyll Limbs Spice How Spice How Spice How Spice How Spice How Spice	, JI							
5. SCHUM MIGGTER 6. RELACION TO THE STATE OF	3. Myriophyllums	picatum		, ,				
6. CHORD UM GRUP IN THE STORY I	4. Phalais arma	nacea	H	FacW+	4.			
7. Involution Carbons H	5. Salix Mara			FACWF	5.			
a. Caves Atherodes He are OBL. FACW, or FAC (excluding FAC): 100 % Per Centr of Dominant Species that are OBL. FACW, or FAC (excluding FAC): 100 % REMARKS: REQUED NOT > 300% ADMINIMANT > 24555 Fanc - Neutral feat 8 8  PYOROLOGY Recorded Data? NO Describe: (Force) Pepth of Surface Water in Pit: Depth of Surfac		-3	H	081	6.			
Per Cent of Dominant Species that are OBL, FACW, or FAC (excluding FAC): 100° // REMARKS: TROOD NOT 300 dom/wwwt passes few not a passes few not not seem of the passes of the not of single of Surface Water. Several Feat 1 (or or on) Depth of Surface Water: Several Feat (or or on) Depth of Surface Water: Several Feat (or or on) Depth of Surface Water: Several Feat (or or on) Depth of Surface Water: Several Feat (or or on) Depth to Saturated Soli:	7. Impatiens Can	genoro		FacW	7.			
REMARKS: TROUGO NO. T. SOME DESCRIPTION OF THE WORLDOOK PROCORD DEPTH OF FROM STURBOR Water: Several Perin, or of more control of the Control of Saturated Soit: Several Perin, or of more control of the Control of Saturated Soit: Several Perin, or of more control of Saturated Soit: Secondary Wetland Indicators: Secondary Wetland Indica	8. Cavex atherodes		#					
Property of Surface Water: Several Red (in. or orm)						,		
Recorded Data? NO Describus Depth to Surface Water: Sewbull Felin. or dm) Depth to Free Water in Pit:	Control of the Control of Control	<u> </u>	gomi	court;	passes for	ovc-Neutral 1	est 8	පී
Depth of Surface Water: Several Rest. (In or								
Depth to Fire Water in Pit: Depth to Saturated Soil: Secondary Wetland Indicators (2 or more required): Saturated in Upper 12 Inches (30 cm) Water Stationed Leaves Local Soil Survey Data Drift Lines Sodiment Deposits Drift Lines Sodiment Deposits Drainage Patterns in Wetlands Estimate of wetlands or weters within disturbance area REMARKS: Soil Survey Map Unit (Series and Phase): Taxonomy (to Studgroup): Profile Description: Depth Range Horizon Desig, (Matrix Color (Ionanes) Horizon Desig, (Matrix Color (Ionanes) Horizon Desig, (Marsell Moist) Depth Range Histosol  Histosol  Histosol  Histosol  Aquic Moisture Regime Listed on Local Hydric Soils List Listed Order Aquic Moisture Regime Listed on Local Hydric Soil Indicator (Explain in Remarks)  No Hydrophylic Vagatation Present? No Nettland Determination No Nettland Determinations No Nettland Hydrology Present? No Nettland Determinations No Nettland Hydrology Present? No Nettland Hydrology Present? No Nettland Determinations No Nettland Hydrology Present? Ne Nettland Hydrology Present? Ne			ona)	Ott - Note		****		
Depth to Saturated Soil:	Depth of Surface Water: Seve	(in. or d	m)	Ciner Notes	ted to cz	180012		
Primary Wetland Indicators:    Secondary Wetland Indicators (2 or more required):   Inundated	Depth to Free Water in Pit:	(in. or c	m)	White		HOCOL		
Inundated   Oxidized Root Channels in Upper 12 Inches (30 cm)   Saturated in Upper 12 Inches (30 cm)   Water-Stained Leaves	Depth to Saturated Soil:	$\mathscr{P}$ (in. or c	m)					
Saturated in Upper 12 Inches (30 cm)   Water-Stained Leaves	Primary Wetland Indicators:			Secondary Wetland Indicators (2 or more required):				
Water Marks Difft Lines Sediment Deposits Sediment Deposits Other (Explain in Remarks) Drainage Patterns in Wetlands Estimate of wetlands or waters within disturbance area REMARKS: AQUALIC OCAL (PWN) MALE PROPERTY OF PROPE	<u></u> Inundated				Oxidized Root Chann	els in Upper 12 Inches (30 d	em)	
Drift Lines  Sediment Doposits  Drainage Patterns in Wetlands  Estimate of wetlands or waters within disturbance area  REMARKS: **AUCHIC OCALLY** (W. C. Soils Soi	∑ Saturated in Upper	12 Inches (30 cm)			$\underline{X}$ Water-Stained Leave	s	~~~~	
Sediment Deposits Drainage Patterns in Wetlands Estimate of wetlands or waters within disturbance area  REMARKS: **POWATIC OCAT (**POWATIC CONTINUATION COLOR (**POWATIC CONTINUATION COLOR COLOR CONTINUATION COLOR CONTINUATION COLOR CO					Local Soil Survey Da	ta		
Drainage Patterns in Wetlands Estimate of wetlands or waters within disturbance area  REMARKS: AQUALIC COCK (AW) AQUALIC					FAC-Neutral Test		***************************************	
Estimate of wetlands or waters within disturbance area  REMARKS: **POUNT C NOW (**PONT**) **PONT** **P					Other (Explain in Ren	narks)		
SOILS  Soil Survey Map Unit (Series and Phase):  Taxnonny (to Subgroup):  Profile Description:  Depth Range (Inches or cm)  Inches or cm)  In								
SOILS  Soil Survey Map Unit (Series and Phase):  Taxnonny (to Subgroup):  Profile Description:  Depth Range (Inches or cm)  Inches or cm)  In	BEMARKS AQUATIC	no A COM	DADIA.	Anna	Landle D	to a le	- COA - A	1 0 0 - 1 6
Soil Survey Map Unit (Series and Phase):  Taxonomy (to Subgroup):  Profile Description:  Depth Range Horizon Desig Matrix Color (Munsel Moist) (Abundance/Contrast/Color)	The state of the second state of the second according	Jan Clar.	$t^{most}$	7500	= 1 eget- 1 = 0	Vara to man	1 x mae	Chorn 1
Profile Description:  Depth Range (Inches or cm)  O-3"  Histosol  Histo Epidedon  Aquic Moisture Regime  Aquic Moisture Regime  Aquic Moisture Regime  Listed on Local Hydric Soils List  Gleyed or Low-Chroma Colors  REMARKS:  Wetland Hydrology Present?  Mottles (Abundance/Contrast/Color)  Texture, Concretions, Structure, Redox Concen., etc.  Texture, Concretions, Structure, Redox Concent., etc.  Texture, Concretions, Structure, Pedox Concent., etc.  Texture, Concretions, Structure, Concretions, Pedox Concent., etc.  Texture, Concretions, Pedox Concent., etc.  Texture, Concretions, Pedox Concent., etc.  Texture, Concretions,	The state of the s	ase):	magaalaagaagaa ee minii	<u> </u>		Oralnage Class:		
Depth Range (Inches or cm) (Munsell Moist), (Munsell Moist), (Abundance/Contrast/Color) Texture, Concretions, Structure, Redox Concen., etc.    Parallel	Taxonomy (to Subgroup):	<u> </u>			F	ield Observations Confirm	Mapped Type?	
(Inches or cm)  Charles or charles or concertions, Structure, Redox Concent, etc.  Subject of the common, dro  Concretions or Redox Concentrations  High Organic Content  Concretions or Redox Concentrations  High Organic Streaking in Sandy Soils  Listed on Local Hydric Soils List  Concretions or Redox Concentrations  High Organic Content  Concretions or Redox Concentrations  High Organic Streaming in Sandy Soils  Concretions or Redox Concentrations  High Organic Content  Concretions or Redox Concentrations  Concretions or Redox Concentrations  High Organic Content  Concretions or Redox Concentrations  High Organic Content  Concretions or Redox Concentrations  Co	Profile Description:					JSDA Land Resource Regio	n:	
## Paragraph   Par		. Matrix Color						
Histosol  Histo Epidedon  Sulfidic Odor  Aquic Moisture Regime  Gleyed or Low-Chroma Colors  REMARKS:  WETLAND DETERMINATION Hydrophytic Vegetation Present? Hydrophytic Soils Present? No  Wetland Hydrology Present? Hydrophytic Soil Surganizes? No  Significantly Disturbed:  REMARKS:  No  Is This Sampling Point Within a Wetland?  Patential Packlets Accounts  Patential Packlets Accounts  Replaced to the Common, dro  Concretions or Redox Concentrations  High Organic Content  Organic Streaking in Sandy Soils  Listed on Local Hydric Soils List  Cher USDA Hydric Soil Indicator (Explain in Remarks)  Remarks: No  Is This Sampling Point Within a Wetland?  YES  NO  Remarks:  Remarks:  No  Remarks:  No  Remarks:  Remarks:  No  Remarks:  No  Remarks:  No  Remar			ist),	(Abundance/				cen., etc.
Histosol		2.548	23//	7,54	R5/8		END OF	MON de
Histic Epidedon  Grganic Content  Grganic Content  Grganic Streaking in Sandy Soils  Listed on Local Hydric Soils List  Gleyed or Low-Chroma Colors  REMARKS:  WETLAND DETERMINATION  Hydrophytic Vegetation Present?  Wetland Hydrology Present?  Hydric Soils Present?  No  Hydric Soils Present?  No  REMARKS:  No  Hydric Soils Present?  No  REMARKS:  No  REMARKS:  No  Remarks  No  Is This Sampling Point Within a Wetland?  Patrolic Present According to	B   S   V2			7,5 1	1-1/9	Sitionery (	ATTIC CO	ryon
Histic Epidedon  Grganic Content  Grganic Content  Grganic Streaking in Sandy Soils  Listed on Local Hydric Soils List  Gleyed or Low-Chroma Colors  REMARKS:  WETLAND DETERMINATION  Hydrophytic Vegetation Present?  Wetland Hydrology Present?  Hydric Soils Present?  No  Hydric Soils Present?  No  REMARKS:  No  Hydric Soils Present?  No  REMARKS:  No  REMARKS:  No  Remarks  No  Is This Sampling Point Within a Wetland?  Patrolic Present According to								
Sulfidic Odor Organic Streaking in Sandy Soils Aquic Moisture Regime Listed on Local Hydric Soils List Other USDA Hydric Soil Indicator (Explain in Remarks)  REMARKS:  WETLAND DETERMINATION Hydrophytic Vegetation Present? Yes No Wetland Hydrology Present? Yes No Hydric Soils Present? Yes No REMARKS:  Normal Circumstances?	Histosol			]	Concretions or Redox	Concentrations		
Aquic Moisture RegimeListed on Local Hydric Soils List Other USDA Hydric Soil Indicator (Explain in Remarks)  REMARKS:  WETLAND DETERMINATION  Hydrophytic Vegetation Present?	Histic Epidedon			7	High Organic Content	<u> </u>		
Aquic Moisture RegimeListed on Local Hydric Soils ListOther USDA Hydric Soil Indicator (Explain in Remarks)  REMARKS:  WETLAND DETERMINATION  Hydrophytic Vegetation Present?	Sulfidic Odor				Organic Streaking in	Sandy Soils		
Gleyed or Low-Chroma Colors Other USDA Hydric Soil Indicator (Explain in Remarks)  REMARKS:  WETLAND DETERMINATION  Hydrophytic Vegetation Present?	Aquic Moisture Regi	me						
WETLAND DETERMINATION Hydrophytic Vegetation Present? Wetland Hydrology Present? Hydric Soils Present?  No  Hydric Soils Present?  No  REMARKS:  No  Significantly Disturbed:  Normal Circumstances?  Normal Circumstances?					orka)			
WETLAND DETERMINATION  Hydrophytic Vegetation Present? Yes No  Wetland Hydrology Present? Yes No  Hydric Soils Present? Yes No  REMARKS:  No Is This Sampling Point Within a Wetland? YES NO  Remarks:				_	Guidi GODA Fiyalio C	on tridicator (Explain in 1981)	idikə)	
Hydrophytic Vegetation Present?  Wetland Hydrology Present?  Hydric Soils Present?  No  Hydric Soils Present?  No  REMARKS:  No  Is This Sampling Point Within a Wetland?  YES  NO  Hydric Soils Present?  No  Remarks:  No  Remar		TANA ANG SAN	eyer (1907)					
Wetland Hydrology Present?  Hydric Soils Present?  No REMARKS:  No Ris This Sampling Point Within a Wetland?  YES NO Remarks:  Normal Circumstances?		(Valent				900, 41.4 4 정원정(1) (1) 41.50 U		
Hydric Soils Present?  REMARKS:  Normal Circumstances?  According to the standard of the stand				1. 801 -			<b>\</b>	
REMARKS:  Normal Circumstances?  Vac Significantly Disturbed:  Normal Circumstances?				is ints Sam	pung Point Within a We	etland? YES	סא ל	
Normal Circumstances? \( \rangle \rang			140					
	Normal Circumstances?	5	Significantly	Disturbed:	No	Potential Problem Area	No	



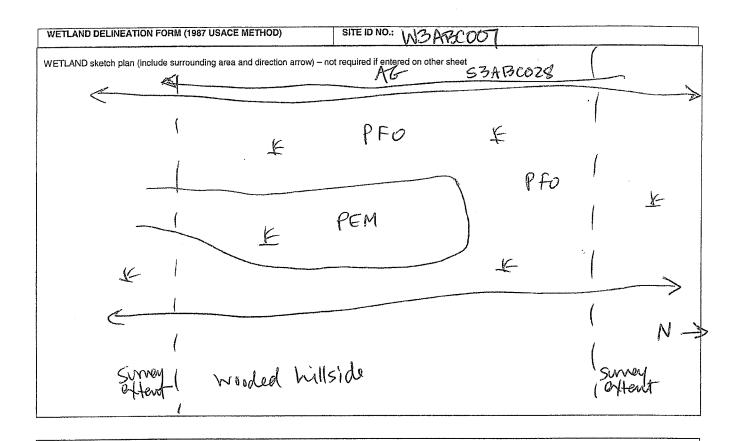
GENERAL COMMENTS (ie. wetland disturbed by landowner, excessive noxious weeds in wetland, weather conditions, landowner issues, etc):

Mostly pow - High Evality (except that cons are do fe to access pand - Joesn't seem to affect WL)
PEM is small, on bank on E side & WL
There here are < 30% dominant

104.0					70700
WATERBODY	DATA - Page 1 of 1	Stream ID No.: 53f	B0070	GPS Flie;	28789400
Date:		Client/Project Name: F	IDCO 12	RC427 13A	MILEPOST: 545.25
Staff: 10.00	27/06	N-X3W 1 101801 IMEX-W	(est)	Project #: 04060-018-11	0 17.25
· · · · · · · · · · · · · · · · · · ·	5 PDW	State/County/Municipa	ity:	LOOP/FACILITY NAME:	
Logbook page No's.:	B102 P6120	Block/ Buchan	(1)		
STREAM Sketch Plan	include surrounding	Lot/Tract No.: PC	-57	Photo No(s).:	pstr Dostr
	odiroding are	Lot/Tract No.: OC	flow direction arroy	3/R2C072_04270	76-!V
	1		Pastive	"   OKta Soft	I and the second
	11 &				effect
				1	
	X	POW &	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	$T_{i}$	
			= +	11 PONI	Pastine
	offent (				ABC072
	extent, N	latriet		1	14)0012
	1	nmatrie Forest	- cleaned		
Stream Flow Oo. A			Rm	(	
LOUGHIN FIOW POND	Perennial	Moderate Intermittent	Slow	Pooled	$N \rightarrow .$
Flow Depth (In.)	apol (elt		Ephemeral	Direction of Flow	None
	1 0-3	3-6 6-12	12-24 24-3		
Stream Width at Crossin	ig (ft.) Top of Banks:	500 Chann	el OWHM:	70-1	001
Stream Substrate %	Bedrock %	Gravel %	7.	Water Surface	: 45'
Bank Height (ft.)	Left 0-2	2-4		Silt/Clay OD %	Organic %
(looking downstream)	Right (0-2)	2-4	4-6	6-8	8+
Bank Slope (%) (looking downstream)	Left 0-20	/20-40	40-60	6-8	8+
	Right 0-20	20-40	40-60	60-80 60-80	80+
Water Clarity	Clear	Slightly Turbid	Typoid of	1 00-00	80+
Aquatic Habitat	Sand Bar		( And old )	Very Turbid	Color: black-touring
Undercut Banks	Overhanging	Gravel Bar In stream emergent	Mud Bar	Gravel Riffles	Deep Pools
	trees/shrubs	plants	In-stream submerge	ent Bank root	Fringing Pools
Aquatic Organisms	Waterfowl	Fish (adult)		systems	Wetlands
Observed	Snakes	Invertebrates	Fish (juvenile) Other:	(Frogs)	Turtles
T/E SPECIES / SUITABLE H	ABITAT		- 01011		
are the first of the second of	V/A				
RIPARIAN VEGETATION D	ESCRIPTION				
In mixed ac	<i>1</i> .	A Poor			
Comments (e.g. pipeline or	Design and	of 604-41	of Row -	also parture	
Comments (e.g. pipeline crown SABCOU )	a b. at antight diffill	II COnstrainte progine	tential, existing distu	rbances mandass :	
W3ABCOIL b	attached to	pond on <	· Catte	20 GOOD LO	th variations
			<u>'* )                                   </u>	20 Freely W	Jack (n/avi of
STREAM QUALITY (circle)  High Quality - no indication	I of strong	igh ) In In		POVOL IN	many places
High Quality - no indication diverse and stable fish & will Medium Quality - mild to m provides fair fish and wildlife.	dlife habitat - gravel he	in stream or adjacent ar	es - diverse and ma	Low	
Medium Quality - mild to m	oderate disturbances re-	sult in miner and	ercut banks, riffles ar	nd pools - no channeliza	ated cover .
Medium Quality - mild to m provides fair fish and wildlife and depth variation restricted	habitat - some erosior	put in minor recognizable potential - some habite	alterations - existin	g pipeline, road, railroad.	other ROWs
provides fair fish and wildlife and depth variation restricted Low quality - disturbances of	<ul> <li>some channelization</li> </ul>	- trees, grass, or forbs	dominate bank veget	diment deposition predom	inate - flow
intense grazing activities	ause significant change	s affecting plant species	- Mechaniani da		
intense grazing activities - s high erosion potential - flow vegetation	and depth variation lack	tion or ditching - exotic	nuisance, or invasiv	e species - habitat diver	If soils -
Page 1 of 1		2 not brovide st		t - grass or forbs domina	te bank
ar var i vi i					

PEM/PFO W3ABLOU7a (PEM) 29/20/00 Site ID No.: W3ABC007 WETLAND DELINEATION FORM (1987 USACE METHOD) Milepost:: 551.51 R042503A 4/25/06 GPS FILE: MAG ROW Client/Project Name: Rockies Express Pipeline Project (REX-West) 04060-018-110 Staff: BC-0 Logbook Page No's.: @ Bio 2 P6 10 Block/Lot/Tract No.: Photo No's .: N3 ABC007\_042506 5 Nearest Waterway: S3 ABC028 Watershed: Drainage Basin: -Loop/Facility: State/County/Municipality: E Buchaman DOMINANT PLANT SPECIES (% Cover) Stratum Indicator NON-DOMINANT PLANT SPECIES (% Cover) Indicator Stratum 1. Saggitaria làtifolia Salix niara Fac Wt OBL Acer sacharinum FACIN Vimus americana FUC Hydrophyllum sp. 1 FACW 3. Phalaris grandinacea Fac Wt atherodes Carex OBL. 1 Polotonoma pomospicionico 6. a monibium H OBL POTGGONUM 7. Musham Fac-6BL Per Cent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 151990 Passes Fac-Neutral test 6/6 HYDROLOGY NÕ Recorded Data? Describe: old channel Depth of Surface Water: (in. or cm) Depth to Free Water in Pit: (in. or cm) Thio bacillus observed Depth to Saturated Soil: (in, or cm) **Primary Wetland Indicators:** Secondary Wetland Indicators (2 or more required): Nundated Oxidized Root Channels in Upper 12 Inches (30 cm) X Saturated in Upper 12 Inches (30 cm) Water-Stained Leaves Water Marks Local Soil Survey Data Y Drift Lines X FAC-Neutral Test Sediment Deposits Other (Explain in Remarks) L Drainage Patterns in Wetlands Estimate of wetlands or waters within disturbance area S3ABC02A is next to M ; old Channel a Platte Soil Survey Map Unit (Series and Phase): Drainage Class: Taxonomy (to Subgroup): Field Observations Confirm Mapped Type? Profile Description: USDA Land Resource Region: Depth Range Horizon Desig. Matrix Color Texture, Concretions, Structure, Redox Concen., etc. (Munsell Moist) (Abundance/Contrast/Color) (Inches or cm) B Gley fine, common, tain D-12+ 2.5 Histosol Concretions or Redox Concentrations K Histic Epidedon High Organic Content Sulfidic Odor Organic Streaking in Sandy Soils X Aquic Moisture Regime Listed on Local Hydric Soils List X Other USDA Hydric Soil Indicator (Explain in Remarks) Moth -X Gleyed or Low-Chroma Colors now filled REMARKS: (Na me WETLAND DETERMINATION **Fes** Hydrophytic Vegetation Present? Νo Yes Wetland Hydrology Present? No Is This Sampling Point Within a Wetland? YES NO Yes Hydric Soils Present? REMARKS: No 40 Normal Circumstances? 105 Significantly Disturbed: Potential Problem Area?

VO



GENERAL COMMENTS (ie. wetland disturbed by landowner, excessive noxious weeds in wetland, weather conditions, landowner issues, etc):

OUD FINED-(N CHANNEL OF THE PLATT REVER)

HIGH QUAUTY

WETLAND DELINEATION FORM (1987	USACE ME	ETHOD)	Site ID No.:	3ACR010	Milepost::	C12
Date: 4/10/06	GPS FILE:	ROAK	)12A			410
Staff: LEH RDW	Client/Projec	t Name: Rockie	s Express Pipeline F	Project (REX-West) 04060-01	8-110	
Logbook Page No's.: BID I PU 46	Block/Lot/Tra	act No.:	JR-53	Photo No's.: 103	ACR010-041	006.
Nearest Waterway: BIG CREEK	Watershed:	BIG CR			ede é	
Loop/Facility:	State/County	/Municipality:	CARRO		,	
DOMINANT PLANT SPECIES (% Cover)	Stratum	Indicator		PLANT SPECIES (% Cove	r) Stratum	Indi
1. Carva 64949	T	FacU	1.		i) Grandia	111631
2. Phalaris arundinacea	H	Facwt	2.			
3. Cavex Sp. (no infloreseme)	H	Fac-OBL	3.			
4. Lemna sp.	<u>i</u> +	OBL	4			
1 5. pologonumi pamphibium	<u>i</u> t	ERCHOOP.	L <sub>5.</sub>		-	
6. QUEVEUS PALUSTRUS	T	FacW	6.			
7.			7			
8.		<u> </u>	8.			
Per Cent of Dominant Species that are OBL, FACW, o		ing FAC-):	20%			····
REMARKS: Passes Fac Neutro	xl lest	415				
HYDROLOGY						
Recorded Data? ND Describe:		wd .				
Depth of Surface Water: Up to Swerous tin. or	ent in po	Other Notes	ina ovea	my Rt.65	ally ron	nee
Depth to Free Water in Pit:(in. or	cm)	10 B	CARON Ali	ma Rt. 65		
Depth to Saturated Soil: Ø (in. or	cm)	(10 10 11)	o de la partir de la constantina della constanti	,,,,,		
Primary Wetland Indicators:		Secondary				
✓ Inundated		,		hannels in Upper 12 Inches (	(30 cm)	
Saturated in Upper 12 Inches (30 cm)	)		✓ Water-Stained L		,00 cm)	
Water Marks			Local Soil Surve			
Drift Lines			K FAC-Neutral Tes			
Sediment Deposits			Cher (Explain in	Remarks) Buttesse	ed meen	UNI
Drainage Patterns in Wetlands			•			
Estimate of wetlands or waters within disturbance area	a					
REMARKS: 2000	200 21 4.00					
SOILS						
A STATE OF THE STA				Drainage Class:		
Soil Survey Map Unit (Series and Phase):	-					
Soil Survey Map Unit (Series and Phase): Taxonomy (to Subgroup):				Field Observations Confi	rm Mapped Type?	
Soil Survey Map Unit (Series and Phase): Taxonomy (to Subgroup): Profile Description:				Field Observations Confi		
Soil Survey Map Unit (Series and Phase):  Taxonomy (to Subgroup):  Profile Description:  Depth Range Horizon Desig. Matrix Colo		Mottles (Abundance)	Contrast/Color)	USDA Land Resource Re	egion:	en e
Soil Survey Map Unit (Series and Phase):  Taxonomy (to Subgroup):  Profile Description:  Depth Range (Inches or cm) (Munsell Mc (Munsell Munsell Mc (Munsell Mc (M		Mottles (Abundance/	Contrast/Color)		egion: ructure, Redox Cond	en., e
Soil Survey Map Unit (Series and Phase):  Taxonomy (to Subgroup):  Profile Description:  Depth Range Horizon Desig. Matrix Colo		Mottles (Abundance/	Contrast/Color)	USDA Land Resource Resource Resource Concretions, Str	egion: ructure, Redox Cond	en., e
Soil Survey Map Unit (Series and Phase):  Taxonomy (to Subgroup):  Profile Description:  Depth Range (Inches or cm) (Munsell Mc (Munsell M		(Abundance/		USDA Land Resource Returner, Concretions, Str	egion: ructure, Redox Cond MC Matta	en., e
Soil Survey Map Unit (Series and Phase):  Taxonomy (to Subgroup):  Profile Description:  Depth Range Horizon Desig. Matrix Colo (Munsell Mc Phase)  On 1,5 O O Y (2)  1.5 124 B LOY (2)		(Abundance/	Common, F	USDA Land Resource Re Texture, Concretions, Str 200/0 Organ	egion: ructure, Redox Cond MC Matta	cen., e
Soil Survey Map Unit (Series and Phase):  Taxonomy (to Subgroup):  Profile Description:  Depth Range (Inches or cm) Horizon Desig. Matrix Colo (Munsell M. Dolor J. Solor J. S		(Abundance/	Concretions or R	USDA Land Resource Retrieved to the contraction of the contractions and the contractions are contractions.	egion: ructure, Redox Cond MC Matta	cen., e
Soil Survey Map Unit (Series and Phase):  Taxonomy (to Subgroup):  Profile Description:  Depth Range (Inches or cm) Horizon Desig. (Munsell Mc (Munsell Munsell Munsel		(Abundance/	Common, F	USDA Land Resource Retrieved to the contraction of the contractions and the contractions are contractions.	egion: ructure, Redox Cond MC Matta	cen., e
Soil Survey Map Unit (Series and Phase):  Taxonomy (to Subgroup):  Profile Description:  Depth Range (Inches or cm) Horizon Desig. Matrix Colo (Munsell M. Doll, 5 Doll, 6 Dol		(Abundance/	Concretions or R	USDA Land Resource Retreature, Concretions, Str	egion: ructure, Redox Cond MC Matta	cen., e
Soil Survey Map Unit (Series and Phase):  Taxonomy (to Subgroup):  Profile Description:  Depth Range Horizon Desig. Matrix Colo (Munsell Mc Portion Phase)  Original Phase Horizon Desig. Matrix Colo (Munsell Mc Portion Phase)  Histosol Histosol  Histosol  Sulfidic Odor  Aquic Moisture Regime		(Abundance/	Concretions or R	USDA Land Resource Re Texture, Concretions, Str  2000 OTGAN  LINE S  edox Concentrations  ntent g in Sandy Soils	egion: ructure, Redox Cond MC Matta	cen., e
Soil Survey Map Unit (Series and Phase):  Taxonomy (to Subgroup):  Profile Description:  Depth Range Horizon Desig. Matrix Colo (Munsell Mr. 10 Y/2)  1.5 124 B 10 Y/2  — Histosol — Histic Epidedon — Sulfidic Odor		(Abundance/	Concretions or R High Organic Co Organic Streakin	USDA Land Resource Re Texture, Concretions, Str  2000 OTGAN  LINE S  edox Concentrations  ntent g in Sandy Soils	egion: ructure, Redox Conc AC Matty 7/14/1003	cen., (
Soil Survey Map Unit (Series and Phase):  Taxonomy (to Subgroup):  Profile Description:  Depth Range Horizon Desig. Matrix Colo (Munsell Mc Phase)  Depth Range Horizon Desig. Matrix Colo (Munsell Mc Phase)  — Histosol — Histosol — Histosol — Sulfidic Odor — Aquic Moisture Regime	oist) 2/1 -3/2	(Abundance)	Concretions or R High Organic Co Organic Streakin Listed on Local H	USDA Land Resource Re Texture, Concretions, Str DOOO OTGAN  ELECTRIC STR  edox Concentrations  ntent  g in Sandy Soils  sydric Soils List	egion: ructure, Redox Conc AC Matty 7/14/1003	
Soil Survey Map Unit (Series and Phase):  Taxonomy (to Subgroup):  Profile Description:  Depth Range Horizon Desig. Matrix Colo (Munsell Mc Phase)  Only 15 Only 15 Only 10 Y (2)  Histosol Histosol  Histosol Histo Epidedon  Sulfidic Odor  Aquic Moisture Regime  X Gleyed or Low-Chroma Colors  REMARKS: The Oba Cill US 3058 V Vest	oist) 2/1 -3/2	(Abundance)	Concretions or R High Organic Co Organic Streakin Listed on Local H	USDA Land Resource Re Texture, Concretions, Str DOOO OTGAN  ELECTRIC STR  edox Concentrations  ntent  g in Sandy Soils  sydric Soils List	egion: ructure, Redox Conc AC Matty 7/14/1003	
Soil Survey Map Unit (Series and Phase):  Taxonomy (to Subgroup):  Profile Description:  Depth Range Horizon Desig. Matrix Colo (Munsell Mr.  D-1.5 D 10 Y/2  I S 10 Y/2  Histosol  Histic Epidedon  Sulfidic Odor  Aquic Moisture Regime  X Gleyed or Low-Chroma Colors  REMARKS: Th (Dha Cill US 3058 West	oist) 2/1 -3/2 3 Decay	(Abundance)	Concretions or R Concretions or R High Organic Co Organic Streakin Listed on Local H Cother USDA Hyd	USDA Land Resource Re Texture, Concretions, Str  1000 OTGAN  etwork, Fine S  edox Concentrations  ntent g in Sandy Soils  dydric Soils List  fric Soil Indicator (Explain in F	egion: ructure, Redox Conc AC Matty 7/14/1003	
Soil Survey Map Unit (Series and Phase):  Taxonomy (to Subgroup):  Profile Description:  Depth Range (Inches or cm) (Munsell Mc (Munsell Munsell Munsell Munsell Munsell Munsell Mc (Munsell Munsell M	oist) 2/1-3/2 3/2 No	(Abundance)	Concretions or R High Organic Co Organic Streakin Listed on Local F Other USDA Hyd	USDA Land Resource Retrieved to the contractions of the contraction of the	egion: ructure, Redox Conc ric Matta illy Clay Remarks) Moth	
Soil Survey Map Unit (Series and Phase):  Taxonomy (to Subgroup):  Profile Description:  Depth Range (Inches or cm) Horizon Desig. (Munsell Mc (Munsel	oist) 2/1 -3/2 3 Decay	(Abundance)	Concretions or R High Organic Co Organic Streakin Listed on Local H	USDA Land Resource Retrieved to the contractions of the contraction of the	egion: ructure, Redox Conc ric Matta illy Clay Remarks) Moth	

WETLAND DELINEATION FORM (1987 USACE METHOD)	SITE ID NO.: W	3ACRO10		
WETLAND sketch plan (include surrounding area and direction arrow) - no	t required if entered o	n other sheet	(	
Smeyeflent		proposedCL	Surreyestent	_
State	Pt-65	•		N ->>
, call	1 1 1	@ 21 <sup>(0</sup>	1	1
1 PFO		<i>)</i> ,		
V 2 (2	785	. VPLAM	1 UPLAND	
UPLAN	<b>₽</b>	1 203	7-1	
( [28] 206 \$	205	203 203	1001	
21			7	
/ K STA	12	·	1 = 1	
1 PPO	<u> </u>	' DM	PFO	
7 7 2 6		, 10		
(107	106 105		- 101	
(170)	AND	103	UPLA	M
(			(	
		1	<u> </u>	
	C	hack those	trongs out v	I tre
GENERAL COMMENTS (ie.wetland disturbed by landowner, excessive now	dous weeds in wetland	i, weather conditions, lando	owner issues, etc): $6P$	s -
FROGS + OWL OBSERVED			YW.	i USTO
TROUS 4 OVAL OUT OF	Const	dout	(5	$\mathcal{J}$
Beautiful, High ovality	( con f	JIM DIN	eusity) pfo 9	veas
many dead snags & fre	e cani	es hore	monus live	,
shaebark hickorsys in	A . M. o . ca	rate	(1.0)	•
Show balk more by 3 11	n and n	i acuel		

WATERBODY DA	ATA - Page 1 of 1	Stream ID No.:	17	GPS File		MILE	POST:	_
Date:	01	Client/Project Name: Roo	kies Express	Project	#: 04060-018-	A (	029.6	
4/25 ) Staff:	0.6	Pipeline Project (REX-Wes State/County/Municipality		_{				
44		Charton Co		LOOP/F/	ACILITY NAME	:		
Logbook page No's.:	00 50	Block/	7.60	Photo N		Upstr	Dnst	-
STREAM Sketch Plan (inc	clude surrounding area	Lot/Tract No.:		(1)	08,-W	100	10- N 3	Joseph-
h &		bank 85					ide que	-
1		1203	7 libani	٠	· · · · · · · ·	)	1)(1)	
	4			£				
		17.7	Jan -					
			77.00		4			
			<i>N</i> :		***************************************			
		19 100:	17:			٠,		
Hrib to a	rand Rive	2.						
Stream Flow	Fast (Perennial)	Moderate	Slow		Pooled	i i	Vone	 
Pro Date Control	<u> </u>	Intermittent	Ephemeral		Direction of	Flow:	5	
Flow Depth (in.)	0 0-3	3-6 6-12	12-24	24-36×	36-48	48-60	60 +	7
Stream Width at Crossin	g (ft.) Top of Banks	: 100 Channe	el OWHM: C	75 '	Water Sur	face: 5	351	- 7
Stream Substrate %	Bedrock %	Gravel %	Sand 7-6	%	Silt/Clay 3/		Organic %	J T
Bank Height (ft.)	Left 0-2	2-4	4-6		6-8			J T
(looking downstream)	Right 0-2	2-4)	4-6		6-8		+	-
Bank Slope (%) (looking downstream)	Left 0-20 Right 0-20	20-40 20-40	(40-60)		60-80	8	0+	] ]
Water Clarity	Clear		40-60		60-80	[6	0+)	]
	Clear	Slightly Turbid	Turbid	(	Very Turbid	С	olor: DVOA	DA
Aquatic Habitat Undercut Banks	Sand Bar NO Overhanging	Gravel Bar AO	Mud Bar	yes	Gravel Riffles	no D	eep Pools 110	
ges-	trees/shrubs	plants MO	In-stream sut plants p	がmergent でつ	Bank root systems	Fi	ringing /	
Aquatic Organisms	Waterfowl	Fish (adult)	Fish (juvenile					
Observed	Snakes	Unvertebrates	Other: ///	155el	Frogs)	1 To	urtles 	
T/E SPECIES / SUITABLE	HABITAT	1 1 2 2 2 2				,		
110 11 6 00	2) MODATO	nd bank	-, per	)==(1/1)	ruia N	Shru	bs	
RIPARIAN VEGETATION D	DESCRIPTION							
1 HATUR CARRY SP	, totentilla	Posalix evice	<u></u>					
Comments (e.g. pipeline c	rossing angle construc	tion constraint		g disturban	ices, meanders	Or width	Variation	
peune cro	issing angle	perpendicula	of tro	A1000	~ SVI	/ C /	variations	
Wetland						< $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$	7.e	
STREAM QUALITY (circle	)	High	Medium		Low			
High Quality - no indication of the high Quality - no indication of the high quality o	vildlife habitat – grave	nce in stream or adjacent I beds, submerged logs, ur	area – diverse	and mature	fringing shrub	-dominat	ed cover -	
vieulum Quaimv - mild to	moderate disturbances	ropula in					1	1
provides fair fish and wildli and depth variation restrict	re nabitat – some ero: ed – some channeliza:	sion potential - some hab tion - trees, grass or fort	itat diversity -	fine sedim	ent deposition	ıııroad, o predomir	tner HUWs -	į
.ow quality - disturbance	s cause significant abo		o dominate Da	ik vegeratio	on			
ntense grazing activities – nigh erosion potential –  flo	stream course channe	elization or ditching - exot	tic, nuisance, o	r invasive s	of plant specie pecies – habit	s and/or at divers	soils -	-
nigh erosion potential – flo regetation	s.a coper variation	racking - does not provide	suitable wildlif	e habitat -	grass or forbs	dominat	e bank	!

'age 1 of 1

WETLAND DE	ELINEATION F	ORM (198	7 USACE MI	ETHOD)	Site ID No.: [A]	4A.CI	07 9	Milepost::	1.00
Date: 4/2	5106		GPS FILE:		2509A	77.0	02-1	micpost	029.0
Staff: L-A			Client/Project	1 4km	s Express Pipeline P	roject (REX-West)	04060-018-11	0	
Logbook Page No	s.: BOOK	2 pg. 5	Block/Lot/Tra		-004	Photo No's		<u> </u>	
Nearest Waterway		aram		arani	TR.			<u> </u>	
Loop/Facility:		J.		/Municipality:	Charitar	Drainage 6			
DOMINARY DI AR	IT SPECIES (% Cov			T			2/0		T
1. CO. CPY	atherode	\$ (75)	Stratum	Indicator OP-L-	1. UNK	PLANT SPECIES	(% Cover)	Stratum	Indicator
		ustris	(s) H	OBL	2.	1. 3 nn	10-010	<u> </u>	PFA-C
3.				CH 3 Same	3.			•	-
4.					4.			·	
5.					5.				-
6.					6.			·	
÷ 7.				<b>†</b>	7.				
8.		······································		<del>                                     </del>	8.			·	
	ant Species that are	OBL. FACW	or FAC leveludi	no FAC-): 2	<del></del>	97			L
REMARKS:			· · · · · · · · · · · · · · · · · ·		15- 100	107			
HYDROLOGY			<del></del>						
Recorded Data?	Des	scribe: be	rmed	1.01	- 20		01/1 -1		
Depth of Surface V		in. o		Other Notes	$\frac{AVICS-C}{C}$	issoc. U	N/til	o to	Chan c
Depth to Free Wat		1000 (in. a		-					0
· · · · · · · · · · · · · · · · · · ·				1					1
Depth to Saturated	Soil:	<u>(j)</u>	cm)						
Primary Wetland	Indicators:			Secondary Wetland Indicators (2 or more required):					
	ındated				Oxidized Root Ch	annels in Upper 12	Inches (30 cn	n)	
	turated in Upper 12	nches (30 cm	)		✓ Water-Stained Le				
	ater Marks				Local Soil Survey	Data			
	ft Lines			}	FAC-Neutral Test				
	diment Deposits		·····	Other (Explain in Remarks)					
<u> </u>	ainage Patterns in W Is or waters within d	etlands	a 0=1						
			35'	x 2001					
REMARKS:			·	<del></del>					
Soil Survey Man Ur	nit (Series and Phase	, l.							
Taxonomy (to Subg		····				Drainage Class:			
	* *		<del></del>			Field Observation			- Marie
Profile Description	"moderate	molec	of clan		reduction	USDA Land Rese	ource Region:		
Depth Range (Inches or cm)	Horizon Desig.	Matrix Cold		Mottles (Abundance/	Contrast/Color)	Texture, Concreti	ions. Structure	. Redox Con	can atc
0-12"	AI	10 WR	1-11	54R 4	16 10 0/2 DYS	clauran		C	
		)		,	1	. 3	1 1000	<del>ジ ( 11.10</del>	
		<u> </u>							
	tosol				Concretions or Rec	dox Concentrations			
Hist	tic Epidedon				High Organic Cont	ent			
Sulf	idic Odor			Organic Streaking in Sandy Soils					
Aqu	ic Moisture Regime			Listed on Local Hydric Soils List					
X Gle	yed or Low-Chroma	Colors			Other USDA Hydric		lain in Dame-	ka)	~
REMARKS:					_ s coor riyan	Son maidator (exp	nam m meman	no)	
WET AND DESCRIPTION	MINIATION!								
WETLAND DETER		Yes	N. T						
							(3		
					ling Point Within a V	Vetland?	(YES)	NO	
REMARKS:		Yes	No						
Normal Circumstance	es?		Significantly D	Disturbed: A	1.7	Dotomic Des	blam 4 = 0	·	
	upe,			Disturbed:	V	Potential Pro	blem Area? y	70	

WETLAND DELINEATION FORM (1987 USACE METHOD)	SITE ID NO .: WHACL OZG
WETLAND sketch plan (include surrounding area and direction arrow) no	
4	( trib to Grand R.
N	
2	
	( E BY
	S/ PEM/
	$\langle     v  $
80.506.5	
& corps plat.	enter
(r) pand	d X ; to
	bEW.
V wetland	
E	

GENERAL COMMENTS (ie.weitland disturbed by landowner, excessive noxious weeds in wetland, weather conditions, landowner issues, etc):

i	LINEATION FOR	RM (1987	USACE ME	THOD)	Site ID No.: (A)	4A. C1. 03	277	Milepost:;	630.2	
Date: 4/25	106		GPS FILE:	RN425	09A				630.9	
Staff: 4A						oject (REX-West) 040	60-018-110	0	4 ) 0 3 1	
Logbook Page No's	·· BOOK 2	09.51		ct No.:		Photo No's.:	∩ €		<u>e)</u>	
	trib to ar		Watershed:	arand	R.	Drainage Basi			2.	
Loop/Facility:			State/County/		Charitan	Co., mo				
DOMINANT PLAN	Y SPECIES (% Cover	ì,	Stratum	Indicator		PLANT SPECIES (%	Coveri	Stratum	Indicates	
	s polusto	1 < (10)		FACW	1. Solden	ajaantea	(2)	+	FACUS	
	15 birole	(10)	Í	FACINT	2 action	< P. (8)	. ,	.41	=1700	
3. Pancuy	1111115 5	¿ P. (5)	F	BFACW)	3. Spilobias	n S.p. (5)	)	HIF	> FAW	
4. COCOX		<del>,,,</del>	$\mathcal{H}$	OBL	4. Celtis	50 (5)	)	F	-FAC-	
5. Eleoch		ris (5)	++	OBL	5. Phlox	C.E. (5)	)	F/H	之FAL	
8. Azer so	secharinum	(lo)	F.	FACUL	6. Querais	macrocaro	m (3)	F	FAZ-	
7.	******				7. Aschedia	- incacnatal	2)	1-1	OBL	
8.					8. Azer 1	enundo (	(5)	F	FK W	
Per Cent of Domina	ant Species that are O	BL, FACW, o	or FAC (excludi	ng FAC-):	6/6 = 100	e Po				
REMARKS:										
HYDROLOGY										
Recorded Data?	Descr	ibe:								
Depth of Surface W	Vater:	(in) or	cm)	Other Notes	· P'	nddlena thro Seattered	1 12 on	,	· · · · · · · · · · · · · · · · · · ·	
Depth to Free Wate	er in Pit: 3 8	2. ' (in.)or	cm)	150mc	oindwaed g	seattered				
Depth to Saturated	Soil:	)((iii) or	cm)	Pto Me	Hand-tr	art to pe	75A			
Primary Wetland I	ndicators:			Secondary 1	Wetland Indicators (	2 or more required):				
lnu	ndated					annels in Upper 12 Inc	ches (30 cr	n)	· · · · · · · · · · · · · · · · · · ·	
<u>√</u> Sa	turated in Upper 12 Inc	ches (30 cm)			Water-Stained Le			::/		
Wa	ater Marks				Ļocal Soil Survey	Data				
Dri	ft Lines			_	FAC-Neutral Test			<del></del>		
Şe	diment Deposits			Olher (Explain in Remarks)						
	ainage Patterns in Wei									
Estimate of wetland	ds or waters within dist	urbance area	1 1 200	) × 300	001					
ŘEMARKS:										
SOILS						`				
L	nit (Series and Phase):					Drainage Class:				
Taxonomy (to Subg						Field Observations				
Profile Description	>0/4/10 m	Dark (	1/x L. Fe	reduction	NS .	USDA Land Resour	rce Region	:		
Depth Range (Inches or cm)	Horizon Desig.	Matrix Color (Munsell Mo	r pist)	Mottles (Abundance/	Contrast/Color)	Texture, Concretion	s, Structur	e, Redox Coi	ncen., etc.	
0-12	A	10412	3/2	300/Fx	int/104R 5/2	Clay loav	Λ.	. CCU		
					/ :	1		\\	·	
11:-										
	tic Epidedon		<del></del>			dox Concentrations				
	fidic Odor				High Organic Cont					
	uic Moisture Regime		Organic Streaking in Sandy Soils							
} <u>-</u>		·		<del> </del>	Listed on Local Hy					
X Gle	yed or Low-Chroma C				Omer USDA Hydri	c Soil Indicator (Expla	ın ın Hema	rks)		
	ANIA ATTORY			<del></del>						
WETLAND DETER		(es)	Nic	<u> </u>						
Hydrophytic Vegeta		es	No							
Wetland Hydrology		Yes	No	is This Sam	pling Point Within a	Wetland?	(YES	NO	1	
Hydric Soils Present REMARKS:	11.	(Tes	No	l	<del></del>					
Normal Circumstan	ces? YES		Significantly	Disturbed:	(0	Potential Probl	em Area?	NIO		

WETLAND DELINEATION FORM (1987 USACE METHOD)	SITE ID NO .: W. 4A. CI. 03	2
WETLAND sketch plan (include surrounding area and direction arrow) - n		. 8 colli
EUS 1351 PEM  EUS PFO		Dem

GENERAL COMMENTS (ie. wetland disturbed by landowner, excessive noxious weeds in wetland, weather conditions, landowner issues, etc):