APPENDIX A
Wetland Data Forms
(Additional Features Only)

gai consultants
transforming ideas into reality

VIL-CDK-001

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: STL Pipeline City/County: Jersey Co Sampling Date: 11/1/16
Applicant/Owner: Spire State: IL Sampling Point: PEM
Investigator(s): CDK/TTR Section, Township, Range: 3, 7N, 12W, 25
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): concave
Slope (%): <1% Lat: 39.021611 Long: -90.377264 Datum: NAD83
Soil Map Unit Name: Greenbush silt loam, 2-5% slopes NWI classification: PEM
Are climatic / hydrologic conditions on the site typical for this time of year? Yes Y No ____ (If no, explain in Remarks.)
Are Vegetation Y*, Soil N, or Hydrology Y* significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
PEM situated in a drainage swale. * veg mowed, drained by culvert. NWI wetland.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30')			
1. Absent			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. Absent			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5')			
1. Phalaris arundinacea	80	Y	FACW
2. Solidago canadensis	10	N	FACU
3. Ambrosia trifida	10	N	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1. Absent			
2.			
	0 = Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

WIL-COK-001

SOIL

Sampling Point: PEM

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16"	10YR 4/2	95	7.5YR 4/6	5%	C	M	SL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: NONE

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ~

Water Table Present? Yes ___ No X Depth (inches): ~

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ~

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

* Drained by roadside culvert

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WETLAND DETERMINATION DATA FORM – Midwest Region

WIL-DFW-001

Project/Site: STL Pipeline City/County: Jersey Co. Sampling Date: 9/23/2016

Applicant/Owner: Spire State: Il Sampling Point: Wetland

Investigator(s): D. Ware and R. Maggiore Section, Township, Range:

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Concave

Slope (%): 3 Lat: Long: Datum:

Soil Map Unit Name: Winfield Silt Loam, 2-5% slopes NWI or WWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No	**Is the Sampled Area within a Wetland?** Yes X No
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	

Remarks:
PEM has formed in a concave depression near a residential property. Historical aerial imagery as early as 2013 shows that a pond used to be located where the wetland has formed.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5)			
1. *Persicaria pennsylvanica*	60	Yes	FACW
2. *Persicaria lapathifolia*	35	Yes	FACW
3. *Echinochloa crus-galli*	3	No	FACW
4. *Ambrosia trifida*	2	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-14"	10YR 4/1	97	7.5YR 4/4	3	C	M	SiL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ____ Depth (inches): 1"

Water Table Present? Yes ____ No X Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): ____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WIL-JJP-003

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Spire City/County: Scott Sampling Date: 9-9-2016
Applicant/Owner: Spire STL State: ILL Sampling Point: wetland
Investigator(s): JJP - TMA Section, Township, Range: Section 28, T13N, R12W
Landform (hillslope, terrace, etc.): Depression - on plain Local relief (concave, convex, none): Concave
Slope (%): 2 Lat: 39.540330 Long: -90.430672 Datum: NAD 83
Soil Map Unit Name: Keomah silt loam, 0-2% slopes NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	Is the Sampled Area within a Wetland? Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:
- Area sample point for Abutting, PEM wetland WIL-JJP003
- Area of wetland near culvert outflow

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30)			
1.			
2.			
3. Absent			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3. Absent			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5')			
1. Setaria pumila	60	Y	FAC
2. Setaria viridis	15	N	UPL
3. Schedonorus arundinaceus	15	N	FAC
4. Cyperus esculentus	10	N	FACW
5. Echinochloa crus-galli	10	N	FACW
6. Amaranthus rudis	5	N	UPL
7.			
8.			
9.			
10.			
	115 = Total Cover		
Woody Vine Stratum (Plot size: 30'r)			
1.			
2. Absent			
	0 = Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
✓ 1 - Rapid Test for Hydrophytic Vegetation
✓ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks: (Include photo numbers here or on a separate sheet.)
- None

WI-LJJP003

SOIL

Sampling Point: wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/3	100					SCL	
4-17	10YR 4/1	78	7.5YR 5/8	10	C	M		
			7.5YR 4/6	5	C	M		
			7.5YR 4/6	5	C	PL		
			10YR 3/1	2	C	M		Manganese concn

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5)
- __ 2 cm Muck (A10)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ 5 cm Mucky Peat or Peat (S3)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Loamy Mucky Mineral (F1)
- __ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- __ Coast Prairie Redox (A16)
- __ Dark Surface (S7)
- __ Iron-Manganese Masses (F12)
- __ Very Shallow Dark Surface (TF12)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: none

Depth (inches): —

Hydric Soil Present? Yes ✓ No ____

Remarks:

none

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- __ Surface Water (A1)
- __ High Water Table (A2)
- __ Saturation (A3)
- __ Water Marks (B1)
- __ Sediment Deposits (B2)
- __ Drift Deposits (B3)
- __ Algal Mat or Crust (B4)
- __ Iron Deposits (B5)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Sparsely Vegetated Concave Surface (B8)
- __ Water-Stained Leaves (B9)
- __ Aquatic Fauna (B13)
- __ True Aquatic Plants (B14)
- __ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- __ Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Tilled Soils (C6)
- __ Thin Muck Surface (C7)
- __ Gauge or Well Data (D9)
- __ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- __ Surface Soil Cracks (B6)
- __ Drainage Patterns (B10)
- __ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- __ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): —

Water Table Present? Yes ____ No ✓ Depth (inches): —

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): —

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

WIL-JJP-006A

Project/Site: Spine City/County: Greene Sampling Date: 9-12-2016
Applicant/Owner: Spine JTL State: ILL Sampling Point: wetland
Investigator(s): JJP-TMA Section, Township, Range: Section 3, T12N, R12W
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): concave
Slope (%): 4 Lat: 39.518063 Long: -90.429856 Datum: NAD83
Soil Map Unit Name: Hickory silt loam, 18 to 35 percent slopes NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	Is the Sampled Area within a Wetland? Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:
- Area sample point for abutting PSS wetland WT JJP006A
- Area along drainage channel from upslope agric. field

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30'r)			
1.			
2. Absent			
3.			
4.			
5.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15'r)			
1. Salix nigra	60	Y	OBL
2.			
3.			
4.			
5.			
	60 = Total Cover		
Herb Stratum (Plot size: 5'r)			
1. Phalaris arundinacea	40	Y	FACW
2. Persicaria punctata	20	Y	OBL
3. Salix nigra	20	Y	OBL
4. Lobelia siphilitica	10	N	OBL
5. Carex frankii	10	N	OBL
6. Pilea pumila	10	N	FACW
7.			
8.			
9.			
10.			
	110 = Total Cover		
Woody Vine Stratum (Plot size: 30'r)			
1.			
2. Absent			
	0 = Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks: (Include photo numbers here or on a separate sheet.)
- None

WILWP006A

SOIL

Sampling Point: wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4"	2.5Y 4/2		7.5YR 4/6	10	C	M	SiCL	
			5YR 3/4	5	C	M		
			7.5YR 4/6	5	C	PL		
4-17	2.5Y 5/2		7.5YR 4/6	15	C	M	SC	
			7.5YR 4/6	5	C	PL		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Marl

Depth (inches): ✓

Hydric Soil Present? Yes ✓ No ___

Remarks:

- None

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ✓ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ✓ No ___ Depth (inches): 14"

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 10"

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

- None

WIL-JJP-008

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Spire City/County: Greene Sampling Date: 9-12-2016
Applicant/Owner: Spire STL State: ILL Sampling Point: wetland
Investigator(s): JJP-TMA Section, Township, Range: Section 3, T12N, R12W
Landform (hillslope, terrace, etc.): hillslope-foot position Local relief (concave, convex, none): none
Slope (%): 2 Lat: 39.515570 Long: -90.430114 Datum: NAD83
Soil Map Unit Name: Kendall silt loam, 0 to 2 percent slopes NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ____	Is the Sampled Area within a Wetland? Yes ✓ No ____
Hydric Soil Present?	Yes ✓ No ____	
Wetland Hydrology Present?	Yes ✓ No ____	

Remarks:
- Area sample point for DEM - Isolated wetland WILJJP008
- Area borders corn field and pasture

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30'r)			
1.			
2.			
3. Absent			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15'r)			
1.			
2.			
3. Absent			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5'r)			
1. Echinochloa crus-galli	25	Y	FACW
2. Persicaria punctata	20	Y	OBL
3. Trifolium repens	10	N	FACU
4. Persicaria pensylvanica	10	N	FACW
5. Eclipta prostrata	10	N	FACW
6. Cyperus esculenta	10	N	FACW
7.			
8.			
9.			
10.			
	85 = Total Cover		
Woody Vine Stratum (Plot size: 30'r)			
1.			
2. Absent			
	0 = Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
✓ 1 - Rapid Test for Hydrophytic Vegetation
✓ 2 - Dominance Test is >50%
__ 3 - Prevalence Index is ≤3.0[1]
__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks: (Include photo numbers here or on a separate sheet.)
- none

WILJP008

SOIL

Sampling Point: wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4"	10YR 4/4	65	7.5YR 4/6	20	C	M	SiC	
			7.5YR 4/6	5	C	PL		
			7.5Y 4/2	10	D	M		
4"-17"	5Y 4/2	70	5YR 3/4	20	C	M	SiC	
			5YR 4/6	5	C	M		
			5YR 4/6	5	C	PL		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ✓ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (Inches): —

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction In Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ✓ No ___ Depth (inches): 6"

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 4"

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

—

WIL-JSP-011

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: STL City/County: Jersey Co Sampling Date: 11-17-2016
Applicant/Owner: Spire State: IL Sampling Point: wetland
Investigator(s): JWP-TMA Section, Township, Range: 3, 7N, 12W, 25
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave
Slope (%): 2 Lat: 39.025022 Long: -90.381559 Datum: NAD83
Soil Map Unit Name: Elco silt loam, 10-18% slopes, eroded NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:
- Area sample point for PEM/Abutting wetland WETLAND
- Area located within drainage of active soybean field

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30'r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3. Absent			
4.			
5.			
	0 = Total Cover		

Sapling/Shrub Stratum (Plot size: 15'r)			
1.			
2.			
3. Absent			
4.			
5.			
	0 = Total Cover		

Herb Stratum (Plot size: 5'r)			
1. Panicum dichotomiflorum	60	Yes	FACW
2. Setaria pumila	30	Yes	FAC
3. Carex frankii	10	No	OBL
4. Rumex crispus	5	No	FAC
5. Schedonorus arundinaceus	5	No	FACU
6.			
7.			
8.			
9.			
10.			
	110 = Total Cover		

Woody Vine Stratum (Plot size: 30)			
1.			
2. Absent			
	0 = Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
__ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
__ 3 - Prevalence Index is ≤3.0[1]
__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)
- None

WTLJJP111

Sampling Point: wetland

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	2.5Y3/3	85	7.5YR 4/6	10	C	M-PL	SiCL	
			2.5Y5/2	5	D	M		
2-17	10YR 5/2		7.5YR 4/6	5	C	M-PL	SiCL	
			10YR 4/4	5	C	M		
			10YR 2/1	2	C	M		Manganese conc.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: MMP

Depth (inches): —

Hydric Soil Present? Yes X No ___

Remarks:

— None

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (Inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): —

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (Inches): —

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

- wetland area abuts streams SILTMA064

WIL-JJP-118

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: STL pipeline City/County: Greene Co. Sampling Date: 2-21-2017
Applicant/Owner: Spire State: IL Sampling Point: wetland
Investigator(s): JJP-WJW Section, Township, Range: 14/12N/9W
Landform (hillslope, terrace, etc.): Depression on plain Local relief (concave, convex, none): concave
Slope (%): 2 Lat: 39.228369 Long: -90.403585 Datum: NAD83
Soil Map Unit Name: Beaucoup silty clay loam, cool mesic, 0-2% NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:
- Area sample point for PEM/Abutting wetland WILWP118
- Area possible agricultural drainage ditch.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30'r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2. Absent			
3.			
4.			
5.			
	0 = Total Cover		

Sapling/Shrub Stratum (Plot size: 15'r)			
1.			
2. Absent			
3.			
4.			
5.			
	0 = Total Cover		

Herb Stratum (Plot size: 5'r)			
1. Persicaria maculosa	10	Y	FACW
2. Rumex altissima	5	Y	FACW
3. Panicum dichotomiflora	5	Y	FACW
4. Xanthium spinosum	2	N	FAC
5.			
6.			
7.			
8.			
9.			
10.			
	22 = Total Cover		

Woody Vine Stratum (Plot size: 30'r)			
1.			
2. Absent			
	0 = Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
- X 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)
- None

WILJJP118

SOIL

Sampling Point: wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-17	2.5Y 3/2	90	10YR 3/4	10	C	M-PL	SCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): —

Hydric Soil Present? Yes ✓ No ___

Remarks:

- None

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): —

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): —

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

- wetland abuts stream SILJJP141

WIL-JJP-119

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: STL project City/County: Greene Co. Sampling Date: 2-24-2017
Applicant/Owner: SPire State: IL Sampling Point: wetland
Investigator(s): JP-WJW Section, Township, Range: 14/12N/9W
Landform (hillslope, terrace, etc.): Depression on plain Local relief (concave, convex, none): Concave
Slope (%): 2 Lat: 39.227897 Long: -90.404304 Datum: NAD83
Soil Map Unit Name: Beaucoup silty clay loam, cool mesic, 0-2% NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
- Area sample point for PEM/Abutting wetland WIL JJP119
- Area mapped, NWI
- Area possible agricultural field drainage ditch

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30'r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3. Absent			
4.			
5.			
	0 = Total Cover		

Sapling/Shrub Stratum (Plot size: 15'r)			
1.			
2.			
3. Absent			
4.			
5.			
	0 = Total Cover		

Herb Stratum (Plot size: 5'r)			
1. Panicum dichotomiflora	10	Y	FACW
2. Ranunculus sceleratus	5	Y	OBL
3. Amaranthus tuberculatus	5	Y	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	20 = Total Cover		

Woody Vine Stratum (Plot size: 30'r)			
1.			
2. Absent			
	0 = Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
__ 3 - Prevalence Index is ≤3.0[1]
__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)
- NA

WILNWP119

SOIL

Sampling Point: wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2	98	10YR3/4	2	C	M	SL	
4-17	2.5Y 4/2	80	10YR4/6	10	C	M	SL	
			7.5YR3/4	5	C	M-PL		
			7.5YR4/6	5	C	M-PL		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): —

Hydric Soil Present? Yes ✓ No ___

Remarks:

- None

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Merks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✓ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aeriel Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): —

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): —

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

- wetland abuts stream SILNWP142

VIL-JJP-120

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: STL City/County: Greene Co. Sampling Date: 2/21/17
Applicant/Owner: Spire State: IL Sampling Point: PEM
Investigator(s): JJP / WJW Section, Township, Range: 11 / 12W / 9N
Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave
Slope (%): 0 Lat: 39.233096 Long: -90.407851 Datum: NAD83
Soil Map Unit Name: Lawson silt loam, cool mesic, 0-2% slopes NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:
PEM wetland associated with field drain

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30'r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Absent	—	—	—
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15'r)			
1. Absent	—	—	—
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5'r)			
1. Ammannia coccinea	5	Y	OBL
2. Amaranthus tuberculatus	5	Y	OBL
3. Brassica sp. *	5*	*	*
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	____ = Total Cover		
Woody Vine Stratum (Plot size: 30'r)			
1. Absent	—	—	—
2.			
	0 = Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)
* Species not identified beyond genus level have been omitted from calculations.

WIL - JJP - 120

SOIL

Sampling Point: Wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4"	2.5Y 3/2	80	2.5Y 4/1	20	D	M	SCL	
4-17"	2.5Y 4/1	90	7.5YR 3/4	5	C	M	SCL	
			10YR 3/4	5	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): -

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): -

Water Table Present? Yes ___ No X Depth (inches): -

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): -

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

Isolated.

Stunted corn

WIL-JJP-121

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: STL City/County: Greene Co Sampling Date: 2/21/17
Applicant/Owner: Spire State: IL Sampling Point: PEM
Investigator(s): JJP / WIW Section, Township, Range: 14 / 12W / 9N
Landform (hillslope, terrece, etc.): Depression Local relief (concave, convex, none): Concave
Slope (%): 0 Lat: 39.232343 Long: -90.406868 Datum: NAD83
Soil Map Unit Name: Lawson silt loam, cool mesic, 0-2% slopes NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normel Circumstances" present? Yes X No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	
Hydric Soil Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes X No ____
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Depressional PEM situated on the fringe of an agricultural field and tree line

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Statue
Tree Stratum (Plot size: 30')			
1. Absent	—	—	—
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. Absent	—	—	—
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5')			
1. Lycopus americanus	10	Y	OBL
2. Elymus riparius	10	Y	FACW
3. Symphyotrichum lanceolatum	10	Y	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	30 = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1. Absent	—	—	—
2.			
	0 = Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
- X 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

WIL-JJP - 121

SOIL

Sampling Point: Wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4"	10YR 4/3	85	2.5Y 4/1	5	D	M	CL	
			7.5YR 3/4	5	C	M		
			10YR 3/4	5	C	M		
4-17	10YR 5/2	70	10YR 3/4	10	C	M	CL	
			7.5YR 3/4	10	C	M/PL		
			2.5YR 4/1	10	D	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineret (S1)
- ___ 5 cm Mucky Peat or Peet (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Metrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (Inches): ~

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Merks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imegery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remerks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aeriel Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (Inches): ~

Water Table Present? Yes ___ No X Depth (inches): ~

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ~

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

Adjacent

WIL-JJP-122

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: STL City/County: Greene Co. Sampling Date: 2/24/17
Applicant/Owner: Spire State: IL Sampling Point: Wetland
Investigator(s): JJP / WJW Section, Township, Range: 23 / 12N / 9W
Landform (hillslope, terrace, etc.): Depression on plain Local relief (concave, convex, none): Concave
Slope (%): 0 Lat: 39.214124 Long: -90.319709 Datum: NAD83
Soil Map Unit Name: Greenbush silt loam, 2-5% slopes NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remerks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	
Hydric Soil Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes X No ____
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
PEM situated in an agricultural drainage swale

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30')			
1. Absent			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. Absent			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5')			
1. Panicum dichotomiflorum	100	Y	FACW
2. Amaranthus tuberculatus	10	N	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	110 = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1. Absent			
2.			
	0 = Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

WIL-JJP-122

SOIL

Sampling Point: Wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6"	10YR 3/2	95	10YR 3/4	5	C	M	SL	
6-17"	10YR 3/2	90	10YR 3/4	10	C	M/PL	SL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): —

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (Inches): 3"

Water Table Present? Yes ___ No X Depth (inches): —

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): —

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

Isolated

WIL-JJP-123

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: STL City/County: Greene Co. Sampling Date: 2/24/17
Applicant/Owner: Spire State: IL Sampling Point: wetland
Investigator(s): JJP / WJW Section, Township, Range: 23 / 12W / 9N
Landform (hillslope, terrece, etc.): Floodplain / Depression Local relief (concave, convex, none): Concave
Slope (%): 0 Lat: 39.210005 Long: -90.400015 Datum: NAD83
Soil Map Unit Name: Fayette silt loam, glaciated, 10-18% Slopes NWI claseification: PEM1Fh
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explein in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explein any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:
NWI wetland.
PEM situated on a floodplain

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix nigra	5	Y	OBL
2.			
3.			
4.			
5.			
	5 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. Absent			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5')			
1. Phalaris arundinacea	100	Y	FACW
2. Typha latifolia	30	Y	OBL
3. Urtica dioica	5	N	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	135 = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1. Absent			
2.			
	0 = Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
__ 3 - Prevalence Index is ≤3.0[1]
__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on e separate sheet.)

WIL-JJP-123

SOIL

Sampling Point: Wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6"	10YR 4/2	100	—	—	—	—	SCL	
6-17"	10YR 4/1	90	10YR 3/4	10	C	M/PL	SCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depletad Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problamatic.

Restrictive Layer (if observed):

Type: None

Depth (Inches): —

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (Inches): —

Water Table Present? Yes X No ___ Depth (inches): 4 in

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): SURFACE

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

Abuts SIL-JJP-145

WIL-JJP-124
PEM

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: STL City/County: Greene Co. Sampling Date: 2/24/17
Applicant/Owner: Spire State: IL Sampling Point: Wetland
Investigator(s): JJP / WJW Section, Township, Range: 13 / 12W / 9N
Landform (hillslope, terrace, etc.): Bottomland / depression Local relief (concave, convex, none): Concave
Slope (%): 0 Lat: 39.209468 Long: -90.399522 Datum: NAD83
Soil Map Unit Name: Greenbush silt loam, 5-10% slopes, eroded NWI classification: PEM1Fh
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
PEM wetland situated in a bottomland depression. Possible old pond. Mapped NWI.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30')			
1. Salix nigra	5	Y	OBL
2. Acer rubrum	2	N	FAC
3.			
4.			
5.			
	7	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. Sambucus nigra	5	Y	FAC
2. Rubus alleghaniensis	2	N	FACU
3.			
4.			
5.			
		= Total Cover	
Herb Stratum (Plot size: 5')			
1. Phalaris arundinacea	100	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1. Absent			
2.			
	0	= Total Cover	

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

SIL - JJP - 124

SOIL

Sampling Point: PEM

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-17	10YR 4/1	75	7.5YR 4/6	10	C	M/PL	SiCL	
			5YR 3/4	15	C	M/PL		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): -

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (Inches): -

Water Table Present? Yes ___ No X Depth (inches): -

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): -

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

Abuts SIL-JJP-143.

WIL-JJP-124
PSS

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: STL City/County: Greene Co. Sampling Date: 2/24/17
Applicant/Owner: Spire State: IL Sampling Point: PSS
Investigator(s): JJP / WJW Section, Township, Range: 23 / 12W / 9N
Landform (hillslope, terrace, etc.): Bottomland / Depression Local relief (concave, convex, none): Concave
Slope (%): 0 Lat: 39.209198 Long: -90.399039 Datum: NAD83
Soil Map Unit Name: Green bush silt loam, 5-10% slopes, eroded NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:
PSS situated in a bottomland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Absent			
2.			
3.			
4.			
5.			
	0 = Total Cover		

Sapling/Shrub Stratum (Plot size: 15')			
1. Sambucus nigra	35	Y	FAC
2. Lonicera maackii	5	N	UPL
3.			
4.			
5.			
	40 = Total Cover		

Herb Stratum (Plot size: 5')			
1. Urtica dioica	20	Y	FACW
2. Leersia virginica	10	Y	FACW
3. Phalaris arundinacea	10	Y	FACW
4. Solidago gigantea	5	N	FACW
5. Geum canadense	5	N	FAC
6.			
7.			
8.			
9.			
10.			
	50 = Total Cover		

Woody Vine Stratum (Plot size: 30')			
1. Absent			
2.			
	0 = Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

WIL-JJP-124

SOIL

Sampling Point: PSS

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-17"	10YR 4/1	75	7.5YR 4/6	10	C	M/PL	SiCL	
			5YR 3/4	15	C	M/PL		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): -

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): -

Water Table Present? Yes ___ No X Depth (inches): -

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): -

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

Abts SIL-JJP-146.

WIL-JJP-125

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: STL City/County: Greene Co. Sampling Date: 2/24/17
Applicant/Owner: Spire State: IL Sampling Point: Wetland
Investigator(s): JJP/WJW Section, Township, Range: 33/12N/9W
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave
Slope (%): 0 Lat: 39.207900 Long: -90.397278 Datum: NAD83
Soil Map Unit Name: Greenbush silt loam, 5-10% slopes, eroded NWI classification: PUBGh
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Mapped NWI
PEM situated in a depression.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Absent			
2.			
3.			
4.			
5.			
	0 = Total Cover		

Sapling/Shrub Stratum (Plot size: 15')			
1. Absent			
2.			
3.			
4.			
5.			
	0 = Total Cover		

Herb Stratum (Plot size: 5')			
1. Phalaris arundinacea	80	Y	FACW
2. Persicaria sp. *	20*	*	*
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		

Woody Vine Stratum (Plot size: 30')			
1. Absent			
2.			
	0 = Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)
* Species not identified beyond genus level have been omitted from calculations

WIL-JJP-125

SOIL

Sampling Point: Wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-17	2.5Y 4/1	80	5YR 4/6	10	C	M	SiCL	
			7.5YR 4/6	5	C	M		
			5YR 3/4	5	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: NONE

Depth (Inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

WILTMA001

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: STL PIPELINE City/County: SCOTT CO. Sampling Date: 9/9/2016
Applicant/Owner: SPIRE STL State: IL Sampling Point: WETLAND
Investigator(s): JJP / TMA Section, Township, Range: Section 28, T13N, R12W
Landform (hillslope, terrace, etc.): PLAIN Local relief (concave, convex, none): CONCAVE
Slope (%): 5 Lat: 39.5403558340 Long: -90.4311840497 Datum: NAD83
Soil Map Unit Name: Elco silty clay loam, 10 to 18 percent slopes, severely eroded NWI classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes Y No ____
Wetland Hydrology Present? Yes Y No ____
Is the Sampled Area within a Wetland? Yes X No ____

Remarks: PER @ NHD STREAM LINE; AG DRAINAGE FOR ADJACENT CROPLAND

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 5' x 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3. NONE			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 5 x 15')			
1. LONICERA MAACKII	10	Y	UPL
2.			
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: 5')			
1. PHALARIS ARUNDINACEA	90	Y	FACW
2. LEERSIA ORYZOIDES	10	N	OBL
3. LOBELIA SIPHILITICA	10	N	OBL
4. APIOS AMERICANA	5	N	FACW
5. COMMELINA COMMUNIS	3	N	FACU
6. AMBROSIA TRIFIDA	2	N	FAC
7.			
8.			
9.			
10.			
	110 = Total Cover		
Woody Vine Stratum (Plot size: 5' x 30')			
1.			
2. NONE			
	= Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 20	x 1 =	20
FACW species 85	x 2 =	170
FAC species 2	x 3 =	6
FACU species 3	x 4 =	12
UPL species 10	x 5 =	50
Column Totals: 120 (A)		258 (B)

Prevalence Index = B/A = 2.15

Hydrophytic Vegetation Indicators:
__ 1 - Rapid Test for Hydrophytic Vegetation
__ 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0[1]
__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)
ADJUSTED PLOT SIZE TO WETLAND CONFIGURATION

WILTMA001

SOIL

Sampling Point: WETLAND

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/1	75	10YR 5/2	5	D	M	SiL	
			5YR 4/6	20	C	PL/M		DIFFUSE
6-16	10YR 4/1	70	5YR 4/6	20	C	PL/M	SiCL	DIFFUSE
			10YR 5/2	10	D	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

HYDRIC

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): _____

Water Table Present? Yes ____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): 0-16

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: AT NHD STREAM LINE

WILTMA003

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: STL PIPELINE City/County: GREENE Sampling Date: 9/10/2016
Applicant/Owner: SPIRE STL State: IL Sampling Point: WETLAND
Investigator(s): JJP / TMA Section, Township, Range: Section 4, T13N, R12W
Landform (hillslope, terrace, etc.): HILLSLOPE* Local relief (concave, convex, none): CONVEX
Slope (%): 3 Lat: 39.5209191599 Long: -90.4303154308 Datum: NAD83
Soil Map Unit Name: Hickory silt loam, 18 to 35 percent slopes NWI classification: R4SBC
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks: *WETLAND ALONG STREAM SILTMA010 @ AN AREA THAT BRIEFLY LOSES DOWNWARD GRADE.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3. NONE			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. LONICERA MAACKII	25	Y	UPL
2. ACER NEGUNDO	5	N	FAC
3.			
4.			
5.			
	30 = Total Cover		
Herb Stratum (Plot size: 5')			
1. IMPATIENS CAPENSIS	60	Y	FACW
2. PERSICARIA PUNCTATA	10	N	OBL
3. PERSICARIA PENSYLVANICA	10	N	FACW
4. COMMELINA COMMUNIS	5	N	FACU
5. LEERSIA VIRGINICA	5	N	FACW
6. CAREX FRANKII	5	N	OBL
7. PILEA PUMILA	3	N	FACW
8.			
9.			
10.			
	98 = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1.			
2. NONE			
	= Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	78	x 2 =	156
FAC species	5	x 3 =	15
FACU species	5	x 4 =	20
UPL species	25	x 5 =	125
Column Totals:	128 (A)		331 (B)

Prevalence Index = B/A = 2.59

Hydrophytic Vegetation Indicators:
__ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
__ 3 - Prevalence Index is ≤3.0[1]
__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)
SURROUNDING AREA IS FORESTED BUT NO TREES (3" DBH) ARE ROOTED W/IN WETLAND.

WILTMA003

SOIL

Sampling Point: WETLAND

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/1	100					SiL	
3-12	10YR 4/1	70	7.5YR 4/4	15	C	PL/M	SiCL	
			10YR 5/1	15	D	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

HYDRIC

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): _____

Water Table Present? Yes ____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: ABUTTING UNID STREAM (SILTMA010)

WETLAND DETERMINATION DATA FORM – Midwest Region

WMO-JJP-004

Project/Site: STL City/County: St. Charles Sampling Date: 10-15-2016

Applicant/Owner: Spire State: MO Sampling Point: wetland

Investigator(s): JJP-TMA Section, Township, Range: Section 1838, Land, Grant

Landform (hillslope, terrace, etc.): Plain - depression Local relief (concave, convex, none): Concave

Slope (%): 0 Lat: 38.881774 Long: -90.260713 Datum: NAD83

Soil Map Unit Name: Sandesser silty clay, 0-2% slopes, occasionally flooded NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ✓, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	Is the Sampled Area within a Wetland? Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks: - Area sample point for PEM/isolated wetland wmp JJP004

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30'r)			
1.			
2.			
3. Absent			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15'r)			
1.			
2.			
3. Absent			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5'r)			
1. Panicum dichotomiflorum	20	Y	FACW
2. Ammannia coccinea	20	Y	OBL
3. Xanthium strumarium	10	N	FAC
4. Rumex crispus	5	N	FAC
5. Schinochloa crus-galli	5	N	FACW
6.			
7.			
8.			
9.			
10.			
	60 = Total Cover		
Woody Vine Stratum (Plot size: 30'r)			
1.			
2. Absent			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks: (Include photo numbers here or on a separate sheet.)

- None

WMO- JJP004

Sampling Point: Wetland

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/1	98	10YR 3/6	2	C	M	SiL	
8-17	10YR 3/1	85	10YR 3/6	15	C	M	C	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ✓ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): —

Hydric Soil Present? Yes ✓ No ___

Remarks:

- None

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): —

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): —

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

- None

WMO-JJP-008

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: STL City/County: St. Charles Sampling Date: 10-17-2016
Applicant/Owner: Spire State: MO Sampling Point: wetland
Investigator(s): JJP-TMA Section, Township, Range: Section 122, Land Grant
Landform (hillslope, terrace, etc.): Plain - Depression Local relief (concave, convex, none): concave
Slope (%): 0 Lat: 38.926360 Long: -90.369053 Datum: NAD83
Soil Map Unit Name: Blase silty clay loam, 0-2% slopes, rarely flooded NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ____	Is the Sampled Area within a Wetland? Yes ✓ No ____
Hydric Soil Present?	Yes ✓ No ____	
Wetland Hydrology Present?	Yes ✓ No ____	

Remarks:
- Area sample point for PEM/adjacent wetland wmwJPOO3
- Area is depression @ edge of agric. field/wood edge along d/t road

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30'r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3. Absent			
4.			
5.			
	0 = Total Cover		

Sapling/Shrub Stratum (Plot size: 15'r)			
1.			
2.			
3. Absent			
4.			
5.			
	0 = Total Cover		

Herb Stratum (Plot size: 5'r)			
1. Echinochloa crus-galli	30	Y	FACW
2. Amaranthus cochinensis	30	Y	OBL
3. Setaria pumila	10	N	FAC
4. Sagittaria latifolia	5	N	OBL
5.			
6.			
7.			
8.			
9.			
10.			
	75 = Total Cover		

Woody Vine Stratum (Plot size: 30'r)			
1.			
2. Absent			
	0 = Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
✓ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks: (Include photo numbers here or on a separate sheet.)
- No trees/shrubs root within wetland boundary

WMWJP008

SOIL

Sampling Point: wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4"	10YR3/2		7.5YR4/6	10	C	PL-M	SCL	
4-17"	2.5Y4/1		7.5YR4/6	5	C	PL-M	SC	
			10YR4/6	15	C	M		
			N4/0	5	D	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5)
- __ 2 cm Muck (A10)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ 5 cm Mucky Peat or Peat (S3)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Loamy Mucky Mineral (F1)
- __ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- __ Coast Prairie Redox (A16)
- __ Dark Surface (S7)
- __ Iron-Manganese Masses (F12)
- __ Very Shallow Dark Surface (TF12)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: None

Depth (Inches): ✓

Hydric Soil Present? Yes ✓ No ___

Remarks:

None

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- __ Surface Water (A1)
- __ High Water Table (A2)
- __ Saturation (A3)
- __ Water Marks (B1)
- __ Sediment Deposits (B2)
- __ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- __ Iron Deposits (B5)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Sparsely Vegetated Concave Surface (B8)
- __ Water-Stained Leaves (B9)
- __ Aquatic Fauna (B13)
- __ True Aquatic Plants (B14)
- __ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- __ Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Tilled Soils (C6)
- __ Thin Muck Surface (C7)
- __ Gauge or Well Data (D9)
- __ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- __ Surface Soil Cracks (B6)
- __ Drainage Patterns (B10)
- __ Dry-Season Water Table (C2)
- __ Crayfish Burrows (C8)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Stunted or Stressed Plants (D1)
- __ Geomorphic Position (D2)
- __ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ✓

Water Table Present? Yes ___ No ✓ Depth (inches): ✓

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ✓

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

-None

WMO-JJP-119

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Line 880 City/County: St. Louis Co Sampling Date: 2-17-2017
Applicant/Owner: Spire State: MO Sampling Point: wetland
Investigator(s): JJP-WJW Section, Township, Range: 14 / 12W / 9N
Landform (hillslope, terrace, etc.): Bottomland - Plain Local relief (concave, convex, none): concave
Slope (%): 0 Lat: 38.813417 Long: -90.218065 Datum: NAD83
Soil Map Unit Name: menfro silt loam, 5-9% slopes, eroded NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:
- Area sample point for PEM/Isolated wetland WMOJJP119
- Area of wetland within residential yard

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30'r)			
1.			
2.			
3. Absent			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15'r)			
1.			
2.			
3. Absent			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5'r)			
1. Echinochloa crus-galli	30	Y	FAC
2. Ranunculus sceleratus	20	Y	OBL
3. Poa trivialis	20	Y	FACW
4. Juncus dudleyi	10	N	FACW
5. Ammania coccinea	5	N	OBL
6.			
7.			
8.			
9.			
10.			
	85 = Total Cover		
Woody Vine Stratum (Plot size: 30'r)			
1.			
2. Absent			
	0 = Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)
- None

WMOWP119

SOIL

Sampling Point: wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-3	2.5Y 3/1	95	10YR 3/4	5	C	M	SiL	
3-17	2.5Y 4/1	85	7.5YR 3/4	10	C	M/PL	SiL	
			7.5YR 4/6	5	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: None

Depth (inches): ✓

Hydric Soil Present? Yes ✓ No ___

Remarks:

None

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 2

Water Table Present? Yes ✓ No ___ Depth (inches): 4

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 0" surface

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

None

WMO-JJP-120
PEM

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Line 880 City/County: St. Louis CO Sampling Date: 2-18-2017
Applicant/Owner: Spire State: MO Sampling Point: wetland
Investigator(s): JJP-WJW Section, Township, Range: 1907
Landform (hillslope, terrace, etc.): Bottomland - Plain Local relief (concave, convex, none): none
Slope (%): 0 Lat: 38.830043 Long: -90.245898 Datum: NAD83
Soil Map Unit Name: Wilbur silt loam, 0-2% slopes, freq. flood NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	Is the Sampled Area within a Wetland? Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:
- Area sample point for PEM Adjacent wetland WMO-JJP-120
- Area possible old abandoned pasture / wetland part of PEM/PFO complex

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3. Absent			
4.			
5.			
	0 = Total Cover		

Sapling/Shrub Stratum (Plot size: 15 r)			
1.			
2.			
3. Absent			
4.			
5.			
	0 = Total Cover		

Herb Stratum (Plot size: 5 r)			
1. Phalaris arundinacea	99	Y	FACW
2. Eleocharis cylindrica	5	N	FACW
3. Apocynum cannabinum	5	N	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	104 = Total Cover		

Woody Vine Stratum (Plot size: 30' r)			
1.			
2. Absent			
	0 = Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks: (Include photo numbers here or on a separate sheet.)
- None

WMVJP 2.0 PEM

SOIL

Sampling Point: wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR4/2	98	10YR4/4	2	C	M	SiCL	
4-17	10YR4/1	85	10YR5/1	5	D	M	SiCL	
			10YR4/4	5	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: None

Depth (inches): —

Hydric Soil Present? Yes ✓ No ___

Remarks:

— None

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)

- ___ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ✓ No ___ Depth (inches): 6"

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 0" surface

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

— None

WMO-JJP-120
PFO

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Line 880 City/County: St. Louis Co Sampling Date: 2-18-2017
Applicant/Owner: Spire State: MO Sampling Point: wetland
Investigator(s): JJP-WW Section, Township, Range: 1907
Landform (hillslope, terrace, etc.): Bottomland - Plain Local relief (concave, convex, none): None
Slope (%): 0 Lat: 38.830221 Long: -90.245721 Datum: NAD83
Soil Map Unit Name: Wilbur silt loam, 0-2% slopes, Freq. Flooded NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
- Area wetland sample point for PFO/Adjacent wetland WMO JJP120
- Area possible old pasture / Area part of PEM/PFO complex

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30'r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	20	Y	FAC
2. Ulmus americana	10	Y	FACW
3. Salix nigra	10	Y	OBL
4.			
5.			
	40	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15'r)			
1. Acer rubrum	5	Y	FAC
2.			
3.			
4.			
5.			
	5	= Total Cover	
Herb Stratum (Plot size: 5'r)			
1. Phalaris arundinacea	60	Y	FACW
2. Boehmeria cylindrica	10	N	FACW
3. Apocynum cannabinum	5	N	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	75	= Total Cover	
Woody Vine Stratum (Plot size: 30'r)			
1. Toxicodendron radicans	5	Y	FAC
2.			
	5	= Total Cover	

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)
Total Number of Dominant Species Across All Strata: 6 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
- X 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)
- None

WMONP120 PFO

SOIL

Sampling Point: wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 4/2	95	10YR 4/4	5	C	M	S:CL	
5-17	10YR 4/1	90	10YR 3/4	5	C	M	S:CL	
			10YR 5/1	5	D	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): —

Hydric Soil Present? Yes ✓ No ___

Remarks:

—None

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✓ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 1"

Water Table Present? Yes ✓ No ___ Depth (inches): 0" Surface

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 0" Surface

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

—None

WMO-JJP-121

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Line 880 City/County: St. Louis Sampling Date: 2-18-2017

Applicant/Owner: Spire State: MO Sampling Point: wetland

Investigator(s): JJP-WJW Section, Township, Range: 1960

Landform (hillslope, terrace, etc.): Depression on hillslope Local relief (concave, convex, none): concave

Slope (%): 4 Lat: 38.831995 Long: -90.245649 Datum: NAD83

Soil Map Unit Name: Menfro silt loam, 5-9% slopes, eroded. NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes N No ____

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
- Area sample point for PEM/Isolated wetland WMO JJP121
- Area possibly old farm pond

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30'r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3. Absent			
4.			
5.			
	0 = Total Cover		

Sapling/Shrub Stratum (Plot size: 15'r)			
1.			
2. Absent			
3.			
4.			
5.			
	0 = Total Cover		

Herb Stratum (Plot size: 5'r)			
1. Typha latifolia	80	Y	OBL
2. Persicaria maculosa	5	N	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	85 = Total Cover		

Woody Vine Stratum (Plot size: 30'r)			
1.			
2. Absent			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- X 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks: (Include photo numbers here or on a separate sheet.)
- no

WMOJJPR1

SOIL

Sampling Point: wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-17	2.5Y4/1	80	10YR3/4	5	C	M/PL	SiCL	
			7.5YR4/6	2	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): —

Hydric Soil Present? Yes ✓ No ____

Remarks:

- None

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ✓ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ____ Depth (inches): 5"

Water Table Present? Yes ✓ No ____ Depth (inches): 0" surface

Saturation Present? (includes capillary fringe) Yes ✓ No ____ Depth (inches): 0" surface

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

- None

WMO-JJP - 122

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Line 880 City/County: St. Louis Sampling Date: 2-20-2017
Applicant/Owner: Spire State: MO Sampling Point: wetland
Investigator(s): JJP-WJW Section, Township, Range: 17/7E/47N
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): concave
Slope (%): 0 Lat: 38.822301 Long: -90.241612 Datum: NAD83
Soil Map Unit Name: Menfro silt loam, 9-14% Slopes, eroded NWI classification: PUB Gh
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
- Area sample point for PEM/adjacent wetland WMOJJP122
- Area mapped NWI

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30'r)			
1. Acer rubrum	5	Y	FAC
2.			
3.			
4.			
5.			
	5 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15'r)			
1. Rosa multiflora	5	Y	FACU
2.			
3.			
4.			
5.			
	5 = Total Cover		
Herb Stratum (Plot size: 5'r)			
1. Ranunculus sceleratus	15	Y	OBL
2. Carex vulpinoidea	5	N	OBL
3. Lemna minor	5	N	OBL
4. Lonicera japonica	5	N	FAC
5.			
6.			
7.			
8.			
9.			
10.			
	30 = Total Cover		
Woody Vine Stratum (Plot size: 30'r)			
1.			
2. Absent			
	0 = Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 66.67% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)
- None

wmoWP122

SOIL

Sampling Point: wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-3	N 2.5/0	100	—	—	—	—	muck	
3-17	5Y 4/1	85	10YR 3/4	5	C	M	S.C	
			7.5YR 4/6	10	C	PL-M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: none

Depth (inches): —

Hydric Soil Present? Yes X No ___

Remarks:

— none

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✓ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ✓ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 6"

Water Table Present? Yes ✓ No ___ Depth (inches): 0" surface

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 0" surface

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

- Adjacent of stream SMOJJP022
- Possible source of hydrology ground water seep @MOJJP002
- Aquatic plants Lemna minor

WMO-JJP-123
PSS

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Line 880 City/County: St. Louis Co Sampling Date: 2-20-2017
Applicant/Owner: Spire State: MO Sampling Point: wetland
Investigator(s): JJP-WJW Section, Township, Range: 16 / 7E / 47N
Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): none
Slope (%): 0 Lat: 38, 72157 Long: -90, 24043 Datum: NAD83
Soil Map Unit Name: Menfro silt loam, 9-14% slopes, eroded NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
- Area sample point for PSS/Abutting wetland wmo JJP123

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30'r)			
1. Acer negundo	5	Y	FAC
2. Ulmus americana	5	Y	FACW
3.			
4.			
5.			
	10 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15'r)			
1. Catalpa speciosa	20	Y	FAC
2. Acer negundo	5	Y	FAC
3.			
4.			
5.			
	25 = Total Cover		
Herb Stratum (Plot size: 5'r)			
1. Carex vulpinoidea	20	Y	OBL
2. Carex lurida	10	Y	OBL
3. Poa trivialis	10	Y	FACW
4. Humulus japonicus	10	Y	FACU
5. Typha latifolia	5	N	OBL
6.			
7.			
8.			
9.			
10.			
	55 = Total Cover		
Woody Vine Stratum (Plot size: 30'r)			
1. Absent			
2.			
	0 = Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)
Total Number of Dominant Species Across All Strata: 8 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 87.5 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

WMOJJP123 PSS

SOIL

Sampling Point: wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/3	100					SiCL	
6-17	10YR 4/1	86	7.5YR 3/4	10	C	M-PL	SiCL	
			7.5YR 4/6	2	C	M		
			10YR 2/1	2	C	M		(many manganese conc.)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): —

Hydric Soil Present? Yes X No ___

Remarks:

- None

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ✓ No ___ Depth (inches): 14

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 11

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

- wetland area abuts SMOJJP022

VMO-JJP-123

PEM

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Line 880 City/County: St. Louis Sampling Date: 2-20-2017

Applicant/Owner: Spire State: Mo Sampling Point: wetland

Investigator(s): JJP-WJW Section, Township, Range: 16/7E/47N

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave

Slope (%): 0% Lat: 38.82146 Long: -90.240365 Datum: NAD83

Soil Map Unit Name: Menfro silt loam, 9-14% slopes, eroded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	Is the Sampled Area within a Wetland?	Yes X No ____
Hydric Soil Present?	Yes X No ____		
Wetland Hydrology Present?	Yes X No ____		

Remarks:
– Area sample point for PEM/Abutting wetland WMO JJP123

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30'r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2. Absent			
3.			
4.			
5.			
	0 = Total Cover		

Sapling/Shrub Stratum (Plot size: 15'r)			
1.			
2. Absent			
3.			
4.			
5.			
	0 = Total Cover		

Herb Stratum (Plot size: 5'r)			
1. Boehmeria cylindrica	20	Y	FACW
2. Symphyotrichum lanceolatum	20	Y	FACW
3. Poa Trivialis	15	Y	FACW
4. Typha latifolia	10	N	OBL
5. Geum canadensis	5	N	FACU
6. Carex vulpinoidea	5	N	OBL
7.			
8.			
9.			
10.			
	75 = Total Cover		

Woody Vine Stratum (Plot size: 30'r)			
1.			
2. Absent			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

WMeDJP123 PEM

SOIL

Sampling Point: wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/3	100					SiCL	
6-17	10YR 4/1	86	7.5YR 3/4	10	C	M-PL	SiCL	
			7.5YR 4/6	2	C	M		
			10YR 2/1	2	C	M		(Manganese Conc)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Mangenese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): ✓

Hydric Soil Present? Yes ✓ No ___

Remarks:

- none

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): -

Water Table Present? Yes ✓ No ___ Depth (inches): 19

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 16

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

- None

WMO-JJP - 124
PFO

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: STL NCE City/County: St. Louis Co. Sampling Date: 2/23/17
Applicant/Owner: Spire State: MO Sampling Point: PFO
Investigator(s): JJP / WJW Section, Township, Range: 52
Landform (hillslope, terrace, etc.): Depression / Bottomland Local relief (concave, convex, none): Concave
Slope (%): 0% Lat: 38.812673 Long: -90.216132 Datum: NAD83
Soil Map Unit Name: Winfield silt loam, 2-5% slopes NWI classification: PEM1/SS1F
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Bottomland PFO
Mapped NWI.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus nigra	30	Y	FACW
2. Populus deltoides	25	Y	FAC
3. Acer saccharinum	15	Y	FACW
4. Platanus occidentalis	5	N	FACW
5.			
	75	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' r)			
1. Lonicera maackii	5	Y	UPL
2. Fraxinus nigra	5	Y	FACW
3.			
4.			
5.			
	10	= Total Cover	
Herb Stratum (Plot size: 5' r)			
1. Symphyotrichum lanceolatum	5	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
		= Total Cover	
Woody Vine Stratum (Plot size: 30' r)			
1. Absent			
2.			
	0	= Total Cover	

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)
Total Number of Dominant Species Across All Strata: 6 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 83.3 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

WMO-JSP-124

SOIL

Sampling Point: PFO

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2"	10YR 2/1	100	-	-	-	-	Muck	
2-17"	2.5Y 3/1	85	10YR 3/4	15	C	M/PL	SiCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 12 in

Water Table Present? Yes X No ___ Depth (inches): Surface

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): Surface

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

Isolated.

WMO-JJP-125

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: STL NCE City/County: St. Louis Co Sampling Date: 2/25/17
Applicant/Owner: Spire State: MO Sampling Point: PEM
Investigator(s): JJP/WJW Section, Township, Range: 16/7E/47N
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave
Slope (%): <2% Lat: 38.818406 Long: -90.230601 Datum: NAD83
Soil Map Unit Name: Urban land, Harvester complex, 0-2% slopes NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
PEM situated in a depression next to a highway.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30' r)			
1. Absent	—	—	—
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15' r)			
1. Absent	—	—	—
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. Typha angustifolia	35	Y	OBL
2. Echinochloa crus-galli	35	Y	FACW
3. Setaria viridis	10	N	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	80 = Total Cover		
Woody Vine Stratum (Plot size: 30' r)			
1. Absent	—	—	—
2.			
	0 = Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

WMO-JJP-125

SOIL

Sampling Point: wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6"	10YR 4/2	70	2.5Y 4/1	20	D	M	SiCL	
			10YR 3/4	10	C	M/PL		
6-17"	10YR 6/2	60	10YR 5/4	25	C	M	Clay	
			10YR 4/6	15	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (Inches): -

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): -

Water Table Present? Yes ___ No X Depth (inches): -

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): -

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

Adjacent

WMOTMA008

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: STL PIPELINE City/County: ST. CHARLES CO. Sampling Date: 10/5/2016

Applicant/Owner: SPIRE STL State: MO Sampling Point: WETLAND

Investigator(s): JJP / TMA Section, Township, Range: none

Landform (hillslope, terrace, etc.): DEPRESSION Local relief (concave, convex, none): CONCAVE

Slope (%): 2 Lat: 38.8660030012 Long: -90.2338845869 Datum: NAD 83

Soil Map Unit Name: Lowmo silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	
Hydric Soil Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes X No ____
Wetland Hydrology Present?	Yes X	No ____	

Remarks: PEM

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3. NONE			
4.			
5.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3. NONE			
4.			
5.			
	= Total Cover		

Herb Stratum (Plot size: 5')			
1. ECHINOCHLOA CRUS-GALLI	50		FACW
2. AMMANNIA COCCINEA	10		OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	60 = Total Cover		

Woody Vine Stratum (Plot size: 30')			
1. NONE			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

WMOTMA008

SOIL

Sampling Point: WETLAND

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/1	75	5YR 5/8	25	C	PL	SiC	
2-6	10YR 3/1	98	5YR 5/8	2	C	PL	SiC	
6-14	10YR 3/1	100					SiC	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

APPENDIX B
Upland Data Forms
(Additional Features Only)

gai consultants
transforming ideas into reality

WIL-CDK-001 UPL

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: STL Pipeline City/County: Jersey Co. Sampling Date: 11/1/19
Applicant/Owner: Spire State: IL Sampling Point: UPLAND
Investigator(s): CDK/JTR Section, Township, Range: 3, 7N, 12W, 25
Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): concave
Slope (%): <1% Lat: 39.021611 Long: -90.377378 Datum: NAD83
Soil Map Unit Name: Greenbush silt loam, 2-5% slopes NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation Y*, Soil Y*, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Upland representative to WIL-CDK-001. Active agricultural field. * Soil plowed / mowed. Soy field.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Absent	—	—	—
2.			
3.			
4.			
5.			
	0 = Total Cover		

Sapling/Shrub Stratum (Plot size: 15')			
1. Absent	—	—	—
2.			
3.			
4.			
5.			
	0 = Total Cover		

Herb Stratum (Plot size: 5')			
1. Setaria pumila	15	Y	FAC
2. Barbarea vulgaris	10	Y	FAC
3. Lamium amplexicaule	10	Y	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	35 = Total Cover		

Woody Vine Stratum (Plot size: 30')			
1. Absent	—	—	—
2.			
	0 = Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 66.67% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)
65% bare ground.

WIL-CDK-001

SOIL

Sampling Point: UPLAND

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16"	10YR 3/2	90	10YR 3/6	5	C	M	SL	
			10YR 5/6	5	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): —

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (Inches): —

Water Table Present? Yes ___ No X Depth (inches): —

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): —

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

WIL-DFW-001

Project/Site: STL Pipeline City/County: Jersey Co. Sampling Date: 9/23/2016

Applicant/Owner: Spire State: IL Sampling Point: Upland

Investigator(s): D. Ware and R. Maggiore Section, Township, Range:

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None

Slope (%): 5 Lat: Long: Datum:

Soil Map Unit Name: Winfield Silt Loam, 2-5% slopes NWI or WWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✗ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✗ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✗	**Is the Sampled Area within a Wetland?** Yes _____ No ✗
Hydric Soil Present?	Yes _____	No ✗	
Wetland Hydrology Present?	Yes _____	No ✗	

Remarks:
Upland Pit for WIL-DFW-001 dug in an adjacent upland area next to wetland

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. *Eleusine indica*	35	Yes	FACU
2. *Setaria viridis*	30	Yes	UPL
3. *Plantago lanceolata*	10	No	FACU
4. *Daucus carota*	10	No	UPL
5. *Phleum pratense*	10	No	FACU
6. *Trifolium pratense*	5	No	FACU
7. *Echinoclora crus-galli*	5	No	FACW
8. *Xanthium strumarium*	5	No	FAC
9.			
10.			
	110 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	5	x 2 =	10
FAC species	5	x 3 =	15
FACU species	60	x 4 =	320
UPL species	40	x 5 =	200
Column Totals:	110 (A)		545 (B)

Prevalence Index = B/A = 4.9

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✗

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4"	10YR 4/3	100					SiL	
4-15	5YR 4/6	80	7.5YR 4/3	20	C	M	SiCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 5 cm Mucky Peat or Peat (S3)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Coast Prairie Redox (A16)
___ Iron-Manganese Masses (F12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✗

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ True Aquatic Plants (B14)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Gauge or Well Data (D9)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✗ Depth (inches): _____

Water Table Present? Yes _____ No ✗ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✗ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✗

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WIL-TMA-001 EXT

and WIL-JJP-003 UPL

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: STL Pipeline City/County: Scott Co. Sampling Date: 12/2/16

Applicant/Owner: Spire State: IL Sampling Point: UPLAND

Investigator(s): CDK/WJW Section, Township, Range: 28 12W 13N

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex

Slope (%): 5% Lat: 39.540212 Long: -90.432694 Datum: NAD83

Soil Map Unit Name: Elco silty clay loam, 10-18% slopes, severely eroded NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation Y*, Soil Y*, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Upland representative to WIL-TMA-001 EXT.
*Active agricultural field; soil + vegetation disturbed

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Absent			
2.			
3.			
4.			
5.			
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. Absent			
2.			
3.			
4.			
5.			
	0	= Total Cover	

Herb Stratum (Plot size: 5')			
1. Glycine max	90	Y	UPL
2. Lamium amplexicaule	10	N	UPL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	

Woody Vine Stratum (Plot size: 30')			
1. Absent			
2.			
	–	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	100	x 5 =	500
Column Totals:	100 (A)		500 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

No hydrophytic vegetation indicators observed.

WIL-JJP-003 and

WIL-TMA-001 EXT

SOIL

Sampling Point: UPLAND

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16"	10YR 5/6	95	10YR 5/4	5	D	M	SiCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If observed):

Type: None

Depth (inches): —

Hydric Soil Present? Yes ____ No X

Remarks:

No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): —

Water Table Present? Yes ____ No X Depth (inches): —

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): —

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

No hydrology indicators observed.

WIL-JJP-006/006A

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Spire City/County: Green Sampling Date: 9-12-2016
Applicant/Owner: Spire STL State: IL Sampling Point: Upland
Investigator(s): JJP-TMA Section, Township, Range: Section 3, T 12N, R12W
Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none
Slope (%): 8 Lat: 39.518184 Long: -90.429922 Datum: NAD83
Soil Map Unit Name: Hickory silt loam, 18 to 35% slopes NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:
- Area upland sample point for wetlands WILJJP006/WILJJP006A

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30'r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3. Absent			
4.			
5.			
	0 = Total Cover		

Sapling/Shrub Stratum (Plot size: 15'r)			
1. Cornus drummondii	10	Y	FAC
2.			
3.			
4.			
5.			
	10 = Total Cover		

Herb Stratum (Plot size: 5'r)			
1. Schedonorus arundinaceus	35	Y	FACU
2. Dactylis glomerata	25	Y	FACU
3. Tridens flavus	10	N	UPL
4. Ambrosia artimisiifolia	10	N	FACU
5. Ageratina altissima	10	N	FACU
6. Symphyotrichum pilosum	5	N	FACW
7. Solidago canadensis	5	N	FACU
8. Erigeron canadensis	5	N	FACU
9.			
10.			
	105 = Total Cover		

Woody Vine Stratum (Plot size: 30'r)			
1.			
2. Absent			
	0 = Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)
- None

WILJP006/006A

SOIL

Sampling Point: upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR3/2	90	10YR4/4	10	C	M	SiL	
3-17	10YR4/4	75	7.5YR4/6	25	C	M	SiCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Bleck Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Metrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Derk Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coest Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (Inches): —

Hydric Soil Present? Yes ____ No ✓

Remarks:

- None

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imegery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remerks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): —

Water Table Present? Yes ____ No ✓ Depth (inches): —

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): —

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

- None

WIL-JJP-007 and WIL-JJP-008

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Spire City/County: Green Sampling Date: 9-12-2016
Applicant/Owner: Spire STL State: ILL Sampling Point: upland
Investigator(s): JJP-TMA Section, Township, Range: Section 4, T12N, R12W
Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none
Slope (%): < 2 Lat: 39.615699 Long: -90.430264 Datum: NAD83
Soil Map Unit Name: Hickory silt loam, 18-35% slope, eroded NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:
- Area upland sample point for wetland WILJJP007
- Area pond breast hillslope

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30'r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3. Absent			
4.			
5.			
	0 = Total Cover		

Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3. Absent			
4.			
5.			
	0 = Total Cover		

Herb Stratum (Plot size: 5'r)			
1. Trifolium repens	40	Y	FACU
2. Digitaria sanguinalis	30	Y	FACU
3. Erigeron canadensis	10	N	FACU
4. Trifolium pratense	10	N	FACU
5. Solanum carolinense	10	N	FACU
6. Setaria pumila	10	N	FACU
7.			
8.			
9.			
10.			
	110 = Total Cover		

Woody Vine Stratum (Plot size: 30'r)			
1.			
2. Absent			
	0 = Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

WIL-JJP-007 and
WIL-JJP-008

SOIL

Sampling Point: Upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-17"	10YR4/3	60	2.5Y5/2	10	D	M	S. CL	
	10YR4/4	30						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5)
- __ 2 cm Muck (A10)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ 5 cm Mucky Peat or Peat (S3)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Loamy Mucky Mineral (F1)
- __ Loamy Gleyed Matrix (F2)
- __ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- __ Coast Prairie Redox (A16)
- __ Dark Surface (S7)
- __ Iron-Manganese Masses (F12)
- __ Very Shallow Dark Surface (TF12)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No ✓

Remarks:

- Soil disturbed, possible due from pond construction spoil
- 2 matrix colors due to mixing of soil spoil

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- __ Surface Water (A1)
- __ High Water Table (A2)
- __ Saturation (A3)
- __ Water Marks (B1)
- __ Sediment Deposits (B2)
- __ Drift Deposits (B3)
- __ Algal Mat or Crust (B4)
- __ Iron Deposits (B5)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Sparsely Vegetated Concave Surface (B8)
- __ Water-Stained Leaves (B9)
- __ Aquatic Fauna (B13)
- __ True Aquatic Plants (B14)
- __ Hydrogen Sulfide Odor (C1)
- __ Oxidized Rhizospheres on Living Roots (C3)
- __ Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Tilled Soils (C6)
- __ Thin Muck Surface (C7)
- __ Gauge or Well Data (D9)
- __ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- __ Surface Soil Cracks (B6)
- __ Drainage Patterns (B10)
- __ Dry-Season Water Table (C2)
- __ Crayfish Burrows (C8)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Stunted or Stressed Plants (D1)
- __ Geomorphic Position (D2)
- __ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): ____

Water Table Present? Yes ____ No ✓ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

NONE

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: STL City/County: Jersey Sampling Date: 11-17-2016
Applicant/Owner: Spire State: IL Sampling Point: upland
Investigator(s): JJP-TMA Section, Township, Range:
Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave
Slope (%): Lat: Long: Datum: NAD83
Soil Map Unit Name: NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No (If no, explain in Remarks.)
Are Vegetation Y, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes No
Hydric Soil Present? Yes No
Wetland Hydrology Present? Yes No
Is the Sampled Area within a Wetland? Yes No

Remarks:
- Area upland sample point for wetland WI & JJP111
- Area within active soybean field

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3. Absent			
4.			
5.			
	0 = Total Cover		

Sapling/Shrub Stratum (Plot size: 15' r)			
1.			
2.			
3. Absent			
4.			
5.			
	0 = Total Cover		

Herb Stratum (Plot size: 5' r)			
1. Lamium amplexicaule	10		
2. Stellaria media	5		
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	15 = Total Cover		

Woody Vine Stratum (Plot size: 30' r)			
1.			
2. Absent			
	= Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: (A)
Total Number of Dominant Species Across All Strata: (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:
__ 1 - Rapid Test for Hydrophytic Vegetation
__ 2 - Dominance Test is >50%
__ 3 - Prevalence Index is ≤3.0[1]
__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes No

Remarks: (Include photo numbers here or on a separate sheet.)
- Area sampled within active soybean field

WILUP111

SOIL

Sampling Point: upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-17	10YR 5/4	90	2.5Y 5/3	10	D	M	SCL	Fine sandy

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Mengenese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): —

Hydric Soil Present? Yes ____ No ____

Remarks:

- None

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): —

Water Table Present? Yes ____ No ✓ Depth (inches): —

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): —

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

No hydrology indicators observed

WIL-JJP-118 + 119

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: STH Project City/County: Greene Co. Sampling Date: 2-21-2017
Applicant/Owner: Spire State: IL Sampling Point: upland
Investigator(s): MP-WJW Section, Township, Range: 14 / 12W / 9N
Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): none
Slope (%): 0 Lat: 39.227989 Long: -90.404138 Datum: NAD83
Soil Map Unit Name: Beaucoup silty clay loam, cool mesic, 0-2% NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	
Hydric Soil Present?	Yes ____	No X	Is the Sampled Area within a Wetland? Yes ____ No X
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
- Area upland sample point for wetlands WILWP118/WILWP119
- Area is within active agricultural field.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30'r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3. Absent			
4.			
5.			
	0 = Total Cover		

Sapling/Shrub Stratum (Plot size: 15'r)			
1.			
2.			
3. Absent			
4.			
5.			
	0 = Total Cover		

Herb Stratum (Plot size: 5'r)			
1. Panicum dichotomiflora	20	Y	FACW
2. Lamium amplexicaul	10	Y	UPL
3. Ranunculus abortivus	5	N	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	35 = Total Cover		

Woody Vine Stratum (Plot size: 30'r)			
1.			
2. Absent			
	0 = Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	25	x 2 =	50
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	10	x 5 =	50
Column Totals:	35 (A)		100 (B)

Prevalence Index = B/A = 2.86

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)
- Area plowed agricultural field

WILWP118 / WILWP119

SOIL

Sampling Point: Upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	2.5Y 3/2	100					SCL	
6-17	10YR 3/2	90	2.5Y 4/4	10	D	M	SCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): —

Hydric Soil Present? Yes ____ No X

Remarks:

- None

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): —

Water Table Present? Yes ____ No ✓ Depth (inches): —

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): —

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

- None

WIL-JJP-120 + 121
UPL

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: STL City/County: Greene Co. Sampling Date: 2/21/17
Applicant/Owner: Spire State: IL Sampling Point: UPLAND
Investigator(s): JJP/WJW Section, Township, Range: 11/12S/9W
Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): None
Slope (%): 0 Lat: 39.2329 Long: -90.407561 Datum: NAD83
Soil Map Unit Name: Lawson silt loam, cool mesic, 0-2% Slopes NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks: upland representative to WIL-JJP-120 + 121. Active agricultural field. Soil + veg disturbed

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30')			
1. Absent			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. Absent			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5')			
1. Stellaria media	5	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	5 = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1. Absent			
2.			
	0 = Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	5 (A)		20 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)
None

WIL-JJP-120+121

SOIL

Sampling Point: UPLAND

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6"	2.5Y 3/2	95	2.5Y 4/1	5	D	M	SCL	
6-17"	2.5Y 4/1	60	2.5Y 4/3	40	C	M	SCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Metrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (Inches): ___

Hydric Soil Present? Yes ___ No X

Remarks:

No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Merks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remerks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imegery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

None observed.

WIL-JJP-122
UPL

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: STL City/County: Greene Co. Sampling Date: 2/24/17
Applicant/Owner: Spire State: IL Sampling Point: UPLAND
Investigator(s): JJP/VJW Section, Township, Range: 23/12W/9N
Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): Convex
Slope (%): 2% Lat: 39.214095 Long: -90.399806 Datum: NAD83
Soil Map Unit Name: Greenbush silt loam, 2-5% slopes NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation Y*, Soil Y*, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	
Hydric Soil Present?	Yes ____	No X	Is the Sampled Area within a Wetland? Yes ____ No X
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Upland representative to WIL-JJP-122. Active agricultural field.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30')			
1. Absent			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. Absent			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5')			
1. Lamium amplexicaule	15	Y	UPL
2. Stellaria media	10	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	25 = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1. Absent			
2.			
	0 = Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	15	x 4 =	40
UPL species	10	x 5 =	50
Column Totals:	25 (A)		90 (B)

Prevalence Index = B/A = 3.6

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)
None

WIL - JJP - 122

SOIL

Sampling Point: UPLAND

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-17"	10YR 3/2	100	-	-	-	-	SL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): -

Hydric Soil Present? Yes ____ No X

Remarks:

No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (Inches): -

Water Table Present? Yes ____ No X Depth (inches): -

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (Inches): -

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

No hydro observed.

WIL-JJP-123+124
UPL

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: STL City/County: Greene Co Sampling Date: 2/24/17
Applicant/Owner: Spire State: IL Sampling Point: UPLAND
Investigator(s): JJP / WJW Section, Township, Range: 23 / 12W / 7N
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex
Slope (%): 3% Lat: 39.209736 Long: -90.399845 Datum: NAD83
Soil Map Unit Name: Greenbush silt loam, 5-10% slopes, eroded NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No X
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes ____ No X
Is the Sampled Area within a Wetland? Yes ____ No X

Remarks:
Upland representative to WIL-JJP-123+124.
Tree line near stream / ag. field margin.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30'r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Maclura pomifera	5	Y	FACU
2. Prunus serotina	5	Y	FACU
3.			
4.			
5.			
	10 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15'r)			
1. Rubus allegheniensis	15	Y	FACU
2.			
3.			
4.			
5.			
	15 = Total Cover		
Herb Stratum (Plot size: 5'r)			
1. Setaria viridis	10	Y	UPL
2. Ambrosia trifida	10	Y	FAC
3. Stellaria media	10	Y	FACU
4. Solidago canadensis	10	Y	FACU
5. Convolvulus arvensis	10	Y	UPL
6.			
7.			
8.			
9.			
10.			
	50 = Total Cover		
Woody Vine Stratum (Plot size: 30'r)			
1. Absent			
2.			
	0 = Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 8 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 12.5% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species 0	x 1 = 0
FACW species 0	x 2 = 0
FAC species 10	x 3 = 30
FACU species 45	x 4 = 180
UPL species 20	x 5 = 100
Column Totals: 75 (A)	310 (B)

Prevalence Index = B/A = 4.13

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)
No hydrophytic veg. indicators observed.

WIL-JJP-123+124

SOIL

Sampling Point: UPLAND

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4"	10YR 2/2	100	-	-	-	-	SiCL	
4-17"	10YR 4/3	100	-	-	-	-	SCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): -

Hydric Soil Present? Yes ____ No X

Remarks:

No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): -

Water Table Present? Yes ____ No X Depth (inches): -

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): -

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

No hydro indicators observed

WIL-JJP-125 UPL

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: STL City/County: Greene Co. Sampling Date: 2/24/17
Applicant/Owner: Spire State: IL Sampling Point: UPLAND
Investigator(s): JJP/WJW Section, Township, Range: 23/12W/9N
Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): Concave
Slope (%): 2% Lat: 39.207689 Long: -90.397321 Datum: NAD83
Soil Map Unit Name: Greenbush silt loam, 5-10% slopes, eroded NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation Y, Soil Y, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	
Hydric Soil Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes ____ No X
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Upland representative to WIL-JJP-125
Soil and veg disturbed; active soy bean field.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Absent			
2.			
3.			
4.			
5.			
	0 = Total Cover		

Sapling/Shrub Stratum (Plot size: 15')			
1. Absent			
2.			
3.			
4.			
5.			
	0 = Total Cover		

Herb Stratum (Plot size: 5')			
1. Stellaria media	50	Y	FACU
2. Lamium amplexicaule	15	Y	UPL
3. Brassica sp. *	20*	*	*
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	65 = Total Cover		

Woody Vine Stratum (Plot size: 30')			
1. Absent			
2.			
	0 = Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	50	x 4 =	200
UPL species	15	x 5 =	75
Column Totals:	65 (A)		275 (B)

Prevalence Index = B/A = 4.23

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)
* Species not identified beyond genus level have been omitted from calculations.

WIL-JJP-125

SOIL

Sampling Point: UPLAND

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8"	10YR 4/2	100	-	-	-	-	SL	
8-17"	2.5Y 4/1	95	10YR 3/4	5	C	M	SL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): ---

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ---

Water Table Present? Yes ___ No X Depth (inches): ---

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ---

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

No hydro indicators observed

WIL-TMA-001 EXT

UPL

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: STL Pipeline City/County: Scott Co. Sampling Date: 12/2/16

Applicant/Owner: Spire State: IL Sampling Point: UPLAND

Investigator(s): CDK/WJW Section, Township, Range: 28 12W 13N

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex

Slope (%): 5% Lat: 39.540212 Long: -90.432694 Datum: NAD83

Soil Map Unit Name: Elco silty clay loam, 10-18% slopes, severely eroded NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation Y*, Soil Y*, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Upland representative to WIL-TMA-001 EXT.
*Active agricultural field; soil + vegetation disturbed

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Absent			
2.			
3.			
4.			
5.			
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. Absent			
2.			
3.			
4.			
5.			
	0	= Total Cover	

Herb Stratum (Plot size: 5')			
1. Glycine max	90	Y	UPL
2. Lamium amplexicaule	10	N	UPL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	

Woody Vine Stratum (Plot size: 30')			
1. Absent			
2.			
	–	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	100	x 5 =	500
Column Totals:	100 (A)		500 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

No hydrophytic vegetation indicators observed.

WIL-TMA-001 EXT

SOIL

Sampling Point: UPLAND

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16"	10YR 5/6	95	10YR 5/4	5	D	M	SiCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If observed):

Type: None

Depth (inches): —

Hydric Soil Present? Yes ____ No X

Remarks:

No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): —

Water Table Present? Yes ____ No X Depth (inches): —

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): —

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

No hydrology indicators observed.

WETLAND DETERMINATION DATA FORM – Midwest Region

WIL-TMA-003

Project/Site: Spire City/County: Scott Sampling Date: 9-10-2016
Applicant/Owner: Spire STL State: IL Sampling Point: upland
Investigator(s): JJP - TMA Section, Township, Range: Section 4, T12N, R12W
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): none
Slope (%): 5 Lat: 39.520947 Long: -90.430255 Datum: NAD84
Soil Map Unit Name: Hickory silt loam, 18 to 35% slopes NWI classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:
– Area sample point for wetland WIL-TMA-003

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Carya ovata	40	Y	FACU
2. Quercus rubra	20	Y	FACU
3. Ulmus rubra	20	Y	FAC
4.			
5.			
	80	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' r)			
1. Lonicera morrowii	20	Y	FACU
2. Carya ovata	10	Y	FACU
3. Quercus imbricaria	5	N	FACU
4. Juglans nigra	5	N	FACU
5.			
	40	= Total Cover	

Herb Stratum (Plot size: 5' r)			
1. Solidago canadensis	30	Y	FACU
2. Ageratina altissima	20	Y	FACU
3. Parthenocissus quinquefolia	10	N	FACW
4. Toxicodendron radicans	5	N	FAC
5. Apocynum cannabinum	5	N	FAC
6. Rubus flagellaris	5	N	FACU
7. Bidens frondosa	5	N	FACW
8. Symphyotrichum pilosum	5	N	FACU
9.			
10.			
	85	= Total Cover	

Woody Vine Stratum (Plot size: 30' r)			
1.			
2. Absent			
	0	= Total Cover	

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 6 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a seperate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

WILTMA003

SOIL

Sampling Point: Upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6"	10YR 3/4	100					SiCL	
6"-12"	10YR 4/6	90	10YR 4/2	10	D	M	SiCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? Yes ___ No ✓

Remarks:

- None

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators observed

WETLAND DETERMINATION DATA FORM – Midwest Region WMO-JJP-004

Project/Site: STL City/County: St. Charles Sampling Date: 10-15-2016
Applicant/Owner: Spire State: Mo Sampling Point: Upland
Investigator(s): JJP-TMA Section, Township, Range: Section 1838, Land Grant
Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): Convex
Slope (%): 0 Lat: 38.881698 Long: -90.260706 Datum: NAD83
Soil Map Unit Name: Sarpy-Lesterin silty clay, 0-2% slopes, Occasionally flooded NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:
- Area upland sample point for wetland WMOJJP004
- Area active soybean field

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30'r)			
1.			
2.			
3. Absent			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15'r)			
1.			
2.			
3. Absent			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5'r)			
1. Glycine max	50	Y	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	50 = Total Cover		
Woody Vine Stratum (Plot size: 30'r)			
1.			
2. Absent			
	0 = Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)
- None

WMOWP004

SOIL

Sampling Point: upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-17	10YR 3/1	100					SiC	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (Inches): —

Hydric Soil Present? Yes ____ No ✓

Remarks:

- None

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concava Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (Inches): —

Water Table Present? Yes ____ No ____ Depth (Inches): —

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (Inches): —

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

- No hydrology indicators observed

WETLAND DETERMINATION DATA FORM – Midwest Region

WMO-JJP-008

Project/Site: STL City/County: St. Charles Sampling Date: 10-17-2016

Applicant/Owner: Spire State: MO Sampling Point: Upland

Investigator(s): JJP - TMA Section, Township, Range: Section 12?, Land, Grant

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): Convex

Slope (%): 0 Lat: 38.926597 Long: -90.368006 Datum: NAD83

Soil Map Unit Name: Clare silty clay loam, 0-2% Slopes, rarely flooded NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ____ No ✓

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	
Hydric Soil Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: Area upland sample point for wetland WMO-JJP008

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Diospyros virginiana	30	Y	FAC
2. Ulmus rubra	10	N	FAC
3. Morus alba	5	N	FAC
4. Carya illinoinensis	5	N	FACW
5.			
	50	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' r)			
1. Lonicera morrowii	10	Y	FACU
2. Carya ovata	10	Y	FACU
3. Juglans cinerea	5	N	FACU
4. Rubus allegheniensis	5	N	FACU
5.			
	30	= Total Cover	

Herb Stratum (Plot size: 5' r)			
1. Schedonorus arundinaceus	60	Y	FACU
2. Trifolium pratense	20	N	FACU
3. Ambrosia trifida	20	N	FAC
4. Toxicodendron radicans	20	N	FAC
5.			
6.			
7.			
8.			
9.			
10.			
	120	= Total Cover	

Woody Vine Stratum (Plot size: 30' r)			
1. Absent			
2.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

WMOSSP008

SOIL

Sampling Point: upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-17+	10YR 3/2	90	10YR 4/2	8	D	M	SiCL	
			10YR 3/6	2	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? Yes ___ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (Inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (Includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

-No hydrology indicators observed

WMO-JJP-119 UPL

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Line 880 City/County: St. Louis Sampling Date: 2-17-2017
Applicant/Owner: Spire State: MO Sampling Point: upland
Investigator(s): JJP-WJW Section, Township, Range: 14/12W/47
Landform (hillslope, terrace, etc.): Bottomland - Plain Local relief (concave, convex, none): Convex
Slope (%): 0 Lat: 38.713197 Long: -90.217705 Datum: NAD83
Soil Map Unit Name: Menfro silt loam, 5-9% slopes, eroded NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	
Hydric Soil Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes ____ No X
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
- Area upland sample point for wetland WMO-JJP119
- Area of sample point within residential yard

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus palustris	10	Y	FACW
2.			
3.			
4.			
5.			
	10 = Total Cover		

Sapling/Shrub Stratum (Plot size: 15' r)			
1.			
2.			
3. Absent			
4.			
5.			
	0 = Total Cover		

Herb Stratum (Plot size: 5' r)			
1. Schedonorus arundinaceus	30	Y	FACU
2. Digitaria sanguinalis	20	Y	FACU
3. Poa annua	20	Y	FACU
4. Trifolium repens	10	N	FACU
5. Prunella vulgaris	10	N	FACU
6. Cerastium fontanum	10	N	FACU
7.			
8.			
9.			
10.			
	100 = Total Cover		

Woody Vine Stratum (Plot size: 30' r)			
1.			
2. Absent			
	0 = Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 25% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	0	x 3 =	0
FACU species	100	x 4 =	400
UPL species	0	x 5 =	0
Column Totals:	110 (A)		420 (B)

Prevalence Index = B/A = 4.20

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)
- None

WMOSJP119

SOIL

Sampling Point: upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100					SiCL	
3-17	10YR 4/1	80	7.5YR 3/4	5	C	M	SiCL	
			7.5YR 4/6	5	C	M/PL		
			5YR 3/4	2	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Bleck Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): —

Hydric Soil Present? Yes X No ___

Remarks:

- None

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): —

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): —

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

- None

WMO-JJP-120
UPL

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Line 880 City/County: St. Louis Co Sampling Date: 2-18-2017
Applicant/Owner: Spire State: MO Sampling Point: upland
Investigator(s): JJP-WJW Section, Township, Range: 1960
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): convex
Slope (%): 4 Lat: 38.830483 Long: -90.245962 Datum: NAD83
Soil Map Unit Name: Menfro silt loam, 9-14% slopes, eroded. NWI classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No X	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks:
- Area upland sample point for wetland PEM/PFO wmoWP120
- Area pasture field

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30'r)			
1.			
2. Absent			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15'r)			
1.			
2. Absent			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5'r)			
1. Trifolium repens	35	Y	FACU
2. Digitaria sanguinalis	35	Y	FACU
3. Festuca rubra	20	Y	FACU
4. Poa annua	20	Y	FACU
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30'r)			
1. Absent			
2.			
	0 = Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	100	x 4 =	400
UPL species	0	x 5 =	0
Column Totals:	100 (A)		400 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)
-none

WMO WP120

SOIL

Sampling Point: upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/3	100					SiL	
4-17	10YR 4/3	60	7.5YR 4/6	10	C	M/PL	SiCL	
			10YR 4/2	5	D	M		
			10YR 5/1	5	D	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): —

Hydric Soil Present? Yes ____ No ✓

Remarks:

—None

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): —

Water Table Present? Yes ____ No ✓ Depth (inches): —

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): —

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

—None

WMO-JJP-121

UPL

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Line BBC City/County: ST Louis CO Sampling Date: 2-18-2017

Applicant/Owner: Spire State: MO Sampling Point: upland

Investigator(s): JJP-WJW Section, Township, Range: 1960

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): No relief

Slope (%): 4 Lat: 38.832022 Long: -90.245751 Datum: NAD83

Soil Map Unit Name: Menfro silt loam, 5-9% slopes, eroded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ✓, Soil ✓, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ✓, Soil ✓, or Hydrology ✓ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	
Hydric Soil Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland? Yes ____ No X
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:
- Area upland sample point for wetland WMO JJP 121

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30'r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3. Absent			
4.			
5.			
	0 = Total Cover		

Sapling/Shrub Stratum (Plot size: 15'r)			
1. Acer negundo	5	Y	FAC
2.			
3.			
4.			
5.			
	5 = Total Cover		

Herb Stratum (Plot size: 5'r)			
1. Schedonorus arundinaceus	100	Y	FACU
2. Phleum pratense	25	N	FACU
3. Dactylis glomerata	25	N	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	150 = Total Cover		

Woody Vine Stratum (Plot size: 30'r)			
1.			
2. Absent			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	5	x 3 =	15
FACU species	150	x 4 =	600
UPL species	0	x 5 =	0
Column Totals:	155 (A)		615 (B)

Prevalence Index = B/A = 3.97

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)
- None

WMOJJP121

SOIL

Sampling Point: Upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	7.5YR4/2	100					SiL	
5-17	10YR4/4	100					SiL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): —

Hydric Soil Present? Yes ____ No ✓

Remarks:

- None

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): —

Water Table Present? Yes ____ No ✓ Depth (inches): —

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): —

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

- None

WMO-JJP-122

UPL

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Line BBO City/County: St. Louis Sampling Date: 2-20-2017

Applicant/Owner: Spire State: MO Sampling Point: upland

Investigator(s): JJP-WJW Section, Township, Range: 17/7E/47N

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): none

Slope (%): 3 Lat: 38.822301 Long: -90.241612 Datum: NAD83

Soil Map Unit Name: Menfro silt loam, 9-14% slopes, eroded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	
Hydric Soil Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes ____ No X
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
-Area upland sample point for wetland WMOJJP122

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30'r)			
1. Ulmus rubra	5	Y	FAC
2. Juniperus virginiana	5	Y	FACU
3.			
4.			
5.			
	10	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15'r)			
1. Rubus alleghaniensis	20	Y	FACU
2. Acer rubrum	5	N	FAC
3. Prunus serotina	5	N	FACU
4.			
5.			
	30	= Total Cover	
Herb Stratum (Plot size: 5'r)			
1. Lonicera japonica	50	Y	FAC
2. Alliaria petiolata	5	N	FACU
3. Rubus alleghaniensis	5	N	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	60	= Total Cover	
Woody Vine Stratum (Plot size: 30'r)			
1.			
2. Absent			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	60	x 3 =	180
FACU species	40	x 4 =	160
UPL species	0	x 5 =	0
Column Totals:	100 (A)		340 (B)

Prevalence Index = B/A = 3.40

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

None

wmoJJP122

SOIL

Sampling Point: upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR3/2	100					SiL	
6-17	2.5Y4/2	90	10YR4/6	5	C	M	SCL	
			7.5YR3/4	5	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: none

Depth (inches): ~

Hydric Soil Present? Yes X No ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): ~

Water Table Present? Yes ____ No ✓ Depth (inches): ~

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): ~

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

- No hydrology indicators observed

L/MO-SJP-123
UPL

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Line 880 City/County: St. Louis Sampling Date: 2-20-2017
Applicant/Owner: Spire State: MO Sampling Point: Upland
Investigator(s): JWP-WJW Section, Township, Range: 16/7E/47N
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None
Slope (%): 4 Lat: 38.821696 Long: -90.240411 Datum: NAD83
Soil Map Unit Name: Menfro silt loam, 9-14% slopes, eroded NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	
Hydric Soil Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes ____ No X
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
-Area upland sample point for wetlands wmoJJP123 PEM and wmoJJP123 PSS.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30'r)			
1. Acer negundo	40	Y	FAC
2.			
3.			
4.			
5.			
	40 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15'r)			
1. Lonicera maackii	10	Y	UPL
2.			
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: 5r)			
1. Geum canadensis	15	Y	FACU
2. Ageratina altissima	15	Y	FACU
3. Aplectrum hyemale	10	Y	FACU
4. Allium vineale	5	N	FACU
5. Fragaria virginiana	5	N	FACU
6.			
7.			
8.			
9.			
10.			
	50 = Total Cover		
Woody Vine Stratum (Plot size: 30'r)			
1.			
2. Absent			
	0 = Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 5 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	40	x 3 =	120
FACU species	50	x 4 =	200
UPL species	10	x 5 =	50
Column Totals:	100 (A)		370 (B)

Prevalence Index = B/A = 3.70

Hydrophytic Vegetation Indicators:
__ 1 - Rapid Test for Hydrophytic Vegetation
__ 2 - Dominance Test is >50%
__ 3 - Prevalence Index is ≤3.0[1]
__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)
-None

WMOOJP123 PEM-PSS

SOIL

Sampling Point: upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/3	100					SiCL	
5-17	2.5Y 4/2	95	10YR 3/4	5	C	M	SiCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): —

Hydric Soil Present? Yes X No ___

Remarks:

-None

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): —

Water Table Present? Yes ___ No ✓ Depth (inches): —

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): —

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

-No hydrology indicators observed

WMO-JJP-124
UPL

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: STL SCE City/County: St. Louis Co Sampling Date: 2/23/17
Applicant/Owner: Spire State: MO Sampling Point: UPLAND
Investigator(s): JJP / WJW Section, Township, Range: 52
Landform (hillslope, terrace, etc.): Bottomland Local relief (concave, convex, none): None
Slope (%): <2 Lat: 38.812201 Long: -90.215249 Datum: NAD83
Soil Map Unit Name: Menfro silt loam, 5-9% slopes, eroded NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	
Hydric Soil Present?	Yes ____	No X	Is the Sampled Area within a Wetland? Yes ____ No X
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Upland representative to WMO-JJP-124.
Forest edge near active ag. field margin

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus deltoides	60	Y	FAC
2. Acer saccharinum	15	Y	FACW
3.			
4.			
5.			
	75	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. Lonicera maackii	10	Y	UPL
2. Acer negundo	5	Y	FAC
3. Cornus drummondii	5	Y	FAC
4.			
5.			
	20	= Total Cover	

Herb Stratum (Plot size: 5')			
1. Lonicera japonica	10	Y	FACU
2. Elymus canadensis	10	Y	FACU
3. Stellaria media	10	Y	FACU
4. Toxicodendron radicans	5	N	FAC
5.			
6.			
7.			
8.			
9.			
10.			
	35	= Total Cover	

Woody Vine Stratum (Plot size: 30')			
1. Vitis sp. *	10*	*	*
2.			
	10*	= Total Cover	

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)
Total Number of Dominant Species Across All Strata: 8 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	15	x 2 =	30
FAC species	75	x 3 =	225
FACU species	30	x 4 =	120
UPL species	10	x 5 =	50
Column Totals:	130 (A)		425 (B)

Prevalence Index = B/A = 3.27

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)
* Species not identified beyond genus level have been omitted from calculations.

WIL-JJP-124

SOIL

Sampling Point: UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4"	10YR 3/2	100	-	-	-	-	SiCL	
4-17"	10YR 3/3	98	10YR 3/4	2	C	M	SiCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (Inches): -

Hydric Soil Present? Yes ____ No X

Remarks:

No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (Inches): -

Water Table Present? Yes ____ No X Depth (inches): -

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): -

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

None observed

WMO-JSP-125 UPL

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: STL NCE City/County: St. Louis Co. Sampling Date: 2/25/17
Applicant/Owner: Spire State: MO Sampling Point: UPLAND
Investigator(s): JSP/WJW Section, Township, Range: 16/7E/47N
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave
Slope (%): 2 Lat: 38.818325 Long: -90.23045 Datum: NAD83
Soil Map Unit Name: Urban land - Harvester complex, 9-20% NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	
Hydric Soil Present?	Yes ____	No X	Is the Sampled Area within a Wetland? Yes ____ No X
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
upland representative to WMO-JSP-125.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus deltoides	10	Y	FAC
2. Malus sp. *	10*	*	*
3.			
4.			
5.			
	10	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. Lonicera maackii	5	Y	UPL
2. Elaeagnus umbellata	5	Y	UPL
3. Cornus drummondii	2	N	FAC
4.			
5.			
	12	= Total Cover	

Herb Stratum (Plot size: 5')			
1. Setaria viridis	40	Y	UPL
2. Tridens flavus	10	N	UPL
3. Sorghum halepense	2	N	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	52	= Total Cover	

Woody Vine Stratum (Plot size: 30')			
1. Absent	-	-	-
2.			
	0	= Total Cover	

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 25% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	12	x 3 =	36
FACU species	2	x 4 =	8
UPL species	60	x 5 =	300
Column Totals:	74 (A)		344 (B)

Prevalence Index = B/A = 4.65

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)
* Species not ID'd beyond genus level have been omitted from calculations

WMO-JSP-125

SOIL

Sampling Point: UPLAND

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8"	10YR 3/3	80	10YR 5/6	20	C	M	SiCL	
8-17"	10YR 5/6	90	10YR 3/3	10	D	M	SiCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): —

Hydric Soil Present? Yes ____ No X

Remarks:

No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (Inches): —

Water Table Present? Yes ____ No X Depth (inches): —

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): —

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks:

No hydro observed.

WMOTMA008

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: STL PIPELINE City/County: ST. CHARLES CO Sampling Date: 10/15/2016

Applicant/Owner: SPIRE STL State: MO Sampling Point: UPLAND

Investigator(s): JJP / TMA Section, Township, Range: none

Landform (hillslope, terrace, etc.): PLAIN Local relief (concave, convex, none): CONVEX

Slope (%): 1 Lat: 38.8657518935 Long: -90.2334309793 Datum: NAD 83

Soil Map Unit Name: Lowmo silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation Y*, Soil N, or Hydrology N significantly disturbed? Are 'Normal Circumstances' present? Yes X No ____

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	
Hydric Soil Present?	Yes ____	No X	Is the Sampled Area within a Wetland? Yes ____ No X
Wetland Hydrology Present?	Yes ____	No X	

Remarks: * HARVESTED CORN FIELD; PLOWED RECENTLY

UPLAND DATA PT FOR WETLAND WMOTMA008

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2. NONE			
3.			
4.			
5.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3. NONE			
4.			
5.			
	= Total Cover		

Herb Stratum (Plot size: 5')			
1.			
2.			
3.			
4. NONE			
5.			
6.			
7.			
8.			
9.			
10.			
	= Total Cover		

Woody Vine Stratum (Plot size: 15')			
1.			
2. NONE			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ____ (A)

Total Number of Dominant Species Across All Strata: ____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

WMOTMA008

SOIL

Sampling Point: UPLAND

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/1	99	10YR 4/6	1			SC	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

APPENDIX C
Stream Data Forms
(Additional Features Only)

gai consultants
transforming ideas into reality

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 12/2/16
REVIEWER(S): CDK / WJW
GAI STREAM ID: SIL-CDK-033
WEATHER CONDITIONS: 45°F, Sunny

STREAM TYPE: ☒ PERENNIAL ☐ INTERMITTENT ☐ EPHEMERAL
Stream crossed by centerline: ☒ YES ☐ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
3516 - Upstream E # 3517 - Downstream W # 3518 - Impact Area, S
X - Culvert Inflow # X - Culvert Outflow

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☐ YES ☒ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 12/2/16
REVIEWER(S): CDK / LJW
GAI STREAM ID: SIL-CDK-033

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 20'; at centerline (feet): 20
Average bank height (feet): 5; at centerline (feet): 5
Bottom width (feet): 17 Water width (feet): 17 Water depth (feet): 3 in
Ordinary High Water Mark (OHWM), if observed (feet): 2 3' ⇔ 20'

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☒ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☒ LOW
Average depth of water (feet): 3 in

BANK EROSION: ☐ EXTENSIVE ☒ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): + scour

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.):
Identify specific pollutants, if known: None

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe:

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe:
Fish or wildlife observed? ☐ YES ☒ NO Describe:
Habitat for:
Fish/spawn areas? ☐ YES ☐ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe:

OTHER OBSERVATIONS AND COMMENTS: silt, sand, gravel, cobble

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 12/2/16
REVIEWER(S): CDK / WTV
GAI STREAM ID: STL-CDK-034
WEATHER CONDITIONS: 45°F, Sunny

STREAM TYPE: ☐ PERENNIAL ☒ INTERMITTENT ☐ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
3519 - Upstream # 3520 - Downstream # 3521 - Impact Area
X - Culvert Inflow # X - Culvert Outflow

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☐ YES ☒ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 12/2/16
REVIEWER(S): CDK / WJW
GAI STREAM ID: STL-CDK-034

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 4 ft ; at centerline (feet): N/A
Average bank height (feet): 2 ft ; at centerline (feet): N/A
Bottom width (feet): 3 ft Water width (feet): 1 ft Water depth (feet): < 1 in
Ordinary High Water Mark (OHWM), if observed (feet): ↕ 0.75 ft
↔ 3.5 ft

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☒ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☒ LOW
Average depth of water (feet): < 1 in

BANK EROSION: ☐ EXTENSIVE ☒ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): Scour

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.):
Identify specific pollutants, if known:

AQUATIC PLANTS: None
☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe:

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe:
Fish or wildlife observed? ☐ YES ☒ NO Describe:
Habitat for:
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe:

OTHER OBSERVATIONS AND COMMENTS: Silt, Sand, Gravel

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 12/5/16
REVIEWER(S): CDK / WTW
GAI STREAM ID: SIL-CDK-035

WEATHER CONDITIONS: 47°F, Cloudy

STREAM TYPE: ☐ PERENNIAL ☒ INTERMITTENT ☐ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#3526 - Upstream E #3527 - Downstream SSW #3528 - ~~Impact Area~~ Cross W
#3529 - Culvert Inflow SW #3530 - Culvert Outflow NE

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☐ YES ☒ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☐ FORESTED ☐ WETLAND
☒ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☐ FORESTED ☐ WETLAND
☒ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 10/5/16
REVIEWER(S): CDK/WJW
GAI STREAM ID: STL-CDK-035

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 4'; at centerline (feet): N/A
Average bank height (feet): 5'; at centerline (feet): N/A
Bottom width (feet): 3' Water width (feet): 2' Water depth (feet): 1 in
Ordinary High Water Mark (OHWM), if observed (feet): ↕ 1 ft
↔ 3.5 ft

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☒ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☒ LOW
Average depth of water (feet): 1 in

BANK EROSION: ☐ EXTENSIVE ☒ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): scour

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.):

Identify specific pollutants, if known: None

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe:

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe:
Fish or wildlife observed? ☐ YES ☒ NO Describe:
Habitat for:
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe:

OTHER OBSERVATIONS AND COMMENTS: silt, sand, gravel

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 12/5/16
REVIEWER(S): CDK / WJW
GAI STREAM ID: SJL-CDK-036

WEATHER CONDITIONS: 47°F, Cloudy

STREAM TYPE: ☐ PERENNIAL ☒ INTERMITTENT ☐ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#3536 - Upstream ESE #3537 - Downstream NW #3538 - Impact Area SW
#X - Culvert Inflow #X - Culvert Outflow

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☐ YES ☒ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☐ FORESTED ☐ WETLAND
☒ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☐ FORESTED ☐ WETLAND
☒ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 12/5/16
REVIEWER(S): CDK / VJW
GAI STREAM ID: STL - CDK - 036

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 6 ft ; at centerline (feet): N/A
Average bank height (feet): 10 ft ; at centerline (feet): N/A
Bottom width (feet): 5 ft Water width (feet): 1.5 ft Water depth (feet): 1.5 in.
Ordinary High Water Mark (OHWM), if observed (feet): ↕ 1 ft
↔ 5.5 ft

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☒ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☒ LOW
Average depth of water (feet): 1.5 in

BANK EROSION: ☐ EXTENSIVE ☒ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): scour

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.):

Identify specific pollutants, if known:

AQUATIC PLANTS: None ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe:

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe:
Fish or wildlife observed? ☐ YES ☒ NO Describe:
Habitat for:
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe:

OTHER OBSERVATIONS AND COMMENTS: Silt, sand, gravel, cobble

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 12/6/16
REVIEWER(S): CDK / VJW
GAI STREAM ID: STL-CDK-037

WEATHER CONDITIONS: 43°F, Cloudy

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
3539 - Upstream E
3540 - Downstream W
3541 - Impact Area N
X - Culvert Inflow
X - Culvert Outflow

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☐ YES ☒ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 12/6/16
REVIEWER(S): CDK / WJL
GAI STREAM ID: STL-CDK-037

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 6ft ; at centerline (feet): N/A
Average bank height (feet): 3.5 ; at centerline (feet): N/A
Bottom width (feet): 4 ft Water width (feet): dry Water depth (feet): dry
Ordinary High Water Mark (OHWM), if observed (feet): ↕ 0.5 ft ↔ 5 ft

FLOW CHARACTERISTICS:
Water present: ☒ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☒ LOW
Average depth of water (feet): dry

BANK EROSION: ☐ EXTENSIVE ☒ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): scour

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): dry
Identify specific pollutants, if known: None

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe:

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe:
Fish or wildlife observed? ☐ YES ☒ NO Describe:
Habitat for:
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe:

OTHER OBSERVATIONS AND COMMENTS: Silt, Sand, Gravel

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 12/6/16
REVIEWER(S): CDK/WJW
GAI STREAM ID: 576-CDK-038

WEATHER CONDITIONS: 43°F, Cloudy

STREAM TYPE: ☐ PERENNIAL ☒ INTERMITTENT ☐ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
3542 - Upstream SE # 3543 - Downstream NW # 3544 - Impact Area NE
X - Culvert Inflow # X - Culvert Outflow

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☐ YES ☒ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 12/6/16
REVIEWER(S): CDK / WJV
GAI STREAM ID: SIL-CDK-038

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 8 Ft; at centerline (feet): N/A
Average bank height (feet): 2.5 ft; at centerline (feet): N/A
Bottom width (feet): 6 Ft Water width (feet): 3 Ft Water depth (feet): 1 in
Ordinary High Water Mark (OHWM), if observed (feet): ↕ 1 Ft
↔ 7 Ft

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☒ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☒ LOW
Average depth of water (feet): 1 in

BANK EROSION: ☐ EXTENSIVE ☒ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): Scour

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.):
Identify specific pollutants, if known:

AQUATIC PLANTS: None ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe:

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe:
Fish or wildlife observed? ☐ YES ☒ NO Describe:
Habitat for:
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe:

OTHER OBSERVATIONS AND COMMENTS: Silt, sand, gravel, cobble

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 12/6/16
REVIEWER(S): CDK/ WJW
GAI STREAM ID: SIL-CDK-039

WEATHER CONDITIONS: 43°F, Cloudy

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#3545 - Upstream SW #3546 - Downstream NE #3547 - Impact Area SE
#X - Culvert Inflow #X - Culvert Outflow

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☐ YES ☒ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 12/6/16
REVIEWER(S): CDK/VJW
GAI STREAM ID: SIL-CDK-039

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 6ft; at centerline (feet): N/A
Average bank height (feet): 3Pt; at centerline (feet): N/A
Bottom width (feet): 4Pt Water width (feet): dry Water depth (feet): dry
Ordinary High Water Mark (OHWM), if observed (feet): 1 Pt <-> 5 ft

FLOW CHARACTERISTICS:
Water present: ☒ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☒ LOW
Average depth of water (feet): dry

BANK EROSION: ☐ EXTENSIVE ☒ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): scour

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): dry
Identify specific pollutants, if known: none

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe:

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe:
Fish or wildlife observed? ☐ YES ☒ NO Describe:
Habitat for:
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe:

OTHER OBSERVATIONS AND COMMENTS: silt, sand, gravel

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 9-17-2016
REVIEWER(S): JJP-TMA
GAI STREAM ID: STLJJP019

WEATHER CONDITIONS: Clear / No rain / Last rain event 48 hours

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#4845 - Upstream N #4846 - Downstream S #_____ - Impact Area
#_____ - Culvert Inflow #_____ - Culvert Outflow 4847 RB → W / 4848 LB → E

FULLY FUNCTIONAL: ☐ YES ☐ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☐ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 9-12-2016
REVIEWER(S): JJP-TMA
GAI STREAM ID: STLWP019

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 4 ; at centerline (feet): /
Average bank height (feet): 2 ; at centerline (feet): /
Bottom width (feet): 6" Water width (feet): NO Water depth (feet): NO
Ordinary High Water Mark (OHWM), if observed (feet): 1'

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☒ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW none
Average depth of water (feet): /

BANK EROSION: ☐ EXTENSIVE ☐ MODERATE ☒ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): _____

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO No flow
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): /

Identify specific pollutants, if known: _____

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: _____

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: _____
Fish or wildlife observed? ☐ YES ☒ NO Describe: _____
Habitat for: _____
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: NHD

OTHER OBSERVATIONS AND COMMENTS: Trib of STLWP018

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 9-12-2016
REVIEWER(S): JJP-TMA
GAI STREAM ID: STLJJP020

WEATHER CONDITIONS: Clear/No rain/last rain event 48 hrs

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#4850 - Upstream SE #4851 - Downstream NW #✓ - Impact Area
#✓ - Culvert Inflow #✓ - Culvert Outflow 4852 RB→NE/4853 LB→SW

FULLY FUNCTIONAL: ☐ YES ☐ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☐ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 9-12-2016
REVIEWER(S): WD-TMA
GAI STREAM ID: SILSJP020

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 3'; at centerline (feet): /
Average bank height (feet): 3'; at centerline (feet): /
Bottom width (feet): 2' Water width (feet): NO Water depth (feet): None
Ordinary High Water Mark (OHWM), if observed (feet): 2'

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☒ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW None
Average depth of water (feet): None

BANK EROSION: ☐ EXTENSIVE ☒ MODERATE Flag 3 to 2 ☒ LITTLE / NONE (Flag 2 to 1)
Explain (sloughing banks, exposed root wads, undercut banks, etc.):

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): No Flow
Identify specific pollutants, if known:

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe:

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe:
Fish or wildlife observed? ☐ YES ☒ NO Describe:
Habitat for: None
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: Connects to NHD

OTHER OBSERVATIONS AND COMMENTS: Trib of SILTMA

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 9-12-16
REVIEWER(S): JJP-TMA
GAI STREAM ID: STLJJP021

WEATHER CONDITIONS: Clear / No rain / Last rain event 48 hrs

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#4877 - Upstream N #4878 - Downstream S #_____ - Impact Area
#_____ - Culvert Inflow #_____ - Culvert Outflow 4879RB→W / 4880LB→E

FULLY FUNCTIONAL: ☐ YES ☐ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☐ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 9-12-2016
REVIEWER(S): JJR - TMA
GAI STREAM ID: STLJJP021

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 8 ; at centerline (feet): —
Average bank height (feet): 8' ; at centerline (feet): —
Bottom width (feet): 4 Water width (feet): — Water depth (feet): <1"
Ordinary High Water Mark (OHWM), if observed (feet): _____

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☑ STREAMBED MOIST ☒ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW
Average depth of water (feet): <1" in pools

BANK EROSION: ☒ EXTENSIVE ☐ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): undercuts / scour / wads

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☒ YES ☐ NO in pools
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): _____
Identify specific pollutants, if known: —

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: _____

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: _____
Fish or wildlife observed? ☐ YES ☒ NO Describe: _____
Habitat for: none
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: connects to MHD

OTHER OBSERVATIONS AND COMMENTS: Trib of STLTMA016

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 9-13-2016
REVIEWER(S): JJP-TMA
GAI STREAM ID: STLJJP022

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 6 ; at centerline (feet): —
Average bank height (feet): 5 ; at centerline (feet): —
Bottom width (feet): 2.5' Water width (feet): None Water depth (feet): None (<1" in pools)
Ordinary High Water Mark (OHWM), if observed (feet): 3'

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☒ STREAMBED MOIST ☒ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW No flow
Average depth of water (feet): None

BANK EROSION: ☒ EXTENSIVE ☐ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): Slough banks/undercuts/ wads/scour

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO No flow
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): —

Identify specific pollutants, if known: —

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe:

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe:
Fish or wildlife observed? ☐ YES ☒ NO Describe:
Habitat for:
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: Connects to NHD

OTHER OBSERVATIONS AND COMMENTS: Trib of STLTMA022
- Agric. field run-off

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 9-13-2016
REVIEWER(S): JJT-TMA
GAI STREAM ID: STLJJP022

WEATHER CONDITIONS: Clear/Last rain event 72hrs

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#4885 - Upstream NW #4886/87 Downstream SE #____ - Impact Area
#____ - Culvert Inflow #____ - Culvert Outflow
4888 RB→SW/4889LB→NE

FULLY FUNCTIONAL: ☐ YES ☐ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 9-13-2016
REVIEWER(S): JT-TMA
GAI STREAM ID: STL_WP023

WEATHER CONDITIONS: Clear/Last rain event 72 hours

STREAM TYPE: ☒ PERENNIAL ☐ INTERMITTENT ☐ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#4890 - Upstream NE #4891 - Downstream SW #____ - Impact Area
#____ - Culvert Inflow #____ - Culvert Outflow
4892 RB→NW/4893→LB→SE

FULLY FUNCTIONAL: ☐ YES ☐ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☐ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 9-13-2016
REVIEWER(S): JJP-TMA
GAI STREAM ID: STLJJP023

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 8 ; at centerline (feet): —
Average bank height (feet): 4' ; at centerline (feet): —
Bottom width (feet): 3' Water width (feet): 3 Water depth (feet): 2"
Ordinary High Water Mark (OHWM), if observed (feet): 5

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☒ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☒ LOW
Average depth of water (feet): 2"

BANK EROSION: ☐ EXTENSIVE ☒ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): undercuts/wads/scour

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☒ YES ☐ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): Low turbidity
Identify specific pollutants, if known: —

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☒ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe:

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☒ YES ☐ NO Describe: caddisfly cases
Fish or wildlife observed? ☐ YES ☒ NO Describe:
Habitat for: N/A
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: NHD

OTHER OBSERVATIONS AND COMMENTS: Trib of STLTMA017

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 10-24-2016
REVIEWER(S): JWP-TMA
GAI STREAM ID: STLJWP116
WEATHER CONDITIONS: Clear/63°F

STREAM TYPE: ☐ PERENNIAL ☒ INTERMITTENT ☐ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#619 - Upstream E #620 - Downstream W #623 - Impact Area N
#_____ - Culvert Inflow #_____ - Culvert Outflow 621 RB→N / 622 LB→S

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:		LEFT BANK:	
☒ FORESTED	☐ WETLAND	☒ FORESTED	☐ WETLAND
☒ FARMLAND	☐ SCRUB/SHRUB	☒ FARMLAND	☐ SCRUB/SHRUB
☐ HAYFIELD	☐ PRAIRIE	☐ HAYFIELD	☐ PRAIRIE
☐ INDUSTRIAL	☐ HIGH BLUFFS	☐ INDUSTRIAL	☐ HIGH BLUFFS
☐ RESIDENTIAL		☐ RESIDENTIAL	

* Impact area near CL farmfield

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 10-24-2016
REVIEWER(S): JP-TMA
GAI STREAM ID: STLJJP116

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 6 ; at centerline (feet): /
Average bank height (feet): 4.5 ; at centerline (feet): /
Bottom width (feet): 2' Water width (feet): / Water depth (feet): /
Ordinary High Water Mark (OHWM), if observed (feet): 4'

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☒ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW none
Average depth of water (feet): none

BANK EROSION: ☐ EXTENSIVE ☐ MODERATE ☒ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): scour some undercuts

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☐ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): No flow
Identify specific pollutants, if known: No flow / None

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: /

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe:
Fish or wildlife observed? ☐ YES ☒ NO Describe:
Habitat for: None
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: Connects to NHD outside Study area

OTHER OBSERVATIONS AND COMMENTS: - Stream bed with standing water near edge of Study area boundary

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 11-17-2016
REVIEWER(S): JJP-TMA
GAI STREAM ID: SILWP125

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 4 ; at centerline (feet): —
Average bank height (feet): 3 ; at centerline (feet): —
Bottom width (feet): 2 Water width (feet): — Water depth (feet): —
Ordinary High Water Mark (OHWM), if observed (feet): 3'

FLOW CHARACTERISTICS:
Water present: ☒ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW No flow
Average depth of water (feet): _____

BANK EROSION: ☐ EXTENSIVE ☒ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): undercuts - scour - wads

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): No flow
Identify specific pollutants, if known: none observed

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: —

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☐ YES ☒ NO Describe: —
Habitat for: None
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☐ YES ☐ NO Describe: _____

OTHER OBSERVATIONS AND COMMENTS: source agricultural field
IWM-017

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 11-17-2016
REVIEWER(S): JJP-TMA
GAI STREAM ID: STLJJP126

WEATHER CONDITIONS: Clear/70°F/No rain last 72hrs

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#6022 - Upstream NW #6023 - Downstream SE #____ - Impact Area
#____ - Culvert Inflow #____ - Culvert Outflow 6024 RB→SW/6025 LB→NE

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☐ YES ☒ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 11-17-2016
REVIEWER(S): JJP-TMA
GAI STREAM ID: STLJJP126

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 3 ; at centerline (feet): /
Average bank height (feet): 2 ; at centerline (feet): /
Bottom width (feet): .5 Water width (feet): / Water depth (feet): /
Ordinary High Water Mark (OHWM), if observed (feet): 2'

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☒ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW No flow
Average depth of water (feet): None

BANK EROSION: ☐ EXTENSIVE ☐ MODERATE ☒ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): Scour

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): No flow
Identify specific pollutants, if known: None observed

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: /

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: /
Fish or wildlife observed? ☐ YES ☒ NO Describe: /
Habitat for: None
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: Connects to NHD blueline stream

OTHER OBSERVATIONS AND COMMENTS: Tributary of STLTMA069 an intermittent stream.

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2-21-2017
REVIEWER(S): JP- WVW
GAI STREAM ID: SFLWP141

WEATHER CONDITIONS: overcast/60°F/Light rain last 24 hrs

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☒ YES ☐ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#6810 - Upstream E #6811 - Downstream W #6814 - Impact Area S
#6809 - Culvert Inflow #6815 - Culvert Outflow 6812RB→N/6813LB→S

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☐ YES ☒ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☐ FORESTED ☐ WETLAND
☒ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☐ FORESTED ☐ WETLAND
☒ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-21-2017
REVIEWER(S): JWP-WJW
GAI STREAM ID: STLWP141

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 4 ; at centerline (feet): 4
Average bank height (feet): 2 ; at centerline (feet): 2
Bottom width (feet): .6 Water width (feet): / Water depth (feet): /
Ordinary High Water Mark (OHWM), if observed (feet): .5

FLOW CHARACTERISTICS:
Water present: ☒ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW no flow
Average depth of water (feet): none

BANK EROSION: ☐ EXTENSIVE ☐ MODERATE ☒ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): possible OHWM change in veg. community

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): no flow none observed
Identify specific pollutants, if known: none observed

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☒ YES ☐ ABUTTING or ☐ ADJACENT ☐ NO
Describe: PEM abutting channel, possible source of flow

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☐ YES ☒ NO Describe: —
Habitat for: none
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe:

OTHER OBSERVATIONS AND COMMENTS: Tributary of STLWP142/

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2-21-2017
REVIEWER(S): JJP-WJW
GAI STREAM ID: SILJJP142

WEATHER CONDITIONS: Overcast/60°F/Light rain last 24 hrs

STREAM TYPE: ☐ PERENNIAL ☒ INTERMITTENT ☐ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#6816 - Upstream SE #6817 - Downstream # — - Impact Area
#6820 - Culvert Inflow #6821 - Culvert Outflow 6818RB→ /6819LB

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☐ FORESTED ☐ WETLAND
☒ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☐ FORESTED ☐ WETLAND
☒ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-21-2017
REVIEWER(S): JVP-WJW
GAI STREAM ID: STLWP142

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 5 ; at centerline (feet): —
Average bank height (feet): 3' ; at centerline (feet): —
Bottom width (feet): 1.5' Water width (feet): — Water depth (feet): —
Ordinary High Water Mark (OHWM), if observed (feet): .5'

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☒ STREAMBED MOIST ☒ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW no flow
Average depth of water (feet): .5' in standing water near culvert inflow only

BANK EROSION: ☐ EXTENSIVE ☐ MODERATE ☒ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): —scour

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): standing water only, water clear
Identify specific pollutants, if known: none observed

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☒ YES ☐ ABUTTING or ☐ ADJACENT ☐ NO
Describe: PEM abutting up stream area

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☒ YES ☐ NO Describe: minnows observed in standing water area
Habitat for: —
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe:

OTHER OBSERVATIONS AND COMMENTS: Tributary of STLWP148 Macoupin Creek

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2-24-2017
REVIEWER(S): JNP-WJW
GAI STREAM ID: STLWP143
WEATHER CONDITIONS: Overcast / 38°F

STREAM TYPE: [X] PERENNIAL [ ] INTERMITTENT [ ] EPHEMERAL
Stream crossed by centerline: [X] YES [ ] NO
Stream crossed by access road: [ ] YES [X] NO

PHOTOGRAPHS TAKEN:
#6892 - Upstream NE #6893 - Downstream W NW #6896 - Impact Area S
~~/~~ - Culvert Inflow # ~~/~~ - Culvert Outflow 6894 RB → N / 6895 LB → S

FULLY FUNCTIONAL: [X] YES [ ] NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: [ ] YES [X] NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: [ ] YES [X] NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
[ ] FORESTED [ ] WETLAND
[X] FARMLAND [ ] SCRUB/SHRUB
[ ] HAYFIELD [ ] PRAIRIE
[ ] INDUSTRIAL [ ] HIGH BLUFFS
[ ] RESIDENTIAL
pasture

LEFT BANK:
[X] FORESTED [ ] WETLAND
[ ] FARMLAND [ ] SCRUB/SHRUB
[ ] HAYFIELD [ ] PRAIRIE
[ ] INDUSTRIAL [ ] HIGH BLUFFS
[ ] RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 7-24-2017
REVIEWER(S): JJP-CWJW
GAI STREAM ID: STLJJP143

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 15 ; at centerline (feet): 15
Average bank height (feet): 7 ; at centerline (feet): 7
Bottom width (feet): 3 Water width (feet): 4 Water depth (feet): 1
Ordinary High Water Mark (OHWM), if observed (feet): 1.5

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☒ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☒ LOW
Average depth of water (feet): 1.5

BANK EROSION: ☐ EXTENSIVE ☒ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): sloughing banks - scour - undercuts

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☒ YES ☐ NO GILJJP050A/050B

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): siltation observed on cobble surface / water clear
Identify specific pollutants, if known: none observed

AQUATIC PLANTS: ☒ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☒ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: inactive forested - woodland floodplain - pasture

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☐ YES ☒ NO Describe: —
Habitat for: none
Fish/spawn areas? ☒ YES ☐ NO possible

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: NHD mapped stream

OTHER OBSERVATIONS AND COMMENTS: none

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2-24-2017
REVIEWER(S): JJP-WJW
GAI STREAM ID: SILWJP144

WEATHER CONDITIONS: Overcast / 39°F

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☒ NO ☐ YES
Stream crossed by access road: ☒ NO ☐ YES
> stream outside current Study Area boundary

PHOTOGRAPHS TAKEN:
#6888 - Upstream S
#6889 - Downstream N
#____ - Impact Area 6890 RB → E / 6891 LB → W
#____ - Culvert Inflow
#6883 - Culvert Outflow

FULLY FUNCTIONAL: ☐ YES ☒ NO

Considered fully functional if the following criteria are met:

1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO

Considered moderately functional if the following are met:

1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO

Considered functionally impaired if the stream has more than one of the following:

1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:

☒ FORESTED	☐ WETLAND
☐ FARMLAND	☐ SCRUB/SHRUB
☐ HAYFIELD	☐ PRAIRIE
☐ INDUSTRIAL	☐ HIGH BLUFFS
☐ RESIDENTIAL	

LEFT BANK:

☒ FORESTED	☐ WETLAND
☐ FARMLAND	☐ SCRUB/SHRUB
☐ HAYFIELD	☐ PRAIRIE
☐ INDUSTRIAL	☐ HIGH BLUFFS
☐ RESIDENTIAL	

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 7-24-2017
REVIEWER(S): JP-WJW
GAI STREAM ID: SMOJWP144

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 2'; at centerline (feet): —
Average bank height (feet): 1; at centerline (feet): —
Bottom width (feet): .5 Water width (feet): — Water depth (feet): —
Ordinary High Water Mark (OHWM), if observed (feet): .3

FLOW CHARACTERISTICS:
Water present: ☒ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW no flow
Average depth of water (feet): —

BANK EROSION: ☐ EXTENSIVE ☐ MODERATE ☒ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): scour

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): No flow
Identify specific pollutants, if known: none observed

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: upland wooded land

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☐ YES ☒ NO Describe: —
Habitat for: none
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: connects to NHD stream

OTHER OBSERVATIONS AND COMMENTS: Stream channel outside SA boundary

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2-24-2017
REVIEWER(S): JJP-WJW
GAI STREAM ID: STLJJP145
WEATHER CONDITIONS: overcast / 38°F

STREAM TYPE: ☒ PERENNIAL ☐ INTERMITTENT ☐ EPHEMERAL
Stream crossed by centerline: ☒ YES ☐ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#6917 - Upstream SE #6918 - Downstream WSW #6921 - Impact Area S
#____ - Culvert Inflow #____ - Culvert Outflow

FULLY FUNCTIONAL: ☒ YES ☐ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☐ YES ☒ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☐ YES ☒ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☐ FORESTED ☒ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☐ FORESTED ☒ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-24-2017
REVIEWER(S): JP - WW
GAI STREAM ID: STLWP145

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 4 ; at centerline (feet): 4
Average bank height (feet): 2 ; at centerline (feet): 2
Bottom width (feet): 1 Water width (feet): 1 Water depth (feet): .5
Ordinary High Water Mark (OHWM), if observed (feet): .5

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☒ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☒ LOW
Average depth of water (feet): .5

BANK EROSION: ☐ EXTENSIVE ☐ MODERATE ☒ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): some scour

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): water clear
Identify specific pollutants, if known: None observed

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☒ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☒ YES ☒ ABUTTING or ☐ ADJACENT ☐ NO
Describe: PEM WT-WP122

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☐ YES ☒ NO Describe: —
Habitat for: None
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe:

OTHER OBSERVATIONS AND COMMENTS:

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2-24-2017
REVIEWER(S): JJP-WJW
GAI STREAM ID: STLJJP146

WEATHER CONDITIONS: Overcast / 38°F

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#6931 - Upstream SE #6932 - Downstream NW #— - Impact Area
#— - Culvert Inflow #— - Culvert Outflow 6933RB→N/6934LB→S

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☐ FORESTED ☒ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☐ FORESTED ☒ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-24-2017
REVIEWER(S): JJP-WJW
GAI STREAM ID: SI-WJP146

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 4'; at centerline (feet): —
Average bank height (feet): 1; at centerline (feet): —
Bottom width (feet): .5 Water width (feet): — Water depth (feet): —
Ordinary High Water Mark (OHWM), if observed (feet): .4

FLOW CHARACTERISTICS:
Water present: ☒ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW no flow
Average depth of water (feet): —

BANK EROSION: ☐ EXTENSIVE ☐ MODERATE ☒ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): scour

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): no flow
Identify specific pollutants, if known: None observed

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☒ YES ☐ ABUTTING or ☐ ADJACENT ☐ NO
Describe: PSS WJWJP124

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☐ YES ☒ NO Describe: —
Habitat for: None
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe:

OTHER OBSERVATIONS AND COMMENTS: possible source upslope run-off from agricultural field

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2-25-2017
REVIEWER(S): JJP-WJW
GAI STREAM ID: SILJJP147

WEATHER CONDITIONS: overcast / 38°F

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☒ YES ☐ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#6945 - Upstream N #6946 - Downstream S #6944 - Impact Area E
#____ - Culvert Inflow #____ - Culvert Outflow
6942 RB→W / 6943 LB→E

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-24-2017
REVIEWER(S): JJP-WJW
GAI STREAM ID: STLWP147

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 4' ; at centerline (feet): 4
Average bank height (feet): 1 ; at centerline (feet): 1
Bottom width (feet): 1 Water width (feet): — Water depth (feet): —
Ordinary High Water Mark (OHWM), if observed (feet): .4

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☒ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW no flow
Average depth of water (feet): —

BANK EROSION: ☐ EXTENSIVE ☐ MODERATE ☒ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): scour

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): no flow
Identify specific pollutants, if known: Trash in stream channel

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: upland forested slopes

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☐ YES ☒ NO Describe: —
Habitat for: none
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: NHD stream

OTHER OBSERVATIONS AND COMMENTS:

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2-21-2017
REVIEWER(S): JJP-WJW
GAI STREAM ID: SILJJP148

WEATHER CONDITIONS: Overcast/60°F/Light rain last 24 hrs,

STREAM TYPE: ☒ PERENNIAL ☐ INTERMITTENT ☐ EPHEMERAL
Stream crossed by centerline: ☒ YES ☐ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
6847 → SE
6825 - Upstream NE # 6826 - Downstream SW # 6828 - Impact Area NW
____ - Culvert Inflow # ____ - Culvert Outflow 6827 LB—SW

FULLY FUNCTIONAL: ☒ YES ☐ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☐ YES ☒ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☐ YES ☒ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
- ☒ FORESTED
- ☐ FARMLAND
- ☐ HAYFIELD
- ☐ INDUSTRIAL
- ☐ RESIDENTIAL
- ☐ WETLAND
- ☐ SCRUB/SHRUB
- ☐ PRAIRIE
- ☐ HIGH BLUFFS

LEFT BANK:
- ☐ FORESTED
- ☒ FARMLAND
- ☐ HAYFIELD
- ☐ INDUSTRIAL
- ☐ RESIDENTIAL
- ☐ WETLAND
- ☐ SCRUB/SHRUB
- ☐ PRAIRIE
- ☐ HIGH BLUFFS

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-21-2017
REVIEWER(S): JJD-WJW
GAI STREAM ID: STLJJP148

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 150 ; at centerline (feet): 150
Average bank height (feet): 20 ; at centerline (feet): 20
Bottom width (feet): 20' Water width (feet): 50 Water depth (feet): 4'
Ordinary High Water Mark (OHWM), if observed (feet): 10

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☒ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☒ LOW
Average depth of water (feet): 4'

BANK EROSION: ☒ EXTENSIVE ☐ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): sloughy banks / scour / undercuts

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☒ YES ☐ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): water turbid
Identify specific pollutants, if known: none observed

AQUATIC PLANTS: ☒ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☒ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☒ ADJACENT ☐ NO
Describe:

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☐ YES ☒ NO Describe: —
Habitat for: possible mussels & Fish, specific species unknown
Fish/spawn areas? ☒ YES ☐ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe:

OTHER OBSERVATIONS AND COMMENTS: Macoupin Creek/

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 9/9/2016
REVIEWER(S): JJP/TMA
GAI STREAM ID: SILTMA003
WEATHER CONDITIONS: A.M. RAIN

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☒ YES ☐ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#0048 - Upstream (E) #0049 - Downstream (W) #_____ - Impact Area
#_____ - Culvert Inflow #_____ - Culvert Outflow #0050 - Across (S)

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☐ YES ☒ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☒ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☒ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 9/9/2016
REVIEWER(S): JJP / TMA
GAI STREAM ID: SILTMA003

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 3 ; at centerline (feet): 3
Average bank height (feet): 2 ; at centerline (feet): 2
Bottom width (feet): 2 Water width (feet): N/A Water depth (feet): N/A
Ordinary High Water Mark (OHWM), if observed (feet): 2.5

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☒ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☒ LOW
Average depth of water (feet): N/A

BANK EROSION: ☐ EXTENSIVE ☐ MODERATE ☒ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): EXPOSED ROOTS

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): N/A

Identify specific pollutants, if known:

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES NONE

WETLAND FRINGE: ☒ YES ☒ ABUTTING or ☐ ADJACENT ☐ NO
Describe: WETLAND SILJJP003 (PEM @ DITCH, ABOVE STREAM)
WETLAND WILTMA001 (PEM @ NHD LINE, BELOW STREAM)

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe:
Fish or wildlife observed? ☐ YES ☒ NO Describe:
Habitat for:
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe:

OTHER OBSERVATIONS AND COMMENTS: AT NHD LINE, AG DRAINAGE

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 9/12/2016
REVIEWER(S): JJP / TMA
GAI STREAM ID: SILTMA013

WEATHER CONDITIONS: SUNNY, LINEAR

STREAM TYPE: ☐ PERENNIAL ☒ INTERMITTENT ☐ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#0136 - Upstream (N) #0137 - Downstream (S) #_____ - Impact Area
#_____ - Culvert Inflow #_____ - Culvert Outflow #0138 RB (E) #0139 LB (W)

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☐ YES ☒ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☒ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☒ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 9/12/2016
REVIEWER(S): JJP / TMA
GAI STREAM ID: SILTMA013

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 8 ; at centerline (feet): N/A
Average bank height (feet): 12 ; at centerline (feet): NA
Bottom width (feet): 5 Water width (feet): 1 Water depth (feet): 0.05
Ordinary High Water Mark (OHWM), if observed (feet): 17

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☒ STREAMBED MOIST ☒ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☒ LOW
Average depth of water (feet): 0.5

BANK EROSION: ☒ EXTENSIVE ☐ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): EXPOSED ROOTS, UNDERCUT BANKS SLOUGHING BANKS

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): N/A
Identify specific pollutants, if known:

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES NONE

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe:

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☒ YES ☐ NO Describe:
Fish or wildlife observed? ☐ YES ☒ NO Describe:
Habitat for:
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: @ NHD LINE

OTHER OBSERVATIONS AND COMMENTS: TRIBUTARY TO SILJJP018
1' + FOOT DEEP HEADCUT NEAR STUDY CORRIDOR BOUNDARY WHERE 16" CULVERT OUTFALL LOCATED

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 9/12/2016
REVIEWER(S): JJP / TMA
WEATHER CONDITIONS: SUNNY, CLEAR
GAI STREAM ID: S1LTMA014

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#0143 - Upstream (W) #0144 - Downstream (E) #_____ - Impact Area
#_____ - Culvert Inflow #_____ - Culvert Outflow #0145 LB (N) #0146 RB (S)

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☐ YES ☒ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☒ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☒ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 9/12/2016
REVIEWER(S): JJP / TMA
GAI STREAM ID: SILTMA014

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 5; at centerline (feet): N/A
Average bank height (feet): 6; at centerline (feet): N/A
Bottom width (feet): 1.5 Water width (feet): _____ Water depth (feet): N/A
Ordinary High Water Mark (OHWM), if observed (feet): 4

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☒ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☒ LOW
Average depth of water (feet): N/A

BANK EROSION: ☐ EXTENSIVE ☒ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): EXPOSED ROOTS

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): N/A
Identify specific pollutants, if known: _____

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES NONE

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: _____

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: _____
Fish or wildlife observed? ☐ YES ☒ NO Describe: _____
Habitat for: _____
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: _____

OTHER OBSERVATIONS AND COMMENTS: AG DRAINAGE TRIBUTARY TO SILTMA013

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 9/13/2016
REVIEWER(S): JJP / JMA
GAI STREAM ID: SILJMA017

WEATHER CONDITIONS: SUNNY, CLEAR

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☑ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#0154 - Upstream (SW) #0155 - Downstream (NE) #_____ - Impact Area
#_____ - Culvert Inflow #_____ - Culvert Outflow #0156 (W) ACROSS

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☐ YES ☒ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☒ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☒ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 9/13/2016
REVIEWER(S): JJP / TMA
GAI STREAM ID: S1LTMA017

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 6 ; at centerline (feet): N/A
Average bank height (feet): 10 ; at centerline (feet): N/A
Bottom width (feet): 2 Water width (feet): _____ Water depth (feet): N/A
Ordinary High Water Mark (OHWM), if observed (feet): 4

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☒ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☒ LOW
Average depth of water (feet): N/A

BANK EROSION: ☒ EXTENSIVE ☐ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): HEAVILY INCISED, UNDERCUT, EXPOSED ROOTS, ACTIVE HEADCUT

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): N/A
Identify specific pollutants, if known: _____

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES NONE

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: _____

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: _____
Fish or wildlife observed? ☐ YES ☒ NO Describe: _____
Habitat for: _____
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☐ YES ☐ NO Describe: DRAINS TO NHD FEATURE

OTHER OBSERVATIONS AND COMMENTS: S1LJJP022 IS A TRIBUTARY

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 9/14/2016
REVIEWER(S): JJP / JMA
WEATHER CONDITIONS: SUNNY, CLEAR
GAI STREAM ID: S1LTMA020

STREAM TYPE: ☒ PERENNIAL ☐ INTERMITTENT ☐ EPHEMERAL
Stream crossed by centerline: ☒ YES ☐ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#0218 - Upstream (E) #0219 - Downstream (W) #0216 - Impact Area (SE) (SLOUGHING)
#_____ - Culvert Inflow #_____ - Culvert Outflow #0220 ACROSS (S)

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☐ YES ☒ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☒ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☒ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 9/14/2016
REVIEWER(S): JJP / TMA
GAI STREAM ID: SILTMA020

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 12 ; at centerline (feet): 20
Average bank height (feet): 7 ; at centerline (feet): 5
Bottom width (feet): 8 Water width (feet): 4 Water depth (feet): 0.5
Ordinary High Water Mark (OHWM), if observed (feet): 10

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☒ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☒ LOW
Average depth of water (feet): 0.75

BANK EROSION: ☒ EXTENSIVE ☐ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): SLOUGHING, EXPOSED ROOTS, UNDERCUT BANKS, ROOT WADS

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☒ YES ☐ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): TURBITY, SILTY
Identify specific pollutants, if known:

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES NONE

WETLAND FRINGE: ☒ YES ☐ ABUTTING or ☐ ADJACENT ☐ NO
Describe: WITHIN OHWM OF STREAM CHANNEL

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe:
Fish or wildlife observed? ☒ YES ☐ NO Describe: MINNOWS
Habitat for:
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: NHD LINE

OTHER OBSERVATIONS AND COMMENTS:

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 9/16/2016
REVIEWER(S): JJP / TMA
WEATHER CONDITIONS: RAIN
GAI STREAM ID: SILTMA025

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#0263 - Upstream (E) #0264 - Downstream (W) #_____ - Impact Area
#_____ - Culvert Inflow #_____ - Culvert Outflow #0265 (S)

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☐ YES ☒ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
- ☒ FORESTED
- ☒ FARMLAND
- ☐ HAYFIELD
- ☐ INDUSTRIAL
- ☐ RESIDENTIAL
- ☐ WETLAND
- ☐ SCRUB/SHRUB
- ☐ PRAIRIE
- ☐ HIGH BLUFFS

LEFT BANK:
- ☒ FORESTED
- ☒ FARMLAND
- ☐ HAYFIELD
- ☐ INDUSTRIAL
- ☐ RESIDENTIAL
- ☐ WETLAND
- ☐ SCRUB/SHRUB
- ☐ PRAIRIE
- ☐ HIGH BLUFFS

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 9/16/2016
REVIEWER(S): JJP/TMA
GAI STREAM ID: SILTMA025

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 5; at centerline (feet): N/A
Average bank height (feet): 3; at centerline (feet): N/A
Bottom width (feet): 1 Water width (feet): N/A Water depth (feet): N/A
Ordinary High Water Mark (OHWM), if observed (feet): 4

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☒ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☒ LOW
Average depth of water (feet): N/A

BANK EROSION: ☐ EXTENSIVE ☒ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): HEADWALL @ EDGE OF CROP

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): N/A

Identify specific pollutants, if known:

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES None

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe:

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe:
Fish or wildlife observed? ☐ YES ☒ NO Describe:
Habitat for:
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: This is WND

OTHER OBSERVATIONS AND COMMENTS: - CONNECTS TO SILTMA021
- AG FIELD DRAINAGE

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 10/22/2016
REVIEWER(S): JSP / TMH
GAI STREAM ID: S1L7MA 028

WEATHER CONDITIONS: SUNNY 45°

STREAM TYPE: ☐ PERENNIAL ☒ INTERMITTENT ☐ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#197 - Upstream W #198 - Downstream E #1 - Impact Area
#_____ - Culvert Inflow #_____ - Culvert Outflow #199 ACROSS S

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☐ YES ☒ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
- ☒ FORESTED
- ☒ FARMLAND
- ☐ HAYFIELD
- ☐ INDUSTRIAL
- ☐ RESIDENTIAL
- ☐ WETLAND
- ☐ SCRUB/SHRUB
- ☐ PRAIRIE
- ☐ HIGH BLUFFS

CATTLE PASTURE

LEFT BANK:
- ☒ FORESTED
- ☒ FARMLAND
- ☐ HAYFIELD
- ☐ INDUSTRIAL
- ☐ RESIDENTIAL
- ☐ WETLAND
- ☐ SCRUB/SHRUB
- ☐ PRAIRIE
- ☐ HIGH BLUFFS

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 10/22/2016
REVIEWER(S): JJP / TMA
GAI STREAM ID: SILTMA048

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 9 ; at centerline (feet): N/A
Average bank height (feet): 3.5 ; at centerline (feet): N/A
Bottom width (feet): 5 Water width (feet): N/A Water depth (feet): N/A
Ordinary High Water Mark (OHWM), if observed (feet): 6-9 (water)

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☒ STREAMBED MOIST ☒ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☒ LOW
Average depth of water (feet): N/A (4 FOOT POOL OUTSIDE STUDY AREA)

BANK EROSION: ☐ EXTENSIVE ☒ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): CATTLE DISTURBANCE

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): TURBID (POOL OUTSIDE OF STUDY AREA)
Identify specific pollutants, if known:

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES NONE

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe:

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe:
Fish or wildlife observed? ☐ YES ☒ NO Describe:
Habitat for:
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: NHD LINE

OTHER OBSERVATIONS AND COMMENTS: BEDROCK EXPOSED @ STREAM CHANNEL @ N. PORTION OF STUDY AREA

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 10/22/2016
REVIEWER(S): JJP / TMA
GAI STREAM ID: S1L7MA049

WEATHER CONDITIONS: SUNNY 45°

STREAM TYPE: ☐ PERENNIAL ☒ INTERMITTENT ☐ EPHEMERAL
Stream crossed by centerline: ☐ YES ☐ NO
Stream crossed by access road: ☐ YES ☐ NO

PHOTOGRAPHS TAKEN:
#202 - Upstream NW #204 - Downstream SE #_____ - Impact Area
#203 - Culvert Inflow SW #205 - Culvert Outflow W #206 ↑ ACROSS

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☐ YES ☒ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☐ FORESTED ☐ WETLAND
☒ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☐ FORESTED ☐ WETLAND
☒ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

CATTLE PASTURE

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 10/22/2019
REVIEWER(S): BJP / TMK
GAI STREAM ID: S1LTMA049

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 5 ; at centerline (feet): N/A
Average bank height (feet): 2.5 ; at centerline (feet): N/A
Bottom width (feet): 2.0 Water width (feet): 1.5 Water depth (feet): 0.25 (pooled)
Ordinary High Water Mark (OHWM), if observed (feet): 3.5

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☒ STREAMBED MOIST ☒ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☒ LOW
Average depth of water (feet): <0.5

BANK EROSION: ☐ EXTENSIVE ☒ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): CATTLE DISTURBANCE

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☒ YES ☐ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): SLIGHT TURBIDITY @ POOLED WATER
Identify specific pollutants, if known:

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES NONE

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe:

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe:
Fish or wildlife observed? ☐ YES ☒ NO Describe:
Habitat for:
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: NHD FEATURE UNNAMED TRIB. TO MACOUPIN CREEK

OTHER OBSERVATIONS AND COMMENTS:

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 11/17/2016
REVIEWER(S): JJP / TMA
GAI STREAM ID: SIL TM1A064

WEATHER CONDITIONS: SUNNY 55°

STREAM TYPE: ☐ PERENNIAL ☒ INTERMITTENT ☐ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#23 - Upstream SE #24 - Downstream NW #25 - Impact Area NE
#_____ - Culvert Inflow #_____ - Culvert Outflow

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☐ YES ☒ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☐ FORESTED ☐ WETLAND
☒ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

AG

LEFT BANK:
☐ FORESTED ☐ WETLAND
☒ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

AG

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 11/16/2016
REVIEWER(S): JJP / TMH
GAI STREAM ID: S1LTMIA064

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 3; at centerline (feet): N/A
Average bank height (feet): 2; at centerline (feet): N/A
Bottom width (feet): 2.0 Water width (feet): 1.0 Water depth (feet): 0.2
Ordinary High Water Mark (OHWM), if observed (feet): 2

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☒ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☒ LOW
Average depth of water (feet): <0.25

BANK EROSION: ☐ EXTENSIVE ☐ MODERATE ☒ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): _____

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): CLEAR
Identify specific pollutants, if known: _____

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES NONE

WETLAND FRINGE: ☐ YES ☒ ABUTTING or ☐ ADJACENT ☐ NO
Describe: DRAINS INTO WILTJP111

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: _____
Fish or wildlife observed? ☐ YES ☒ NO Describe: _____
Habitat for: _____
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: CONNECTED DOWNSTREAM TO NHD

OTHER OBSERVATIONS AND COMMENTS: AG FIELD DRAINAGE

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 11/17/2016
REVIEWER(S): JJB / TMH
WEATHER CONDITIONS: SUNNY 58°
GAI STREAM ID: SILTIBA065

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#26 - Upstream SE #27 - Downstream NW #28 - Impact Area E
#_____ - Culvert Inflow #_____ - Culvert Outflow

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☐ YES ☒ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☒ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☒ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 11/17/2016
REVIEWER(S): JJP / TMH
GAI STREAM ID: SILTMA065

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 8 ; at centerline (feet): N/A
Average bank height (feet): 4 ; at centerline (feet): N/A
Bottom width (feet): 4 Water width (feet): N/A Water depth (feet): N/A
Ordinary High Water Mark (OHWM), if observed (feet): 6

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☒ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☒ LOW
Average depth of water (feet): N/A

BANK EROSION: ☐ EXTENSIVE ☒ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): SCOUR, INCISED

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): N/A

Identify specific pollutants, if known:

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES NONE

WETLAND FRINGE: ☐ YES ☒ ABUTTING or ☐ ADJACENT ☐ NO
Describe: WILLOW FEEDS STREAM

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe:
Fish or wildlife observed? ☐ YES ☒ NO Describe:
Habitat for:
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: LEADS TO NHD

OTHER OBSERVATIONS AND COMMENTS:

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 11/17/2016
REVIEWER(S): JJP/ TMA
WEATHER CONDITIONS: SUNNY 65°
GAI STREAM ID: SILTMA069

STREAM TYPE: ☐ PERENNIAL ☒ INTERMITTENT ☐ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#38 - Upstream N #39 - Downstream S #40 - Impact Area E
#_____ - Culvert Inflow #_____ - Culvert Outflow

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☐ YES ☒ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 11/17/2016
REVIEWER(S): JJP / TMA
GAI STREAM ID: SILTMA069

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 6; at centerline (feet): N/A
Average bank height (feet): 4; at centerline (feet): N/A
Bottom width (feet): 3.5 Water width (feet): N/A Water depth (feet): N/A
Ordinary High Water Mark (OHWM), if observed (feet): 4

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☒ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☒ LOW
Average depth of water (feet): _____

BANK EROSION: ☐ EXTENSIVE ☒ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): SLOUGHING BANKS

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): N/A
Identify specific pollutants, if known: _____

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES NONE

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: _____

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: _____
Fish or wildlife observed? ☐ YES ☒ NO Describe: _____
Habitat for: _____
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: TRIB. TO NHD STREAM SILTMA006.

OTHER OBSERVATIONS AND COMMENTS: _____

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 9/23/2016
REVIEWER(S): W. John Hackler, Jr.; Jacob Robash
WEATHER CONDITIONS: Clear to partly cloudy, 91F
GAI STREAM ID: SIL-WJW-001

STREAM TYPE: ☐ PERENNIAL ☒ INTERMITTENT ☐ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#P9730099 - Upstream #P9230100 - Downstream #_____ - Impact Area
#_____ - Culvert Inflow #_____ - Culvert Outflow

FULLY FUNCTIONAL: ☐ YES ☐ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed deeply incised

FUNCTIONALLY IMPAIRED: ☐ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☒ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☒ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 9/23/2016
REVIEWER(S): W. John Wachter, Jr. - Jacob Robash
GAI STREAM ID: SIL-WIW-001

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 9 ; at centerline (feet): —
Average bank height (feet): 4 ; at centerline (feet): —
Bottom width (feet): 6 Water width (feet): 0 Water depth (feet): 0
Ordinary High Water Mark (OHWM), if observed (feet): 2.5

FLOW CHARACTERISTICS:
Water present: ☒ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW
Average depth of water (feet): _____

BANK EROSION: ☐ EXTENSIVE ☒ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): Deeply incised; some undercutting; possible flashy drainage from adjacent agricultural fields and field drains

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☐ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): _____
Identify specific pollutants, if known: _____

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☒ YES ☒ ABUTTING or ☐ ADJACENT ☐ NO
Describe: PEM in old pond bed

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: _____
Fish or wildlife observed? ☐ YES ☒ NO Describe: _____
Habitat for: _____
Fish/spawn areas? ☐ YES ☐ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: Guessing RPW

OTHER OBSERVATIONS AND COMMENTS: Head of stream is outlet of field drain.

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2/16/2017
REVIEWER(S): WJW, DJP
GAI STREAM ID: SMO-DJP-007

WEATHER CONDITIONS: 50, Sunny

STREAM TYPE: ☐ PERENNIAL ☒ INTERMITTENT ☐ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO - CL just misses
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#6581 - Upstream N #6582 - Downstream S #_____ - Impact Area
#_____ - Culvert Inflow #_____ - Culvert Outflow

6583 - RB W
6584 - LB E

FULLY FUNCTIONAL: ☐ YES ☒ ~~NO~~

Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO

Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally – field drain outlet, some entrenching
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☐ YES ☒ ~~NO~~

Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☒ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☒ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2/16/2017
REVIEWER(S): WTW JJP
GAI STREAM ID: SMO-JJP-007

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 6 ; at centerline (feet): —
Average bank height (feet): 2 ; at centerline (feet): —
Bottom width (feet): 1.5 Water width (feet): None Water depth (feet): None
Ordinary High Water Mark (OHWM), if observed (feet): 0.5

FLOW CHARACTERISTICS:
Water present: ☒ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☒ LOW
Average depth of water (feet): dry

BANK EROSION: ☐ EXTENSIVE ☒ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): Exposed root wads, undercut banks

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☒ YES ☐ NO At head

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): No flow
Identify specific pollutants, if known: None observed

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe:

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe:
Fish or wildlife observed? ☐ YES ☒ NO Describe:
Habitat for: None
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☐ YES ☐ NO Describe: Maybe, probably non-RPW.

OTHER OBSERVATIONS AND COMMENTS: Drains into SMO-~~JJP~~DFW-015 ext'l

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 7-16-2017
REVIEWER(S): JJP-WJW
GAI STREAM ID: SMOJJP008

WEATHER CONDITIONS: Cloudy / 60°F / No rain last 24 hrs

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#6589 - Upstream SSW #6590 - Downstream NNE #/ - Impact Area
#/ - Culvert Inflow #/ - Culvert Outflow 6591 RB→SE / 6592 LB→NW

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-16-2017
REVIEWER(S): JJP - WJW
GAI STREAM ID: SMOJJP008

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 6 ; at centerline (feet): /
Average bank height (feet): 4.5 ; at centerline (feet): /
Bottom width (feet): 1' Water width (feet): / Water depth (feet): /
Ordinary High Water Mark (OHWM), if observed (feet): 2.5'

FLOW CHARACTERISTICS:
Water present: ☒ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW no flow
Average depth of water (feet): /

BANK EROSION: ☐ EXTENSIVE ☐ MODERATE ☒ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): some veg wash and scour

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): No flow so none observed
Identify specific pollutants, if known: None observed

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: upland area only

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: /
Fish or wildlife observed? ☐ YES ☒ NO Describe: /
Habitat for: None
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe:

OTHER OBSERVATIONS AND COMMENTS: None

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 7-16-2017
REVIEWER(S): JJP - WJW
GAI STREAM ID: SmallP009

WEATHER CONDITIONS: Clear / 60°F / No rain last 24 hrs

STREAM TYPE: ☐ PERENNIAL ☒ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☒ YES ☐ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
6593 - Upstream SW # 6594 - Downstream N & # 6597 - Impact Area N
____ - Culvert Inflow # ____ - Culvert Outflow 6595 RB→S / 6596 LB→N

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-16-2017
REVIEWER(S): JJP - WJW
GAI STREAM ID: SMOWJP009

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 8 ; at centerline (feet): 8
Average bank height (feet): 4.5 ; at centerline (feet): 4.5
Bottom width (feet): 3 Water width (feet): — Water depth (feet): —
Ordinary High Water Mark (OHWM), if observed (feet): 4

FLOW CHARACTERISTICS:
Water present: ☒ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW No flow
Average depth of water (feet): —

BANK EROSION: ☐ EXTENSIVE ☐ MODERATE ☒ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): S Cour

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): No flow
Identify specific pollutants, if known: None observed - No flow

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: upland forest only

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☐ YES ☒ NO Describe: —
Habitat for: None
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe:

OTHER OBSERVATIONS AND COMMENTS: Stream within ravine ~ 20' across
Tributary of SMOWJW010

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 7-16-2017
REVIEWER(S): JP-WJW
GAI STREAM ID: SMO-JJP010

WEATHER CONDITIONS: Clear / 60°F / No rain last 24 hrs

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#6598 - Upstream SE #6599 - Downstream NW # / - Impact Area
/ - Culvert Inflow # / - Culvert Outflow 6600 RB → NE / 6601 LB → SW

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☐ FORESTED ☐ WETLAND
☐ FARMLAND ☒ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☐ FORESTED ☐ WETLAND
☐ FARMLAND ☒ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-16-2017
REVIEWER(S): JP-WJW
GAI STREAM ID: SMOWP010

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 4 ; at centerline (feet): —
Average bank height (feet): 4 ; at centerline (feet): —
Bottom width (feet): .5 Water width (feet): — Water depth (feet): —
Ordinary High Water Mark (OHWM), if observed (feet): 1'

FLOW CHARACTERISTICS:
Water present: ☒ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW No flow
Average depth of water (feet): —

BANK EROSION: ☐ EXTENSIVE ☐ MODERATE ☒ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): some scour + veg wash

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): No flow none observed
Identify specific pollutants, if known: none observed

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: upland scrub shrub only

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☐ YES ☒ NO Describe: —
Habitat for: none
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe:

OTHER OBSERVATIONS AND COMMENTS: Tributary of SMOWP009

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2-16-2017
REVIEWER(S): JJP-WJW
GAI STREAM ID: SMoJJP011

WEATHER CONDITIONS: Clear / 60°F / No rain last 24 hrs

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#6602 - Upstream SW #6603 - Downstream NE #— - Impact Area
#— - Culvert Inflow #— - Culvert Outflow 6604 RB → SE / 6605 LB → NW

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-16-2017
REVIEWER(S): JJP-WJW
GAI STREAM ID: SMOJJP011

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 5 ; at centerline (feet): /
Average bank height (feet): 4 ; at centerline (feet): /
Bottom width (feet): 2 Water width (feet): / Water depth (feet): /
Ordinary High Water Mark (OHWM), if observed (feet): 3

FLOW CHARACTERISTICS:
Water present: ☒ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW No flow
Average depth of water (feet): /

BANK EROSION: ☐ EXTENSIVE ☐ MODERATE ☒ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): scour only

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): No flow none observed
Identify specific pollutants, if known: none observed

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: Upland forest only

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: /
Fish or wildlife observed? ☐ YES ☒ NO Describe: /
Habitat for: None
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe:

OTHER OBSERVATIONS AND COMMENTS: Stream channel is part of beach-cut area of SMOJJP009/channel filled in wooded debris

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2-16-2017
REVIEWER(S): JP-WW
GAI STREAM ID: SMOJJP012

WEATHER CONDITIONS: Clear / 60°F / No rain last 24 hrs

STREAM TYPE: [X] PERENNIAL [ ] INTERMITTENT [ ] EPHEMERAL
Stream crossed by centerline: [X] YES [ ] NO
Stream crossed by access road: [ ] YES [X] NO

PHOTOGRAPHS TAKEN:
6609 - Upstream SSW # 6610 - Downstream NNE # 6607 - Impact Area W / 6608 → E
— - Culvert Inflow # — - Culvert Outflow 6611 RB → E / 6612 LB → W

FULLY FUNCTIONAL: [X] YES [ ] NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: [X] YES [ ] NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: [ ] YES [X] NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
- [X] FORESTED
- [ ] FARMLAND
- [ ] HAYFIELD
- [ ] INDUSTRIAL
- [ ] RESIDENTIAL
- [ ] WETLAND
- [ ] SCRUB/SHRUB
- [ ] PRAIRIE
- [ ] HIGH BLUFFS

LEFT BANK:
- [X] FORESTED
- [ ] FARMLAND
- [ ] HAYFIELD
- [ ] INDUSTRIAL
- [ ] RESIDENTIAL
- [ ] WETLAND
- [ ] SCRUB/SHRUB
- [ ] PRAIRIE
- [ ] HIGH BLUFFS

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-16-2017
REVIEWER(S): JJP-WJW
GAI STREAM ID: SMOJJP012

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 30 ; at centerline (feet): 30
Average bank height (feet): 18 ; at centerline (feet): 18
Bottom width (feet): 5 Water width (feet): 5 Water depth (feet): .5
Ordinary High Water Mark (OHWM), if observed (feet): 8

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☒ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☒ LOW
Average depth of water (feet): .5

BANK EROSION: ☒ EXTENSIVE ☐ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): sloughing banks / root wads / undercuts

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☒ YES ☐ NO GMOJJP001

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): None observed
Identify specific pollutants, if known: none observed

AQUATIC PLANTS: ☒ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: steep banks / upland forest buffer

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe:
Fish or wildlife observed? ☐ YES ☒ NO Describe:
Habitat for: none
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe:

OTHER OBSERVATIONS AND COMMENTS: slopes unstable along banks / slides and sloughs observed / channel is within deep ravine

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2-16-2017
REVIEWER(S): JJP-WJW
GAI STREAM ID: SMoSJP013

WEATHER CONDITIONS: Clear/60°F/No rain last 24 hrs.

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#6641 - Upstream N #6613 - Downstream S #_____ - Impact Area
#_____ - Culvert Inflow #_____ - Culvert Outflow 6616 RB→W/6615 LB→E

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☐ YES ☒ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-16-2017
REVIEWER(S): JJP - WJW
GAI STREAM ID: SMOJJP013

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 9 ; at centerline (feet): /
Average bank height (feet): 6 ; at centerline (feet): /
Bottom width (feet): 2 Water width (feet): / Water depth (feet): /
Ordinary High Water Mark (OHWM), if observed (feet): 2

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☒ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW no flow
Average depth of water (feet): no flow

BANK EROSION: ☐ EXTENSIVE ☒ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): some sloughing banks

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): no flow none observed
Identify specific pollutants, if known: none observed

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: upland forested area

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: /
Fish or wildlife observed? ☐ YES ☒ NO Describe: /
Habitat for: /
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe:

OTHER OBSERVATIONS AND COMMENTS:

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2-16-2017
REVIEWER(S): JJP-WJW
GAI STREAM ID: SMOJJP014

WEATHER CONDITIONS: Clear/60°F/NO rain last 24hrs

STREAM TYPE: ☐ PERENNIAL ☒ INTERMITTENT ☐ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#6617 - Upstream W #6618 - Downstream E #✓ - Impact Area
#✓ - Culvert Inflow #✓ - Culvert Outflow 6619 RB → SE/6620 LB → NE

FULLY FUNCTIONAL: ☒ YES ☐ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☐ YES ☒ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-16-2017
REVIEWER(S): JJP - WJW
GAI STREAM ID: SMOJJP014

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 10 ; at centerline (feet): —
Average bank height (feet): 7 ; at centerline (feet): —
Bottom width (feet): 3 Water width (feet): — Water depth (feet): —
Ordinary High Water Mark (OHWM), if observed (feet): 3

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☒ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW No flow
Average depth of water (feet): No flow

BANK EROSION: ☐ EXTENSIVE ☒ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): scour / undercuts / root wads

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): No flow None observed
Identify specific pollutants, if known: None observed

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: upland forest

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☐ YES ☒ NO Describe: —
Habitat for: None
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe:

OTHER OBSERVATIONS AND COMMENTS: Stream channel is within ravine.

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2-16-2017
REVIEWER(S): JJP-WJW
GAI STREAM ID: SMOJJP015

WEATHER CONDITIONS: Clear/60°F/No rain last 24 hrs

STREAM TYPE: ☒ PERENNIAL ☐ INTERMITTENT ☐ EPHEMERAL
Stream crossed by centerline: ☒ YES ☐ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
6621 - Upstream W # 6622 - Downstream E # 6625 - Impact Area N
____ - Culvert Inflow # ____ - Culvert Outflow 6623 RB→S / 6624 LB→N

FULLY FUNCTIONAL: ☒ YES ☐ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☐ YES ☒ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-16-2017
REVIEWER(S): WP-WJW
GAI STREAM ID: SMO-WP015

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 12 ; at centerline (feet): 12
Average bank height (feet): 5 ; at centerline (feet): 5
Bottom width (feet): 5 Water width (feet): 5 Water depth (feet): 4"
Ordinary High Water Mark (OHWM), if observed (feet): 6'

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☒ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☒ LOW
Average depth of water (feet): 4"

BANK EROSION: ☐ EXTENSIVE ☒ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): Scour

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): None observed
Identify specific pollutants, if known: None

AQUATIC PLANTS: ☒ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: uplands forested bottomland

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☐ YES ☒ NO Describe: —
Habitat for: None
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe:

OTHER OBSERVATIONS AND COMMENTS:

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 7-16-2017
REVIEWER(S): JJP - WJW
GAI STREAM ID: SMOJJP016

WEATHER CONDITIONS: Clear / 60°F / No rain last 24hrs

STREAM TYPE: ☒ PERENNIAL ☐ INTERMITTENT ☐ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#6626 - Upstream N. #6627 - Downstream # / - Impact Area
/ - Culvert Inflow # / - Culvert Outflow
6628 RB → W
6629 LB → E

FULLY FUNCTIONAL: ☒ YES ☐ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☐ YES ☒ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-16-2017
REVIEWER(S): JP - WJW
GAI STREAM ID: SMOWJP016

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 12' ; at centerline (feet): ~~
Average bank height (feet): 4.5' ; at centerline (feet): ~~
Bottom width (feet): 5' Water width (feet): 4' Water depth (feet): 4.5"
Ordinary High Water Mark (OHWM), if observed (feet): 8'

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☒ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☒ LOW
Average depth of water (feet): 4.5"

BANK EROSION: ☐ EXTENSIVE ☐ MODERATE ☒ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): scour

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): none observed
Identify specific pollutants, if known: none observed

AQUATIC PLANTS: ☒ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: upland forest riparian area

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: ~~
Fish or wildlife observed? ☐ YES ☒ NO Describe: ~~
Habitat for: none
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe:

OTHER OBSERVATIONS AND COMMENTS:

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2-17-2017
REVIEWER(S): JJP-WJW
GAI STREAM ID: SMOJJP017
WEATHER CONDITIONS: Clear / 65°F / No rain last 24 hrs

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
6631 - Upstream NE # 6632 - Downstream SW # ~ - Impact Area
~ - Culvert Inflow # ~ - Culvert Outflow 6633 RB → NW / 6634 LB → SE

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☐ YES ☒ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-17-2017
REVIEWER(S): JJP- WJW
GAI STREAM ID: SMOJJP017

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 6'; at centerline (feet): —
Average bank height (feet): 4'; at centerline (feet): —
Bottom width (feet): 2' Water width (feet): — Water depth (feet): —
Ordinary High Water Mark (OHWM), if observed (feet): 2'

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☒ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW no flow
Average depth of water (feet): —

BANK EROSION: ☐ EXTENSIVE ☐ MODERATE ☒ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): scour

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): no flow
None observed
Identify specific pollutants, if known: Trash in stream channel

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: upland forested hillslope

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☐ YES ☒ NO Describe: —
Habitat for: —
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe:

OTHER OBSERVATIONS AND COMMENTS: Head cut present / source upslope run-off

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2-17-2017
REVIEWER(S): JJP-WJW
GAI STREAM ID: SMOJJP019

WEATHER CONDITIONS: Clear/65°F/No rain last 48 hrs

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☒ YES ☐ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
6655 - Upstream S # 6656 - Downstream N # 6659 - Impact Area E
____ - Culvert Inflow # ____ - Culvert Outflow 6657 RB → E / 6658 LB → W

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☐ YES ☒ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-17-2017
REVIEWER(S): JJP - WJW
GAI STREAM ID: SMOJJP019

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 16 ; at centerline (feet): 16
Average bank height (feet): 4 ; at centerline (feet): 4
Bottom width (feet): 3 Water width (feet): — Water depth (feet): —
Ordinary High Water Mark (OHWM), if observed (feet): .5

FLOW CHARACTERISTICS:
Water present: ☒ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW No flow
Average depth of water (feet): —

BANK EROSION: ☐ EXTENSIVE ☐ MODERATE ☒ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): no vegetation along banks only

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): No flow
None observed
Identify specific pollutants, if known: —

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: RB is composed of exposed bedrock face/LB forest

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☐ YES ☒ NO Describe: —
Habitat for: None
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe:

OTHER OBSERVATIONS AND COMMENTS: - channel is possibly an ox bow from cold water creek/ channel abuts bedrock bluff face on RB side

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2-17-2017
REVIEWER(S): WP-WJW
GAI STREAM ID: SMOJP020

WEATHER CONDITIONS: Clear/65°F/No rain last 48hrs

STREAM TYPE: ☒ PERENNIAL ☐ INTERMITTENT ☐ EPHEMERAL
Stream crossed by centerline: ☒ YES ☐ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#66663 - Upstream SW #66664 - Downstream #66667 - Impact Area E
#____ - Culvert Inflow #____ - Culvert Outflow
66660 → NW
66665 RB → E / 66666 LB → W

FULLY FUNCTIONAL: ☒ YES ☐ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☐ YES ☒ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-17-2017
REVIEWER(S): JJP-WJW
GAI STREAM ID: SMOJJPO20

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 125 ; at centerline (feet): 125
Average bank height (feet): 8 ; at centerline (feet): 8
Bottom width (feet): 80 Water width (feet): 80 Water depth (feet): 2'
Ordinary High Water Mark (OHWM), if observed (feet): 5

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☒ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☒ MEDIUM ☐ LOW
Average depth of water (feet): 2

BANK EROSION: ☐ EXTENSIVE ☒ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): scour / sloughing banks

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): no flow
Identify specific pollutants, if known: none observed

AQUATIC PLANTS: ☒ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☒ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: upland forest fringe

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☒ YES ☐ NO Describe: minnows
Habitat for: none
Fish/spawn areas? ☒ YES ☐ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe:

OTHER OBSERVATIONS AND COMMENTS: LB lined with rip-rap / Cold Water Creek / large gravel bar 'island' within stream channel - see photo # below /

6669 → SE
6670 → NW
6671 → NE
6668 → S
} @ CL

6661 upstrm → S
6662 dwnstrm → N
} LB area

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2-17-2017
REVIEWER(S): JLP-WJW
GAI STREAM ID: SMO.JP021

WEATHER CONDITIONS: Clear / 65°F / No rain last 48 days

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#6676 - Upstream SW #6677 - Downstream NE #_____ - Impact Area
#_____ - Culvert Inflow #6680 - Culvert Outflow
6678 RB → E / 6679 LB → W

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☐ YES ☒ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☐ FORESTED ☐ WETLAND
☐ FARMLAND ☒ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☐ FORESTED ☐ WETLAND
☐ FARMLAND ☒ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-17-2017
REVIEWER(S): JJP - WJW
GAI STREAM ID: SMOJJP021

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 4 ; at centerline (feet): —
Average bank height (feet): 2.5 ; at centerline (feet): —
Bottom width (feet): 2' Water width (feet): — Water depth (feet): —
Ordinary High Water Mark (OHWM), if observed (feet): .5

FLOW CHARACTERISTICS:
Water present: ☒ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW No flow
Average depth of water (feet): —

BANK EROSION: ☐ EXTENSIVE ☐ MODERATE ☒ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): scour

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): No flow - None observed
Identify specific pollutants, if known: Trash in channel

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: upland scrub shrub area

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☐ YES ☒ NO Describe: —
Habitat for: None
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☐ YES ☐ NO Describe:

OTHER OBSERVATIONS AND COMMENTS: channel trib of SMOJJP020/source is upslope run-off/channel originates at culvert outflow/approx. 30' of stream appears as overland surface sheet flow, no defined channel in the sheet flow area/

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2-18-2017
REVIEWER(S): JP- WJW
GAI STREAM ID: SMWJP022

WEATHER CONDITIONS: overcast / 60°F / No rain last 48 hrs

STREAM TYPE: ☒ PERENNIAL ☐ INTERMITTENT ☐ EPHEMERAL
Stream crossed by centerline: ☒ YES ☐ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#6687 - Upstream NW #6688 - Downstream SE #6691 - Impact Area ANE
#6682 - Culvert Inflow #6681 - Culvert Outflow

FULLY FUNCTIONAL: ☒ YES ☐ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☐ YES ☒ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-18-2017
REVIEWER(S): JJP - WJW
GAI STREAM ID: SMOJJPO22

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 6 ; at centerline (feet): 6
Average bank height (feet): 2 ; at centerline (feet): 2
Bottom width (feet): 2 Water width (feet): 2 Water depth (feet): .2
Ordinary High Water Mark (OHWM), if observed (feet): .5

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☒ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☒ LOW
Average depth of water (feet): .2

BANK EROSION: ☐ EXTENSIVE ☐ MODERATE ☒ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): scour

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☒ YES ☐ NO
Observable water quality (siltation; water color is clear, discolored, oily film, scum, water odor; etc.): water turbid

Identify specific pollutants, if known: none observed

AQUATIC PLANTS: ☒ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: upland forest - some pasture area

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe:
Fish or wildlife observed? ☐ YES ☒ NO Describe:
Habitat for: none
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe:

OTHER OBSERVATIONS AND COMMENTS:

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 7-18-2017
REVIEWER(S): JJP-WJW
GAI STREAM ID: SMOJJP023

WEATHER CONDITIONS: Overcast/60°F/No rain last 48 hrs

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#6692 - Upstream S #6693 - Downstream N #— - Impact Area
#— - Culvert Inflow #— - Culvert Outflow 6694 RB → E / 6695 LB → W

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☐ YES ☒ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-18-2017
REVIEWER(S): JJP-WJW
GAI STREAM ID: SMOJJP023

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 4 ; at centerline (feet): —
Average bank height (feet): 2 ; at centerline (feet): —
Bottom width (feet): 2 Water width (feet): — Water depth (feet): —
Ordinary High Water Mark (OHWM), if observed (feet): .7

FLOW CHARACTERISTICS:
Water present: ☒ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW No flow
Average depth of water (feet): —

BANK EROSION: ☐ EXTENSIVE ☐ MODERATE ☒ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): scour

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor, etc.): No flow none observed
Identify specific pollutants, if known: Trash observed in channel

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: upland forest

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☐ YES ☒ NO Describe: —
Habitat for: None
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: —

OTHER OBSERVATIONS AND COMMENTS: —

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2-20-2017
REVIEWER(S): WP-WJW
GAI STREAM ID: SMOSJWPD24

WEATHER CONDITIONS: Partly Cloudy / 70°F

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☒ YES ☐ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#6708 - Upstream W #6709 - Downstream E #6712 - Impact Area S
#_____ - Culvert Inflow #_____ - Culvert Outflow 6710 RB→S / 6711 LB→N

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☐ YES ☒ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 7-20-2017
REVIEWER(S): JJP-WJW
GAI STREAM ID: SMOJJPD24

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 4' ; at centerline (feet): 4'
Average bank height (feet): 2 ; at centerline (feet): 2
Bottom width (feet): .5 Water width (feet): — Water depth (feet): —
Ordinary High Water Mark (OHWM), if observed (feet): .5

FLOW CHARACTERISTICS:
Water present: ☒ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW no flow
Average depth of water (feet): no flow

BANK EROSION: ☐ EXTENSIVE ☐ MODERATE ☒ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): scour - rootwads

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): no flow
Identify specific pollutants, if known: Trash in channel

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: upland wooded hillslope

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☐ YES ☒ NO Describe: —
Habitat for: None
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe:

OTHER OBSERVATIONS AND COMMENTS: Tributary of SMOJJPD22

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2-20-2017
REVIEWER(S): WP-WJW
GAI STREAM ID: SMOJJP025

WEATHER CONDITIONS: partly Cloudy /70°F

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#6717 - Upstream E #6718 - Downstream SW #_____ - Impact Area
#_____ - Culvert Inflow #_____ - Culvert Outflow 6719 RB→N / 6720 LB→S

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☐ YES ☒ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☐ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☒ RESIDENTIAL Roadside ROW

LEFT BANK:
☐ FORESTED ☐ WETLAND
☐ FARMLAND ☒ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 7-20-2017
REVIEWER(S): JJP-WJW
GAI STREAM ID: SMOJJP025

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 5' ; at centerline (feet): —
Average bank height (feet): 4.5 ; at centerline (feet): —
Bottom width (feet): 2.5 Water width (feet): — Water depth (feet): —
Ordinary High Water Mark (OHWM), if observed (feet): 2'

FLOW CHARACTERISTICS:
Water present: ☒ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW no flow
Average depth of water (feet): —

BANK EROSION: ☐ EXTENSIVE ☐ MODERATE ☒ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): undercuts - scour - headcut

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): no flow
Identify specific pollutants, if known: Trash in channel

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: upland scrub/shrub - grassy roadside ROW

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☐ YES ☒ NO Describe: —
Habitat for: None
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: Tributary of mapped NHD stream

OTHER OBSERVATIONS AND COMMENTS: Tributary of SMOJJP024

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2-20-2017
REVIEWER(S): NP-WJW
GAI STREAM ID: SMAIIP026

WEATHER CONDITIONS: Partly Cloudy / 20°F

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☒ YES ☐ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#6730 - Upstream WSW #6731 - Downstream ENE #6734 - Impact Area SW
#____ - Culvert Inflow #____ - Culvert Outflow 6732 RB→S / 6733 LB→N

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☐ YES ☒ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☐ FORESTED ☐ WETLAND
☐ FARMLAND ☒ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☐ FORESTED ☐ WETLAND
☐ FARMLAND ☒ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-20-2017
REVIEWER(S): JP-WJW
GAI STREAM ID: SMOJJP026

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 6' ; at centerline (feet): 6'
Average bank height (feet): 4' ; at centerline (feet): 4
Bottom width (feet): 1 Water width (feet): — Water depth (feet): —
Ordinary High Water Mark (OHWM), if observed (feet): .7

FLOW CHARACTERISTICS:
Water present: ☒ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW no flow
Average depth of water (feet): —

BANK EROSION: ☐ EXTENSIVE ☒ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): scour - undercuts - rootwads
head cut observed

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): no flow
Identify specific pollutants, if known: Trash in channel

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: upland scrub shrubs

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☐ YES ☒ NO Describe: —
Habitat for: NONE
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: Tributary of NHD stream

OTHER OBSERVATIONS AND COMMENTS: Tributary of SMOJJP022ext1/
possible source highway Run-off

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2-20-2017
REVIEWER(S): JWP-WJW
GAI STREAM ID: SMOJWP027

WEATHER CONDITIONS: Partly Cloudy / 70°F

STREAM TYPE: ☐ PERENNIAL ☒ INTERMITTENT ☐ EPHEMERAL
Stream crossed by centerline: ☒ YES ☐ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#6725 - Upstream W #6726 - Downstream E #6727 - Impact Area S
#____ - Culvert Inflow #____ - Culvert Outflow 6728 RB→NW / 6729 LB→E

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☐ YES ☒ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☐ FORESTED ☐ WETLAND
☐ FARMLAND ☒ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☐ FORESTED ☐ WETLAND
☐ FARMLAND ☒ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-20-2017
REVIEWER(S): JJP-WJW
GAI STREAM ID: SMOJJP027

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 6' ; at centerline (feet): 6'
Average bank height (feet): 2 ; at centerline (feet): 2
Bottom width (feet): 3 Water width (feet): 1 Water depth (feet): .2
Ordinary High Water Mark (OHWM), if observed (feet): .7

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☒ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☒ LOW
Average depth of water (feet): .2

BANK EROSION: ☐ EXTENSIVE ☐ MODERATE ☒ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): scour

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): water clear
Identify specific pollutants, if known: Trash & concrete slabs within channel

AQUATIC PLANTS: ☒ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: upland scrub-shrub

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☐ YES ☒ NO Describe: —
Habitat for: none
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: Tributary of PHO stream

OTHER OBSERVATIONS AND COMMENTS: Tributary of SMOJJP022 ext 1

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2-20-2017
REVIEWER(S): JWP-WJW
GAI STREAM ID: SMOJJP028

WEATHER CONDITIONS: Partly Cloudy /70 °F

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#6749 - Upstream N #6750 - Downstream S #_____ - Impact Area
#_____ - Culvert Inflow #_____ - Culvert Outflow 6751 RB→W / 6752 LB→E

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-20-2017
REVIEWER(S): JJP-WJW
GAI STREAM ID: SMOJJP028

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 6' ; at centerline (feet): —
Average bank height (feet): 4 ; at centerline (feet): —
Bottom width (feet): 2 Water width (feet): — Water depth (feet): —
Ordinary High Water Mark (OHWM), if observed (feet): .4

FLOW CHARACTERISTICS:
Water present: ☒ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW No flow
Average depth of water (feet): None

BANK EROSION: ☐ EXTENSIVE ☐ MODERATE ☒ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): undercuts - scour

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): No flow
Identify specific pollutants, if known: None observed

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: upland woodland - bottomland

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☐ YES ☒ NO Describe: —
Habitat for: None
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: Tributary of NHD stream

OTHER OBSERVATIONS AND COMMENTS: Tributary of SMOJJP022 ext'l

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2-20-2017
REVIEWER(S): JJP-WJW
GAI STREAM ID: SMOJJP029

WEATHER CONDITIONS: Partly Cloudy / 70°F

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#6753 - Upstream SW #6754 - Downstream NE #_____ - Impact Area
#_____ - Culvert Inflow #_____ - Culvert Outflow 6755 RB → S / 6756 LB → N

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☐ YES ☒ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-20-2017
REVIEWER(S): JVP-WJW
GAI STREAM ID: SMOJJP029

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 8 ; at centerline (feet): —
Average bank height (feet): 2.5 ; at centerline (feet): —
Bottom width (feet): 3 Water width (feet): — Water depth (feet): —
Ordinary High Water Mark (OHWM), if observed (feet): .4

FLOW CHARACTERISTICS:
Water present: ☒ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW no flow
Average depth of water (feet): —

BANK EROSION: ☐ EXTENSIVE ☐ MODERATE ☒ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): possible change in veg. community

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): no flow
Identify specific pollutants, if known: none observed

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: upland woodland - Bottomland

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☐ YES ☒ NO Describe: —
Habitat for: none
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: Tributary of NHD stream

OTHER OBSERVATIONS AND COMMENTS: Tributary of SMOJJP022 ext 1

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2-22-2017
REVIEWER(S): JWP-WJW
GAI STREAM ID: SMO JWP029

WEATHER CONDITIONS: overcast/65°F/light rain last 48hrs

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO (crosses mississippi river pull back)
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#6849 - Upstream S #6850 - Downstream N #_____ - Impact Area
#_____ - Culvert Inflow #_____ - Culvert Outflow 6851 RB→E / 6852 LB→W

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☐ YES ☒ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☐ FORESTED ☐ WETLAND
☒ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☐ FORESTED ☐ WETLAND
☒ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-22-2017
REVIEWER(S): JVP-WJW
GAI STREAM ID: SMAWP029

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 3 ; at centerline (feet): —
Average bank height (feet): 2 ; at centerline (feet): —
Bottom width (feet): 1' Water width (feet): — Water depth (feet): —
Ordinary High Water Mark (OHWM), if observed (feet): none

FLOW CHARACTERISTICS:
Water present: ☒ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW no flow
Average depth of water (feet): none

BANK EROSION: ☐ EXTENSIVE ☐ MODERATE ☒ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): void of veg on lower banks

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): no flow
none observed
Identify specific pollutants, if known: —

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: upland agricultural field

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☐ YES ☒ NO Describe: —
Habitat for: none
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: Possible connects an trib of Mississippi

OTHER OBSERVATIONS AND COMMENTS: - channel possible agricultural field drainage

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 7-23-2017
REVIEWER(S): NP-WJW
GAI STREAM ID: SMOJJP030

WEATHER CONDITIONS: Overcast to partly cloudy / light rain last 48 hrs

STREAM TYPE: ☒ PERENNIAL ☐ INTERMITTENT ☐ EPHEMERAL
Stream crossed by centerline: ☒ YES ☐ NO crosses CL 2X
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#6855 - Upstream NE #6856 - Downstream SW #6859 - Impact Area NW
#___ - Culvert Inflow #___ - Culvert Outflow 6857 RB → NNW / 6858 LB → SSE
2nd crossing on RB
6862/6861 upstm → E
6863 dwnstm → SW
6864 RB → SE / 6865 LB → NE

FULLY FUNCTIONAL: ☒ YES ☐ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☐ YES ☒ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☐ YES ☒ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☐ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-23-2017
REVIEWER(S): JJP-WJW
GAI STREAM ID: SMOJJP030

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 30 ; at centerline (feet): 30
Average bank height (feet): 15 ; at centerline (feet): 15
Bottom width (feet): 10 Water width (feet): 15 Water depth (feet): 3
Ordinary High Water Mark (OHWM), if observed (feet): 5

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☒ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☒ LOW
Average depth of water (feet): 3

BANK EROSION: ☒ EXTENSIVE ☐ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): sloughing banks - scour

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☒ YES ☐ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): water turbid
Identify specific pollutants, if known: None observed

AQUATIC PLANTS: ☒ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☒ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: Forested bottomland

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☐ YES ☒ NO Describe: —
Habitat for: None
Fish/spawn areas? ☒ YES ☐ NO (possible)

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: NHD stream

OTHER OBSERVATIONS AND COMMENTS: Stream alignment positioned within deep forested ravine

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 7-25-2017
REVIEWER(S): JJP-WJW
GAI STREAM ID: SMOJJP032

WEATHER CONDITIONS: Partly Cloudy / 40°F

STREAM TYPE: ☒ PERENNIAL ☒ INTERMITTENT ☐ EPHEMERAL
Stream crossed by centerline: ☒ YES ☐ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN: (Perennial area)
6968 - Upstream S # 6969 - Downstream NW # 6967 - Impact Area NE
____ - Culvert Inflow # ____ - Culvert Outflow
6970 RB→N / 6971 LB→WNW
Interm section
6974 upstm→SE
6975 dwnstm→NW
6976 RB→N / 6977 LB→S

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☐ YES ☒ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

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Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-25-2017
REVIEWER(S): WP-WJW
GAI STREAM ID: SMOJWP032

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 15' ; at centerline (feet): 15'
Average bank height (feet): 10 ; at centerline (feet): 10
Bottom width (feet): 5 Water width (feet): 4 Water depth (feet): .7
Ordinary High Water Mark (OHWM), if observed (feet): 2

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☒ STREAMBED MOIST ☐ STANDING WATER ☒ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☒ LOW
Average depth of water (feet): .7

BANK EROSION: ☐ EXTENSIVE ☒ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): scour / Few undercuts

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): water clear
Identify specific pollutants, if known: some trash in stream channel

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: upland forested slope

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe:
Fish or wildlife observed? ☐ YES ☒ NO Describe:
Habitat for: None
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: Tributary to NHD Stream

OTHER OBSERVATIONS AND COMMENTS: Bedrock substate and some areas of Rt bank / tributary of cold water creek / Bedrock substrate plunge-pool 6979 /

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2-25-2017
REVIEWER(S): WP-WJW
GAI STREAM ID: SMOWP033
WEATHER CONDITIONS: partly Cloudy / 40°F

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#6986 - Upstream NW #6981 - Downstream SE # ____ - Impact Area
____ - Culvert Inflow # ____ - Culvert Outflow 6987RB → W / 6988LB → E

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-25-2017
REVIEWER(S): JJP-WJW
GAI STREAM ID: SMOJJP033

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 8 ; at centerline (feet): —
Average bank height (feet): 5 ; at centerline (feet): —
Bottom width (feet): 1 Water width (feet): — Water depth (feet): —
Ordinary High Water Mark (OHWM), if observed (feet): .5

FLOW CHARACTERISTICS:
Water present: ☒ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW no flow
Average depth of water (feet): —

BANK EROSION: ☐ EXTENSIVE ☒ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): scour

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): no flow
Identify specific pollutants, if known: none observed

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: forested slope

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☐ YES ☒ NO Describe: —
Habitat for: none
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: Tributary of NHD stream

OTHER OBSERVATIONS AND COMMENTS: Tributary of SMOWP012 ext 1

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2-25-2016
REVIEWER(S): WP-WJW
GAI STREAM ID: SMWWP034

WEATHER CONDITIONS: Partly Cloudy / 40°F

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#6983 - Upstream NNW #6982 - Downstream SE # ✓ - Impact Area
✓ - Culvert Inflow # ✓ - Culvert Outflow 6984 RB→SW / 6985 LB→NE

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 7-25-2017
REVIEWER(S): JJP-WJW
GAI STREAM ID: SMOJJP034

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 4'; at centerline (feet): —
Average bank height (feet): 4; at centerline (feet): —
Bottom width (feet): 1 Water width (feet): — Water depth (feet): —
Ordinary High Water Mark (OHWM), if observed (feet): .5'

FLOW CHARACTERISTICS:
Water present: ☒ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW no flow
Average depth of water (feet): —

BANK EROSION: ☐ EXTENSIVE ☒ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): scour / undercuts

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): No flow
Identify specific pollutants, if known: none observed

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: upland wooded slope

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☐ YES ☒ NO Describe: —
Habitat for: None
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: Trib of NHD stream

OTHER OBSERVATIONS AND COMMENTS: Tributary of SMOJJP012 ext'l

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2-25-2017
REVIEWER(S): JWP-WJW
GAI STREAM ID: SMOJWP035

WEATHER CONDITIONS: Partly Cloudy / 40°F

STREAM TYPE: ☐ PERENNIAL ☒ INTERMITTENT ☐ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#6997 - Upstream NW #6998 - Downstream SE #___ - Impact Area
#___ - Culvert Inflow #___ - Culvert Outflow 6999RB→N/7000LB→S

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☒ YES ☐ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-25-2017
REVIEWER(S): JJP-WJW
GAI STREAM ID: SMOJJP035

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 20 ; at centerline (feet): —
Average bank height (feet): 16 ; at centerline (feet): —
Bottom width (feet): 3 Water width (feet): 1 Water depth (feet): .4
Ordinary High Water Mark (OHWM), if observed (feet): .5

FLOW CHARACTERISTICS:
Water present: ☐ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☒ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☒ LOW
Average depth of water (feet): .2

BANK EROSION: ☐ EXTENSIVE ☒ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): scour - undercuts

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): turbid
Identify specific pollutants, if known: None observed

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: upland forest

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☐ YES ☒ NO Describe: —
Habitat for: None
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: Trib of NHD stream

OTHER OBSERVATIONS AND COMMENTS: Trib of SMOJJP012 ext'l

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2-25-2017
REVIEWER(S): JJP - WJW
GAI STREAM ID: SMOJJP036

WEATHER CONDITIONS: Partly Cloudy / 40°F

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
6993 - Upstream W # 6994 - Downstream E # ____ - Impact Area
____ - Culvert Inflow # ____ - Culvert Outflow 6995 RB → S / 6996 LB → N

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☐ YES ☒ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-25-2017
REVIEWER(S): WP-WJW
GAI STREAM ID: SMOWP036

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 3' ; at centerline (feet): —
Average bank height (feet): 3 ; at centerline (feet): —
Bottom width (feet): .5 Water width (feet): — Water depth (feet): —
Ordinary High Water Mark (OHWM), if observed (feet): .4

FLOW CHARACTERISTICS:
Water present: ☒ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW no flow
Average depth of water (feet): —

BANK EROSION: ☐ EXTENSIVE ☐ MODERATE ☒ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): scour

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): no flow
Identify specific pollutants, if known: none observed

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: upland wooded slopes

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☐ YES ☒ NO Describe: —
Habitat for: none
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: Trib of NHD stream

OTHER OBSERVATIONS AND COMMENTS: Tributary of SMOWP012 ext/

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2-25-2017
REVIEWER(S): JJP-WJW
GAI STREAM ID: SMOJJP037

WEATHER CONDITIONS: Partly Cloudy / 40°F

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#7001 - Upstream N #7002 - Downstream S #____ - Impact Area
#____ - Culvert Inflow #____ - Culvert Outflow 7003 RB → W / 7004 LB → E

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☐ YES ☒ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-25-2017
REVIEWER(S): JWP-WJW
GAI STREAM ID: SMOJWP037

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 20 ; at centerline (feet): —
Average bank height (feet): 6 ; at centerline (feet): —
Bottom width (feet): 10 Water width (feet): — Water depth (feet): —
Ordinary High Water Mark (OHWM), if observed (feet): 0.6

FLOW CHARACTERISTICS:
Water present: ☒ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW No flow
Average depth of water (feet): —

BANK EROSION: ☐ EXTENSIVE ☐ MODERATE ☒ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): scour

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): No flow
Identify specific pollutants, if known: None observed

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: Upland forested slopes

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☐ YES ☒ NO Describe: —
Habitat for: None
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: Trib of NHD stream

OTHER OBSERVATIONS AND COMMENTS: Tributary of SMOJP012 ext 1

Spire STL Pipeline Stream Survey Data Collection Form

DATE: 2-25-2017
REVIEWER(S): JP-WW
GAI STREAM ID: SMO.WP038

WEATHER CONDITIONS: Partly Cloudy / 40°F

STREAM TYPE: ☐ PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL
Stream crossed by centerline: ☐ YES ☒ NO
Stream crossed by access road: ☐ YES ☒ NO

PHOTOGRAPHS TAKEN:
#7005 - Upstream NW #7006 - Downstream SE #___ - Impact Area
#___ - Culvert Inflow #___ - Culvert Outflow 7007 RB → SW / 7008 LB → NE

FULLY FUNCTIONAL: ☐ YES ☒ NO
Considered fully functional if the following criteria are met:
1. Unaltered in any significant manner by human activities
2. Is stable and does not exhibit headcutting, incision, or excessive aggradation
3. Is connected to its overbank flood plain supporting normal hydrological functions
4. Has a riparian buffer of at least 25 ft in width
5. If stream segment is impacted by a minor structural alteration but otherwise fully functional and does not significantly alter stream segments above and below, then the alteration should be considered separate and moderately functional

MODERATELY FUNCTIONAL: ☒ YES ☐ NO
Considered moderately functional if the following are met:
1. Streams have been altered; however, system recovery has a moderate probability of occurring naturally
2. Streams support many, but not all, of the hydraulic and geomorphic functions characteristic of fully functioning streams of similar order in the watershed

FUNCTIONALLY IMPAIRED: ☐ YES ☒ NO
Considered functionally impaired if the stream has more than one of the following:
1. Has been channelized and shows no evidence of self-recovery
2. Is levee protected, impounded, or artificially constricted
3. Entrenched or contains active headcuts
4. Has little or no riparian buffer of deep-rooted vegetation on 1 or both sides of channel
5. Has banks that are extensively eroded or unstable, bank sloughing, erosional scars
6. Has 4 or greater stream impacts within 0.5 mile upstream of proposed stream impact, and stream impacts individually or cumulatively exceed 100 ft in length

GENERAL WATERSHED AND/OR RIPARIAN AREA CHARACTERISTICS WITHIN 100FT BUFFER

RIGHT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

LEFT BANK:
☒ FORESTED ☐ WETLAND
☐ FARMLAND ☐ SCRUB/SHRUB
☐ HAYFIELD ☐ PRAIRIE
☐ INDUSTRIAL ☐ HIGH BLUFFS
☐ RESIDENTIAL

Spire STL Pipeline Stream Survey Data Collection Form (PAGE 2)

DATE: 2-25-2017
REVIEWER(S): WP-WJW
GAI STREAM ID: SMOWP038

STREAM CHANNEL PROPERTIES WITH RESPECT TO TOP OF BANK (ESTIMATE):
Average bank-to-bank width (feet): 5 ; at centerline (feet): —
Average bank height (feet): 6' ; at centerline (feet): —
Bottom width (feet): 1' Water width (feet): — Water depth (feet): —
Ordinary High Water Mark (OHWM), if observed (feet): .5

FLOW CHARACTERISTICS:
Water present: ☒ NO WATER, STREAMBED DRY ☐ STREAMBED MOIST ☐ STANDING WATER ☐ FLOWING WATER
If flow present, estimate stage at time of survey: ☐ HIGH ☐ MEDIUM ☐ LOW NO flow
Average depth of water (feet): —

BANK EROSION: ☐ EXTENSIVE ☒ MODERATE ☐ LITTLE / NONE
Explain (sloughing banks, exposed root wads, undercut banks, etc.): scour

OBSERVED PRESENCE OF GROUNDWATER SEEPS: ☐ YES ☒ NO

OBSERVED PRESENCE OF SUBSURFACE FLOW: ☐ YES ☒ NO

WATER QUALITY CHARACTERISTICS:
Obvious siltation: ☐ YES ☒ NO
Observable water quality (siltation, water color is clear, discolored, oily film, scum, water odor; etc.): No flow
Identify specific pollutants, if known: None observed

AQUATIC PLANTS: ☐ PERIPHYTON (brown or yellowish algae on rocks or substrate) ☐ FILAMENTOUS ALGAE ☐ MACROPHYTES

WETLAND FRINGE: ☐ YES ☐ ABUTTING or ☐ ADJACENT ☒ NO
Describe: Upland wooded slope

BIOLOGICAL CHARACTERISTICS:
Macroinvertebrates observed? ☐ YES ☒ NO Describe: —
Fish or wildlife observed? ☐ YES ☒ NO Describe: —
Habitat for: None
Fish/spawn areas? ☐ YES ☒ NO

JURISDICTIONAL STATUS:
Is this stream jurisdictional? ☒ YES ☐ NO Describe: Trib of NHD stream

OTHER OBSERVATIONS AND COMMENTS: Tributary of SMOWP038